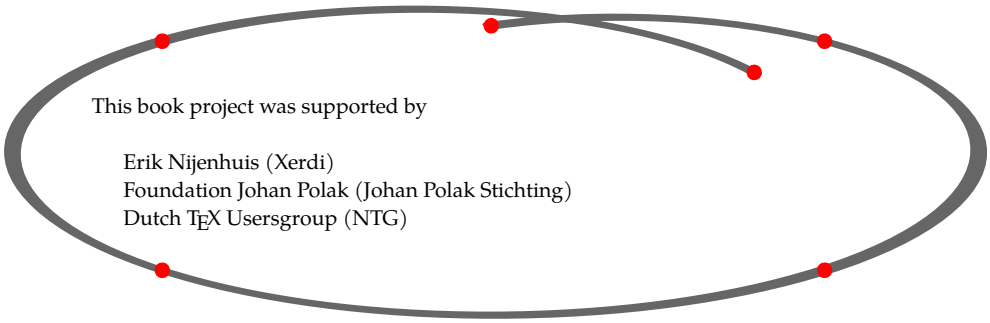
ConTEXt LMTX
an excursion

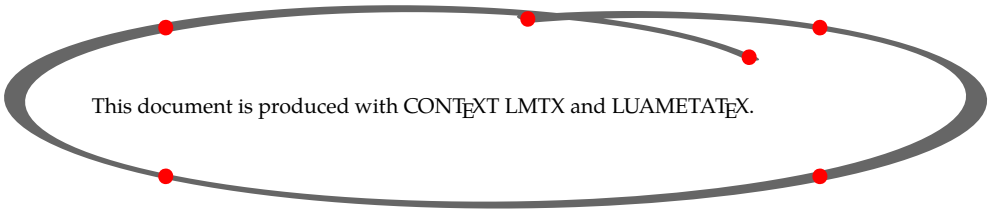
Version 3

CONTEXT group

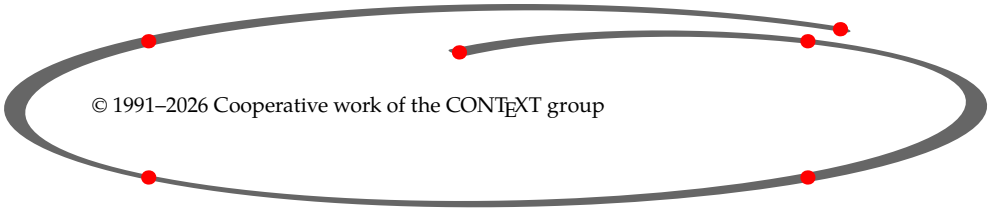


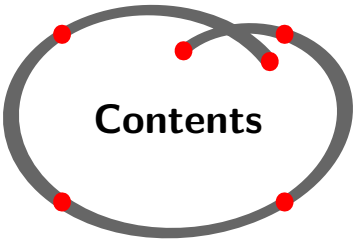
This book project was supported by

Erik Nijenhuis (Xerdi)
Foundation Johan Polak (Johan Polak Stichting)
Dutch TEX Usersgroup (NTG)

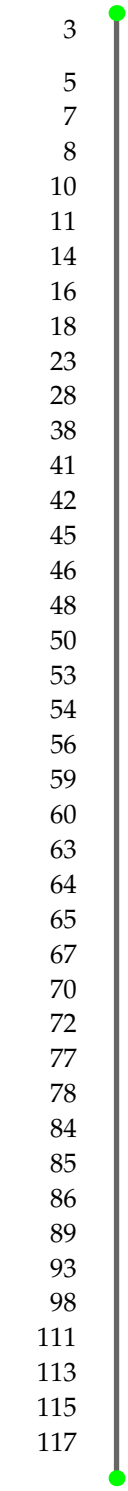


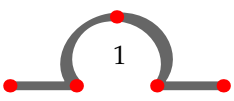
This document is produced with CONTEXT LMTX and LUAMETATEX.

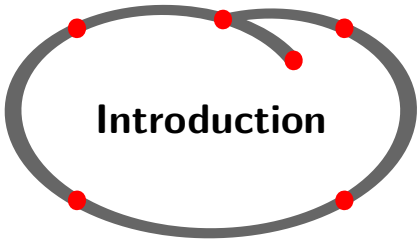




Contents







CONTEXT is a document development system based on TEX, a typesetting system and programming language to typeset and produce documents. This system is easy to use and enables you to make complex paper and electronic documents.

This manual was originally written by Ton Otten. The current Version 3 was edited by the CONTEXT group. The book describes the capabilities of CONTEXT LMTX that uses the LUAMETATEX engine. The manual introduces available commands and their functionality[1].

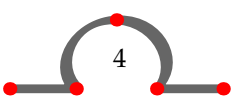
This system is developed for practical applications: the typesetting and production of documents ranging from simple straight forward books up to very complex and advanced technical manuals and textbooks in a paper or an electronic version. This introductory manual describes the functionality necessary to apply standard text elements in a manual or textbook. CONTEXT, however, is capable of much more and for users who want more there are other manuals and sources available.

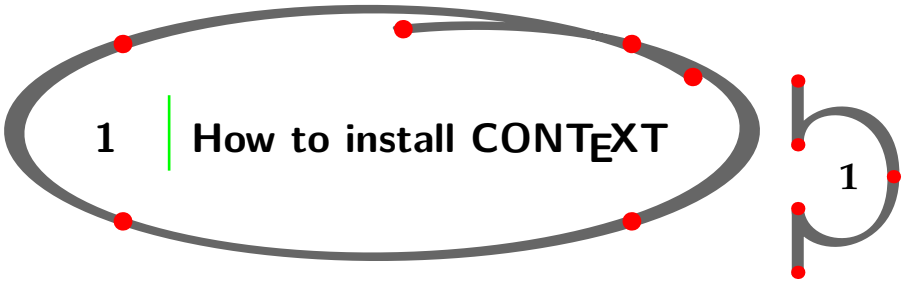
CONTEXT has a multi lingual interface to enable users to work with the system in their own language.

CONTEXT group

Willi Egger

[1] All paper and electronic products around CONTEXT are produced with CONTEXT. All sources of these products are or will be made available electronically to give you insight in the way these products are made up.





1 How to install CONTEXT

1.1 Short history about TEX

The TEX typesetting software was developed by Professor Donald E. Knuth at the Stanford University, USA and first made publicly available in 1976. When Donald E. Knuth released TEX the output format was a DVI file i.e a device independent fileformat. For viewing and printing further software packages were necessary. Looking back to the seventies of the last century you might remember, that at that time computers were the main frame computers, available only to universities and big companies. Still with this restriction the TEX programme became widely distributed over the world. It did not take too long and the first PCs became available which made it possible to use TEX also on such small computers. The TEX typesetting system is characterized by the possibility to program it. The programming bits are called macros. Due to the restrictions of old time computers, writing macros was quite difficult. This lead to the development of different more user friendly interfaces. One of those intermediate layers is CONTEXT.

In the early nineties of the last century Adobe introduced the PDF file format i.e. a portable file format. This company also introduced the so called type 1 fonts. These developments caused the TEX community to invest into an extension of TEX, enabling it to produce directly PDF as output and the use of the type 1 fonts. This work was carried out by Hàn Thế Thành.

Development of TEX went on with consent of Prof. Donald E. Knuth, however mostly outside the USA. A major step in modernizing the TEX engine was the implementation of a LUA interpreter. This enabled the access to internal variables in the TEX engine, leading to more control. The development of LUATEX started around 2005. During the following years multiple versions of increasing completeness were released. This work was mostly done by Hans Hagen and Taco Hoekwater. The version 1.0 was released in 2016.

To this point the development of TEX was always with the aim, that all TEX macro packages were able to use the LUATEX machinery. After the end of the LUATEX project, Hans Hagen started a new thread of development. Now a compatibility with other macro packages was given up, because Hans already had developed his own font handler, a separate PDF backend and more. It was now time to start eliminating extensions added to the engine in the past which were nomore necessary. Furthermore this decision provided the possibility to break open even more of the internals of the TEX engine. The result of these activities is the new TEX engine called LUAMETATEX. This engine is lean and approaches the size of the Knuthian TEX engine. Alongside this development CONTEXT was adapted accordingly. The use of the LUAMETATEX engine requires to run an up-to-date version of CONTEXT.

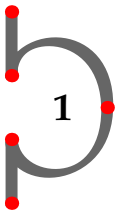
1.2 Supported operating systems

Though the whole development of LUAMETATEX and CONTEXT take place in a WINDOWS environment other operating systems are served as well. In table 1.1 there is a summary of supported environments.

The different binaries are updated in parallel and are normally on the same stage of development.

1.3 Installing CONTEXT

Installing CONTEXT is an easy process. Visit either the *Pragma website* or the *CONTEXT WIKI* and download the appropriate installation package.



OS	Architecture		OS	Architecture	
Windows	X86	32bits	GNU/Linux	X86	32bits
	X86	64bits		X86	64bits
	ARM	64bits		ARM	64bits
macOS	X86	64bits		Musl	64bits
	ARM	64bits	FreeBSD	14.0	64bits
			OpenBSD	7.4	64bits

Table 1.1 Available precompiled LUAMETATEX packages

There is then a short sequence of steps to follow.

1. create a directory for, e.g. . . . /context
2. go there and download the relevant zip, if not done already
3. unpack the archive into your new directory
4. on UNIX set the executable permissions for `install.sh`
5. on WINDOWS run the `install.bat`
6. on UNIX run the `install.sh` file
7. check the installation by issuing `context --version` from the command line
8. set the PATH variable pointing to your installation

On WINDOWS you can best run the script as administrator because that will use shortcuts to programs instead of copies which is more efficient. There you can also run the `setpath.bat` file from your installation directory.

On GNU/Linux and MacOS systems the path to the CONTEXT installation should be put into the shell startup configuration file e.g. the `.bashrc` or `.zshenv` or what your OS is using for this purpose.

1.4 Rebuilding the file database

When installing or updating the installation the install script takes care of building the file database. If you have to regenerate this database because you added e.g. a new font, then run from the command line

```
mtxrun --generate
```

1.5 Rebuilding the format

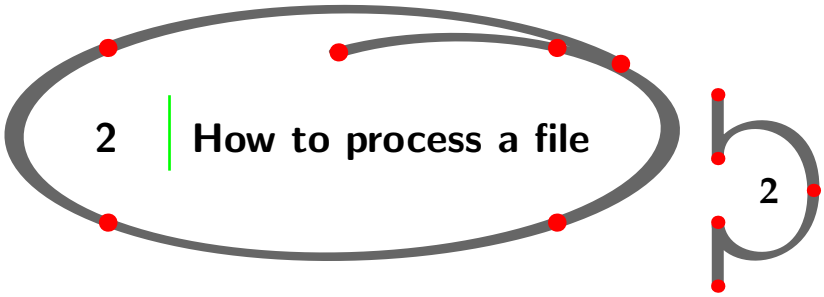
Normally you will not have to deal with the format file because the installation script generates it upon installation or upgrading. However need be, you can run on the command line

```
context --make
```

1.6 Updating the distribution

Once you have a running installation the updating of it is simply running the install script again.

If you would like to use the latest developments you might have an eye on the release of new CONTEXT versions. This can best be done by joining the *CONTEXT mailinglist* because new releases are announced there.



2 How to process a file

In this chapter we assume that you have installed and initiated CONTEXT LMTX correctly so that you can run it from the command-line in your working directory. The installation procedure is described in chapter 1 or you can find the CONTEXT installation procedure on the *CONTEXT WIKI*.

Let's try out what we get when creating a TEX file in the working directory.

Open your favorite ASCII-text editor and type the following

```
\startdocument
  This is my very first \CONTEXT\ document!
\stopdocument
```

Save the file as `first-document.mkxl`

If you want to process a CONTEXT input file, you should type at the command line prompt:

```
context first-document.mkxl
```

The extension `.mkxl` is not needed to be typed. See appendix H and I for more information on the `context` command.

After pressing `ENTER` processing will start. CONTEXT will show processing information on your screen. During the processing of your input file CONTEXT will also inform you of what it is doing with your document.

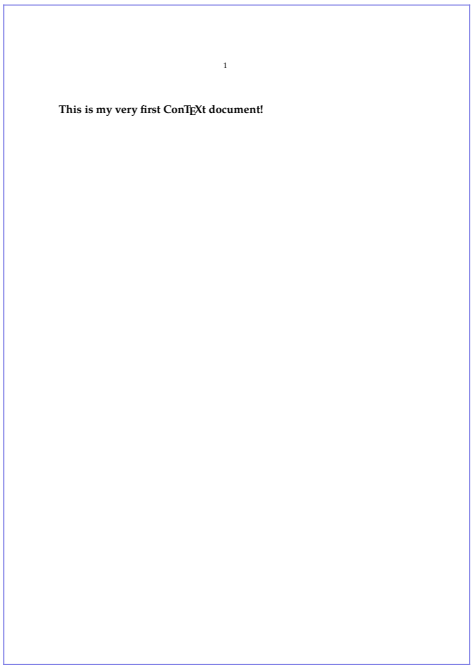
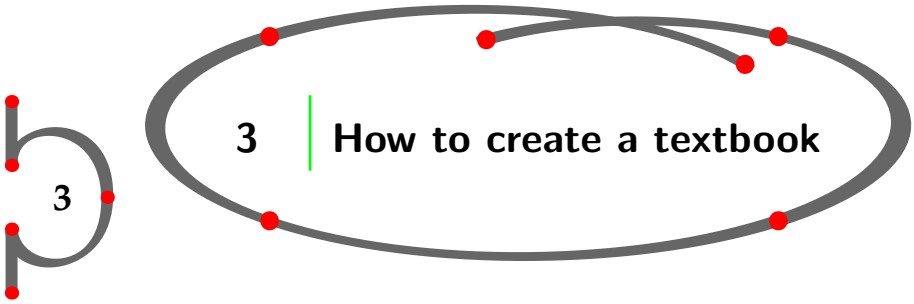


Figure 2.1 The outcome of the `first-document.mkxl`

For example it will show page numbers and information about processing steps. Further more it gives warnings. These are of a typographical order and tell you when line breaking is not successful. All information on processing is stored in a `log` file which can be used for reviewing warnings and errors and the respective line numbers where they occur in your file.
If processing is successful the command line prompt will return and CONTEXT will produce the file `first-document.pdf`.
The abbreviation PDF stands for PORTABLE DOCUMENT FORMAT. This is a platform independent format for printing and viewing with a PDF-READER/BROWSER. The outcome looks like figure 2.1.
In case you use a configurable text editor you can also run CONTEXT from that editor. More information on that topic can be found in appendix G.



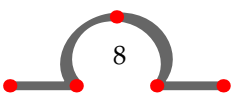
3 How to create a textbook

Let's assume you want to create a simple textbook. It has some structure and contains a title page, a few chapters, sections and subsections. Of course there is a table of contents.

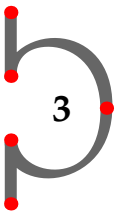
CONTEXT can create such a document automatically if you offer the right input by means of a file. So first you have to create an input file. An input file consists of a name and an extension. You can choose any name you want but the extension should be `.mkxl` to mark the file as one to be compiled with CONTEXT and LUAMETATEX. Other extensions understood by CONTEXT are `*.tex`, `*.mkiv`. If you create a file with the name `mybook.mkxl` you will find no difficulties in running CONTEXT.

An input file could look like this:

```
\startdocument

\startstandardmakeup
  \midaligned{From Hasselt to America}
  \midaligned{by}
  \midaligned{J. Jonker and C. van Marle}
\stopstandardmakeup

\placecombinedlist[content]

\startchapter[title=Introduction]

... ties between Hasselt and America ...

\stopchapter

\startchapter
  [title=The Rensselaer family,reference=chap:rensselaer]

\startsection[title=The first born]

... was born in the year ...

\stopsection

\startsection[title=The early years]

... in those days Hasselt was ...

\stopsection

\startsection[title=Living and working in America]

... life in America was ...

\stopsection

\stopchapter

\startchapter
  [title=The Lansing family,reference=chap:lansing]

... the Lansing family was also ...
```



```
\stopchapter

\startchapter
  [title=The Cuyler family,reference=chap:cuyler]

... much later Tydeman Cuyler ...

\stopchapter

\stopdocument
```



CONTEXT expects a plain ASCII input file. Of course you can use any text editor, as long as you save the file as standard ASCII (also called txt file) with the extension `.mkxl`. Note that spaces in the filename are not allowed.

The input file contains the text you want to typeset and the CONTEXT commands. A CONTEXT command begins with a backslash `\`. With the command `\startdocument` you indicate the beginning of your text.

Sometimes you will see two brackets (`[]`) directly after the command. These brackets are used to feed specific options to the command.

The command

```
\startchapter[title=The Cuyler family,reference=chap:cuyler]
```

that you see in the example will have its effect on *The Cuyler family*. Its actions will have effect on the design, typography and structure. The actions may be:

1. start a new page
2. increase chapter number by one
3. place chapter number in front of chapter title
4. reserve some vertical space
5. use a big font
6. put chapter title (and page number) into the table of contents

Other actions concerning running heads, numbering options and interactivity are disregarded at this moment.

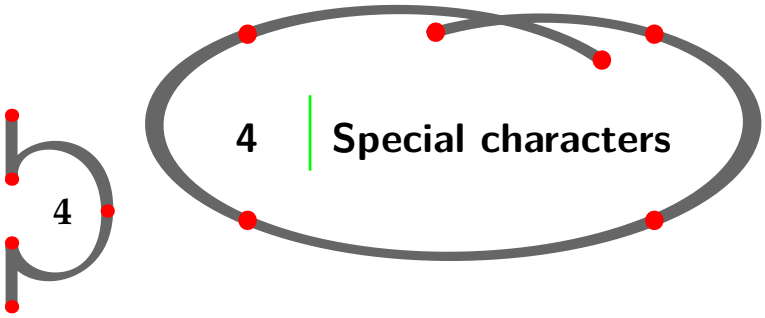
A command is sometimes followed by an argument which is enclosed by curly braces `{}` as shown in table 3.1. Reading through this manual will show you many opportunities to see how commands work.

The commands in your input file can have the appearance as shown in table 3.1.

Appearance of command	Example
`\startcommand ... \stopcommand`	`\startcenteraligned ... \stopcenteraligned`
`\startcommand[] ... \stopcommand`	`\startitemize[packed] ... \stopitemize`
`\command`	`\bf`
`\command[]`	`\about[chap:cuyler]`
`\command{}[]`	`\at{page}[chap:cuyler]`
`\command{}`	`\index{America}`

Table 3.1 How CONTEXT commands look like

If you let CONTEXT process the above example file, you would obtain a very simple document with a title page, a few numbered chapters and section headers and a table of content (because of `\placecombinedlist[content]` see chapter 22).



4 Special characters

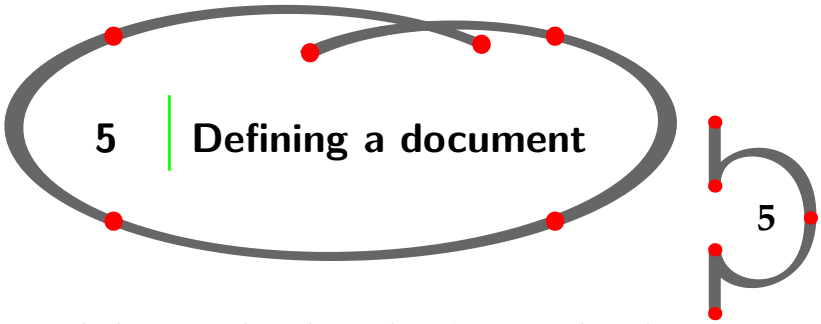
You have seen that CONTEXT commands are preceded by a \ (backslash). This means that \ has a special meaning to CONTEXT. Aside from \ there are other characters that need special attention when you want them to appear in verbatim mode or in text mode. Table 4.1 and 4.2 gives an overview of these special characters and what you have to type to produce them.

Special character		Verbatim		Text	
Character	**Name**	**Type**	**Generates**	**Type**	**Generates**
#	hashtag	`\type{\#}`	#	`\letterhash`	#
$	dollar	`\type{\$}`	$	`\letterdollar`	$
&	ampersand	`\type{\&}`	&	`\letterampersand`	&
%	percent	`\type{\%}`	%	`\letterpercent`	%
\	backslash	`\type{\ }`	\	`\letterbackslash`	\
}	right curly brace	`\type{\} }`	}	`\letterrightbrac`	}
{	left curly brace	`\type{\{ }`	{	`\letterleftbrace`	{
|	vertical bar	`\type{|}`	|	`\letterbar`	|
_	underscore	`\type{_}`	_	`\letterunderscor`	_
~	tilde	`\type{~}`	~	`\lettertilde`	~
^	caret	`\type{^}`	^	`\letterhat`	^

Table 4.1 Special characters (1)

Special character	Verbatim		Text	
Character	**Type**	**Generates**	**Type**	**Generates**
+	`\type{+}`	+	`\m{+}`	+
-	`\type{-}`	-	`\m{-}`	−
=	`\type{=}`	=	`\m{=}`	=
<	`\type{<}`	<	`\m{<}`	<
>	`\type{>}`	>	`\m{>}`	>

Table 4.2 Special characters (2)



5 Defining a document

Every document is started with \startdocument which is nowadays the **preferred** command or also \starttext and closed with \stopdocument and \stoptext respectively. All textual input is placed between these two commands and CONTEXT will only process that information.

```
\setupbodyfont[12pt]                setup area of document

\startdocument
This is a one line document.        your text
\stopdocument
```

The \startdocument command is preferred because it allows you to combine it with a set of arguments. You can use arbitrary key – value pairs which you can refer to throughout the document.

\definedocument [..] [..] [..,..=..,..]
(1: OPT; 2: OPT; 3: OPT)

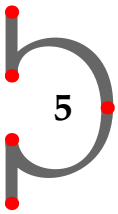
\startdocument [..] [..,..=..,..] ... **\stopdocument**
(1: OPT; 2: OPT)

\setupdocument [...,...] [..,..=..,..]
(1: OPT; 2)

```
\startdocument
  [Title={From Hasselt to America}
   Author={J. Jonker and C. van Marle},
   Version={2012},
   Editor={T. Otten},
   Designer={H. Hagen}]

  ...

\stopdocument
```

For calling one of the variables attached to \startdocument you just would type \documentvariable{Title} or \documentvariable{Editor} and CONTEXT will fetch and typeset the content of a called variable during compilation.

To the \startdocument command two setups are attached i.e. document:start and document:stop. These setups are called automatically just after \startdocument and after \stopdocument. Inside document:start we could define a title page and how the title should be typeset.




```
\setupdocument[SimpleBook]
  [Title={From Hasselt to America},
   Author={J. Jonker and C. van Marle},
   Version={2012},
   Editor={T. Otten},
   Designer={Hans Hagen},
   before=\setups{document:start}]
```

The `document:stop` setups could be used for calling e.g. for an index, appendices.

```
\startsetups document:stop
  \startchapter[title={Appendix: Photos}]
    A list of presented photos
  \stopchapter

  \placeindex
\stopsetups
```

The definition of a (very simple) book could look something like this:

```
\startdocument[SimpleBook]

  \starttitle[title={Foreword}]
    All what you want to state in a foreword
  \stoptitle

  \startchapter[title={Introduction}]
    Explain the approach to the book contents
  \stopchapter

  \startchapter[title={The Rensselaer family}]
    All about the Rensselaer family
  \stopchapter

  \startchapter[title={The Lansing family}]
    All about the Lansing family
  \stopchapter

  \startchapter[title={The Cuyler family}]
    All about the Cuyler family
  \stopchapter
\stopdocument
```

If you want to create a page which has no page numbering and no headers and footers, the environment `\startstandardmakeup` is your friend. These pages easily serve the purpose of e.g. a title page, a colophon and alike. See also chapter 42.1.

\definemakeup [..=..] *[..=..]* *[..,..=..,..]*

\setupmakeup *[...,...]* [..,..=..,..]

\startmakeup [..=1..] [..,..=2..,..] ... \stopmakeup

Because there is a \definemakeup command, you are able to define your own makeups. By using de \setupmakeup command you can influence the working of a makeup. Calling a makeup can be done in two ways. First is to use the name of the defined command in \startMYOWNmakeup or by \startmakeup[MYOWN]. To both command usages you can add arguments derived from \setupmakeup.

```
\startstandardmakeup
  \midaligned{From Hasselt to America}
  \midaligned{by}
  \midaligned{J. Jonker and C. van Marle}
\stopstandardmakeup
```

CONTEXT comes with a predefined overall structure in which the document is divided into four main document parts:[2]

Name	Command
Front matter	\startfrontmatter ... \stopfrontmatter
Body matter	\startbodymatter ... \stopbodymatter
Appendices	\startappendices ... \stopappendices
Back matter	\startbackmatter ... \stopbackmatter

Table 5.1 Main parts of a document

The chapters in your book can be divided over the following parts.

```
\startdocument
  \startstandardmakeup
    \midaligned{From Hasselt to America}
    \midaligned{by}
    \midaligned{J. Jonker and C. van Marle}
  \stopstandardmakeup
  \startfrontmatter
    \starttitle[title={Preface}]
    \stoptitle
    \startchapter[title={Introduction}]
    \stopchapter
  \stopfrontmatter
  \startbodymatter
    \startchapter[title={The Rensselaer family}]
    \stopchapter
```

[2] Here we try to avoid the word *section*.

```
    \startchapter[title={The Lansing family}]
    \stopchapter
    \startchapter[title={The Cuyler family}]
    \stopchapter
  \stopbodymatter
  \startappendices
    \startchapter[title={Photos}]
    \stopchapter
  \stopappendices
\stopdocument
```

In the front matter as well as back matter the command \startchapter produces an unnumbered line in the table of contents. The front matter is mostly used for the table of contents, the list of figures and tables, the preface, the acknowledgements etc. It often comes with a roman page numbering.

The appendices part is used for (indeed) appendices. Chapter headings may be typeset in a different way; for example, \startchapter may be numbered alphabetically.

The style of each document part can be set up with:

```
\setupsectionblock   [...,...]   [..,..=..,..]
                       OPT
```

```
\startsectionblockenvironment   [..] ... \stopsectionblockenvironment
```

The set up of pagenumbers is discussed in section 20.2.

6 Setup commands

Global commands are placed in the setup area of your input file, before \startdocument.

In appendix A there is a complete overview of the used commands in this manual and their parameters.

For a complete list of all commands please refer to *CONTEXT commands* manual.

The set up commands all have an identical structure. They look like what is shown in Figure 6.1.

```
\setupparagraphs   [..]   [...,...]   [..,..=..,..]
                    OPT       OPT
1   NAME
2   each NUMBER
3   n             =  NUMBER
    before        =  COMMAND
    after         =  COMMAND
    width         =  DIMENSION
    distance      =  DIMENSION
    height        =  DIMENSION fit
    top           =  COMMAND
    bottom        =  COMMAND
    align         =  inherits: \setupalign
    inner         =  COMMAND
    command       =  COMMAND
    rule          =  on off
    rulethickness =  DIMENSION
    rulecolor     =  COLOR
    style         =  STYLE COMMAND
    color         =  COLOR
    direction     =  normal reverse
```

Figure 6.1 Example of a setup command

A set up command consists of a more or less logical name and a number of bracket pairs. Bracket pairs may be optional and in that case the `[]` are typeset slanted *[]*. If a bracket pair is optional, this is also stated under the pair with `OPT`. In the definition the bracket pairs may contain:

```
\setupacommand[.1.][.2.][..,..=..,..]
```

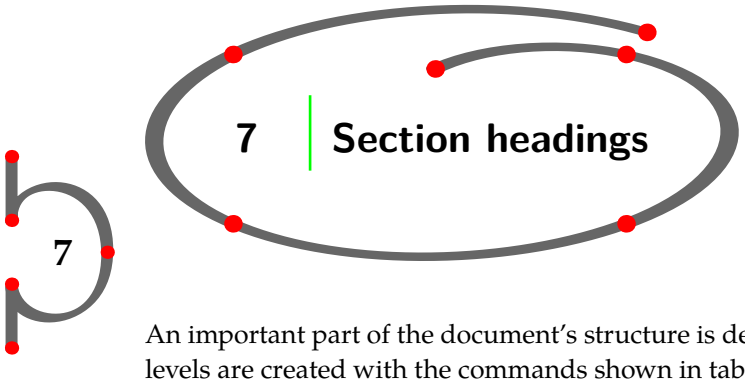
In the options list following the definition, the `.1.` and `.2.` show the possible options that can be set in the first and second bracket pair respectively. The parameters and their possible values are placed in the third bracket pair. The commas in the third pair of brackets indicate that a list of parameters can be enclosed.

The default options and parameter values are underlined.

Furthermore you will notice that some values are typeset in uppercase like: SECTION, NAME, DIMENSION, NUMBER, COMMAND, STYLE and TEXT. This indicates that you can set the value yourself. Table 6.1 shows a selection of upper case values.

Key	Meaning
SECTION	a section name like chapter, section, subsection etc.
NAME	an identifier (logical name)
DIMENSION	a dimension with a unit as `cm`, `pt`, `em`, `ex`, `sp` or `in`
NUMBER	an integer
COMMAND	a command
TEXT	text
STYLE	bold, slanted ...
...	...

Table 6.1 Description of upper case keys in setup commands



7 Section headings

7

An important part of the document's structure is determined by its chapter and section titles. The section levels are created with the commands shown in table 7.1.

Numbered heading	Unnumbered heading
\startchapter ... \stopchapter	\starttitle ... \stoptitle
\startsection ... \stopsection	\startsubject ... \stopsubject
\startsubsection ... \stopsubsection	\startsubsubject ... \stopsubsubject
\startsubsubsection ... \stopsubsubsection	\startsubsubsubject ... \stopsubsubsubject
...	...

Table 7.1 Headings

```
\startchapter   [..,..1=..,..]   [..,..2=..,..] ... \stopchapter
                      OPT              OPT
```

```
\startsection   [..,..1=..,..]   [..,..2=..,..] ... \stopsection
                      OPT              OPT
```

```
\startsubsection   [..,..1=..,..]   [..,..2=..,..] ... \stopsubsection
                         OPT              OPT
```

```
\starttitle   [..,..1=..,..]   [..,..2=..,..] ... \stoptitle
                    OPT              OPT
```

```
\startsubject   [..,..1=..,..]   [..,..2=..,..] ... \stopsubject
                      OPT              OPT
```

```
\startsubsubject   [..,..1=..,..]   [..,..2=..,..] ... \stopsubsubject
                         OPT              OPT
```

These commands will produce a numbered or unnumbered title in a predefined font-size and font-type with some vertical spacing before and after the header.

Please keep in mind that only numbered sections will appear in a table of contents. See also in chapter 22.

The title commands can take several arguments, like in

```
\starttitle
  [title=Hasselt by night,reference=chap:hasselt-by-night]
...
\stoptitle
```


Of course the chapter and section titles can be set to your own preferences and you can even define your own sections. This is done with the `\setuphead` and `\definehead` command.

```
\definehead [.1.] [.2.] [..,..=3..,..]
                   OPT       OPT
```

```
\setuphead [...,1...] [..,..=2..,..]
              OPT
```

```
\definehead
  [Myhead]
  [section]
\setuphead
  [Myhead]
  [numberstyle=bold,
   textstyle=bold,
   before=\hairline\blank,
   after=\inhibitwhitespace\hairline]
\startMyhead
  [title=Hasselt makes headlines,reference=headlines]
...
\stopMyhead
```

A new heading `\startMyhead ... \stopMyhead` is defined and it inherits the properties of `\startsection ... \stopsection`. It would look something like this

7.1 Hasselt makes headlines

...

There is one other command you should know now, and that is `\setupheads`. You can use this command to set up the numbering of the numbered chapters and sections. If you type:

```
\setupheads
  [alternative=inmargin,
   separator=--]
```

all numbers will appear in the margin. Section 1.1 would look like 1–1.

Commands like `\setupheads` are typed in the setup area of your input file.

```
\setupheads [...,...] [..,..=..,..]
              1 OPT       2
```

8

In order to make profit of the strengths of CONTEXT it is advised against using the old TEX way of coding sections. The list in table 7.2 is only displayed here for understanding the old and new way of coding.

Numbered heading	Unnumbered heading
`\chapter`	`\title`
`\section`	`\subject`
`\subsection`	`\subsubject`
`\subsubsection`	`\subsubsubject`
...	...

Table 7.2 Discouraged use of headings

8 Itemize

One way of structuring your information is by way of enumeration or summing up items. The itemize command looks like this

```
\startitemize [...,...] [..,..=..,..] ... \stopitemize
                1 OPT       2 OPT
```

For example:

```
\startitemize[R,packed,broad]
  \startitem
    Hasselt was founded in the 14th century.
  \stopitem
  \startitem
    Hasselt is known as a so called Hanze town.
  \stopitem
```

```
    \startitem
      Hasselt's name stems from a tree.
    \stopitem
  \stopitemize
```

Within the `\startitemize ... \stopitemize` pair you start a new item with `\startitem ... \stopitem`. In the example above `R` specifies Roman numbering and `packed` keeps line spacing to a minimum. The parameter `broad` takes care of the spacing between item separator and item. The example would produce:

I. Hasselt was founded in the 14th century.
II. Hasselt is known as a so called Hanze town.
III. Hasselt's name stems from a tree.

The bracket pair contains information on item separators and local set up variables.

Argument	Separator symbol	Argument	Separator symbol
n	1 2 3 4 ···	1	•
a	a b c d ···	2	–
A	A B C D ···	3	⋆
r	i ii iii iv ···	⋮	⋮
R	I II III IV ···		

Table 8.1 Item separators

You can also define your own item separator by means of `\definesymbol`. For example if you try this

```
\definesymbol[5][\im{\clubsuit}]

\startitemize[5,packed]
  \startitem Hasselt was built on a river dune. \stopitem
  \startitem Hasselt lies at the crossing of two rivers. \stopitem
\stopitemize
```

You will get:

♣ Hasselt was built on a river dune.
♣ Hasselt lies at the crossing of two rivers.

If you want to have a sort of head within an enumeration you should use `\starthead ... \stophead` instead of `\startitem ... \stopitem`.

```
Hasselt lies in the province of Overijssel and there are
a number of customs that are typical of this province.

\startitemize
  \starthead kraamschudden \hfill (child welcoming)

    When a child is born the neighbours come to visit
    the new parents. The women come to admire the baby
    and the men come to judge the baby (if it is a boy)
    on other aspects. The neighbours will bring a
    \Emph{krentenwegge} along. A krentenwegge is a loaf
    of currant bread of about 1 \unit{Meter} long.
    Of course the birth is celebrated with \Emph{jenever}.
```

```
  \stophead
  \starthead nabuurschap (naberschop) \hfill (neighbourship)
    Smaller communities used to be very dependent on the
    cooperation among the members for their well being.
    Members of the \Emph{nabuurschap} helped each other
    in difficult times during harvest times, funerals
    or any hardship that fell upon the community.
  \stophead
  \starthead Abraham \& Sarah  \hfill (identical)
    When people turn 50 in Hasselt it is said that they see
    Abraham or Sarah. The custom is to give these people a
    \Emph{speculaas} Abraham or a Sarah. Speculaas is a
    kind of strongly spiced biscuit.
  \stophead
\stopitemize
```

The `\starthead ... \stophead` can be set up with `\setupitemize`. In case of a page breaking a `\starthead ... \stophead` will appear on a new page. (The `\unit{Meter}` command is explained in chapter 38. `\Emph{}` is a user defined highlight. See also in chapter 28.

The example of old customs will look like this:

Hasselt lies in the province of Overijssel and there are a number of customs that are typical of this province.

– kraamschudden (child welcoming)

  When a child is born the neighbours come to visit the new parents. The women come to admire the baby and the men come to judge the baby (if it is a boy) on other aspects. The neighbours will bring a *krentenwegge* along. A krentenwegge is a loaf of currant bread of about 1 m long. Of course the birth is celebrated with *jenever*.

– nabuurschap (naberschop) (neighbourship)

  Smaller communities used to be very dependent on the cooperation among the members for their well being. Members of the *nabuurschap* helped each other in difficult times during harvest times, funerals or any hardship that fell upon the community.

– Abraham & Sarah (identical)

  When people turn 50 in Hasselt it is said that they see Abraham or Sarah. The custom is to give these people a *speculaas* Abraham or a Sarah. Speculaas is a kind of strongly spiced biscuit.

The set up parameters of itemize are described in table 8.2.

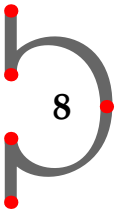
You can use the setup parameters in `\startitemize`, but for reasons of consistency you can make them valid for the complete document with `\setupitemize`.

The parameter `columns` is used in conjunction with a (written) number. If you type this

```
\startitemize[n,columns,three]
  \startitem Achter 't Werk \stopitem
   ...
  \startitem Justitiebastion \stopitem
\stopitemize
```

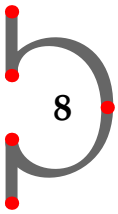
Set up	Meaning
standard	standard (global) set up
packed	no vertical spacing between items
serried	no horizontal spacing between separator and text
joinedup	no vertical spacing before and after itemize
broad	horizontal spacing between separator and text
inmargin	place separator in margin
atmargin	place separator on margin
stopper	place full stop after separator
columns	put items in columns
intro	prevent page breaking after introduction line
continue	continue numbering or lettering

Table 8.2 Set up parameters in itemize



You will get:

1. Achter 't Werk
2. Baangracht
3. Brouwersgracht
4. Eikenlaan
5. Eiland
6. Gasthuisstraat
7. Heerengracht
8. Hofstraat
9. Hoogstraat
10. Julianakade
11. Justitiebastion
12. Kaai
13. Kalverstraat
14. Kastanjelaan
15. Keppelstraat



Sometimes you want to continue the enumeration after a short intermezzo. Then you type for example `\startitemize[continue]` and numbering will continue and all other preferences are kept.

```
\startitemize[continue]
  \startitem Markt            \stopitem
  \startitem Meerstersteeg    \stopitem
  \startitem Prinsengracht    \stopitem
  \startitem Raamstraat       \stopitem
  \startitem Ridderstraat     \stopitem
  \startitem Rosmolenstraat   \stopitem
  \startitem Royenplein       \stopitem
  \startitem Van Nahuijsweg   \stopitem
  \startitem Vicariehof       \stopitem
  \startitem Vissteeg         \stopitem
  \startitem Watersteeg       \stopitem
  \startitem Wilhelminalaan   \stopitem
  \startitem Ziekenhuisstraat \stopitem
\stopitemize
```

16. Markt
17. Meerstersteeg
18. Prinsengracht
19. Raamstraat
20. Ridderstraat
21. Rosmolenstraat
22. Royenplein
23. Van Nahuijsweg
24. Vicariehof
25. Vissteeg
26. Watersteeg
27. Wilhelminalaan
28. Ziekenhuisstraat

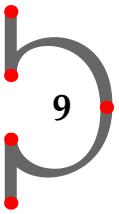
You can add the parameter `broad`. It enlarges the horizontal space between item separator and item text.

`\setupitemize` *[...,...]*[1] *[...,...]*[2] *[..,..=..,..]*[3] (OPT)

An itemize within an itemize is automatically typeset in a correct way. For example if you type:

```
In The Netherlands the cities can determine the height of a number of
taxes. So the cost of living can differ from town to town. There are
differences of up to 50\% in taxes such as:

\setupitemize[2][width=5em]
\startitemize[n]
  \startitem[estate tax] real estate tax

    The real estate tax is divided into two components:

    \startitemize[a,packed]
      \startitem the ownership tax \stopitem
      \startitem the tenant tax    \stopitem
    \stopitemize
```

```
      If the real estate has no tenant the owner pays
      both components.
  \stopitem
  \startitem dog license fee

    The owner of one or more dogs pays a fee.
    When a dog has died or been sold,
    the owner has to inform the city hall.
  \stopitem
\stopitemize
```



Then the horizontal space between item separator and text at the second level of itemizing is set with `\setupitemize[2][width=5em]`.

The example will look like this:

In The Netherlands the cities can determine the height of a number of taxes. So the cost of living can differ from town to town. There are differences of up to 50% in taxes such as:

1. real estate tax

   The real estate tax is divided into two components:

   a. the ownership tax
   b. the tenant tax

   If the real estate has no tenant the owner pays both components.

2. dog license fee

   The owner of one or more dogs pays a fee. When a dog has died or been sold, the owner has to inform the city hall.

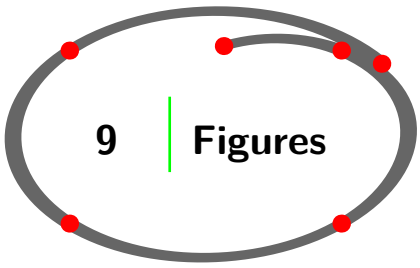
You can refer to an item if you give it a reference-label (see `\startitem[estate tax]`).

If you then type

```
\in{In item}[estate tax] we discussed one of the income sources of Hasselt.
```

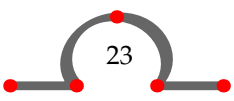
You'll get a reference to that item:

In item 1 we discussed one of the income sources of Hasselt.



Images can be placed in your document with the command `\externalfigure`.

```
\externalfigure
  [cow.pdf]
  [width=.1\textwidth,
   frame=on,framecolor=gray,
   frameoffset=3pt,rulethickness=3pt,
```



```
framecorner=round]
```

Such an image will be placed on the location where you defined it  and can have some strange effects on the surrounding white space. By the way, the cow image is always available for CONTEXT users which is very convenient when you are testing the figure related commands.

You can use the command `\startplacefigure ... \stopplacefigure` to influence the positioning of images in your document.

```
\startplacefigure
   [location={here,middle},
    reference=fig:church,
    title={Stephanus Church}]
   {\externalfigure[excursion-24][width=.4\textwidth]}
\stopplacefigure
```

After processing this will come out as figure 9.1 at the first available location.

Figure 9.1 Stephanus Church

The command `\startplacefigure ... \stopplacefigure` handles numbering and vertical spacing before and after your figure. Furthermore this command initializes a float mechanism, which means that CONTEXT looks whether there is enough space for your figure on the actual page. If not, the figure will be placed at another location and the text carries on, while the figure floats in your document until the optimal location is found.

You can influence this mechanism within the bracket pair.

The command `\startplacefigure...\stopplacefigure` is a predefined example of:

```
\startplacefloat [..1..] [..,..2=..,..] [..,..3=..,..] ... \stopplacefloat
                          OPT               OPT
```

A number of basic options are described in table 9.1.

Option	Value	Meaning
location	here	put figure at this location if possible
	force	force figure placement here
	page	put figure on its own page
	top	put the figure at the top of the page
	bottom	put the figure at the bottom of the page
	left	place figure at the left margin
	right	place figure at the right margin
	margin	place figure in the margin
reference		text for referencing (e.g. fig:church)
title		text which appears as a caption
list		alternative text appearing in the list of figures

Table 9.1 Options in `\startplacefigure ... \stopplacefigure`

The text behind `reference=` is used for cross-referencing. You can refer to such a reference anywhere in the document with:

```
\in{figure}[fig:church]
```

Text after `title=` is typeset as the caption of the figure or table. You can type any text you want. The figure captions are set up with `\setupcaptions` (see paragraph 42.4).

The brace pair is used for defining the figure and addressing the file names of external figures.

In the next example you see how Hasselt is defined within the brace pair to show you the function of `\startplacefigure ... \stopplacefigure`.

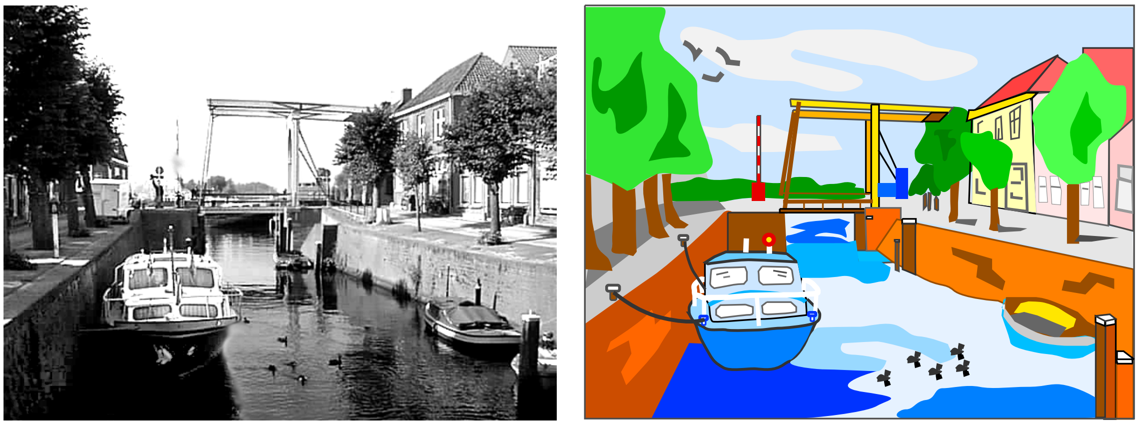
Figure 9.2 The boundaries of Hasselt

```
\startplacefigure
  [title={The boundaries of Hasselt}]
  \framed
    [width=.55\makeupwidth,
     offset=5pt,
     align={lohi,center}]
    {\tfb Hasselt}
\stopplacefigure
```

However, your images are often created using specialized programs for image processing and photos are — after scanning — improved in packages for this purpose. Then the images are available as files. CONTEXT supports image file types like `JPG`, `PNG` and (pages from) `PDF` files as well as METAPOST output (`MP` files). With the latest CONTEXT versions you also can include `svg` (scalable vector graphics) without depending on external software to convert them to PDF. Those are processed by METAPOST on the fly. For further information see the *svg in context and metafun xl* manual and the *CONTEXT WIKI* about svg support in CONTEXT.

In figure 9.3 you see a photo and a graphic combined into one figure.

9



a bitmap picture a vector graphic

Figure 9.3 The Hasselt Canals

You can produce this figure by typing something like

```
\startplacefigure
  [location={here,force},
   reference=fig:canals,
   title={The Hasselt Canals}]
  \startcombination[2*1]
    {\externalfigure
      [excursion-03]
      [width=.45\makeupwidth][frame=on]}{a bitmap picture}
    {\externalfigure
      [excursion-00]
      [width=.45\makeupwidth]}{a vector graphic}
   \stopcombination
\stopplacefigure
```

In this figure two pictures are combined with:

```
\startcombination [.1..] [..,..=2..,..] ... \stopcombination
                   OPT          OPT
```

The `\startcombination ...\stopcombination` pair is used for combining two pictures in one figure. You can type the number of pictures within the bracket pair. If you want to display one picture below the other you would have typed `[1*2]`. You can imagine what happens when you combine 6 pictures as `[3*2]` (`[nx*ny]`).

The examples shown above are enough for creating illustrated documents. Sometimes however you want a more integrated layout of the picture and the text. For that purpose you can use `\startfiguretext ... \stopfiguretext` command pair.

The effect of

```
\startfiguretext
  [left,verytolerant]
  [fig:statue-barges]
  {Statue \quotation{Two Hasselt Barges}}
  {\externalfigure[excursion-18][width=.44\makeupwidth]}
```

```
    Hasselt has always had a varying number of citizens
    due to economic events. For example the {\nl Dedemsvaart}
    was dug around 1810. This canal runs through Hasselt
    and therefore trade flourished. This led to a
    population growth of almost 40\% within 10~years.
    Nowadays the {\nl Dedemsvaart} has no commercial
    value anymore and the canals have become a tourist
    attraction. But reminders of these prosperous
    times can be found everywhere.
\stopfiguretext
```

is shown in figure 9.4 below.

Hasselt has always had a varying number of citizens due to economic events. For example the Dedemsvaart was dug around 1810. This canal runs through Hasselt and therefore trade flourished. This led to a population growth of almost 40% within 10 years. Nowadays the Dedemsvaart has no commercial value anymore and the canals have become a tourist attraction. But reminders of these prosperous times can be found everywhere.

Figure 9.4 Statue "Two Hasselt Barges"

As you have seen in the examples above you can summon a figure with the command

\externalfigure [.^{1}..] [.^{2}..] [..,..^{3}=..,..]
OPT OPT

The command \externalfigure has three bracket pairs. The first is used for the exact file name without extension, the second argument can contain a symbolic name. The third bracket pair contains key = value pairs for file formats, conversion, dimensions etc. It is not difficult to guess what happens if you type:

```
\inouter
  {\externalfigure
     [excursion-23]
     [width=.6\marginwidth]}
```

An interesting option is to call \externalfigure with a buffer name. On page 51 you find examples using this approach.

You can set up the layout of figures with

\setupfloats [...^{1},...] [..,..^{2}=..,..]
OPT

You can set up the captions with

```
\setupcaptions   [...,...]   [..,..=..,..]
                   OPT
```

These commands are typed in the setup area of your input file and have a global effect on all floating blocks.

```
\setupfloat
  [figure]
  [default=right,
   spacebefore=none]

\setupcaptions
  [location=bottom,
   style=boldslanted]

\startplacefigure
  [title={A characteristic
          view in Hasselt}]
  {\externalfigure
    [excursion-12]
    [width=.4\makeupwidth]}
\stopplacefigure
```

Figure 9.5 *A characteristic view in Hasselt*

For figure management there are commands like `\setupexternalfigure`.

Please refer to the *CONTEXT WIKI* and *Graphics* manual for practical applications and instructions for these commands.

If you want to work with an XML based figure database please see the *Figures* manual.

10 Tables

There are a number of ways to define a table:

- the `\bTABLE ... \eTABLE` mechanism (natural tables)
- the `\startxtable ... \stopxtable` mechanism (extreme tables)
- the `\startlinetable ... \stoplinetable` environment (line tables)

In the early times of CONTEXT there was a `\starttable ... \stoptable` mechanism, based on the work of M. Wichura. Although this environment still works, it is *strongly discouraged* to use this table mechanism in new documents.

In the next sections we describe the principles of the three mechanisms.

10.1 Natural tables

The natural table mechanism (\bTABLE ... \eTABLE) is developed for more complex tables and has features of the general interface of CONTEXT.

\bTABLE [..,..=..,..] ... \eTABLE
OPT

```
\startplacetable
  [location={here,force},
   reference=tab:votedivision,
   title={Division of votes over political parties}]
  \bTABLE[align=middle,offset=3pt]
    \setupTABLE[frame=on,rulethickness=1pt,framecolor=white]
    \setupTABLE[r][first][background=color,backgroundcolor=GreenSheen]
    \setupTABLE[r][each][background=color,backgroundcolor=MiddleGreenYellow]
   \bTABLEhead
     \bTR[width=6cm] \bTD[nc=5] Elections for the City Council \eTD\eTR
   \eTABLEhead
   \bTABLEbody
     \bTR
       \bTD[nr=2,align={right,lohi}] Party \eTD
       \bTD[nc=3,foregroundstyle=bold] Districts \eTD
       \bTD[nr=2,align={middle,lohi}] Total \eTD
     \eTR
     \bTR
       \bTD 1   \eTD
       \bTD 2   \eTD
       \bTD 3   \eTD
     \eTR
     \bTR
       \bTD[align=right] PvdA \eTD
       \bTD 351  \eTD
       \bTD 433  \eTD
       \bTD 459  \eTD
       \bTD 1243 \eTD
     \eTR
     \bTR
       \bTD[align=right] CDA  \eTD
       \bTD 346  \eTD
       \bTD 350  \eTD
       \bTD 285  \eTD
       \bTD ~981 \eTD
     \eTR
     \bTR
       \bTD[align=right] VVD  \eTD
       \bTD 140  \eTD
       \bTD[background=color,
            backgroundcolor=red,foregroundcolor=white,
            foregroundstyle=bold,framecolor=blue,
            frameoffset=-0.6pt] 113 \eTD
       \bTD  132  \eTD
       \bTD ~385 \eTD
     \eTR
```

```
    \bTR
      \bTD[align=right] SGP  \eTD
      \bTD 348 \eTD
      \bTD 261 \eTD
      \bTD 158 \eTD
      \bTD ~767 \eTD
    \eTR
    \bTR
      \bTD[align=right] GPV  \eTD
      \bTD 117 \eTD
      \bTD 192 \eTD
      \bTD 291 \eTD
      \bTD ~600 \eTD
    \eTR
  \eTABLEbody
  \eTABLE
\stopplacetable
```


In the last column a ~ is used to simulate a four digit number. The ~ has the width of a digit.

Elections for the City Council				
Party	Districts			Total
	1	2	3	
PvdA	351	433	459	1243
CDA	346	350	285	981
VVD	140	113	132	385
SGP	348	261	158	767
GPV	117	192	291	600

Table 10.1 Division of votes over political parties

Instead of using formatting information at each element you better can use the \setupTABLE command. If the setup is to stay local the \setupTABLE commands are placed after \bTABLE. Otherwise the setup can be placed into the setup area of the document to have the setup being global for the document.

\setupTABLE *[...,...]* *[...,...]* *[..,..=..,..]*
(1: OPT; 2: OPT; 3)

```
\startplacetable
  [location={here,force},
   reference=tab:votedivision,
   title={Division of votes over political parties}]
  \bTABLE[align=middle,offset=3pt]
    \setupTABLE[row][align=middle,offset=3pt]
    \setupTABLE[1][1][width=0.3\textwidth]
    \setupTABLE[1][2][align={right,lohi}]
    \setupTABLE[5][2][align={right,lohi}]
```

```
\setupTABLE[2][2][foregroundstyle=bold]
\setupTABLE[1][4,5,6,7,8][align=right]
\setupTABLE[3][6][background=color,
                  backgroundcolor=red,
                  foregroundcolor=white,
                  foregroundstyle=bold,
                  framecolor=blue,
                  frameoffset=-0.6pt]
\bTABLEhead
  ...
\eTABLEhead
\bTABLEbody
  ...
\eTABLEbody
\eTABLE
\stopplacetable
```


The meaning of the CONTEXT commands are indicated in table 10.2.

Command	Meaning
\bTABLE ... \eTABLE	begin end table
\bTR ... \eTR	begin end row
\bTD ... \eTD	begin end cell
\bTABLEhead ... \eTABLEhead	begin end table head
\bTABLEbody ... \eTABLEbody	begin end table body
\bTABLEfoot ... \eTABLEfoot	begin end table foot
\bTABLEnext ... \eTABLEnext	begin end next table head
\setupTABLE	table setup

Table 10.2 Commands to define natural tables

You can find more information on this table mechanism on the CONTEXT WIKI and examples in the *Natural Tables* manual.

10.2 Extreme tables

For large tables that extend over a number of pages and where you want the table head repeated after each page break CONTEXT has the *extreme table* mechanism.

```
\startxtable  [..,..*=..,..] ... \stopxtable
                  OPT
```

```
\setupxtable  [...,1=...]  [..,..2=..,..]
                  OPT
```

\startxrow [.[1].] [..,..[2]=..,..] ... \stopxrow
OPT OPT

\startxcell [.[1].] [..,..[2]=..,..] ... \stopxcell
OPT OPT

\startxtablehead [..,..[*]=..,..] ... \stopxtablehead
OPT

\startxtablebody [..,..[*]=..,..] ... \stopxtablebody
OPT

\startxtablefoot [..,..[*]=..,..] ... \stopxtablefoot
OPT

\startxtablenext [..,..[*]=..,..] ... \stopxtablenext
OPT

```
\setupxtable[split=yes,header=repeat]
\setupxtable[offset=3pt]

\startplacetable
  [location=here,
   reference=tab:wealthdecline,
   title={Decline of wealth through time}]
   \setupxtable[frame=on,rulethickness=1pt,framecolor=white,offset=3pt]
   \startxtable
      \startxtablehead
        [align=middle,foregroundstyle=bold,
         background=color,backgroundcolor=GreenSheen]
      \startxrow
        \startxcell[nx=6]
            Decline of wealth in Dutch florine (Dfl)
        \stopxcell
      \stopxrow
      \startxrow[foregroundstyle=bold]
        \startxcell[width=0.1\textwidth] Year \stopxcell
        \startxcell 1.000--2.000      \stopxcell
        \startxcell 2.000--3.000      \stopxcell
        \startxcell 3.000--5.000      \stopxcell
        \startxcell 5.000--10.000     \stopxcell
        \startxcell   over 10.000     \stopxcell
      \stopxrow
    \stopxtablehead
```

```
    \startxtablebody
      [align=middle,background=color,
       backgroundcolor=MiddleGreenYellow]
      \startxrow
        \startxcell 1675 \stopxcell
        \startxcell 22   \stopxcell
        \startxcell ~7   \stopxcell
        \startxcell ~5   \stopxcell
        \startxcell ~4   \stopxcell
        \startxcell ~5   \stopxcell
      \stopxrow
      \startxrow
        \startxcell 1724 \stopxcell
        \startxcell ~4   \stopxcell
        \startxcell ~4   \stopxcell
        \startxcell --   \stopxcell
        \startxcell ~4   \stopxcell
        \startxcell ~3   \stopxcell
      \stopxrow
      \startxrow
        \startxcell 1750 \stopxcell
        \startxcell 12   \stopxcell
        \startxcell ~3   \stopxcell
        \startxcell ~2   \stopxcell
        \startxcell ~2   \stopxcell
        \startxcell --   \stopxcell
      \stopxrow
      \startxrow
        \startxcell 1808 \stopxcell
        \startxcell ~9   \stopxcell
        \startxcell ~2   \stopxcell
        \startxcell --   \stopxcell
        \startxcell --   \stopxcell
        \startxcell --   \stopxcell
      \stopxrow
    \stopxtablebody
  \stopxtable
\stopplacetable
```

\setupxtable *[...,...]* [..,..=..,..]
OPT 1 2

With the \setupxtable it is indicated that the table is allowed to split at a page break and that the head should contain the content of the \startxtablenext ... \stopxtablenext.

The result of this definition is shown in table 10.3.

The meaning of the commands are explained in table 10.4.

Decline of wealth in Dutch florine (Dfl)					
Year	**1.000–2.000**	**2.000–3.000**	**3.000–5.000**	**5.000–10.000**	**over 10.000**
1675	22	7	5	4	5
1724	4	4	–	4	3
1750	12	3	2	2	–
1808	9	2	–	–	–

Table 10.3 Decline of wealth through time

Command	Meaning
`\startxtable ... \stopxtable`	begin end table
`\startxrow ... \stopxrow`	begin end row
`\startxcell ... \stopxcell`	begin end column
`\startxtablehead ... \stopxtablehead`	begin end table head
`\startxtablenext ... \stopxtablenext`	begin end table head next
`\startxtablebody ... \stopxtablebody`	begin end table body
`\startxtablefoot ... \stopxtablefoot`	begin end table foot
`\setupxtable`	table setup

Table 10.4 Commands to define extreme tables

More information and examples can be found in the *Extreme Tables* manual.

10.3 Line tables

The third environment for typesetting tables is `\startlinetable ... \stoplinetable`. This form of tables is characterized by the fact that it can break over pages vertically as well as horizontally. With linetables it is possible to repeat header rows as well as columns after a page break. This environment does not draw frames. Instead there may be (colored) backgrounds.

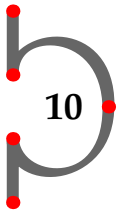
```
\startlinetable ... \stoplinetable
```

```
\setuplinetable  [..=1..]  [..=2..]  [..,..=3..,..]
                    OPT        OPT
```

The previous example (table 10.3) typeset now with `\startlinetable ... \stoplinetable` would look as table 10.5.

```
\startplacetable
  [location={here,middle},
   reference=tab:wealthdecline2,
   title={Decline of wealth through time}]
```

```
\setuplinetable[stretch=0pt]%,offset=3pt,linethickness=2pt
\setuplinetable[n=6,lines=12]%
\setuplinetable
   [c]
   [1]
   [width=0.1\textwidth,
    background=color,
    backgroundcolor=Malachite,
    align=flushright]%
\setuplinetable[c][2]    [align=flushright,width=0.15\textwidth]%
\setuplinetable[c][3]    [align=flushright,width=0.15\textwidth]%
\setuplinetable[c][4]    [align=flushright,width=0.15\textwidth]%
\setuplinetable[c][5]    [align=flushright,width=0.15\textwidth]%
\setuplinetable[c][6]    [align=flushright,width=0.15\textwidth]%
\setuplinetable[r][odd]  [background=color,
                          backgroundcolor=GreenSheen]%
\setuplinetable[r][even][background=color,
                          backgroundcolor=MiddleGreenYellow]%
\startlinetable
  \startlinetablehead
    \NC[nx=6,align=middle,style=bold,
        background=color,backgroundcolor=CaribbeanGreen]
        Decline of wealth in Dutch florine (Dfl)
    \NC\NR
    \NC[style=bold,background=color,
        backgroundcolor=LemonYellow] Year
    \NC[style=bold,background=color,
        backgroundcolor=LemonYellow,align-flushright]
        1--2.000
    \NC[style=bold,background=color,
        backgroundcolor=LemonYellow,align-flushright]
        2--3.000
    \NC[style=bold,background=color,
        backgroundcolor=LemonYellow,align-flushright]
        3--5.000
    \NC[style=bold,background=color,
        backgroundcolor=LemonYellow,align-flushright]
        5--10.000
    \NC[style=bold,background=color,
        backgroundcolor=LemonYellow,align-flushright]
        > 10.000
    \NC\NR
  \stoplinetablehead
  \startlinetablebody
      \NC 1675 \NC 22 \NC ~7 \NC ~5 \NC ~4  \NC ~5 \NC\NR
      \NC 1724 \NC ~4 \NC ~4 \NC -- \NC ~4  \NC ~3 \NC\NR
      \NC 1750 \NC 12 \NC ~3 \NC ~2 \NC ~2  \NC -- \NC\NR
      \NC 1808 \NC ~9 \NC ~2 \NC -- \NC --  \NC -- \NC\NR
      \NC 1675 \NC 22 \NC ~7 \NC ~5 \NC ~4  \NC ~5 \NC\NR
      \NC 1724 \NC ~4 \NC ~4 \NC -- \NC ~4  \NC ~3 \NC\NR
      \NC 1750 \NC 12 \NC ~3 \NC ~2 \NC ~2  \NC -- \NC\NR
      \NC 1808 \NC ~9 \NC ~2 \NC -- \NC --  \NC -- \NC\NR
  \stoplinetablebody
\stoplinetable
\stopplacetable
```



Decline of wealth in Dutch florine (Dfl)					
Year	1–2.000	2–3.000	3–5.000	5–10.000	> 10.000
1675	22	7	5	4	5
1724	4	4	–	4	3
1750	12	3	2	2	–
1808	9	2	–	–	–
1675	22	7	5	4	5
1724	4	4	–	4	3
1750	12	3	2	2	–
1808	9	2	–	–	–

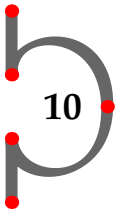


Table 10.5 Decline of wealth through time

The meaning of the commands are explained in table 10.6.

Command	Meaning
`\startlinetable ... \stoplinetable`	begin end table
`\NC`	begin end column
`\NR`	new row
`\startlinetablehead ... \stoplinetablehead`	begin end table head
`\startlinetablebody ... \stoplinetablebody`	begin end table body
`\setuplinetable`	table setup

Table 10.6 Commands to define line tables

10.4 Placing tables as floating objects

You can place tables in two different ways. The first option is to place them like running text, so CONTEXT tries to fit them in the stream where they occur. The second option is to place tables as floating objects. In this case CONTEXT will place the object at the asked place if there is enough room for it or otherwise the floating mechanism moves the object to the next page. The advantage of placing tables as a floating object is that you can add a caption and a reference to the table and force the placement to the left, middle or right.

In all examples you see the command `\startplacetable ... \stopplacetable`. This command has the same function as `\startplacefigure ... \stopplacefigure` (see for the discussion of figures in chapter 9). These commands invoke the floating mechanism which takes care of the vertical spacing, numbering and optimal placement of the floating object in the document.

```
\setupfloat[table][location=right]
\setupcaption[table][style=boldslanted,
              location={left,middle},align=flushright]

\startplacetable
 [location=here,
  reference=tab:opening hours,
  title={Library opening hours}]
  \bTABLE
    \setupTABLE[frame=on,rulethickness=1pt,framecolor=white,offset=3pt]
    \setupTABLE[r][first][background=color,
                          backgroundcolor=GreenSheen]
```

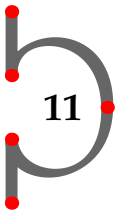
```
\setupTABLE[r][each] [background=color,
                      backgroundcolor=MiddleGreenYellow]
\bTR
  \bTD Day                                \eTD
  \bTD[nx=2,align=middle] Opening hours \eTD
\eTR
\bTR
  \bTD Monday          \eTD
  \bTD 14.00 -- 17.30 \eTD
\eTR
\bTR
  \bTD Tuesday         \eTD
  \bTD                 \eTD
  \bTD                 \eTD
\eTR
\bTR
  \bTD Wednesday       \eTD
  \bTD 10.00 -- 12.00 \eTD
  \bTD 14.00 -- 17.30 \eTD
\eTR
\bTR
  \bTD Thursday        \eTD
  \bTD 14.00 -- 17.30 \eTD
  \bTD 18.30 -- 20.30 \eTD
\eTR
\bTR
  \bTD Friday          \eTD
  \bTD 14.00 -- 17.30 \eTD
  \bTD                 \eTD
\eTR
\bTR
  \bTD Saturday        \eTD
  \bTD 10.00 -- 12.30 \eTD
  \bTD                 \eTD
\eTR
\eTABLE
\stopplacetable
```

The result is displayed in table 10.7.

Table 10.7 *Library opening hours*

Day	Opening hours	
Monday	14.00 – 17.30	
Tuesday		
Wednesday	10.00 – 12.00	14.00 – 17.30
Thursday	14.00 – 17.30	18.30 – 20.30
Friday	14.00 – 17.30	
Saturday	10.00 – 12.30	

11 Tabulation / Paragraph formatting



Sometimes you want to typeset paragraphs in a specific formatted way. This is done with:

```
\starttabulate   [|.^1..|]   [..,..=^2..,..] ... \stoptabulate
                   OPT            OPT
```

```
\setuptabulate   [.^1..]   [.^2..]   [..,..=^3..,..]
                   OPT       OPT
```

You can use the tabulation mechanism in cases you want to typeset complete paragraphs within a cell. The tabulation mechanism also works fine at a page break when `split=yes` is set in a `\setuptabulate` command.

```
\setuptabulate
  [split=yes]
```

A tabulate definition could look like this:

```
\starttabulate[|Bw(0.05\textwidth)
               |p(0.34\textwidth)
               |p(0.54\textwidth)|]
  \NC 1252
  \NC Hasselt obtains its city charter from bishop
      Hendrik van Vianden.
  \NC Hendrik van Vianden was pressed by other towns
      not to agree with the charter. It took Hasselt
      a long period of time to convince the Bishop.
      After supporting the Bishop in a small war
      against the Drents, the charter was released.
  \NC\NR
  \NC 1350
  \NC Hasselt joins the Hanzepact to protect their
      international trade.
  \NC The Hanzepact was of great importance for
      merchants in Hasselt. In those days trading
      goods were taxed at every city, highway or
      river|-|crossing. After joining the Hanzepact
      duty free routes all over Europe became
      available to Hasselt. However important the
      Hanzepact was, Hasselt always stayed a
      minor member of the pact.
```

```
    \NC\NR
\stoptabulate
```

In this case the first column is 10% of the text width wide and is typeset bold (B). The second column has a width of 35% of the text width and is typeset like a paragraph. The remaining horizontal space is used up by the last paragraph.

The example is typeset like this:

1252 Hasselt obtains its city charter from bishop Hendrik van Vianden. Hendrik van Vianden was pressed by other towns not to agree with the charter. It took Hasselt a long period of time to convince the Bishop. After supporting the Bishop in a small war against the Drents, the charter was released.

1350 Hasselt joins the Hanzepact to protect their international trade. The Hanzepact was of great importance for merchants in Hasselt. In those days trading goods were taxed at every city, highway or river-crossing. After joining the Hanzepact duty free routes all over Europe became available to Hasselt. However important the Hanzepact was, Hasselt always stayed a minor member of the pact.

The tabulation entries are placed between the `\starttabulate ... \stoptabulate` pair. Between the bracket pair you specify the tabulate format with the column separators `|` and the format keys (see table 11.1).

Key	Meaning	Key	Meaning
l	left align	I	italic
c	center	R	roman
r	right align	S	slanted
i*n*	spacing left		
T	teletype		
j*n*	spacing right	m	in–line math
k*n*	spacing around	M	display math
w(*d*)	1 line, fixed width	f`\command`	font specification
p(*d*)	paragraph, fixed width	b`{..}`	place `..` before the entry
p	paragraph, maximum width	a`{..}`	place `..` after the entry
B	boldface	h`\command`	apply `\command` on the entry

Table 11.1 Formatting keys for tabulate

In table 11.2 you find an overview of the tabulate structuring commands.

The `\NS` command for going to the next column expects two parameters to create a span of cells. e.g. for 1 extra column one would type `\NS[1][c]`. The second parameter sets the alignment `l,r,c`. See for an example in tabulation 'Quicklime production' hereunder. The spanning mechanism works only on one line cells and not with paragraph cells.

The `\TB` command can be followed by a dimension like `line` or `halfline` e.g. `\TB[halfline]` which inserts a halfline of white space between the previous and the following row.

Command	Meaning
\starttabulate ... \stoptabulate	begin end tabulate
\NC	next column
\NN	next column in math mode
\NS[2][c]	actual column plus the next 2 columns as span, contents centered
\NR	next row
\HL	horizontal line
\VL	vertical line
\TB	empty table line
\definetabulate	define own tabulate
\setuptabulate	tabulate setup

Table 11.2 Commands to define tabulate

Another example of paragraph formatting is given below. Remember that a |p| column takes always as much of the remaning width as possible. This results in the following example that the tabulation fills the width of the typesetting area.

We can define our own tabulation environments with \definetabulate.

```
\definetabulate   [.[1].]   [.[2].]   [|.[3].|]
                                OPT         OPT
```

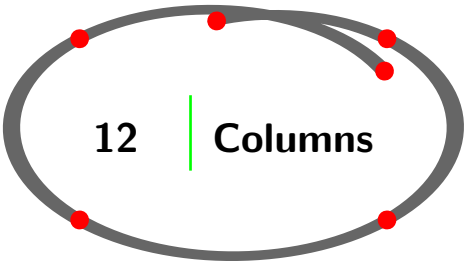
```
\definetabulate[ChemPar][|l|p(0.45\makeupwidth)|l|]

\startChemPar
  \reference[tab:tabulate]{\quote{Quicklime production}}
  \pagereference[tab:tabulatepageref]
  \NS[2][c] \bf Quicklime production \NC\NR
  \NC Limekilns
  \NC Hasselt has its own limekilns. These were build
      in 1504 and produced quick lime up to 1956.
      Nowadays they are a tourist attraction.
  \NC \inlinechemical{CaCO_3,GIVES,CaO,+,CO_2} \NC\NR
\stopChemPar
```

And it would come out like this:

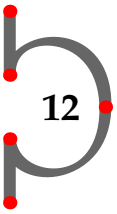
Quicklime production

Limekilns	Hasselt has its own limekilns. These were build in 1504 and produced quick lime up to 1956. Nowadays they are a tourist attraction.	$CaCO_3 \rightarrow CaO + CO_2$

In chapter 37 you can find some more information on chemistry typesetting with CONTEXT.



Simple sections of text can be typeset in columns. If you precede a text fragment by \startcolumns and close the text fragment by \stopcolumns everything in between will be set in columns.




```
\startcolumns   [..,..*=..,..] ... \stopcolumns
                      OPT
```

Let's give an example:

```
\startcolumns[n=3,tolerance=verytolerant]
  Hasselt is an old Hanseatic City, situated 12~km north of
  Zwolle at the river Zwartewater.

  ...

  Furthermore some events of special interest should be
  mentioned. Every year at the end of August Hasselt
  celebrates the \quote{Eui Festival} (hay festival).
\stopcolumns
```

The result will be a three column text.

Hasselt is an old Hanseatic City, situated 12 km north of Zwolle at the river Zwartewater.

The city has a long history since obtaining the city charter around 1252. Part and parcel of this history can be traced back to a large number of monuments to be admired in the city center.

There you will find the St. Stephanus church, a late gothic church dating back to 1479 with a magnificent organ. The former Municipal Building is situated on The Market Place. Constituted between 1500 and 1550 it houses a large collection of weapons, amongst which one of the largest collection of black powder guns (haakhussen) in the whole world should be mentioned.

Furthermore there is a corn windmill 'The Swallow', dating back to 1748 as well as the 'Stenendijk', a unique embankment and the last shell limekiln in Europe still in full operation.

The city center with the townmoat adorned by lime-trees, the Van Stolkspark and the hustle and bustle at the docks are ideally suited for a stroll.

The area around Hasselt is also worth mentioning. In wintertime polder Mastenbroek harbours large numbers of geese. In summertime the hamlets Genne, Streukel and Cellemuiden form, together with the very rare lapwing flowers (Lat. Fritillaria meleagris) found on the banks of the river Zwartewater, the ideal surroundings for walking or cycling trips.

Hasselt also is a very important center for watersports. The lakes of northwest Overijssel, the river IJssel, the Overijsselse Vecht and the Randmeren are within easy reach from the yacht harbour 'De Molenwaard'. Sailing, fishing, swimming and canoeing can be fully enjoyed in Hasselt.

Furthermore some events of special interest should be mentioned. Every year at the end of August Hasselt celebrates the 'Eui Festival' (hay festival).

If needed a new column can be enforced with \column.

You can set up columns with:

```
\setupcolumns   [..,..*=..,..]
```

In most cases you will obtain a better result by typesetting the text on 'grid'. This is done by typing `grid=yes` in the command `\setuplayout`.

If you want to use columns within a framed text `\startframedtext ... \stopframedtext` there is the simple column mechanism.

```
\startframedtext[background=color,backgroundcolor=gray]
  \startsimplecolumns
    In Hasselt's local newspaper there was a column on the
    local customs during New Years Eve.
    ...
    \midaligned
      {\inlinechemical
        {CaC_2,+,2H_2O,GIVES,C_2H_2(g),+,Ca(OH)_2}
      }
    ...
    Nowadays the heavy metal lid of the milk can is
    replaced by a football. This does not reduce the
    sound but it is much safer.
  \stopsimplecolumns
```

This will result in:

In Hasselt's local newspaper there was a column on the local customs during new year's Eve. Next to the general custom of eating Dutch doughnuts (oliebollen) and lighting fireworks there is the carbide shooting. What you need is an old fashioned metal milk can, carbide, a little water and a lighter.
The carbide and water is mixed in the closed milk can and will produce C_2H_2 gas (acetylene), via:

$$CaC_2 + 2H_2O \rightarrow C_2H_2\,(g) + Ca(OH)_2$$

The volatile acetylene gas in the milk can is ignited via a small opening in the can. The result is a very loud detonation and the lid flies off.
It will not surprise you that Hasselt's youth has a designated shooting ground for carbide shooting. Nowadays the heavy metal lid of the milk can is replaced by a football. This does not reduce the sound but it is much saver!

The possibilities using columns with CONTEXT does not end here. There are two more environments providing advanced column type setting. The first is described in the manual *Column sets*. The other environment is described in the manual *Page columns*.

13 Footnotes

If you want to annotate your text you can use `\footnote`. The command looks like this for inserting a

footnote in the running text:

```
\footnote   [...,...]   {...}
              OPT
```

If the footnote is of a longer text you could use instead

```
\startfootnote   [...,...] ... \stopfootnote
                   OPT
```


The bracket pair is optional and contains a logical name. The curly braces contain the text you want to display at the foot of the page.

The same footnote number can be called with its logical name.

```
\note   [...]   [...]
          OPT
```

If you have typed this text:

```
The Hanse was a late medieval commercial alliance of towns in the
regions of the North and the Baltic Sea. The association was formed
for the furtherance and protection of the commerce of its
members.
\startfootnote
  [war]
  This was the source of jealousy and fear among
other towns that caused a number of wars.
\stopfootnote\space
 In the Hanse period there
was a lively trade in all sorts of articles such as wood, wool,
metal, cloth, salt, wine and beer.\note[war] The increasing trade
caused an enormous growth of prosperity in the Hanseatic
towns.\footnote{Hasselt is one of these towns.}
```

It would look like this:

The Hanse was a late medieval commercial alliance of towns in the regions of the North and the Baltic Sea. The association was formed for the furtherance and protection of the commerce of its members.[3] In the Hanse period there was a lively trade in all sorts of articles such as wood, wool, metal, cloth, salt, wine and beer.[3] The increasing trade caused an enormous growth of prosperity in the Hanseatic towns.[4]

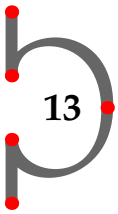
The footnote numbering is done automatically. This command `\setupfootnotes` enables you to influence the display of footnotes:

[3] This was the source of jealousy and fear among other towns that caused a number of wars.
[4] Hasselt is one of these towns.

\setupfootnotes [..,..*=..,..]

Footnotes can be typeset at the bottom of a page but also at other locations, the end of a chapter. This is done with the command:

\placefootnotes [..,..*=..,..] OPT



The footnotes will be placed at the end of your document when issuing \setupfootnotes[location=text] in combination with \placefootnotes at the desired location.

You can also couple footnotes to a table. In that case we speak of local footnotes. The commands are:

\startlocalfootnotes ... \stoplocalfootnotes

\placelocalfootnotes [..,..*=..,..] OPT

An example illustrates the use of local footnotes:

```
\startplacetable
  [location=here,
   reference=tab:productivity,
   title={Decline of Hasselt's productivity.
          \footnote{Source:
            \Emph{Uit de geschiedenis van Hasselt.}}
        },
  ]
  \startlocalfootnotes
    \bTABLE
      \setupTABLE[c][each][align=flushright]
      \setupTABLE[r][1]   [align=middle]
      \bTR
        \bTD                    \eTD
        \bTD Ovens              \eTD
        \bTD Blacksmiths        \eTD
        \bTD Breweries          \eTD
        \bTD Tile works\footnote
             {The factories that produced roof tiles.} \eTD
      \eTR
      \bTR
        \bTD 1682 \eTD
        \bTD 15 \eTD \bTD 9 \eTD \bTD 3 \eTD \bTD 2 \eTD
      \eTR
```

```
    \bTR
      \bTD 1752 \eTD
      \bTD ~6 \eTD \bTD 4 \eTD \bTD 0 \eTD \bTD 0 \eTD
    \eTR
  \eTABLE
  \placelocalfootnotes
 \stoplocalfootnotes
\stopplacetable
```

This results in table 13.1 with a local footnote. The footnote in the caption appears at the bottom of the page.

	Ovens	Blacksmiths	Breweries	Tile works[1]
1682	15	9	3	2
1752	6	4	0	0

[1] The factories that produced roof tiles.

Table 13.1 Decline of Hasselt's productivity.[5]

14 Quotations

The consistent use of quotation marks in the running text is invoked by the use of \quote(single quotes) or \quotation (double quotes). For longer text fragments you can use

```
\startquotation [..1..] [...,2...] ... \stopquotation
                  OPT        OPT
```

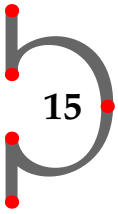
As to be expected there is also

```
\startquote [..1..] [...,2...] ... \stopquote
              OPT        OPT
```

```
In the book \quote{\nl Hasselt, beelden van een middeleeuwse stad} it says:
\startquotation
Het stadhuis wordt voor het eerst vermeld in 1431.
```

[5] Source: *Uit de geschiedenis van Hasselt.*

```
Oorspronkelijk is het een houten huis, dat wordt
afgebroken om plaats te maken voor een nieuw
stadhuis van steen. Dit wordt echter halverwege
de 16e eeuw ook afgebroken en vervangen door een
nog groter pand. Het nieuwe stadhuis wordt weer in
dezelfde fraaie stijl opgebouwd. De bestuurders
laten daarmee zien dat het is gebouwd in een tijd
van grote welvaart.
\stopquotation
```



In the book 'Hasselt, beelden van een middeleeuwse stad' it says:

> "Het stadhuis wordt voor het eerst vermeld in 1431. Oorspronkelijk is het een houten huis, dat wordt afgebroken om plaats te maken voor een nieuw stadhuis van steen. Dit wordt echter halverwege de 16e eeuw ook afgebroken en vervangen door een nog groter pand. Het nieuwe stadhuis wordt weer in dezelfde fraaie stijl opgebouwd. De bestuurders laten daarmee zien dat het is gebouwd in een tijd van grote welvaart."

In the example below you can see that quotations are language sensitive.

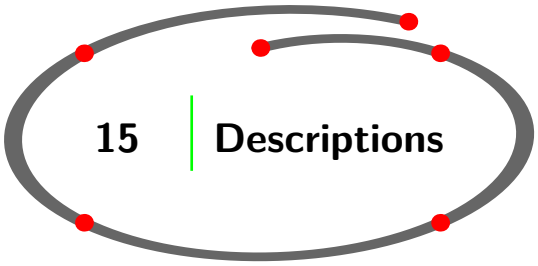
```
\nl Hij zei tegen me: \quotation{In Hasselt noemen ze dat
    \quote{noaberschop} of zoiets.}

\en He told me: \quotation{In Hasselt they call this
    \quote{noaberschop} or something like that.}

\de Er sagte zu mir: \quotation{In Hasselt nennt man das
    \quote{noaberschop} oder ähnlich.}

\fr Il a dit: \quotation{À Hasselt on appelle ça
   \quote{noaberschop} ou quelque chose comme ça.}
```

Note the automatic change of the quotation marks in case of a quote within a quote.

Hij zei tegen me: „In Hasselt noemen ze dat ‚noaberschop' of zoiets."
He told me: "In Hasselt they call this 'noaberschop' or something like that."
Er sagte zu mir: „In Hasselt nennt man das ‚noaberschop' oder ähnlich."
Il a dit: « À Hasselt on appelle ça «noaberschop» ou quelque chose comme ça. »

You can alter the default settings with

```
\setuplanguage   [...]   [..,..=..,..]
                  OPT
```



If you want to display notions, concepts and ideas in a consistent manner you can use

\definedescription [..=1..] [..=2..] OPT [..,..=3=..,..] OPT

For example:

```
\definedescription
  [Notion]
  [alternative=serried,headstyle=bold,width=broad]

\startNotion[title={Hasselter juffer}]
  A sort of biscuit made of puff pastry and
  covered with sugar. It tastes very sweet.
\stopNotion
```


It would look like this:

Hasselter juffer A sort of biscuit made of puff pastry and covered with sugar. It tastes very sweet.

But you can also choose other layouts

```
\definedescription
  [Notion]
  [alternative=top,
   inbetween={\blank[none]},
   headstyle=bold,
   width=broad,
   style=slanted]

\startNotion[title={Hasselter bitter}]
  A strong alcoholic drink (up to 40\%) mixed with
  herbs to give it a special taste. It is sold in
  an earthware flask and it should be served
  \Emph{ijskoud} (as cold as ice).
\stopNotion
```

Hasselter bitter

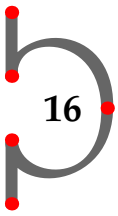
A strong alcoholic drink (up to 40%) mixed with herbs to give it a special taste. It is sold in an earthware flask and it should be served ijskoud (as cold as ice).

```
\definedescription
  [Notion]
  [alternative=outermargin,
   headstyle=\bfx,
   width=broad,
   style=roman]

\startNotion[title={Euifeest}]
  A harvest feast to celebrate the end of a period
  of hard work. The festivities take place in the
  last week of August.
\stopNotion
```

A harvest feast to celebrate the end of a period of hard work. The festivities take place in the last week of August. **Euifeest**

```
\definedescription
```

```
  [Notion]
  [alternative=right,
   headstyle=bold,
   width=broad,
   style=roman]

\startNotion{Euifeest}
  A harvest feast to celebrate the end of a period
  of hard work. This event takes place at the end
  of August and lasts one week. The city is
  completely illuminated and the streets are
  decorated. This feast week ends with a
  \Emph{Braderie}.
\stopNotion
```

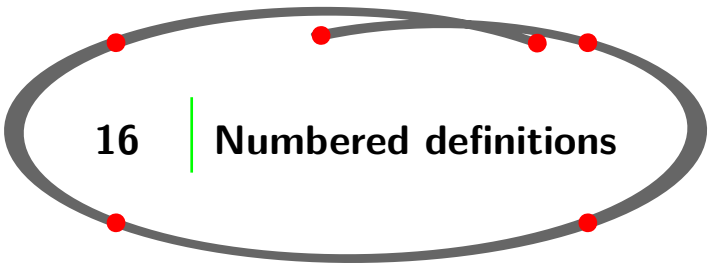


This would become:

Euifeest A harvest feast to celebrate the end of a period of hard work. This event takes place at the end of August and lasts one week. The city is completely illuminated and the streets are decorated. This feast week ends with a *Braderie*.

The layout is set up within the second bracket pair of `\definedescription`. But you can also use

```
\setupdescription   [...,...]   [..,..=..,..]
                        OPT
```



With `\defineenumeration` you can number text elements like remarks or questions. If you want to make numbered remarks in your document you use

```
\defineenumeration   [..]   [..]   [..,..=..,..]
                                OPT          OPT
```

For example:

```
\defineenumeration
  [Remark]
  [alternative=top,
   text=Remark,
   inbetween={\blank[none]},
   after=\blank]
```

Now the following new commands are available:

```
\startRemark ... \stopRemark},
\startsubRemark ... \stopsubRemark},
\startnextRemark ... \stopnextRemark},
\startnextsubRemark ... \stopnextsubRemark}
```

Writing a numbered remark could like this

```
\startRemark
In the early medieval times Hasselt was a place of pilgrimage.
The \Emph{Heilige Stede} (Holy Place) was torn down during
the Reformation. In 1930, after 300 years, the
\Emph{Heilige Stede} was reopened.

\startsubRemark
Nowadays the \Emph{Heilige Stede} is closed again but once
a year an open air service is held on the same spot.
\stopsubRemark

\stopRemark
```


This becomes:

Remark 1

In the early medieval times Hasselt was a place of pilgrimage. The *Heilige Stede* (Holy Place) was torn down during the Reformation. In 1930, after 300 years, the *Heilige Stede* was reopened.

Remark 1.1

Nowadays the *Heilige Stede* is closed again but once a year an open air service is held on the same spot.

You can reset numbering with `\resetRemark` or `\resetsubRemark` or increment a number with `\startnextRemark ... \stopnextRemark`, `\startnextsubRemark ... \stopnextsubRemark`. This is normally done automatically per chapter, section or whatever.

You can set up the layout of `\defineenumeration` with

```
\setupenumerations  [...,...]  [..,..=..,..]
                       OPT
```

You can also vary the layout of `Remark` and `subRemark` in the example above with

```
\setupenumeration[Remark][headstyle=bold]
\setupenumeration[subRemark][headstyle=slanted]
```

If a number becomes obsolete you can type

```
\startRemark[-] ... \stopRemark
```

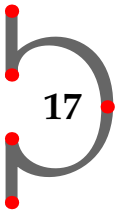
```
\setupenumeration
   [Remark]
   [alternative=hanging,
    width=broad]

\startRemark
In the early medieval times Hasselt was a place of pilgrimage.
The \Emph{Heilige Stede} (Holy Place) was torn down
during the Reformation.
```

```
After 300 years in 1930 the \Emph{Heilige Stede} was reopened.
Nowadays the \Emph{Heilige Stede} is closed again but once
a year an open air service is held on the same spot.
\stopRemark
```

So the example above would look like this:

Remark 2 In the early medieval times Hasselt was a place of pilgrimage. The *Heilige Stede* (Holy Place) was torn down during the Reformation.

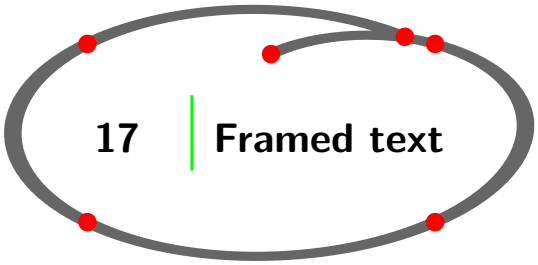
After 300 years in 1930 the *Heilige Stede* was reopened. Nowadays the *Heilige Stede* is closed again but once a year an open air service is held on the same spot.



As a teaser for chapter 36 on mathematics here are two forms of enumerations i.e. Theorem and Lemma. The examples are taken from *Mathematics in CONTEXT*.

```
\defineenumeration
  [Theorem]
  [alternative=serried,
   width=fit,
   distance=\emwidth,
   text=Theorem,
   style=italic,
   title=yes,
   titlestyle=normal,
   prefix=yes,
   headcommand=\groupedcommand{}{.}]

\defineenumeration
  [Lemma]
  [Theorem]
  [text=Lemma]
```

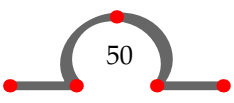
As you can see, the enumeration 'Lemma' is a copy of the 'Theorem' and therefore inherits all properties of this definition and therefore also the counter.



You can put text in a frame with `\framed`. The command looks like this

```
\framed   [..,..=..,..]   {...}
          OPT
```

The bracket pair is optional and contains the set up parameters. The curly braces enclose the text. To be honest, the framed text in the first paragraph was done with `\inframed`. This command takes care of the interline spacing.



Be aware that the \framed environment is used for single line texts only. For paragraphs one needs to use \startframedtext ... \stopframedtext.

Some other examples of \framed and its setup parameters are shown below.

The setup of this series of \framed is done with buffers. Buffers are discussed in chapter 42, paragraph 42.5. We show here only the coding for the first framed text and its outcome to the right as a figure.

```
\startbuffer[a]
  \framed
    [height=fit,
     width=.5\textwidth]
    {Hasselt}
\stopbuffer

\startplacefigure
  [location=right,
   number=,
   title=]
  {\externalfigure[a][type=buffer]}
\stopplacefigure
```


The approach is to put the \framed contents into a buffer. Then \externalfigure is called that is picking up the buffer and places its contents as a figure.

```
\framed
  [height=fit,
   width=.5\textwidth]
  {Hasselt}
```

Hasselt

```
\framed
  [height=3em,
   width=.5\textwidth]
  {Hasselt now has more space}
```

Hasselt now has more space

```
\framed
  [height=3em,
   width=.5\textwidth,
   foregroundcolor=red,
   framecolor=blue]
  {Hasselt now has some color}
```

Hasselt now has some color

```
\framed
  [height=3em,
   width=.5\textwidth,
   foregroundcolor=red,
   framecolor=blue,
   rulethickness=2pt]
  {Hasselt now has a thicker frame}
```

Hasselt now has a thicker frame

```
\framed
  [height=3em,
   width=.5\textwidth,
   foregroundcolor=red,
   framecolor=blue,
   rulethickness=2pt,
   background=color,
   backgroundcolor=green]
  {Hasselt now has a colorful background}
```

Hasselt now has a colorful background

```
\framed
  [height=3em,
   width=.5\textwidth,
   foregroundcolor=red,
   framecolor=blue,
   rulethickness=2pt,
   background=color,
   backgroundcolor=green,
   foregroundstyle=bold]
  {Hasselt now has another style}
```

Hasselt now has another style

```
\framed
  [height=3em,
   width=.5\textwidth,
   foregroundcolor=red,
   framecolor=blue,
   rulethickness=2pt,
   background=linear shade,
   foregroundstyle=bold]
  {Hasselt now has a little shade}
```

Hasselt now has a little shade

The shady background was defined with:

```
\definecolor[a][black]
\definecolor[b][white]

\startuniqueMPgraphic{LinearShade}
  fill OverlayBox
    withshademethod "linear"
    withcolor \MPcolor{a}
    shadedinto \MPcolor{b} ;
\stopuniqueMPgraphic

\defineoverlay
  [linear shade]
  [\uniqueMPgraphic{LinearShade}]
```

The \framed command is very sophisticated and is used in many macros. The command to set up frames is

\setupframed *[...,...]* [..,..=..,..]
OPT

When using \framed between paragraphs, the vertical spacing is tight. If one wants the spacing like with normal paragraphs, then the command \startlinecorrection ... \stoplinecorrection is the solution.

```
A simple line of text

\startframed
  An important piece of information
\stopframed

The next line of text.
```

A simple line of text

An important piece of information

The next line of text.

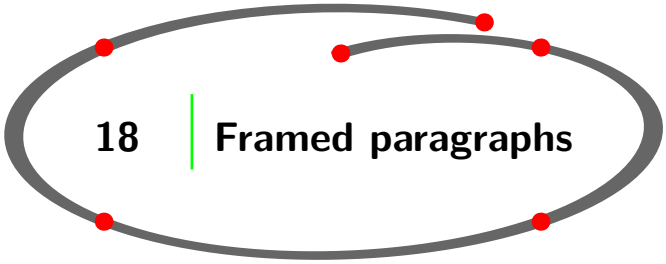
This looks better if one puts the \startframed ... \stopframed between \startlinecorrection ... \stoplinecorrection.

```
A simple line of text

\startlinecorrection
  \startframed
    An important piece of information
  \stopframed
\stoplinecorrection

The next line of text.
```

A simple line of text

An important piece of information

The next line of text.



Complete paragraphs can be put into a frame with

\startframedtext [..=..1..] [..,..=..2..,..] ... \stopframedtext
OPT OPT

Let's give an example.

```
\setupframedtexts
  [width=.8\makeupwidth,
   background=color,
```

```
    backgroundcolor=gray,
    corner=round,
    framecolor=blue,
    rulethickness=2pt]
\startplaceintermezzo
  [location=here,
   reference=block:bridge,
   title={An intermezzo}]
  \startframedtext
    It was essential for Hasselt to have a bridge across the Zwarte
    Water river. The bishop of Utrecht gave Hasselt his consent in
    1486.
    \blank
    Other cities in the neighbourhood of Hasselt were afraid of the
    toll money to be paid when crossing this bridge so they
    prevented the construction for many years.
  \stopframedtext
\stopplaceintermezzo
```

The `\startplaceintermezzo ... \stopplaceintermezzo` environment is another predefined float block. You can find more information on float blocks in chapter 9 and in paragraph 42.4 “Miscellaneous”. The `\blank` is necessary to enforce a blank line.

It was essential for Hasselt to have a bridge across the Zwarte Water river. The bishop of Utrecht gave Hasselt his consent in 1486.

Other cities in the neighbourhood of Hasselt were afraid of the toll money to be paid when crossing this bridge so they prevented the construction for many years.

Intermezzo 18.1 An intermezzo

The frame appearance can be set up with

`\setupframedtexts` *[...,...]* (OPT) [..,..=..,..]

19 Margin texts

It is very easy to put text in the margin. You just use `\inmargin`.

```
\inmargin   [..,..=..,..]   [..,..=..,..]   {...}
                OPT             OPT
```

You may remember one of the earlier examples.

```
\inoutermargin
  {\externalfigure
     [excursion-23]
     [width=.6\marginwidth]}
```

This would result in a figure in the margin. You can imagine that it looks quite nice in some documents. But be careful. The margin is rather small so the figure could become very marginal.

You can set up margin texts with

```
\setupmargindata   [...,...]   [..,..=..,..]
                       OPT
```

Other commands that you can use for forcing text into the margin are listed in table 19.1.

Command	Meaning
\ininner	text in inner margin
\inouter	text in outer margin
\inright	text in right margin
\inleft	text in left margin
\inmargin	text in the margin
\margintext	text in the margin

Table 19.1 Overview of margin commands

The commands \inmargin, \inleft and \inright all have the same function. In a two sided document \inmargin puts the margin text in the correct margin. The \\ is used for line breaking.

A few other examples are shown in the text below.

```
The Ridderstraat (Street of knights)
\inmargin{\tfx\setupinterlinespace Street of\\Knights} is an
obvious name. In the 14th and 15th centuries, nobility and
prominent citizens lived in this street. Some of their big
houses were later turned into poorhouses
\inright[]{\tfx poorhouse} and old peoples homes.

Up until \inleft[]{\tfx 1940}1940 there was a synagog in the
Ridderstraat. Some 40 Jews gathered there to celebrate their
sabbath. During the war all Jews were deported to Westerbork
and then to the extermination camps in Germany and Poland.
None of the Jewish families returned. The synagog was
```

```
knocked down in 1958.
```

The example above would look like this:

Street of Knights

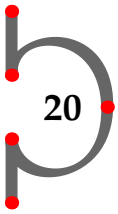
The Ridderstraat (Street of knights) is an obvious name. In the 14th and 15th centuries, nobility and prominent citizens lived in this street. Some of their big houses were later turned into poorhouses and old peoples homes.

poorhouse

1940

Up until 1940 there was a synagog in the Ridderstraat. Some 40 Jews gathered there to celebrate their sabbath. During the war all Jews were deported to Westerbork and then to the extermination camps in Germany and Poland. None of the Jewish families returned. The synagog was knocked down in 1958.

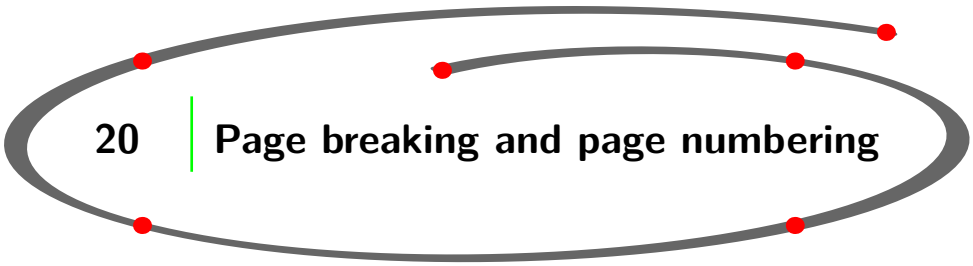
If you want to place more extensive text blocks in the margin there is the command




```
\startmarginblock   [..*..] ... \stopmarginblock
                      OPT
```

and the accompanying command

```
\setupmarginblock   [...,...1...]   [..,..=2..,..]
                          OPT
```



20 Page breaking and page numbering

20.1 Page break

A page can be enforced or blocked by

```
\page   [...*,...]
          OPT
```

The options can be stated within the brackets. The options and their meaning are presented in table 20.1.

20.2 Page numbering

Numbering pages is done automatically by CONTEXT. However, numbering the pages the way you want may take some effort.

A rather simple `\startdocument ... \stopdocument` will be numbered from `1 ... n` (where `n` is the last page). If you want your document to number its pages alphabetically you can type

```
\setupuserpagenumber
```

Option	Meaning
yes	enforce a page
makeup	enforce a page without filling
no	no page
preference	prefer a new page here
bigpreference	great preference for a new page here
left	next page is a left-hand side page
right	next page is a right-hand side page
disable	following commands have no effect
last	add pages till even number is reached
quadruple	add pages till a multiple of four is reached
even	next page is even
odd	next page in odd
blank	no page number
empty	insert an empty page
reset	following commands do have effect
start	from now on page commands have effect
stop	from now on page commands have no effect

Table 20.1 Page options

```
[numberconversion=character]
```

in the setup area of your file.

You can enforce a page number with:

```
\setupuserpagenumber[number=25]
```

```
\setupuserpagenumber   [..,..=..,..]
```

The options of the \setupuserpagenumber command are given in table 20.2.

The prefixset, prefixseparatorset and the numberconversionset options are defined with the \defineprefixset, \defineseparatorset and \defineconversionset respectively.

This manual uses the CONTEXT standard document section blocks: frontmatter, bodymatter and appendices. These section blocks are numbered with roman characters, numeral digits and characters respectively.

Option	Meaning
way	how to number the document
prefix	use pagenumber prefix
prefixset	use defined prefixset
prefixseparatorset	use defined separator
state	start or stop page numbering
number	define page number
numberconversion	convert page number
numberconversionset	used defined conversion set

Table 20.2 Page numbering options

```
\defineconversionset
  [frontpart:pagenumber][][romannumerals]

\defineconversionset
  [bodypart:pagenumber] [][numbers]

\defineconversionset
  [appendix:pagenumber] [][Characters]
```

At the start of each section block the number is reset to i, 1 and A respectively.

The same effect would have been obtained with

```
\startsectionblockenvironment[frontpart]
  \setupuserpagenumber[numberconversion=romannumerals]
\stopsectionblockenvironment
```

Page numbering and the location of the page numbers can be set up with

```
\setuppagenumbering   [..,..=..,..]
```

The options of this command are shown in table 20.3.

Note that this is also the command that indicates that your document is single or double sided which has an effect on the left-right page layout.

```
\setuppagenumbering
  [alternative=doublesided]
```

In a document the page numbering could be set up as

```
\setuppagenumbering
  [location={footer,middle},
   command=\NumberCommand]
```

The \NumberCommand could use METAPOST to draw a unique random image around each page number.

You can recall a page number with \userpagenumber.

Option	Meaning
alternative	page layout: single or double sided
location	location of page number on page
width	width of page number
left	text left of page number
right	text right of page number
page	...
state	start – stop page numbering
command	invoke command
style	set character style
color	set color

Table 20.3 Page numbering layout options

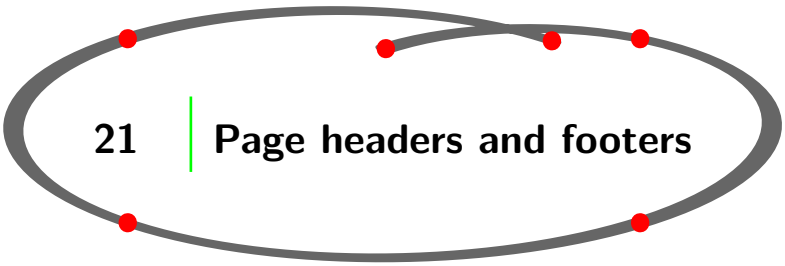
If you set up your header text with

```
\setupheadertexts
  [Page \userpagenumber\ of \lastuserpagenumber]
```

You would get a header with the actual page number and the total of pages (in the current section block).

The actual page number and the real page number may differ since there may be sections which in your document are not numbered. If you feel the need to display the real page number there is the command `\realpagenumber`.

Please refer to the *CONTEXT WIKI* for more details.



In some cases you want to give your document a page header and footer. The commands to do this are

\setupheadertexts *[...]*$^{1}_{\text{OPT}}$ *[...]*$^{2}_{\text{OPT}}$ *[...]*$^{3}_{\text{OPT}}$ *[...]*$^{4}_{\text{OPT}}$ *[...]*$^{5}_{\text{OPT}}$

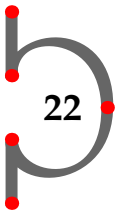
\setupfootertexts *[...]*$^{1}_{\text{OPT}}$ *[...]*$^{2}_{\text{OPT}}$ *[...]*$^{3}_{\text{OPT}}$ *[...]*$^{4}_{\text{OPT}}$ *[...]*$^{5}_{\text{OPT}}$

These commands allow you to configure different contents for the left and right page of a double sided document, hence the number of arguments.

The first bracket pair is used for the location of the header or footer (`text`, `margin`, `edge`). For a graphical representation of these keys please refer to figure 30.1 on page 79. For a single sided document you can use two bracket pairs. The location of `text` is assumed by CONTEXT if not stated. Within the first bracket pair a left portion and in the other bracket pair a right portion of the header or footer is placed. In a double sided document four bracket pairs are used. This allows you to establish a left and right part of the header or footer individually for the left and right page of the document.

```
\setupfootertexts[Manual][section]
```

In this case the text *Manual* will appear in the lower left corner and the title of the actual section on the lower right-hand side of the footer. This footer will change with the beginning of a new section.




```
\setuppagenumbering
  [location={footer,middle},alternative=doublesided]
\setupheadertexts
  [\CONTEXT\ an excursion][chapter][chapter][\CONTEXT\ an excursion]
```

The first two bracket pairs refer to the two portions of the header of the *right hand* page. Making a double sided document you could have in the left portion of the header the title of the document and in the right portion the name of the actual chapter. For the right hand page the sequence of the portions would be inverted.

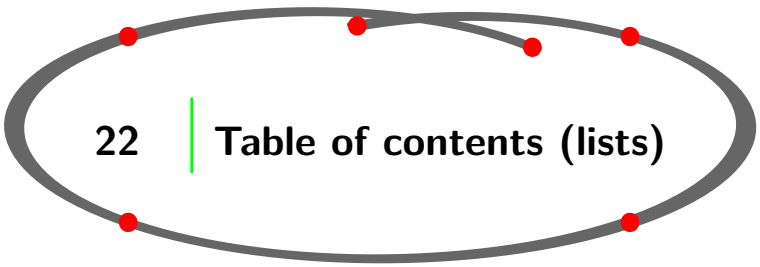
You can set up the layout of the header and footer with

```
\setupheader   [..=1..]   [..,..=2..,..]
                  OPT
```

```
\setupfooter   [..=1..]   [..,..=2..,..]
                  OPT
```

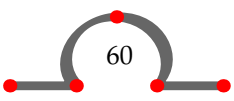
If you want to leave out the page header and footer you can type

```
\noheaderandfooterlines
```



A table of contents contains chapter numbers, chapter titles and page numbers and can be extended with sections, sub sections, etc. A table of contents is generated automatically by typing:

```
\placecontent
```



Which table of contents is produced depends on the location of this command in your document. At the start of the document it will generate a list of chapters, sections etc. But at the top of a chapter

```
\startchapter[title={Hasselt in Summer}]
\placecontent
\startsection[title={Hasselt in July}]
...
\stopsection
\startsection[title={Hasselt in August}]
...
\stopsection
\stopchapter
```

it will only produce a list of (sub) section titles with the corresponding section numbers and page numbers.

The predefined command \placecontent is available because it was defined with:

\definecombinedlist [.[1].] [...[2],...] *[..,..[3]=..,..]* OPT

This command and \definelist allows you to define your own lists necessary for accessing your documents.

The use of this command and its related commands is illustrated for the default available table of contents.

```
\definelist[chapter]
\setuplist
   [chapter]
   [before=\blank,
    after=\blank,
    style=bold]
\definelist[section]
\setuplist
   [section]
   [alternative=d]
```

Now there are two lists of chapters and sections and these will be combined in a table of contents with the command \definecombinedlist.

```
\definecombinedlist
   [content]
   [chapter,section]
   [level=subsection]
```

Now two commands are available: \placecontent and \completecontent. With the second command the title of the table of contents will be added to the table of contents.

The layout of lists can be varied with the parameter alternative.

Alternative	Display
a	number – title – page number
b	number – title – spaces – page number
c	number – title – dots – page number
d	number – title – page number (continuing)
e	reserved for interactive purposes
f	reserved for interactive purposes
g	reserved for interactive purposes

Table 22.1 Alternatives for displaying lists

22

Lists are set up with

```
\setuplist   [...,...]   [..,..=..,..]
                OPT
```

```
\setupcombinedlist   [..]   [..,..=..,..]
```

If you want to change the layout of the generated table of contents you'll have to remember that it is a (combined) list and that we can set the partial lists separately.

```
\setuplist
  [section]
  [textstyle=bold,
   pagestyle=bold,
   numberstyle=bold]
```

This will result in a bold page number, section title and section number.

Lists are generated and placed with:

```
\placelist   [...,...]   [..,..=..,..]
                                OPT
```

So if you want a list of sections at the beginning of a new chapter, you type:

```
\placelist[section]
```

only the sections will be displayed.

A long list or a long table of contents will use up more than one page. To be able to force page breaking you can type:

```
\placecontent[extras={8.2=page}]
```

A page break will then occur after section 8.2.

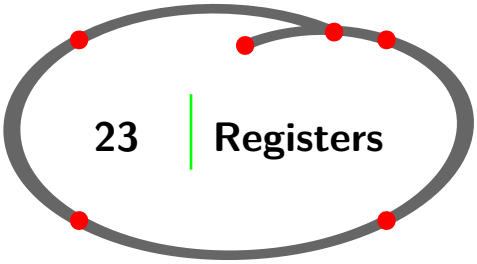
In some cases you want to be able to write your own text in an automatically generated list. This is done with:

```
\writetolist   [...]   [..,..=..,..]   {...}   {...}
                          OPT
```

```
\writebetweenlist   [...]   [..,..=..,..]   {...}
                               OPT
```

For example if you want to make a remark in your table of contents after a section titled *Hotels in Hasselt* you can type:

```
\startsection[title={Hotels in Hasselt}]
\writebetweenlist[section]{\blank}
\writetolist[section][location=here]{}{Section under construction}
\writebetweenlist[section]{\blank}

...

\stopsection
```

It is possible to generate one or more registers. By default the command `\index` is available. If you want to add a word to the index you type

```
\index{town hall}
```

The word *town hall* will appear as an index entry in the sorted register. Sometimes the index word does not appear in normal alphabetic order. For example, entries such as symbols have to provide extra sorting information in order to produce a correct alphabetical list:

```
\index[minus]{\m{-}}
```

Sometimes you have sub- or sub–sub–entries. These can be defined as follows

```
\index{town hall+location}
\index{town hall+architecture}
```

Often in registers there is an entry which points to another entry with its sub- and sub–sub–entries. For this situation you can use `\seeindex`.

```
\seeindex{community centre}{town hall}
```

So looking up ‘community centre’ in the index redirects to ‘town hall’.

You can generate your register with the command

```
\placeindex
```

or

```
\completeindex
```

The command `\index` is a predefined CONTEXT command, but of course you can also define your own registers.

```
\defineregister [.1.] [.2.] [..,..=3..,..]
                       OPT        OPT
```

For example if you want to make a new register based on the streets in Hasselt you could type

```
\defineregister[Street]
```

24

Now a new register command `\Street` is available. Now `\Street{Ridderstraat}` is a new index entry. To produce a list of entries you could now use

```
\placeregister[Street]
\placeStreet
\completeStreet
```

You can alter the layout of the registers with

```
\setupregister [.1.] [..,..=2..,..]
                 OPT
```

24 Sorted lists

If you want to create a sorted list you can use:

```
\definesorting [.1.] [.2.] [.3.]
                             OPT
```

For example:

```
\define[1]\Street{#1\SortStreet{#1}}
\definesorting[SortStreet][SortStreets]
\setupsorting[SortStreet][criterium=all]

When you walk in the \Street{Eikenlaan} you will cross the
\Street{Vechtlaan} and \Street{Gasthuisstraat}.
Go left into the \Street{Gasthuisstraat} and take
```

```
another left turn on the \Street{Heerengracht}. You
walk along the canal to the \Street{Ridderstraat},
there you turn right. Cross the canal and turn left
to the \Street{Julianakade}. There you can enjoy
the view over the Zwartewater.

So the streets you visited are:

\placelistofSortStreets
```

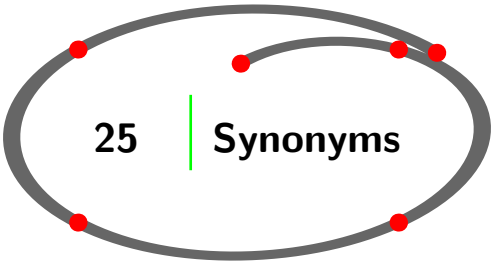
This will become:

When you walk in the Eikenlaan you will cross the Vechtlaan and Gasthuisstraat. Go left into the Gasthuisstraat and take another left turn on the Heerengracht. You walk along the canal to the Ridderstraat, there you turn right. Cross the canal and turn left to the Julianakade. There you can enjoy the view over the Zwartewater.

So the streets you visited are:

Eikenlaan
Gasthuisstraat
Heerengracht
Julianakade
Ridderstraat
Vechtlaan

Note that the Gasthuisstraat appears only once in the list.



In many documents people want specific words consistently used throughout the document. For this purpose there is the predefined command `\abbreviation`. For placing a list of the used abbreviations there are the commands

```
\placelistofabbreviations
\completelistofabbreviations
```

You are not restricted to this command. You can define your own synonyms command by

```
\definesynonyms  [...]  [...]  [...]  [...]
                                OPT     OPT
```

The first bracket pair contains the singular form of the synonym, and the second contains the plural form. The third bracket pair contains a command.

The typesetting of synonyms can be influenced with

\setupsynonyms [...,...] [..,..=..,..]
OPT 1 2

For example the command \Shortcut is defined by

```
\definesynonyms[Shortcut][Shortcuts][\infull]
\setupsynonyms[Shortcut][textstyle=\cap,textcolor=blue]
```

The command \setupsynonyms has a large number of key-value pairs. E.g. the key textcolor and textstyle influence the color and style of the text as can be seen in the example below.

Be aware that there are also the key-value pairs color and style with the command \setupsynonyms. Those influence the color and style of texts in the lists of synonyms.

Now the command \Shortcut is available and can be used to state your abbreviations.

```
\Shortcut{ANWB}{Dutch Automobile Association}
\Shortcut{VVV}{Bureau of Tourist Information}
\Shortcut{NS}{Dutch Railways}
```


If you would type

```
The Dutch \VVV\ (\infull{VVV}) can provide you with tourist
information on Hasselt.

The \ANWB\ (\infull{ANWB}) provides many services supporting Dutch automobilists.

Hasselt has no train station of the \NS\ (\infull{NS}).
```

You would obtain

The Dutch VVV (BUREAU OF TOURIST INFORMATION) can provide you with tourist information on Hasselt.

The ANWB (DUTCH AUTOMOBILE ASSOCIATION) provides many services supporting Dutch automobilists.

Hasselt has no train station of the NS (DUTCH RAILWAYS).

```
\setupsynonyms[Shortcut][style=bolditalic,color=green]
\placelistofShortcuts
```

The current list of Shortcuts as a sorted list:

ANWB	***Dutch Automobile Association***
NS	***Dutch Railways***
VVV	***Bureau of Tourist Information***

The list of synonyms or abbreviations is best defined in the setup area of your input file for maintenance purposes. You can also store this kind of information in an external file, and load the file (e.g. shortcuts.mkxl) with

```
\input{shortcuts}
```

If you want to put a list of the abbreviations used in your document you can type

```
\placelistofShortcuts
```

or

```
\completelistofShortcuts
```

A complete and sorted list with used abbreviations and their meaning is produced.

The predefined \logo command is used for the consistent use of text logos.

When you define

```
\logo [HSTEX]  {Hassel\TeX}
```

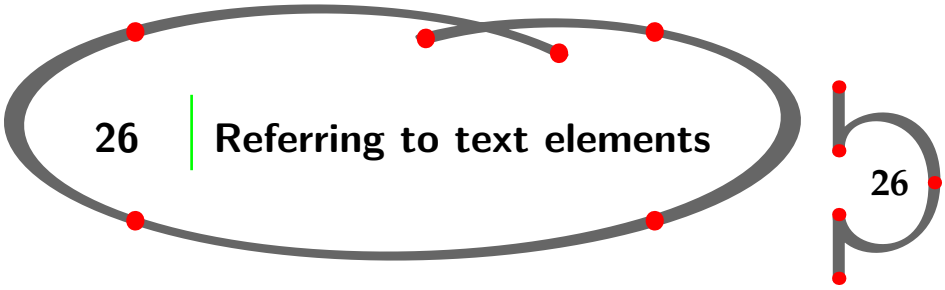
You can use that logo throughout your text.

```
How would you call a \TEX\ based macro-package when you work
in Hasselt? \HSTEX?
```

How would you call a TEX based macro-package when you work in Hasselt? HASSELTEX?

Of course you can also produce a sorted list of the used logos with

```
\placelistoflogos
\completelistoflogos
```



To disclose your document for your readers you can use the table of contents and the register. However, it is not uncommon to refer to specific numbered text elements like formulas, tables, images and sections to enhance readability.

For referring from one location in a document to another you can use the command

```
\in   {...}   {...}   [...]
        OPT     OPT
```

The curly braces contain text. The first pair of braces contain the prefix and the second pair a suffix. The latter could be a full stop (.). The brackets contain a logical label, the reference you want to point to.

If you have written a chapter header like this

```
\startchapter[title=Hotels in Hasselt,reference=chap:hotel]
  ...
\stopchapter
```

then you can refer to this chapter with

```
\in{chapter}[chap:hotel]
```

After processing the chapter number is available and the reference could look something like: *chapter 23*. Remember that the referencing mechanism requires numbered elements like chapters, sections, figures, tables, formulas etc.

Another example:

```
There are a number of things you can do in Hasselt:

\startitemize[n,packed]
  \startitem swimming       \stopitem
  \startitem sailing        \stopitem
  \startitem[hiking] hiking \stopitem
```

```
  \startitem biking          \stopitem
\stopitemize

An activity like \in{activity}[hiking] described
on \at{page}[hiking] is very tiring.
```

This would look like this:

There are a number of things you can do in Hasselt:

1. swimming
2. sailing
3. hiking
4. biking

An activity like activity 3 described on page 68 is very tiring.

As you can see, it is also possible to refer to pages. This is done with


```
\at   {...}   {...}   [...]
        OPT     OPT
```

For example with:

```
\at{page}[hiking]
```

This command can be used in combination with

```
\pagereference   [...,...]
```

and

```
\textreference   [...,...]   {...}
```

If you want to refer to the chapter *Hotels in Hasselt* you could type

```
Look in \in{chapter}[hotel] on \at{page}[hotel]
for a complete overview of accommodations in
\pagereference[accommodation]Hasselt.
```

The command `\pagereference` causes CONTEXT to generate a page number when processing the input file. On another spot in the document you can refer to `accommodation` with `\at{page}[accommodation]`.

When using the command `\textreference` which has a text attached to it, CONTEXT generates the page number at compilation time of the file and anywhere in the text you can refer as well to that page number and the text.

```
\textreference[Hasselt:HanzeHotel]{Hanze Hotel}

As described on \at{page}[Hasselt:HanzeHotel],
\about[Hasselt:HanzeHotel] is the best known hotel
in the area.
```

As described on page 68, “Hanze Hotel” is the best known hotel in the area.

You can also define a set of labels separated by commas.

```
\startplacefigure
  [location=here,
   reference={fig:canals,fig:boats},
   title={A characteristic picture of Hasselt}]
  {\externalfigure[excursion-08][width=.45\textwidth]}
\stopplacefigure

There are many canals in Hasselt
(see \in{figure}[fig:canals]).

...

Boats can be moored in the canals of Hasselt (see
\in{figure}[fig:boats]).
```

This might look like this:

Figure 26.1 A characteristic picture of Hasselt

There are many canals in Hasselt (see figure 26.1).

...

Boats can be moored in the canals of Hasselt (see figure 26.1).

You can also refer to a title of a chapter or section or even a caption of an image. This is done with

```
\about   [..*..]
```

This:

```
The caption of \in{figure}[fig:canals] is
\Emph{\about[fig:canals]}.
```

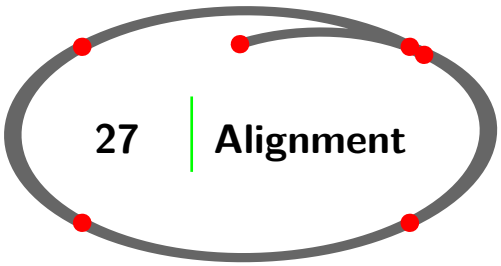
Becomes:

The caption of figure 26.1 is *“A characteristic picture of Hasselt”*.

With the command

```
\setupinteraction[state=start]
```

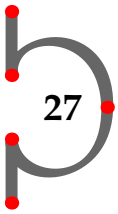
all references become active links. See chapter 47 for more information on this subject.



27 Alignment

27.1 Alignments left, right and centered

Horizontal and vertical alignment can be set up with



```
\setupalign   [...,*...]
```

Single lines can be aligned with:

```
\rightaligned{}
\leftaligned{}
\midaligned{}
```

An example can illustrate the alignment behavior.

```
\leftaligned  {Hasselt was built on a sand hill.}
\midaligned   {Hasselt was built on the crossing of two rivers.}
\rightaligned {Hasselt's name stems from hazel-wood.}
```

After processing this would look like:

Hasselt was built on a sand hill.

Hasselt was built on the crossing of two rivers.

Hasselt's name stems from hazel-wood.

Alignment of a paragraph is done with

```
\startalignment   [...,*...] ... \stopalignment
```

```
\startalignment[flushright,nothyphenated]
  For Hasselt the 15th and 16th century were relatively
  unstable times. There were upraises and disputes with
  neighbouring cities. To be able to defend themselves
  the city council ordered a number of arquebuses
  (very primitive firearms). Fourteen of these have
  survived and now form one of the greatest arquebus
  collections in Europe.
\stopalignment
```

This will become a right aligned paragraph without hyphenation.

For Hasselt the 15th and 16th century were relatively unstable times. There were upraises and disputes with neighbouring cities. To be able to defend themselves the city council ordered a number of arquebuses (very primitive firearms). Fourteen of these have survived and now form one of the greatest arquebus collections in Europe.

In case of alignment you can specify a tolerance and the direction (vertical or horizontal).

```
\setuptolerance   [...,*,...]
```

Normally the tolerance is `verystrict`. In columns you could specify `verytolerant`. The tolerance in this manual is set up as

```
\setuptolerance[horizontal,verytolerant,stretch]
```

Manuals like this one having a lot of verbatim inline texts need to be setup with bigger tolerance than other books.

27.2 Block alignment

Sometimes one wants to put a text fragment not aligned to the left. You can locally restrict the width of the typeset area, indenting it from the left and or restrict the width from the right.

You can set up your own narrower command if need be.

```
\definenarrower   [..,1,..]   [..,2,..]   [..,..,3,..,..]
                                  OPT             OPT
```

```
\setupnarrower   [...,1,...]   [..,..,2,..,..]
                       OPT
```

```
\startnarrower   [...,*,...] ... \stopnarrower
                       OPT
```

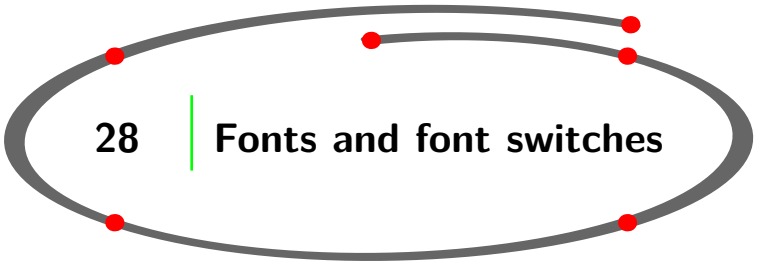
In section 28.2 you encounter the following example text. This time we show the possibilities with `\startnarrower ... \stopnarrower`. When using the command without argument(s) the text is centered. Setting up the command with `middle=0.2\makeupwidth` the left and right margins will be equal.

```
\definenarrower[Mynarrower]
\setupnarrower
  [Mynarrower]
  [left=0.3\makeupwidth,
   right=0.2\makeupwidth,
   middle=0.2\makeupwidth]

\startMynarrower[left,right]
  \getbuffer[Textlines]
```

```
\stopMynarrower

\startMynarrower[middle]
  \getbuffer[Textlines]
\stopMynarrower
```

Foekepotterij, foekepotterij,
Geef mij een centje dan ga'k voorbij.
Geef mij een alfje dan blijf ik staan,
'k Zal nog liever naar m'n arrenmoeder gaan.
Hier woont zo'n rieke man, die zo vulle gèven kan.
Gèf wat, old wat, gèf die arme stumpers wat,
'k Eb zo lange met de foekepot elopen.
'k Eb gien geld om brood te kopen.
Foekepotterij, foekepotterij,
Geef mij een centje dan ga'k voorbij.

Foekepotterij, foekepotterij,
Geef mij een centje dan ga'k voorbij.
Geef mij een alfje dan blijf ik staan,
'k Zal nog liever naar m'n arrenmoeder gaan.
Hier woont zo'n rieke man, die zo vulle gèven kan.
Gèf wat, old wat, gèf die arme stumpers wat,
'k Eb zo lange met de foekepot elopen.
'k Eb gien geld om brood te kopen.
Foekepotterij, foekepotterij,
Geef mij een centje dan ga'k voorbij.



28 Fonts and font switches

28.1 Introduction

The default font in CONTEXT is *Latin Modern Roman* (`lmr`). In CONTEXT the table 28.1 shows fonts that are included in the distribution.

For further reading we refer to the *Fonts in CONTEXT* manual where you can find information on how to install your own font.

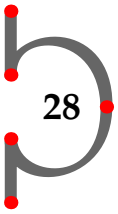
28.2 Fontstyle and size

You can select the font family, style and size for a document with:

```
\setupbodyfont    [...,...]
                      OPT
```

Name	Logical name	Also known as
Latin Modern Roman	lmr	Latin Modern Roman
Termes	termes	Times New Roman
Adventor	adventor	Avant Garde
Bonum	bonum	Bookman
Chorus	chorus	Zapf Chancery
Cursor	cursor	Courier
Heros	heros	Helvetica
Pagella	pagella	Palatino
Schola	schola	Century Schoolbook
Dejavu	dejavu	
Iwona	iwona	
Kurier	kurier	
Antykwa	antykwa	
Antykwa Poltawskiego	antykwa-poltawskiego	
Stix	stixtwo	
Xits	xits	
Almfixed	almfixed	
PK Fonts	pkfonts	
Erewhon	erwhon	
Libertinus	libertinus	
Ebgaramond	ebgaramond	
IBM Plex	ibimplex	
Gentium	gentium	

Table 28.1 Fonts in CONTEXT



If you typed `\setupbodyfont[chorus,9pt]` *in the setup area of the input file your text would look like this.*

For changes in mid-document and on section level you should use:

```
\switchtobodyfont   [...,*,...]
```

```
On November 10th (one day before Saint Martin's day) the youth of
Hasselt goes from door to door to sing a special song and they
accompany themselves on a \Emph{foekepot}. They won't leave
before you give them some money or sweets. The song goes like this:

\startnarrower
\switchtobodyfont[heros,small]
\startlines
  Foekepotterij, foekepotterij,
  Geef mij een centje dan ga'k voorbij.
  Geef mij een alfje dan blijf ik staan,
  'k Zal nog liever naar m'n arrenmoeder gaan.
  Hier woont zo'n rieke man, die zo vulle gèven kan.
  Gèf wat, old wat, gèf die arme stumpers wat,
  'k Eb zo lange met de foekepot elopen.
  'k Eb gien geld om brood te kopen.
  Foekepotterij, foekepotterij,
  Geef mij een centje dan ga'k voorbij.
\stoplines
\stopnarrower
```


Notice that `\startnarrower...\stopnarrower` is also used as a begin and end of the font switch. The function of `\startlines...\stoplines` in this example is obvious.

On November 10th (one day before Saint Martin's day) the youth of Hasselt goes from door to door to sing a special song and they accompany themselves on a *foekepot*. They won't leave before you give them some money or sweets. The song goes like this:

Foekepotterij, foekepotterij,
Geef mij een centje dan ga'k voorbij.
Geef mij een alfje dan blijf ik staan,
'k Zal nog liever naar m'n arrenmoeder gaan.
Hier woont zo'n rieke man, die zo vulle gèven kan.
Gèf wat, old wat, gèf die arme stumpers wat,
'k Eb zo lange met de foekepot elopen.
'k Eb gien geld om brood te kopen.
Foekepotterij, foekepotterij,
Geef mij een centje dan ga'k voorbij.

If you want an overview of an available font family you can e.g. type:

```
\showbodyfont[pagella]
```

[pagella]

	\tf	\tf	\bf	\sl	\it	\bs	\bi	\tfx	\tfxx	\tfa	\tfb	\tfc	\tfd
\rm	Ag	Ag	**Ag**	*Ag*	*Ag*	***Ag***	***Ag***	Ag	Ag	Ag	Ag	Ag	Ag
\ss	Ag	Ag	**Ag**	*Ag*	*Ag*	***Ag***	***Ag***	Ag	Ag	Ag	Ag	Ag	Ag
\tt	Ag	Ag	**Ag**	*Ag*	*Ag*	***Ag***	***Ag***	Ag	Ag	Ag	Ag	Ag	Ag
\mr	Ag	Ag	**Ag**	*Ag*	*Ag*	***Ag***	***Ag***	*Ag*	*Ag*	*Ag*	*Ag*	*Ag*	*Ag*

28.3 Style and size switch in commands

In a number of commands one of the parameters is `style` to indicate the desired typestyle. For example:

```
\setuphead[chapter][style=\tfd]
```

In this case the character size for chapters is indicated with the command `\tfd`. But instead of a command you could use the predefined options that are related to the actual typeface:

```
normal  bold  slanted  boldslanted  type  mediaeval
small  smallbold  smallslanted  smallboldslanted smalltype
capital cap
```

28.4 Local font style and size

In the running text (local) you can change the *typestyle* into roman, sans serif and teletype with `\rm`, `\ss` and `\tt`.

You can change the *typeface* like italic and boldface with `\sl` and `\bf`.

The *type size* is changed with `\switchtobodyfont`.

The actual style is indicated with `\tf`. If you want to change into a somewhat bigger size you can type `\tfa`, `\tfb`, `\tfc` and `\tfd`. Appending `a`, `b`, `c` or `d` to `\sl`, `\it` and `\bf` is also allowed.

```
{\tfc Mintage}

In the period from {\tt 1404} till {\tt 1585} Hasselt had its own
\Emph{right of coinage}. This right was challenged by other cities,
but the {\switchtobodyfont[7pt] bishops of Utrecht} did not honour
these {\slb protests}.
```

The curly braces indicate begin and end of style or size switches.

Mintage

In the period from 1404 till 1585 Hasselt had its own *right of coinage*. This right was challenged by other cities, but the bishops of Utrecht did not honour these *protests*.

28.5 Redefining fontsize

For special purposes you can define your own size of the body font.

\definebodyfont *[...,...]*[1] OPT *[...,...]*[2] *[...,...]*[3] OPT *[..,..=..,..]*[4]

A definition could look like this:

```
\definebodyfont[10pt][rm][tfe=Regular at 24pt]

{\tfe Hasselt!}
```

Now `\tfe` will produce 24pt characters saying: Hasselt!

28.6 Small caps

Abbreviations like PDF (PORTABLE DOCUMENT FORMAT) are printed in pseudo small caps. A small capital is somewhat smaller than the capital of the actual typeface. Pseudo small caps are produced with:

```
\cap   {..*..}
```

If you compare \cap{hasselt} and \sc hasselt: HASSELT and HASSELT you can see the difference. The command \sc shows the real small caps. The reason for using pseudo small caps instead of real small caps is just a matter of taste.

28.7 Emphasized

To emphasize words consistently throughout your document you use the traditional \em

Although it is still correct to do so, another approach could be to use the highlight mechanism for this purpose:

```
\definehighlight   [..1..]   [..2..]   [..,..3=..,..]
                                OPT            OPT
```


The advantage hereof is that it separates the meaning of an emphasis from the text and that in case one wants to change it, it has to be altered only in one place in order to get everything consistent throughout the text.

As an example throughout this manual all emphasized text uses a highlight:

```
\definehighlight[Emph][style=italic]
\definehighlight[Bemph][style=bolditalic]
```

Emphasized words appear in a slanted style.

```
If you walk through Hasselt you should \Bemph{watch out} for
\Emph{Amsterdammers}. An \Emph{Amsterdammer} is \Bemph{not} a
person from Amsterdam but a little stone pillar used to separate
sidewalk and road. A pedestrian should be protected by these
\Emph{Amsterdammers} against cars but more often people get hurt
from tripping over them.
```

This becomes:

If you walk through Hasselt you should ***watch out*** for *Amsterdammers*. An *Amsterdammer* is ***not*** a person from Amsterdam but a little stone pillar used to separate sidewalk and road. A pedestrian should be protected by these *Amsterdammers* against cars but more often people get hurt from tripping over them.

If you want that an emphasize inside an emphasize is turning to roman then you should use \em.

```
{\em An emphasize within an emphasize is {\em normal} again
and a boldface emphasize looks like {\bf this or {\em this}}}.
```

An emphasize within an emphasize is normal *again and a boldface emphasize looks like* ***this or*** **this**.

28.8 Teletype / verbatim

If you want to display typed text and want to keep your line breaking exactly as it is you use:

```
\starttyping   [..,..*=..,..] ... \stoptyping
                      OPT
```

In the text you can use:

```
\type   [..,..1=..,..]   {..2..}
              OPT
```

The curly braces enclose the text you want in teletype. You have to be careful with \type because the line breaking mechanism does not work anymore.

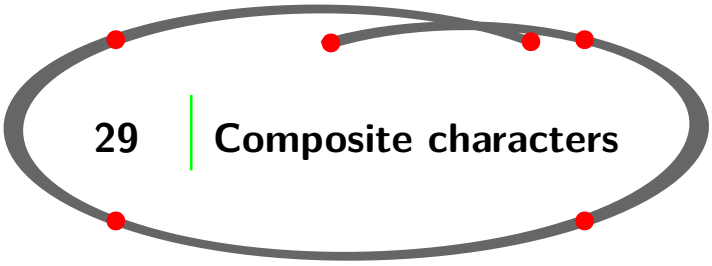
You can set up the 'typing' with:

```
\setuptyping   [...,1...]   [..,..2=..,..]
                    OPT
```

```
\setuptype   [...,1...]   [..,..2=..,..]
                  OPT
```

28.9 Font encodings

CONTEXT LMTX does not need font encodings.



In chapter 4 you have already seen that you have to type more than one token to obtain special characters like # $ % & _ { and }.

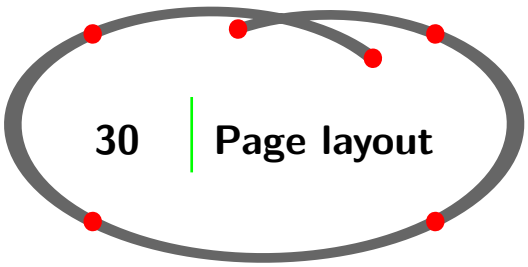
When in former times you had to include characters with accents, you needed to compose them of different tokens. CONTEXT is since a long time fully aware of utf-8 and we can type accented letters directly into the editor.

Be aware that CONTEXT still can handle those encoded accented characters when e.g. processing older files.

For your information the way you would have to code composed characters a selection is shown in table 29.1.

Character	Composed	CONTEXT command	UTF8
ü	\"u	\udiaeresis	ü
é	\'e	\eacute	é
â	\^a	\acircumflex	â
ä	\"a	\adiaeresis	ä
à	\`a	\agrave	à
å	\aa	\aring	å
ç	\c{c}	\ccedilla	ç
ï	\"{\i }	\idiaeresis	ï
î	\^{\i }	\icircumflex	î
Ä	\"A	\Adiaeresis	Ä
Å	\AA	\Aring	Å
É	\'E	\Eacute	É
æ	\ae	\aeligature	æ
Æ	\AE	\AEligature	Æ
ÿ	\"y	\ydiaeresis	ÿ

Table 29.1 Composed characters



30.1 Introduction

The *Layouts in CONTEXT* manual by Willi Egger contains the necessary background information on page layout and design. Below you will find only the basic information necessary for defining rather simple layouts for paper and screen documents.

For more information (examples and usage) on the `\setuplayout` command please refer to the *CONTEXT WIKI*.

30.2 Designing the page layout

To be able to design a page layout you have to familiarize yourself with the page model of CONTEXT. Figure 30.1 shows the areas on a page which you can use in your design.

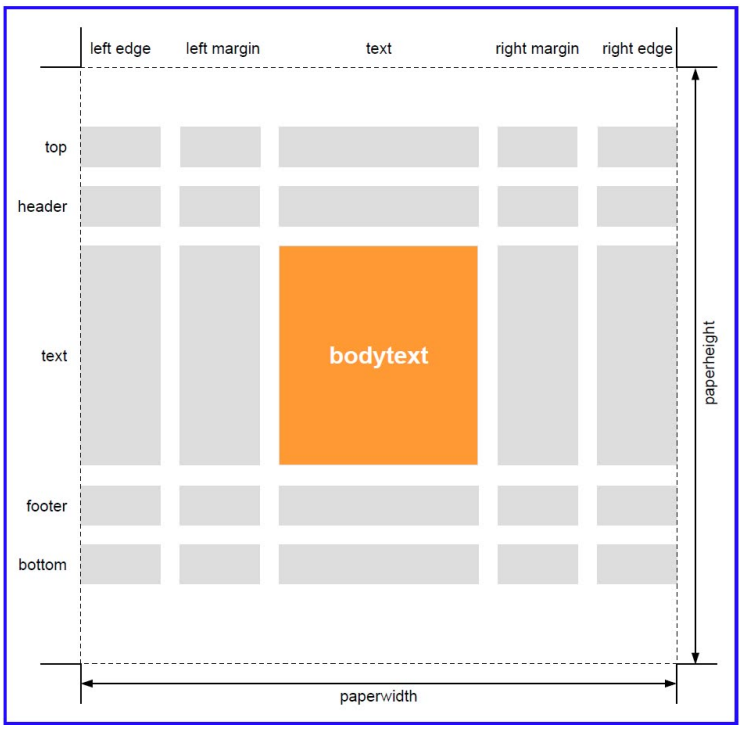


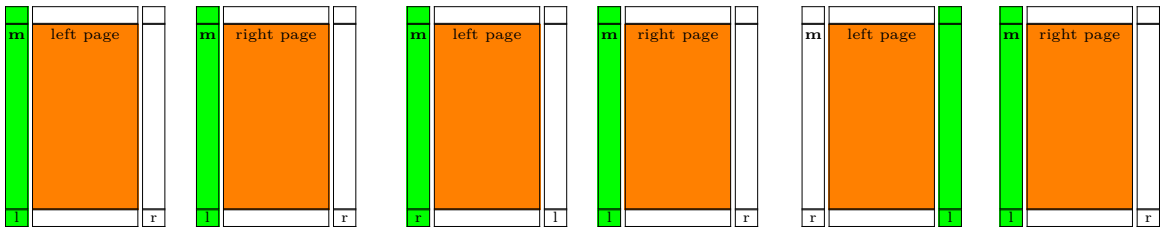
Figure 30.1 The page areas

The orange body text area contains the running text. The top, bottom and edge area are useful for buttons in screen documents.

Please keep in mind that in CONTEXT you are defining/designing a right-hand (odd) page. Only after you have setup

```
\setuppagenumbering[alternative=doublesided]
```

the left page is available (mirrored right page).



singlesided single-double doublesided

Figure 30.2 Page alternatives

Note in figure 30.2 that

- the margin text (`\inmargin{m}`) is always in the left margin
- the footer text in the margin (`\setupfootertexts[margin][l][r][r][l]`) adapts automatically. The page is completely mirrored when `alternative=doublesided` is active.

When designing a page ask yourself a few questions:

- do I want margin texts or margin figures
- will I use the margin for the section numbering

– do I have footer and/or header texts
– do I want a double sided layout (right–left page mirrored)
– do I use ornaments (like tabs) on the page
– do I have navigational buttons (screen documents)

30.3 Defining the paper size / screen size

Before you can set up your page layout you have to have an idea about the paper dimensions. The cut marks connected by the dashed lines in figure 30.1 indicate the paper size. In CONTEXT you set up your paper size with

```
\setuppapersize   [...]   [..,..=..,..]
                   OPT
```

Most common paper sizes for Europe and North America are predefined in CONTEXT A0 ... A10 and B1 ... B10 for paper and S3 ... S8 for screen documents. There are also special formats for envelopes.

The concept of the `setuppapersize` command is to provide the possibility to give the *page size* in the first bracket pair and the size of the *sheet of paper* in the second pair. Predefined is `\setuppapersize[A4][A4]` portrait.

```
\setuppapersize
  [A4][A4]
```

If you need to use landscape orientation of the paper you indicate this with the `\setuppapersize` command.

```
\setuppapersize[A5][A4,landscape]
```

Of course you can also define your own paper size for specific products

```
\definepapersize   [...]   [..,..=..,..]
```

```
\definepapersize
  [Postcard]
  [width=15cm,
   height=10cm]
```

and then:

```
\setuppapersize[Postcard][A4]
```

or

```
\setuppapersize[Postcard][Postcard]
```

30.4 Defining the page layout

The page layout is defined by

```
\setuplayout   [...]   [..,..=..,..]
                OPT
```

This command is typed in the setup area of your input file.

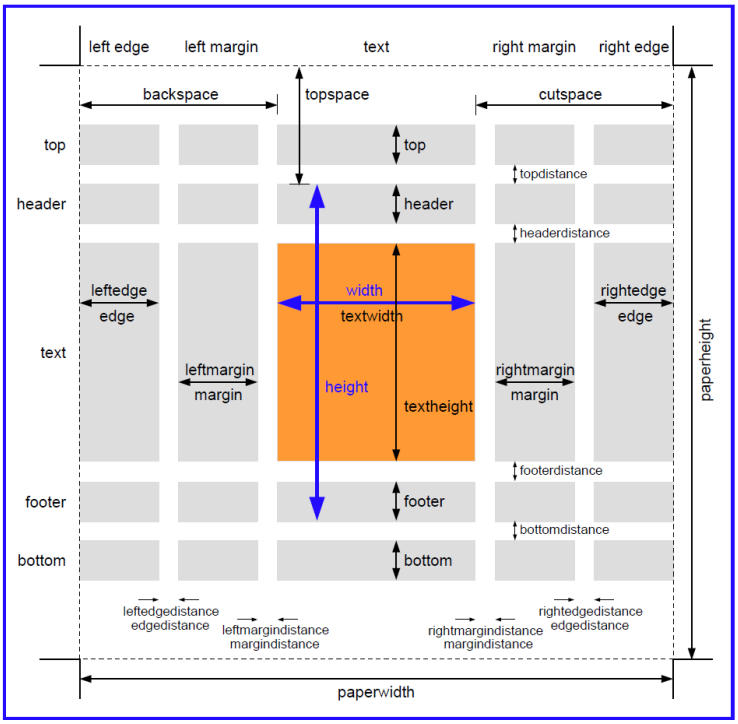


Figure 30.3 The page parameters

An important thing is that the `height` contained in the variable `\textheight` is always the sum of

```
textheight+
headerheight+headerdistance+
footerheight+footerdistance
```

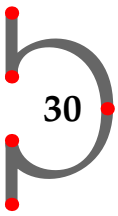
You will have to consider this when setting the height of the text block explicitly. If you set the `height` to `fit` then CONTEXT calculates the text height based on the provided and default values of the different variables that determine the height.

The layout of an A4 manual could be set up as follows

```
\setuplayout
  [backspace=22.5mm,
   width=fit,
   cutspace=22.5mm,
   margin=20mm,
   margindistance=5mm,
   topspace=15mm,
   header=10mm,
   headerdistance=5mm,
   height=fit,
   footerdistance=5mm,
   footer=15mm,
   bottomspace=15mm]
```

Be aware, that `\setuplayout` basically defines the layout of the right (odd) page. For doublesided documents CONTEXT mirrors the layout automatically. In case that the left (even) page layout must be different then you will have to set it up in the following way.

```
\setuplayout % defines always the right (odd) page!
  [topspace=7mm,
   backspace=12mm,
   margin=7mm,
   margindistance=2mm,
   header=0pt,
   headerdistance=0pt,
   footer=1ex,
   footerdistance=1pt,
   height=middle,
   width=middle,
   location=middle]

\definelayout[even]
  [topspace=7mm,
   backspace=12mm,
   margin=7mm,
   margindistance=2mm,
   header=1.5\bodyfontsize,
   headerdistance=4pt,
   footer=0pt,
   footerdistance=0pt,
   height=middle,
   width=middle,
   location=middle]
```



If you want to look at your page layout you can type the command \showframe and process one page or the whole file. The areas are shown in a number of frames.

The command \showsetups shows the values of the parameters. A combination of both commands is \showlayout.

The values of the layout parameters are available as commands. This enables you to work more accurately when defining measures of columns, figures and tables. A few of these parameters are explained in table 30.1.

Commands	Meaning
\makeupwidth	width of the typesetting area
\makeupheight	height of the typsetting area
\textwidth	width of the text area
\textheight	height of the text area

Table 30.1 A few parameters as commands

It might be a little confusing, but what is the difference between \makeupwidth and \textwidth? In most cases these two commands hold the same value. However if you use e.g. columns, then the \textwidth contains the width of the column. On the other hand \makeupwidth always carries the value of the whole width of the text area.

If you want to define the width of a column or the height of a figure you can do it relative to the \textwidth or \textheight. Changes in this width or height will alter columns and figures proportionally.

```
\startplacefigure
  [location=here,
   reference=fig:stepgable,
   title={A step gable}]
  {\externalfigure[excursion-19][width=.4\makeupwidth]}
\stopplacefigure
```

This would after processing become figure 30.4.

Figure 30.4 A step gable

The other available values are (shown with \showsetups):

```
\paperheight           845.0468pt  29.7000cm
\paperwidth            597.5079pt  21.0000cm
\printpaperheight      845.0468pt  29.7000cm
\printpaperwidth       597.5079pt  21.0000cm
\topspace               42.6791pt   1.5000cm
\backspace              64.0187pt   2.2500cm
\makeupheight          759.6886pt  26.7000cm
\makeupwidth           462.3573pt  16.2500cm
\topheight               0.0000pt   0.0000cm
\topdistance             0.0000pt   0.0000cm
\headerheight           28.4527pt   1.0000cm
\headerdistance         14.2264pt   0.5000cm
\textheight            660.1040pt  23.2000cm
\footerdistance         14.2264pt   0.5000cm
\footerheight           42.6791pt   1.5000cm
\bottomdistance          0.0000pt   0.0000cm
\bottomheight            0.0000pt   0.0000cm
\leftedgewidth           0.0000pt   0.0000cm
\leftedgedistance        0.0000pt   0.0000cm
\leftmarginwidth        56.9055pt   2.0000cm
\leftmargindistance     14.2264pt   0.5000cm
\textwidth             462.3573pt  16.2500cm
\rightmargindistance    14.2264pt   0.5000cm
\rightmarginwidth       56.9055pt   2.0000cm
\rightedgedistance       0.0000pt   0.0000cm
\rightedgewidth          0.0000pt   0.0000cm

\bodyfontsize            9.0000pt   0.3163cm
\lineheight             11.6634pt   0.4099cm

\strutheightfactor             .72
```

\strutdepthfactor	.28
\topskipfactor	1.0
\maxdepthfactor	0.4

The parameter values have a global effect and are default throughout the document. Nevertheless you might want to make slight changes in the page design for a number of pages.

```
\adaptlayout[21,38][height=+0.5cm]
```

In this case page 21 and 38 have a height of `textheight` + 0.5 cm.

It is advisable not to use these local changes too often. It is always better to alter the text than to change the page layout.

31 Backgrounds in page areas

31

The page background can be set, with

```
\setupbackgrounds   [...,...]   [...,...]   [..,..=..,..]
                                  OPT
```

The first two bracket pairs are used to define the page areas. The last bracket pair is used for set up.

Figure 31.1 The page areas defined in `\setupbackgrounds`

If you want to have backgrounds in the gray areas of the page layout of figure 31.1 you type

```
\setupbackgrounds
  [header,text,footer]
  [leftmargin,text,rightmargin]
  [background=color,
   background=gray]
```

The edge areas in figure 31.1 are meant for use in screen documents. The white areas at the top and the bottom can also be used in paper documents.

32 Background in paragraphs

To emphasize a paragraph you can use backgrounds. A background is set with the command pair `\starttextbackground ... \stoptextbackground`.

```
\starttextbackground [.1.] [..,..=2..,..] ... \stoptextbackground
                                OPT
```

An example can illustrate the use

```
\setuptextbackground
  [corner=round,frame=on,
   location=paragraph,
   leftoffset=.5\bodyfontsize,
   rightoffset=.5\bodyfontsize,
   topoffset=3pt,
   bottomoffset=8pt]
\starttextbackground
Hasselt has produced a number of well known people. Only recently
it turned out that Kilian van Rensselaer played a prominent role
in the foundation of the State of New York.
\stoptextbackground
```

This would be displayed as

Hasselt has produced a number of well known people. Only recently it turned out that Kilian van Rensselaer played a prominent role in the foundation of the State of New York.

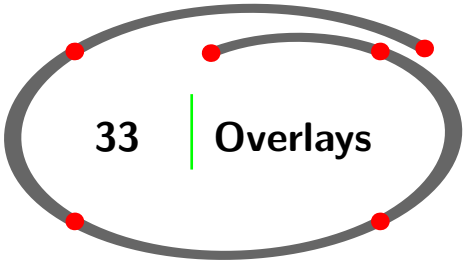
Backgrounds can span multiple pages.

You can vary the display of the backgrounds with

```
\setuptextbackground   [...,...]   [..,..=..,..]
                          OPT
```

You can even define your own text backgrounds with

```
\definetextbackground   [...]   [...]   [..,..=..,..]
                                  OPT             OPT
```



33

33.1 Introduction

CONTEXT has a very powerful mechanism called overlays. This allows you to put graphics or texts stacked on top of each other. The mechanism is available in any environment which has a `background` key. This is e.g. framed, headers, all document areas (see in chapter 30, in figure 30.1) and even paragraphs.

There is a tutorial on the *CONTEXT WIKI* about the use of graphics in CONTEXT including extended examples of using overlays and layers. You can find it under *Graphics and media/Tutorials/Graphical programming with METAPOST and METAFUN*.

33.2 Advertisement in front of the bakery

The bakery in Hasselt will tomorrow (morgen) have a new batch of 'Hasselter juffers' for sale with promotion (aanbieding). – They own a blackboard for advertising in front of the bakery. This could look as shown in figure 33.1.

First we need to define the overlay with `\defineoverlay`. We can give contents to the overlay directly after the name of it.

```
\defineoverlay   [...,...]   [...]   [...]
                                OPT
```

```
\defineoverlay
  [Juffers]
  [\color[yellow]
  {\bfc Hasselter juffers}]

\framed
 [frame=on,
  rulethickness=2pt,
  framecolor=red,
  background={color,
  Juffers,foreground},
  backgroundcolor=black,
  foregroundcolor=white,
  width=0.45\makeupwidth,
  height=0.35\makeupheight,
```

```
  offset=10pt,
  style=\bfa]
 {\bfb Morgen!
```

```
\vfill
 aanbieding}
```

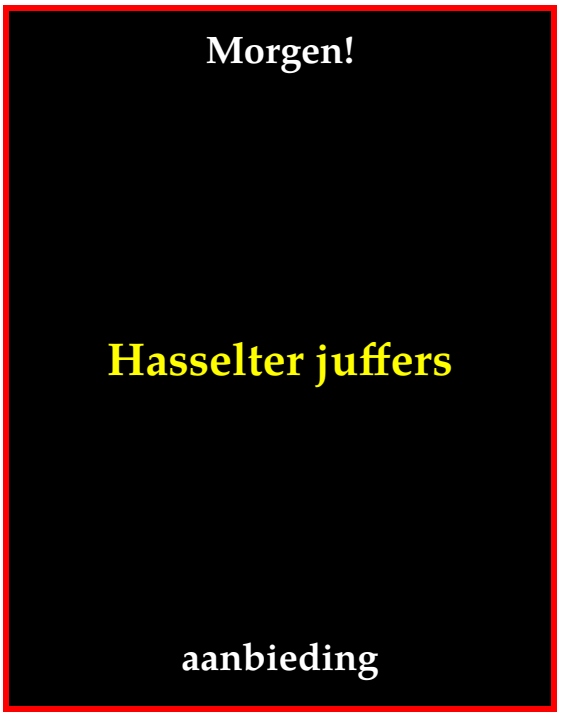


Figure 33.1 The blackboard advertisement

Note the background key. The sequence of the list is indicating how the different overlays are assembled. The sequence is from back to front. The color key is needed, if we want to use a background color as in this example.

We have a black background, yellow text on top of the background and white text in the foreground.

33.3 A picture in an overlay

One can also add a picture to the background and use the foreground for placing text. As we demonstrate in the following example. The result is shown in figure 33.2.

```
\defineoverlay
  [Drawbridge]
  [{\externalfigure
    [excursion-01]
    [height=0.45\textheight]}]

\startplacefigure
  [location=here,
   reference=fig:bridge-overlay,
   title=Background picture and foreground text]
  \framedtext
    [frame=off,background=Drawbridge,
     foregroundcolor=yellow,align=center,
     style=\bfb,width=0.45\makeupwidth,
     height=0.45\textheight]
```

```
    {Drawbridge in Hasselt}
\stopplacefigure
```

Figure 33.2 Background picture and foreground text

33.4 A picture as a background of a page

It is also easy to put a picture into the background of the whole page:

```
\defineoverlay
  [Mill]
  [{\externalfigure
    [excursion-23]
    [width=0.6\makeupwidth]}]

\setupbackgrounds[text][text][background=Mill]
```

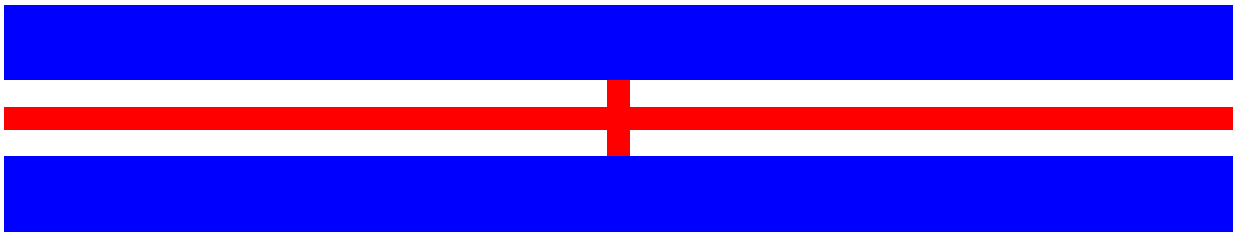
33.5 The flag of Hasselt

The flag of Hasselt could be defined with framed and a number of overlays:

```
\defineoverlay
  [verticalbar]
  [{\blackrule[height=10mm,width=.3cm,color=red]}]

\defineoverlay
  [horizontalbar]
  [{\blackrule[height=.3cm,width=\makeupwidth,color=red]}]

\framed
```

```
[width=\makeupwidth,
 height=3cm,
 background={color,foreground,verticalbar,horizontalbar},
 offset=overlay, backgroundcolor=blue,frame=off]
{\blackrule[width=\makeupwidth,height=10mm,color=white]}
```

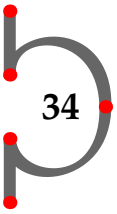
This will become:

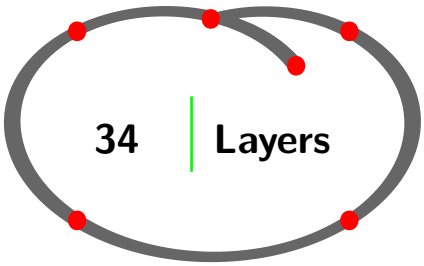


33.6 The page number of this manual

The page number in this manual has a background with an overlay where the `\MPclipFive` command takes care of drawing the image with METAPOST.

```
\defineoverlay
  [NumberBackground]
  [\MPclipFive{\overlaywidth}{\overlayheight}{30pt}{5pt}]

\setuppagenumbering
  [location={footer,middle},
   command=\NumberCommand]

\def\NumberCommand#1%
  {\framed
     [background=NumberBackground,
      frame=off,
      offset=6pt]
     {\lower.5\dp\strutbox\hbox spread 60pt{\hss#1\hss}}}
```





We discussed already the `overlay` mechanism. The `layer` mechanism is a similar concept intended also for stacking information on top of each other but not depending on the background key of a command. Layers are meant to place information at any location on a page. There are two versions of the mechanism, one is combined with the `\framed` environment.

On the *CONTEXT WIKI* there is an extensive tutorial on the layer mechanism and its use under *Document_layout_and_layers/Layers*. Here we can only lift the tip of the veil.

Layers are normally anchored at the top left corner of the typesetting area. You can move them to any place of the paper.

In order to use a layer it must be defined first. The command used for this purpose is

```
\definelayer [.1.] [.2.] [..,..=3..,..]
                     OPT        OPT
```

When defining a layer CONTEXT immediately defines also an overlay with the same name. This can come in handy when placing the defined layer in a command with the background key.

34.1 A logo on a page

In this example we will use a layer as a *page* background. This means that the layer will be anchored at the top left corner of the paper.

We will call the layer 'Logo'.


```
\definelayer
  [Logo]
  [hoffset=0mm,
   voffset=0mm,
   x=0mm,
   y=0mm,
   width=\paperwidth,
   height=\paperheight,
   state=start]
```

You see that the layer has a name and there are the dimensions. The `hoffset` and `voffset` dimensions in this example tell the distance of the layer from the top left corner of the *paper*. The type `x` and `y` values tell the offset of the layer's content from the top left corner of the *layer*. The `state` key can have different values as shown in table 34.1.

State	Explanation
start	layer appears only on the current page
stop	layer doesn't show up
repeat	layer prints on all pages
next	layer appears on the following page

Table 34.1 States of a layer

Now you can fill the layer.

```
\setlayer [.1.] [.2.] [..,..=3..,..] {.4.}
                  OPT        OPT
```

```
\setlayer
  [Logo]
```

```
  [x=\makeupwidth+3mm,
   y=2mm]
   {\externalfigure[excursion-27][height=17mm]}
```

With `\setlayer` you start filling the layer with the given name. `x` and `y` indicate the position of the content in relation to the top left corner of the layer. Between the braces there is the actual content.

The layer's content can be used as a background of the page

```
\setupbackgrounds[page][state=start,background=Logo]
```

If the layer's content should occur on the following (all) pages, the `state` key of the layer definition is `state=repeat`.

Stopping the repetition of the layer placement is done with

```
\setupbackgrounds[state=stop]
```

34.2 Estate sale advertisement

When an estate is sold in The Netherlands through an estate agency, normally the building gets a poster positioned at a good visible spot. Such a poster could look as follows. There are two text lines 'TE KOOP' (FOR SALE) and 'Makelaardij Lensing' the estate agency Lensing.

When the estate is sold, the poster remains with the indication that it is sold (verkocht).

All parts of this example are put into a series of buffers. For the figure 34.1 the buffer `All-Sale` is called two times where for the right figure also the `Sold` buffer is added.

```
\startbuffer
  [Layer-Definition]

\definelayer
  [Estatesale]
  [x=0mm,
   y=0mm,
   width=67mm,
   height=85mm,
   state=repeat]
\stopbuffer

\startbuffer
  [Framed-Definition]

\defineframedtext
  [Advertisement]

\setupframedtext
  [Advertisement]
  [width=67mm,
   height=85mm,
   align=middle,
   style=\bfa,
   foregroundcolor=blue,
   frame=off,
   offset=0pt]
\stopbuffer
```

```
\startbuffer[Fill-Text]
\setlayer
  [Estatesale]
  [x=-4mm,
   y=4mm]
  {\Advertisement{TE KOOP}}

\setlayer
  [Estatesale]
  [y=66mm,
   x=-4mm]
  {\Advertisement
    {Makelaardij Lensing \par Hasselt}}
\stopbuffer

\startbuffer[Fill-Graphic]
\setlayer
  [Estatesale]
  [hoffset=10mm,
   voffset=11mm]
  {\externalfigure
    [excursion-23]
    [width=41mm]}
\stopbuffer

\startbuffer[Sold]
\setlayer
```

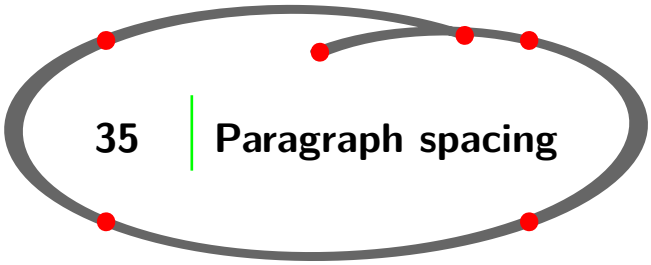
```
[Estatesale]
[hoffset=3mm,
 voffset=17mm]
{\rotate[rotation=20]{%
  \framedtext
   [align=center,
    width=52mm,
    style=\bfd,
    background=color,
    backgroundcolor=white,
    foregroundcolor=blue,
     frame=on]
    {Verkocht}}}
\stopbuffer

\startbuffer[All-Sale]
\framed
  [width=60mm,
   height=85mm,
   background=Estatesale]
   {}
\stopbuffer
```

Now that all is set, you can place the advertisement in two figures next to each other. The result is given in figure 34.1.

```
\getbuffer[Layer-Definition]
\getbuffer[Framed-Definition]
\getbuffer[Fill-Text]
\getbuffer[Fill-Graphic]

\startplacefigure
  [location=here,
   reference=fig:estatesale,
   title=Advertisement for selling an estate]
  \startcombination[2*1]
    {\getbuffer[All-Sale]}{During selling}
    {\getbuffer[Sold]
     \getbuffer[All-Sale]}{After selling}
  \stopcombination
\stopplacefigure
```

During selling After selling

Figure 34.1 Advertisement for selling an estate



35 Paragraph spacing

35.1 Introduction

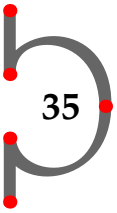
In TEX and CONTEXT the most important unit of text is the paragraph. You can start a new paragraph by

– an empty line
– the TEX command \par
– by enclosing the paragraph in \startparagraph ... \stopparagraph

In your ASCII input file you should use empty lines as paragraph separators. This will lead to a readable, clearly structured and well organized file and will prevent mistakes.

In situations where a command requires to mark the end of the paragraph explicitly you should use \par.

```
During one of the wars Hasselt lay under siege. After some
time the city was famine stricken, everything edible was
eaten. Except for one cow. The cow was kept alive and
treated very well. \par
Once a day the citizens of Hasselt took the cow for a walk
on the ramparts. The besiegers saw the well fed cow and
became very discouraged. They broke up their camps and
Hasselt was saved. \par
In the Hoogstraat in Hasselt there is a stone tablet with a
representation of the cow that commemorates the siege and
the shrewdness of the citizens of Hasselt.
```



This could also be typed without \par commands using a empty lines instead.

```
During one of the wars Hasselt lay under siege. After some
time the city was famine stricken, everything edible was
eaten. Except for one cow. The cow was kept alive and
treated very well.

Once a day the citizens of Hasselt took the cow for a walk
on the ramparts. The besiegers saw the well fed cow and
became very discouraged. They broke up their camps and
Hasselt was saved.

In the Hoogstraat in Hasselt there is a stone tablet with a
representation of the cow that commemorates the siege and
the wisdom of the citizens of Hasselt.
```

35.2 Paragraph formatting

In a situation in which you would like to change the appearance of a paragraph you have tools to do that

```
\defineparagraph   [..=1..]   [..=2..]   [..,..=3..,..]
                                 OPT            OPT
```

```
\setupparagraph   [...=1...]   [..,..=2..,..]
                      OPT
```

```
\defineparagraph[Fairy-Tail]
\setupparagraph[Fairy-Tail][style=\ss,color=blue]

During one of the wars Hasselt lay under siege. After some
time the city was famine stricken, everything edible was
eaten. Except for one cow. The cow was kept alive and
treated very well.

\startparagraph[Fairy-Tail]
Once a day the citizens of Hasselt took the cow for a walk
on the ramparts. The besiegers saw the well fed cow and
became very discouraged. They broke up their camps and
Hasselt was saved.
\stopparagraph

In the Hoogstraat in Hasselt there is a stone tablet with a
representation of the cow that commemorates the siege and
the wisdom of the citizens of Hasselt.
```


During one of the wars Hasselt lay under siege. After some time the city was famine stricken, everything edible was eaten. Except for one cow. The cow was kept alive and treated very well.

Once a day the citizens of Hasselt took the cow for a walk on the ramparts. The besiegers saw the well fed cow and became very discouraged. They broke up their camps and Hasselt was saved.

In the Hoogstraat in Hasselt there is a stone tablet with a representation of the cow that commemorates the siege and the wisdom of the citizens of Hasselt.

35.3 Inter paragraph spacing

The vertical spacing between paragraphs can be specified by

```
\setupwhitespace   [...=*...]
                       OPT
```

This document is produced with `\setupwhitespace[medium]`.

When inter paragraph spacing is specified there are two commands available that are seldom needed

```
\blank[nowhite]
\blank[white]
```

When a paragraph consists of a horizontal line or a framed text like this

Ridderstraat 27, 8061 GH Hasselt

Sometimes spacing is suboptimal. For that purpose you could carry out a correction with

\startlinecorrection [...,*,...] ... \stoplinecorrection
OPT

So if you would type

```
\startlinecorrection
  \framed{Ridderstraat 27, 8061GH Hasselt}
\stoplinecorrection
```

you will get a better output. Only use these commands if really needed!

Ridderstraat 27, 8061GH Hasselt

Another command to deal with vertical spacing is

\blank [...,*,...]
OPT

The blank command has a large set of options relating to all kind of situations where whitespace is involved. The bracket pair is optional and within the bracket pair you can type the amount of spacing. Keywords like `small`, `medium` and `big` are related to the font size.

```
In official writings Hasselt always has the affix Ov. This is an
abbreviation for the province of \Emph{Overijssel}.
\blank[2*big]
The funny thing is that there is no other Hasselt in the Netherlands.
So it is redundant.
\blank
The affix is a leftover from the times when the Netherlands and
Belgium were one country under the reign of King Philip II of Spain.
\blank[2*big]
Hasselt in Belgium lies in the province of Limburg. One wonders whether
the Belgian people write Hasselt (Li) on their letters.
```

The command `\blank` without the bracket pair is the default space.

The example would become:

In official writings Hasselt always has the affix Ov. This is an abbreviation for the province of *Overijssel*.

The funny thing is that there is no other Hasselt in the Netherlands. So it is redundant.

The affix is a leftover from the times when the Netherlands and Belgium were one country under the reign of King Philip II of Spain.

Hasselt in Belgium lies in the province of Limburg. One wonders whether the Belgian people write Hasselt (Li) on their letters.

The default spacing can be set up with

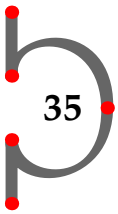
```
\setupblank   [...,*,...]
                 OPT
```

If you want to suppress vertical spacing you can use:

```
\startpacked   [.*.] ... \stoppacked
                 OPT
```

In this manual the whitespace is set to `medium`. In the next situation this set up is ignored and the lines are packed.

```
\startpacked
Hasselt (Ov) lies in Overijssel.

Hasselt (Li) lies in Limburg.

Watch out: we talk about Limburg in Belgium. There is
also a Dutch Limburg.
\stoppacked
```



This will become:

Hasselt (Ov) lies in Overijssel.
Hasselt (Li) lies in Limburg.
Watch out: we talk about Limburg in Belgium. There is also a Dutch Limburg.

It is not hard to imagine why there is also

```
\startunpacked ... \stopunpacked
```

You can force vertical space with `\godown`. The distance is specified within the brackets.

```
\godown   [.*.]
```

Try not to use this command. It is always better to use the `\setup ...` commands to set up your spacing model.

35.4 Whitespace before and after text components

Most text components that are coded with CONTEXT have a `\setup ...` command with which you can define the whitespace before and after that component.

```
\setupitemize
    [before=,after=]

\setuphead
```

```
    [chapter]
    [before=,after=]

\setupframedtexts
    [before=,after=]
```

The use of the `\setup ...` commands prevents you from having to code whitespaces throughout your TEX document. This would lead to unreadable sources and inconsistent use of whitespace.

35.5 Skipping space

You can introduce horizontal and vertical space with `\hskip` and `\vskip` commands.

Try to avoid these commands in your text. It will probably lead to inconsistent spacing.

35.6 Indentation

You can set up the amount of the indentation with:

```
\setupindenting   [...,*,...]
                      OPT
```

A reasonable indentation is provided by

```
\setupindenting[yes]
```

This will lead to indented paragraphs. By default, indentation after white space (as issued by `\blank`) is suppressed.

When for instance you say `\setupindenting[never]`, from that position in the text onwards indentation will be suppressed. Saying `\setupindenting[no]`, only influences the next paragraph.

By default CONTEXT does not indent paragraphs. If you want indentation of paragraphs you will have to issue the above presented setup-command.

However you also can define your own indentation scheme by issuing the command

```
\defineindenting   [...,1,...]   [...,2,...]
```

```
\defineindenting[SpecialIndenting][medium,always]
```

Later in the document you might want to change the settings. So you use e.g.

```
\setupindenting[SpecialIndenting,none]
```

You can then start a piece of text with this setting by using

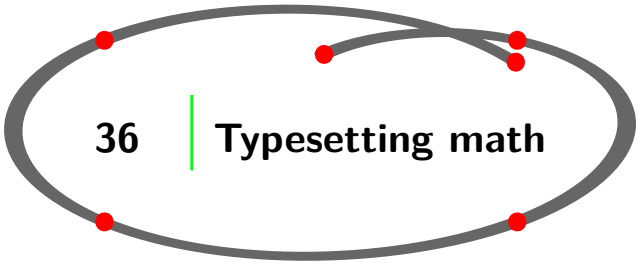
```
\startindentedtext[SpecialIndenting]

...

\stopindentedtext
```

If you choose to use indentations and at a certain place you explicitly *do not* want to indent, you can say

```
\noindentation
```

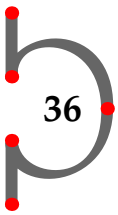
`\noindentation` influences only the next following paragraph. In some `\setup ...` commands you can set the parameter `indent=yes`. This means that the paragraph that follows the text component will be indented.

```
\setupitemize[indentnext=yes]
```



36.1 Introduction

In this section we spend a large number of pages on math because CONTEXT is based on TEX which is famous for its math typesetting. If math is not your thing and you don't need it in your document you can always skip this section.



The math environment used by CONTEXT has been overhauled completely. There have been a great number of improvements, sometimes leading also to a changed way of coding math in CONTEXT. It is beyond this manual to go into the depth of the possibilities and the details. We advise you to do some further reading on typesetting formulas with CONTEXT in *Mathematics in CONTEXT* written by Mikael Sundqvist and Hans Hagen. The following pages are completely derived from the afore mentioned manual.

36.2 Typesetting math

Normally different conventions are applied for typesetting normal text and math text. These conventions are 'known' by CONTEXT LMTX and applied accordingly when generating a document. We can rely on CONTEXT LMTX for delivering high quality math output.

36.2.1 Conventions

A number of conventions for math are:

1. Characters are typeset in *math italic* (don't confuse this with the normal *italic characters* in a text font).
2. Symbols like Greek characters (α, χ) and math symbols ($\leq$, $\geq$, $\in$) are used.
3. Spacing will differ from normal spacing.
4. Math expressions have a different alignment than running text.
5. The sub- and superscripts are downsized automatically, like in a_c^b.
6. Certain symbols have different appearances in the inline and display mode.

36.2.2 Math modes

When typesetting math you have to work in the so called math mode in which math expressions can be defined in CONTEXT. Math mode has two alternatives: text mode (inline math) and display mode (displayed math). Math in text mode can be activated by `\im`, while display mode is activated by `\dm`. These commands are rather simple and replace basically the old `$ ... $` and `$$ ... $$` commands. Although the latter commands still work in CONTEXT it is discouraged to use them anymore. A better command for inline math typesetting is: `\m` allowing for giving some optional arguments with the command.

```
\m[color=blue]{a^2 + b^2 = c^2}
```

This becomes after type setting: $a^2 + b^2 = c^2$

In CONTEXT displayed math is activated with the `\startformula ... \stopformula` command pair in order to have more grip on vertical spacing around the formula. The use of `{}` (grouping) in mathematical expressions are essential for separating operations in a given formula.

There are naturally three different sizes used in math, as seen in a^{b^c}. You usually do not have to care about this, but if you want to enforce the size in sub/superscripts you can use `\scriptstyle` and if you want to enforce the size in the next level, use `\scriptscriptstyle`.

Symbols like `\int` $\int$ and `\sum` $\sum$ will have a different form in text and display mode. If we type `\m{\sum_{n=1}^{m}}` or `\m{\int_{-\infty}^{+\infty}}` we will get $\sum_{n=1}^{m}$ and $\int_{-\infty}^{+\infty}$. But when you type:

```
\startformula
  \sum_{n=1}^{m} \quad \mtext{and} \quad
  \int_{-\infty}^{+\infty}
\stopformula
```

to get display mode, you get:

$$\sum_{n=1}^{m} \quad \text{and} \quad \int_{-\infty}^{+\infty}$$

In the previous examples super- and subscripts are used. For superscript the caret (^) is used and for subscript the underscore (_) is applied. If a super- or subscript is more than one character long, grouping with `{}` is required.

36.2.3 Fractions

For typesetting fractions there is the command `\frac` which takes two arguments the numerator and the denominator. For $\frac{a}{1+b} + c$ we type for instance `\m{\frac{a}{1+b}+c}`. The `\frac` command has a couple of siblings. `\dfrac`, `\tfrac`, `\sfrac` which force display size, text size and script size respectively. There is also `\vfrac` which replaces the horizontal dividing bar into a slanted bar.

```
\startformula
  \frac{a}{b} = \dfrac{a}{b}
              = \tfrac{a}{b}
              = \sfrac{a}{b}
              = \vfrac{a}{b}
\stopformula
```

$$\frac{a}{b} = \frac{a}{b} = \frac{a}{b} = \tfrac{a}{b} = a/b$$

The `\vfrac` version looks sometimes better in running text a/b or in situations where a fraction occurs inside another fraction.

```
\startformula
  a_0+{\frac{a}{a_1+\frac{1}{a_2}}}
\stopformula
```

$$a_0 + \frac{a}{a_1 + \frac{1}{a_2}}$$

but prefer:

```
\startformula
  a_0 + {\frac{a}{a_1 + \vfrac{1}{a_2}}}
\stopformula
```

to obtain:

$$a_0 + \frac{a}{a_1 + {}^{1}\!/_{a_2}}$$

36.2.4 Fences

Fences, also known as paired delimiters, are a pair of symbols to visually group parts of a mathematical expression.

```
\startformula
  \fenced[parenthesis] {1 + \frac{a}{b}} \mtp{}
  \fenced[bracket]     {F(x)^2}_a^b      \mtp{}
  \fenced[brace]       {\frac{x}{n}}     \mtp{}
  \fenced[angle]       {f ,g}
\stopformula
```

$$\left(1+\frac{a}{b}\right) \quad \left[F(x)^2\right]_a^b \quad \left\{\frac{x}{n}\right\} \quad \left\langle f, g \right\rangle$$

Another possibility is to use the traditional fencing commands `\left` and `\right`:

```
\startformula
  \left( 1 + \frac{a}{b}   \right)       \mtp{}
  \left[ F(x)^2            \right]_a^b   \mtp{}
  \left{ \frac{x}{n}       \right}       \mtp{}
  \left\langle f, g        \right\rangle
\stopformula
```

$$\left(1+\frac{a}{b}\right) \quad \left[F(x)^2\right]_a^b \quad \left\{\frac{x}{n}\right\} \quad \left\langle f, g \right\rangle$$

Further aspects of fences are discussed in the manual *Mathematics in CONTEXT*.

36.2.5 Matrices

For presenting a simple matrix one can use

```
\startformula
  \startmathmatrix
    \NC a \NC b \NR
    \NC c \NC d \NR
  \stopmathmatrix
\stopformula
```

$$\begin{matrix} a & b \\ c & d \end{matrix}$$

Often such matrices are surrounded with fences

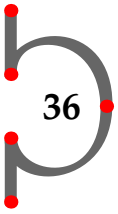
```
\startformula
  \startmathmatrix[fences=bracket]
    \NC a \NC b \NR
    \NC c \NC d \NR
  \stopmathmatrix
\stopformula
```

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

A number of fenced matrices are predefined. Using those looks as follows:

```
\startformula
  \startnamedmatrix[matrix:bars]
    \NC a \NC b \NR
    \NC c \NC d \NR
  \stopnamedmatrix
  =
  \bmatrix{a,b;c,d}
\stopformula
```

$$\begin{vmatrix} a & b \\ c & d \end{vmatrix} = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$



The predefined fences for `\startnamedmatrix ... \stopnamedmatrix` are summarized in table 36.1. As shown in the a forehead shown example there are 'simple commands' giving in the similar results than with the full commands. They save typing but do not add to the readability of the code.

Instance	Simple command
matrix:bars	vmatrix
matrix:braces	bracematrix
matrix:brackets	bmatrix
matrix:doublebar	vvmatrix
matrix:groups	gmatrix
matrix:none	matrix
matrix parentheses	pmatrix
matrix:triplebar	vvvmatrix

Table 36.1 Predefined named matrix fences

36.2.6 Accents

There is a set of accents predefined. They can be put on top of characters e.g. `\acute{x}` $\acute{x}$. Table 36.2 shows the details.

Symbol name	Typeset symbol	Symbol name	Typeset symbol
\grave	$\grave{x}$	\acute	$\acute{x}$
\hat	$\hat{x}$	\tilde	$\tilde{x}$
\bar	$\bar{x}$	\breve	$\breve{x}$
\dot	$\dot{x}$	\ddot	$\ddot{x}$
\dddot	$\dddot{x}$	\ddddot	$\ddddot{x}$
\ring	$\mathring{x}$	\check	$\check{x}$
\overleftharpoon	$\overleftharpoon{x}$	\overrightharpoon	$\overrightharpoon{x}$

Table 36.2 Math accents

When an accent has to be covering more than one character we have the so called wide variants as given in table 36.3.

Symbol name	Typeset symbol	Symbol name	Typeset symbol
\widehat	$\widehat{x+y}$	\widecheck	$\widecheck{x=y}$
\widebar	$\overline{x+y}$	\wideunderbar	$\underline{x+y}$
\wideoverleftharpoon	$\overleftharpoon{x+y}$	\wideoverrightharpoon	$\overrightharpoon{x+y}$
\wideoverleftarrow	$\overleftarrow{x+y}$	\wideoverrightarrow	$\overrightarrow{x+y}$
\wideoverleftrightarrow	$\overleftrightarrow{x+y}$	\wideunderleftrightarrow	$\underleftrightarrow{x+y}$
\wideunderleftharpoon	$\underleftharpoon{x+y}$	\wideunderrightharpoon	$\underrightharpoon{x+y}$
\wideunderleftarrow	$\underleftarrow{x+y}$	\wideunderrightarrow	$\underrightarrow{x+y}$
\widetilde	$\widetilde{x+y}$		

Table 36.3 Wide accents

```
\startformula
 \check{u} + \widecheck{u} + \widecheck{uv} + \widecheck{uvw}
 \breakhere
 + \widecheck{uvwx} + \widecheck{abcdefghijklmn...}
 \breakhere
 \hat{u} + \widehat{u} + \widehat{uv} + \widehat{uvw}
 + \widehat{uvwx} + \widehat{abcdefghijklmn...}
 \breakhere
 \tilde{u} + \widetilde{u} + \widetilde{uv} + \widetilde{uvw}
 \breakhere
 + \widetilde{uvwx} + \widetilde{abcdefghijklmn...}
\stopformula
```

$$\check{u} + \widecheck{u} + \widecheck{uv} + \widecheck{uvw}$$
$$+ \widecheck{uvwx} + \widecheck{abcdefghijklmn...}$$
$$\hat{u} + \widehat{u} + \widehat{uv} + \widehat{uvw} + \widehat{uvwx} + \widehat{abcdefghijklmn...}$$

$$\tilde{u} + \tilde{u} + \widetilde{uv} + \widetilde{uvw}$$
$$+ \widetilde{uvwx} + \widetilde{abcdefghijklmn...}$$

The collection of extensible arrows/stackers hereunder can be placed on top of an expression of there under. Replacing the `\over...` part with `\under ...` the arrow will be placed under the expression.

36.2.7 Stackers and annotations

Stackers and annotations are decorative elements put on top or below a snipped of a formula. An overview is given in table 36.4.

Symbol name	Typeset symbol	Symbol name	Typeset symbol
`\overleftarrow`	$\overleftarrow{x+y}$	`\overrightarrow`	$\overrightarrow{x+y}$
`\overtwoheadleftarrow`	$\overleftarrow{x+y}$	`\overtwoheadrightarrow`	$\overrightarrow{x+y}$
`\overlefttailarrow`	$\overleftarrow{x+y}$	`\overrighttailarrow`	$\overrightarrow{x+y}$
`\overleftbararrow`	$\overleftarrow{x+y}$	`\overrightbararrow`	$\overrightarrow{x+y}$
`\overlefthookarrow`	$\overleftarrow{x+y}$	`\overrighthookarrow`	$\overrightarrow{x+y}$
`\overleftharpoondown`	$\overleftarrow{x+y}$	`\overrightharpoondown`	$\overrightarrow{x+y}$
`\overleftharpoonup`	$\overleftarrow{x+y}$	`\overrightharpoonup`	$\overrightarrow{x+y}$
`\overLeftarrow`	$\overleftarrow{x+y}$	`\overRightarrow`	$\overrightarrow{x+y}$
`\overLeftbararrow`	$\overleftarrow{x+y}$	`\overRightbararrow`	$\overrightarrow{x+y}$
`\overLeftrightarrow`	$\overleftarrow{x+y}$		

Table 36.4 Math stackers

Annotations can be achieved with different approaches. We present here the `\mathannotation` method.

```
\startformula
  \mathannotation[bottom={= mx}]
  {\underbrace{x + x + \ldots + x}} +
  \mathannotation[bottom={= ny}]
  {\underbrace{y + y + \ldots + y}}
  = mx + ny
\stopformula
```

$$\underbrace{x + x + \ldots + x}_{= \mathrm{mx}} + \underbrace{y + y + \ldots + y}_{= \mathrm{ny}} = mx + ny$$

36.2.8 Big operators

In CONTEXT there are four groups of predefined big operators: integrals, summations, products and operators. They can be setup with

```
\setupmathoperators  [...,...]  [..,..=..,..]
                       OPT
```

There is a big group of different integrals. One needs however to pay attention, that not all of them are available in all fonts. The summations group contain three predefined signs and the product group contains two signs. The operators group contains 21 different symbols.

Here follow some examples

```
\m{ \int_0^1 f(x) \dd x \neq \sum_{k=1}^n a_k \neq
    \prod_{k=1}^n a_k \neq \bigoplus_{k=1}^n a_k} \crlf
\dm{\int_0^1 f(x) \dd x \neq \sum_{k=1}^n a_k \neq
    \prod_{k=1}^n a_k \neq \bigoplus_{k=1}^n a_k}
```

$\int_0^1 f(x)\,dx \neq \sum_{k=1}^n a_k \neq \prod_{k=1}^n a_k \neq \bigoplus_{k=1}^n a_k$

$$\int_0^1 f(x)\,dx \neq \sum_{k=1}^n a_k \neq \prod_{k=1}^n a_k \neq \bigoplus_{k=1}^n a_k$$

As you can see the limits in displayed math are to the right of the integral. One can change this by

```
\setupmathoperators
  [integrals]
  [method=auto]
```

Then the above example looks like this

$\int_0^1 f(x)\,dx \neq \sum_{k=1}^n a_k \neq \prod_{k=1}^n a_k \neq \bigoplus_{k=1}^n a_k$

$$\int_0^1 f(x)\,dx \neq \sum_{k=1}^n a_k \neq \prod_{k=1}^n a_k \neq \bigoplus_{k=1}^n a_k$$

36.2.9 Radicals

Radicals in math are obtained with the commands `\sqrt` or `\root`. These can have an argument if the root is not a square root. Another way of representing a (square) root is rising the expression to the power of the fraction:

```
\startformula
  \sqrt{1 + x} = (1 + x)^{\frac{1}{2}} \breakhere
  \root[n=n]{1 + x} = \root[n]{1 + x} = \sqrt[n]{1 + x} = (1+x)^{\strut 1/n}
\stopformula
```

$$\sqrt{1+x} = (1+x)^{\frac{1}{2}}$$

$$\sqrt[n]{1+x} = \sqrt[n]{1+x} = \sqrt[n]{1+x} = (1+x)^{1/n}$$

Radicals can have different appearances which can be influenced with

`\setupmathradical` `[...,`$\underset{\texttt{OPT}}{\overset{1}{\ldots}}$`,...]` `[..,..`$\overset{2}{=}$`..,..]`

36.2.10 Text

In case there should appear normal text inside a math-formula the command `\mtext` is used:

```
\startformula
  \mtext{Like this: } a^2 + b^2 = c^2 \breakhere
  n = \underbrace{1 + 1 + \ldots + 1}_{n \mtext{ terms}}
```

```
\stopformula
```

Like this: $a^2 + b^2 = c^2$

$$n = \underbrace{1 + 1 + \ldots + 1}_{n \text{ terms}}$$

There is also `\texthere` which is used as follows

```
\startformula
  1 + 2 - 3
  \breakhere
  \texthere[left]{and}
  4 + 5 + 6 =  7 + 8
\stopformula
```

$$1 + 2 - 3$$

and

$$4 + 5 + 6 = 7 + 8$$

36.2.11 Math functions

Common math functions like sin and tan that have to be typeset in the actual font are predefined functions. Please look at table 36.5 for an overview.

Function name	Typeset function	Function name	Typeset function
\arccos	$\arccos(x)$	\arcsin	$\arcsin(x)$
\arctan	$\arctan(x)$	\arccosh	$\operatorname{arccosh}(x)$
\arcsinh	$\operatorname{arcsinh}(x)$	\arctanh	$\operatorname{arctanh}(x)$
\acos	$\arccos(x)$	\asin	$\arcsin(x)$
\atan	$\arctan(x)$	\arg	$\arg(x)$
\cos	$\cos(x)$	\cosh	$\cosh(x)$
\cot	$\cot(x)$	\coth	$\coth(x)$
\csc	$\csc(x)$	\deg	$\deg(x)$
\diff	$\mathrm{d}(x)$	\dim	$\dim(x)$
\exp	$\exp(x)$	\hom	$\hom(x)$
\ker	$\ker(x)$	\lg	$\lg(x)$
\ln	$\ln(x)$	\log	$\log(x)$
\sec	$\sec(x)$	\sin	$\sin(x)$
\sinh	$\sinh(x)$	\tan	$\tan(x)$
\tanh	$\tanh(x)$		

Table 36.5 Predefined math functions

36.3 Displayed math

36.3.1 Simple formulas

An example of a simple formula is

```
\startformula
  \sum _ {k = 1} ^ n k = \frac {n(n + 1)}{2}
\stopformula
```

$$\sum_{k=1}^{n} k = \frac{n(n+1)}{2}$$

36.3.2 Chain formulas

Alignment in math expressions may need special attention. In multi line expressions we sometimes need to align at the equal sign.

```
\startformula
  2\int __ {-1} ^^ {1} \sqrt {1 - t ^ 2} \dd t
  \alignhere
  =
  2\int __ {-\pi/2} ^^ {\pi/2} \cos ^ 2 x \dd x
  \breakhere
  =
  \int __ {-\pi/2} ^^ {\pi/2} 1 + \cos 2x \dd x
  \breakhere
  = \pi.
\stopformula
```

$$\begin{aligned} 2\int_{-1}^{1} \sqrt{1-t^2}\,dt &= 2\int_{-\pi/2}^{\pi/2} \cos^2 x\,dx \\ &= \int_{-\pi/2}^{\pi/2} 1+\cos 2x\,dx \\ &= \pi. \end{aligned}$$

A different, and often more compact approach, is to typeset the formulas not aligned, but the first one flushed left, the last one flushed right and the rest of them midaligned. This can be done by using `align=slanted`.

36.3.3 Multiple formulas

Punctuation in math has to be considered. There is a section explaining this in *Mathematics in CONTEXT* for reference.

In inline math writing `\im{f(x)=\sin x}, \im{x\in\reals}`, we get $f(x) = \sin x, x \in \mathbb{R}$. The point is, that the comma between the two formulas is taken from the text font. In order to achieve this in displayed math `\mtp` (math text punctuation) is used:

```
\startformula
  f(x) = \sin x \mtp{,}
  x \in \reals  \mtp{.}
\stopformula
```

$$f(x) = \sin x, \quad x \in \mathbb{R}.$$

The following three formulas fit easily in one line and then it is the preferred way of showing them:

```
\startformula
  x = r \sin\theta \cos\phi \mtp{,}
  y = r \sin\theta \sin\phi \mtp{,}
  z = r \cos\theta          \mtp{.}
\stopformula
```

$$x = r \sin\theta \cos\phi, \quad y = r \sin\theta \sin\phi, \quad z = r \cos\theta.$$

However one can easily stack several formulas on top of each other with

```
\startformula
  x = r \sin\theta \cos\phi \mtp{,} \breakhere
  y = r \sin\theta \sin\phi \mtp{,} \breakhere
  z = r \cos\theta          \mtp{.}
\stopformula
```

$$\begin{aligned} x &= r \sin\theta \cos\phi, \\ y &= r \sin\theta \sin\phi, \\ z &= r \cos\theta. \end{aligned}$$

When alignment should be enforced, this can best be done on the first equal sign

```
\startformula
  x \alignhere = r \sin\theta \cos\phi \mtp{,} \breakhere
  y \alignhere = r \sin\theta \sin\phi \mtp{,} \breakhere
  z \alignhere = r \cos\theta          \mtp{.}
\stopformula
```

$$\begin{aligned} x &= r \sin\theta \cos\phi, \\ y &= r \sin\theta \sin\phi, \\ z &= r \cos\theta. \end{aligned}$$

The old method of aligning with `\startalign...\stopalign` is still in place and can be used:

```
\startformula
  \startalign
    \NC x \EQ r \sin\theta \cos\phi \mtp{,} \NR
    \NC y \EQ r \sin\theta \sin\phi \mtp{,} \NR
    \NC z \EQ r \cos\theta          \mtp{.} \NR
  \stopalign
\stopformula
```

$$\begin{aligned} x &= r \sin\theta \cos\phi, \\ y &= r \sin\theta \sin\phi, \\ z &= r \cos\theta. \end{aligned}$$

36.3.4 Cases

Math cases have a lot of options. You can define your one versions with

```
\definemathcases  [..]  [..]  [..,..=..,..]
                          OPT           OPT
```

and influence the appearance with

```
\setupmathcases  [...,...]  [..,..=..,..]
                      OPT
```

An example dealing with the possibility to have enlarged (display style) formulas could look like this

```
\definemathcases
  [Mynewcases]
  [cases]
  [mathstyle=display]

\startformula
  \frac{1}{2} \int f(x) \alignhere =
  \startcases
    \NC  \frac{1}{2} \int \NC x \geq 0 \NR
    \NC -\frac{1}{2} \int \NC x <    0 \NR
  \stopcases
  \breakhere =
  \startMynewcases
    \NC  \frac{1}{2} \int \NC x \geq 0 \NR
    \NC -\frac{1}{2} \int \NC x <    0 \NR
  \stopMynewcases
\stopformula
```

$$\frac{1}{2}\int f(x) = \begin{cases} \frac{1}{2}\int & x \geq 0 \\ -\frac{1}{2}\int & x < 0 \end{cases} = \begin{cases} \frac{1}{2}\int & x \geq 0 \\ -\frac{1}{2}\int & x < 0 \end{cases}$$

36.3.5 Equation labels

CONTEXT always offered the possibility to label equations automatically. This is done by using:

```
\startplaceformula
  [reference=eq:Pythagoras]
  \startformula
    a^2 + b^2 = c^2
  \stopformula
\stopplaceformula
```

```
From \in{Equation}[eq:Pythagoras] it follows \unknown
```

$$a^2 + b^2 = c^2 \tag{36.1}$$

From Equation 36.1 it follows . . .

There is nothing new to the method of referencing the equation (see also in chapter 26). However unlike the number style of the equation between parentheses the reference in the text show only the number. To change this one can define a new referencing command

```
\definereferenceformat [.1.] [.2.] [..,..=3..,..]
                              OPT         OPT
```

```
\definereferenceformat
  [Eqref]
  [left=(,
   right=)]
```

We now can use the `\Eqref`: `From \Eqref{equation }[eq:pythagoras] follows \unknown`

From equation (36.1) follows . . .

If there is a number of formulas combined into a set, each formula can have its own number and also its own reference. You do not need to use `\startplaceformula ... \stopplaceformula` in this case.


```
\startformula
  x \alignhere = r \sin\theta \cos\phi \mtp{,}
    \numberhere[eq:xa] \breakhere
  y \alignhere = r \sin\theta \sin\phi \mtp{,}
    \numberhere[eq:ya]\breakhere
  z \alignhere = r \cos\theta          \mtp{.}
    \numberhere[eq:za]
\stopformula
```

```
In \Eqref{equations }[eq:xa], \Eqref{}[eq:ya] and
\Eqref{}[eq:za] we see \unknown
```

$$x = r\sin\theta\cos\phi, \tag{36.2}$$

$$y = r\sin\theta\sin\phi, \tag{36.3}$$

$$z = r\cos\theta. \tag{36.4}$$

In equations (36.2), (36.3) and (36.4) we see . . .

With the alternative alignment command it would look as follows. Note that the reference is attached to the new line command `\NR`. Using this method of coding the use of `\startplaceformula ... \stopplaceformula` is needed:

```
\startplaceformula
  \startformula
    \startalign
      \NC x \EQ r \sin\theta \cos\phi \mtp{,} \NR[eq:xb]
      \NC y \EQ r \sin\theta \sin\phi \mtp{,} \NR[eq:yb]
      \NC z \EQ r \cos\theta          \mtp{.} \NR[eq:zb]
    \stopalign
```

```
  \stopformula
\stopplaceformula

In \Eqref{equations }[eq:xb], \Eqref{}[eq:yb]
and \Eqref{}[eq:zb] we see \unknown
```

$$x = r \sin\theta \cos\phi, \tag{36.5}$$

$$y = r \sin\theta \sin\phi, \tag{36.6}$$

$$z = r \cos\theta. \tag{36.7}$$

In equations (36.5), (36.6) and (36.7) we see ...

In case that sub-numbering is asked for one can use:

```
\startformula
  \startsubnumberinghere
    x \alignhere = r \sin\theta \cos\phi \mtp{,}
      \numberhere[eq:xc] \breakhere
    y \alignhere = r \sin\theta \sin\phi \mtp{,}
      \numberhere[eq:yc]\breakhere
    z \alignhere = r \cos\theta          \mtp{.}
    \numberhere[eq:zc]
  \stopsubnumberinghere
\stopformula

In \Eqref{equations }[eq:xc], \Eqref{}[eq:yc]
and \Eqref{}[eq:zc] we see \unknown
```


$$x = r \sin\theta \cos\phi, \tag{36.8.a}$$

$$y = r \sin\theta \sin\phi, \tag{36.8.b}$$

$$z = r \cos\theta. \tag{36.8.c}$$

In equations (36.8.a), (36.8.b) and (36.8.c) we see ...

```
\startplaceformula[eq:spheres]
  \startformula
    \startalign
      \NC x \EQ r \sin\theta \cos\phi \mtp{,} \NR[+]
      \NC y \EQ r \sin\theta \sin\phi \mtp{,} \NR[+]
      \NC z \EQ r \cos\theta          \mtp{.} \NR[+]
    \stopalign
  \stopformula
\stopplaceformula

We see in \Eqref{equation }[eq:spheres] \unknown
```

$$x = r \sin\theta \cos\phi, \tag{36.9.a}$$

$$y = r \sin\theta \sin\phi, \tag{36.9.b}$$

$$z = r \cos\theta. \tag{36.9.c}$$

We see in equation (36.9) ...

Obviously the reference is to the whole set of equations, therefore we get the equation number only. If we need to refer to the single equations the coding becomes:

```
\startplaceformula
  \startformula
    \startalign
      \NC x \EQ r \sin\theta \cos\phi \mtp{,} \NR[eq:xd]
      \NC y \EQ r \sin\theta \sin\phi \mtp{,} \NR[eq:yd]
      \NC z \EQ r \cos\theta          \mtp{.} \NR[eq:zd]
    \stopalign
  \stopformula
\stopplaceformula
In \Eqref{equations }[eq:xd], \Eqref{}[eq:yd]
and \Eqref{}[eq:zd] we see \unknown
```

$$x = r \sin\theta \cos\phi, \tag{36.10}$$

$$y = r \sin\theta \sin\phi, \tag{36.11}$$

$$z = r \cos\theta. \tag{36.12}$$

In equations (36.10), (36.11) and (36.12) we see ...

37 Chemical stuff

The chemical module was developed at the end of the previous century and it was the first ConTeXt module that was officially published and documented. It has seen a number of face lifts over the years.

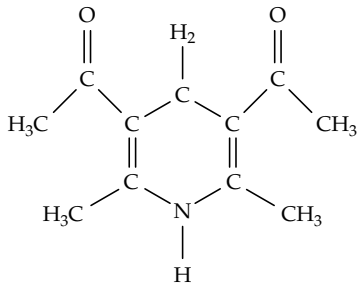
```
\startchemicalformula ... \stopchemicalformula
```

```
\startchemical [.1.] [..,..=..,..] ... \stopchemical
               OPT   OPT
```

```
\chemical [.1.] [...,...] [...,...]
          OPT                OPT
```

```
\setupchemical [...,...] [..,..=..,..]
               OPT
```

Chemical structures may look very impressive.



CONTEXT relies on METAPOST to draw these kind of chemical structures. Although these chemical structures are defined with only very few commands, it takes some practice to get the desired results. This is how the input looks

```
\startchemical[frame=off]
  [scale=small,width=6000,height=6000]
  \chemical[SIX,SB2356,DB14,Z2346,SR36,RZ36]
    [C,N,C,C,H,H_2]
  \chemical[PB:Z1,ONE,Z0,MOV8,Z0,SB24,DB7,Z27,PE]
    [C,C,CH_3,O]
  \chemical[PB:Z5,ONE,Z0,MOV6,Z0,SB24,DB7,Z47,PE]
    [C,C,H_3C,O]
  \chemical[SR24,RZ24]
    [CH_3,H_3C]
\stopchemical
```


Chemical reactions can be typeset within a paragraph or as a display formula with the `\inlinechemical` and `\startchemicalformula ... \stopchemicalformula` command.

One of the steps in the Hasselt canal water treatment is the removal of phosphate by means of a chemical reaction with iron.

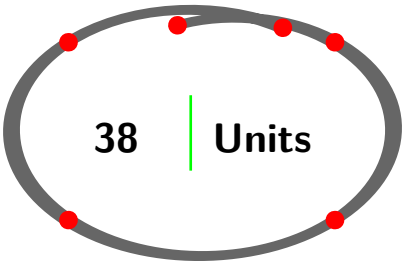
$Fe(OH)_3$	+	H_3PO_4	$\longrightarrow$	$FePO_4$	+	H_2O
iron hydroxide		phosphoric acid		iron phosphate		water

The $FePO_4$ is a solid and precipitates in water. It is filtered and re-used as a fertilizer resource.

This is defined by

```
\startplacefigure
  [title=,number=,location=middle]
  \startchemicalformula
    \chemical{Fe(OH)_3}{iron hydroxide}
    \chemical{PLUS}
    \chemical{H_3PO_4}{phosphoric acid}
    \chemical{GIVES}{\hphantom{whatever}}
    \chemical{FePO_4}{iron phosphate}
    \chemical{PLUS}
    \chemical{H_2O}{water}
  \stopchemicalformula
\stopplacefigure
```

The use of the chemical commands is described in the *PPCHTeX Manual* and the example manual *Chemical Formulas in CONTEXT*.



To force yourself to use dimensions and units consistently throughout your document you can use the \unit command. Let's give a few examples:

```
\unit{meter per square meter}
\unit{cubic meter per sec}
\unit{square milli meter per inch}
\unit{centi liter per sec}
\unit{meter inverse sec}
\unit{newton per square inch}
\unit{newton times meter per square sec}
```

It looks like a lot of typing but it does guarantee a consistent use of units. The command \unit also prevents line breaking between number and unit.

The examples above come out as:

m/m^2
m^3/s
$mm^2/inch$
cl/s
$m \cdot s^{-1}$
$N/inch^2$
$N \cdot m/s^2$

You can add your own units with:

\registerunit *[.$\overset{1}{.}$.]* [..,..$\overset{2}{=}$..,..]
OPT

and set them up with:

\setupunit *[...,$\overset{1}{...}$]* [..,..$\overset{2}{=}$..,..]
OPT

In the example below you can see some new units and the non-consistent use of km.

```
\registerunit[unit][inhab=inhabitants]
\setupunittext[en][inhabitants=inh]

\registerunit[unit][north=north]
\setupunittext[en][north= N]

\registerunit[unit][east=east]
\setupunittext[en][east= E]
```

```
Hasselt is part of the municipality of Zwartewaterland
(coordinates 52\unit{degrees} 35 \unit{arcminute north},
\unit {6 degrees} \unit{5 arcminute east}).
Its area is about \unit {88 square kilometer}
(land \unit {83 square kilom} and water \unit{5 square km}).
As of 1st of Augustus 2013 the population is 22.201
that is \unit {268 inhab per square kilo meter}.
```

This results in:

Hasselt is part of the municipality of Zwartewaterland (coordinates 52° 35′ N, 6° 5′ E). Its area is about 88 km^2 (land 83 km^2 and water 5 km^2). As of 1st of Augustus 2013 the population is 22.201 that is 268 inh/km^2.

The `\unit` command also allows you to align rows of units in a column.

When you type:

```
\bTABLE
  \bTR
    \bTD \bf Street     \eTD \bTD \bf Length         \eTD
  \eTR
  \bTR
    \bTD Ridderstraat   \eTD \bTD \unit{_,160 meter} \eTD
  \eTR
  \bTR
    \bTD Prinsengracht  \eTD \bTD \unit{_,240 meter} \eTD
  \eTR
  \bTR
    \bTD Kalverstraat   \eTD \bTD \unit{_,_60 meter} \eTD
  \eTR
  \bTR
    \bTD H.A.W. van de
         Vechtlaan      \eTD \bTD \unit{1,250 meter} \eTD
  \eTR
  \bTR
    \bTD Meestersteeg   \eTD \bTD \unit{_,_45 meter} \eTD
  \eTR
\eTABLE
```


It will generate a well aligned second column.

Street	Length
Ridderstraat	160 m
Prinsengracht	240 m
Kalverstraat	60 m
H.A.W. van de Vechtlaan	1,250 m
Meestersteeg	45 m

Please refer to the manual *Units* for more information and details.

39 Bibliography

Since the last publication of this manual the bibliography mechanism has been completely overhauled. CONTEXT is now independent of BIBTEX. There is a set of new commands all containing the label *btx*.

```
\definebtxdataset [.1.] [.2.] [..,..=3..,..]
                         OPT        OPT
```

```
\setupbtxdataset [...,1...] [..,..=2..,..]
                    OPT
```

```
\usebtxdataset [.1.] [.2.] [..,..=3..,..]
                OPT              OPT
```

```
\setupbtxrendering [...,1...] [..,..=2..,..]
                      OPT
```

```
\setupbtx [.1.] [..,..=2..,..]
           OPT
```

```
\cite [..,..=1..,..] [.2.]
           OPT
```

```
\placelistofpublications [.1.] [..,..=2..,..]
                          OPT        OPT
```

```
\placebtxrendering [.1.] [..,..=2..,..]
                    OPT        OPT
```

Very basic use of the bibliography mechanism is simple. You only need to select a database containing the references, place citations in the text and place the list of publications at the end of the document.

A bibliography entry can be in different formats as in the BIBTEX-format (`*.bib` file), as a LUA-table (`*.lua` file) or as an XML-makeup (`*.xml` file) or even in the form of a buffer.

The following example is contained in `excursion-en-hasselt.bib`. An entry in a BIBTEX-file might look like:

```
@INBOOK{book01,
  author = {Jonker, J.},
  title = {From Hasselt to America},
  publisher = {Bookplan Publishers},
  year = {2012},
  chapter = {1.2},
}
```

In order to get the entries typeset as a list you call this file accompanied by the choise of bibliographic style.

```
\usebtxdataset [hasselt.bib]
\usebtxdefinitions[apa,numbering=yes]

Please refer to \cite[authoryears][book01] for more information on
famous people who were born in Hasselt.
```

Which would produce:

Please refer to <book01> for more information on famous people who were born in Hasselt.

In an appendix you can place the complete list of publications with

```
\placelistofpublications
```

Result will be a list with all entries of the dataset-file:

The next example shows a more elaborate version which is more to the point for what is needed to get bibliographies:

```
\usebtxdefinitions[apa]
\definebtxdataset
  [hasselt]
\usebtxdataset
  [hasselt]
  [hasselt.bib]
\definebtxrendering
  [hasselt]
  [dataset=hasselt,
   criterium=text,
   specification=apa]
```

The following bibliographic entry is written inside

```
\startbuffer[Leibniz]...\stopbuffer}.

@incollection{leibniz1885,
    author    = {Leibniz, G. W.},
    title     = {Principes de la nature et de la grâce
                 fondés en raison, 1714},
    title:en  = {Principles of Nature and Grace
                 Founded in Reason},
    booktitle = {\de Die Philosophischen Schriften
```

```
                 von Gottfried Wilhelm Leibniz}
    editor    = {Gerhardt, C. G.},
    publisher = {Weidmann},
    year      = {1885},
    volume    = {6},
    chapter   = {8},
    pages     = {598-606},
    address   = {Berlin},
    language  = {french},
}

\usebtxdataset
  [leibniz]
  [Leibniz.buffer]
\definebtxrendering
  [leibniz]
  [dataset=leibniz,
   criterium=text,
   specification=apa]

Hasselt: \cite[authoryears][hasselt::book01]

Leibniz: \cite[authoryears][leibniz::leibniz1885]
```

The citation result becomes:

Hasselt: <hasselt::book01>

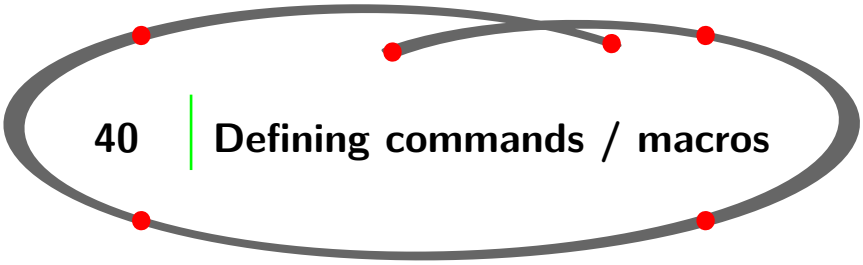
Leibniz: Leibniz (1885)

The bibliographic entries would look as follows when using the apa (*Publication Manual of the American Psychological Association*) style

```
\placebtxrendering
  [hasselt]

\placebtxrendering
  [leibniz]
```

1. Leibniz, G. W. (1885). Principes de la nature et de la grâce fondés en raison, 1714 [Principles of Nature and Grace Founded in Reason]. In C. G. Gerhardt (Ed.), *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz* (Vol. 6, pp. 598–606). Berlin: Weidmann.

However, once customizations are required, the bibliography environment can become quite complicated. For further reading there is a manual *Bibliographies the CONTEXT way*.



CONTEXT is a set of macros based on TEX. TEX is a programming language as well as a typographical system. This means that you can do the programming yourself if you need that kind of flexibility.

You can define a new command with

```
\define   [..1..]   \..2..   {..3..}
            OPT
```

In case you intend to create your own macros it is strongly advised to choose the logical name wisely and type it in mixed case (Mixedcase) or camel case (CamelCase). This will prevent unpleasant crashes with the names used in the CONTEXT core.

The next example will explain its meaning.

You may have a well illustrated document and you are tired of typing

```
\startplacefigure
  [location={here,force},
  [reference=fig:logical name,
   title={Caption}]
  {\externalfigure[filename][width=0.45\makeupwidth]}
\stopplacefigure
```

You could define your own command with a few variables like

- logical name
- caption
- file name

Your command definition and call could look something like this

```
\define[3]\Putgraphic
  {\startplacefigure
     [location={here,force},
      reference=fig:#1,
      title={#2}]
     {\externalfigure[#3][width=.45\makeupwidth]}
   \stopplacefigure}

\Putgraphic{lion}{The Dutch lion is a sentry}{excursion-13}
```

From then on the newly defined command `\Putgraphic` is available.

The number inside the brackets (`[3]` indicates that you want to use three variables `#1`, `#2` and `#3`. In the command call `\Putgraphic` you have to place these variables between curly braces. The result is shown in figure 40.1.

Very sophisticated commands can be programmed, but this is left to your own inventiveness.

In addition to defining commands you can also define `\start ... \stop` command pairs.

```
\definestartstop   [..1..]   [..2..]   [..,..3=..,..]
                               OPT          OPT
```

For example:

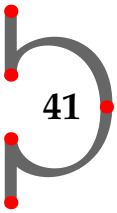
```
\definestartstop
   [Attention]
   [before=\blank\startmarginrule,
```

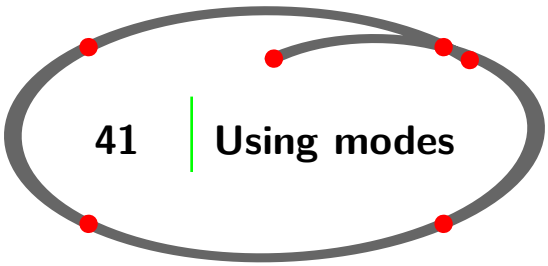
```
    after=\stopmarginrule\blank]
\startAttention
\Emph{Hasselter Juffers} are sweet cookies but the name
is no coincidence. On July 21 in 1233 the
\Emph{Zwartewaterklooster} (Blackwater Monastery) was
founded. The monastery was meant for unmarried girls
and women belonging to the nobility of Hasselt.
These girls and women were called \Emph{juffers}.
\stopAttention
```

This will result in:

Hasselter Juffers are sweet cookies but the name is no coincidence. On July 21 in 1233 the *Zwartewaterklooster* (Blackwater Monastery) was founded. The monastery was meant for unmarried girls and women belonging to the nobility of Hasselt. These girls and women were called *juffers*.

Figure 40.1 The Dutch lion is a sentry





CONTEXT offers a very handy feature called `modes`. Assume you prepare a document which should be compiled as well for a paper as also for a screen version it is the most easy approach to define a mode for the screen version.

```
\definemode   [...,...]   [...]
                          OPT
```

```
\enablemode   [...,...]
```

```
\startmode    [...,...] ... \stopmode
```

```
\enablemode Screen

\definemode[Screen]

\startmode[Screen]
  \environment  examplefile-screen
\stopmode
```

If you enable the Screen mode at the beginning of the document CONTEXT will use this mode and compile with the instructions given for this mode. There can be multiple modes in a document. You can activate multiple modes by adding them to the \enablemode command as a list. Furthermore there are possibilities to use a mode conditionally e.g. \doifmode or \doifnotmode. There is a whole bunch of information on conditional processing with modes on the *CONTEXT WIKI*.

The environment file myscreen.mkxl contains the particulars for this mode.

```
\startenvironment Myscreen
  \definepapersize
    [LocalPaperFormat]
    [width=28cm,
     height=21cm]

  \setuppapersize
    [LocalPaperFormat]
    [LocalPaperFormat]

  \setuplayout
    [location=middle,
     topspace=.5cm,
     header=1.5cm,
     height=20cm,
     rightedge=5cm,
     rightedgedistance=1cm]

  \setupinteractionscreen
    [width=28cm,
     height=21cm,
     option=max]

  \setuppagenumbering
    [alternative=singlesided,
     location={bottom,right}]

  \setupinteraction
    [state=start,
     color=,
     menu=on]

  \setuplist
    [chapter]
    [interaction=all]

  \setupinteractionmenu
    [right]
    [state=start,
     color=blue,
     offset=4pt,
     frame=off]

  \defineoverlay
    [Gotocontents]
    [\overlaybutton
      {chap:Contents}]

  \defineframed
    [Menu]

  \setupframed
    [Menu]
```

```
  [background=color,                    width=\rightedgewidth,
   backgroundcolor=                     frame=off]
     ShapeLightFill,

  \startinteractionmenu[right]
    \vfill
    \startgoto [chap:contents]{\Menu{Contents}}
    \stopgoto\par
    \startgoto [chap:index]{\Menu{Index}}
    \stopgoto\par
    \startgoto [chap:commandindex]{\Menu{Commandindex}}
    \stopgoto\par
    \startgoto [chap:commandsetups]{\Menu{Commanddefinitions}}
    \stopgoto\par
    \vfill
    \startgoto [Colofon]{\Menu{Colofon}}
    \stopgoto \par
    \startgoto [CloseDocument]{\Menu{Close Document}}
    \stopgoto\par
    \startgoto [SearchDocument]{\Menu{Search}}
    \stopgoto \par
    \startgoto [PreviousJump]{\Menu{Go back}}
    \stopgoto
  \stopinteractionmenu
\stopenvironment
```

You can define an `\overlaybutton` as shown above. The overlay button is combined with a reference e.g. to the table of contents. Inside the document, after the table of contents this button may be activated with e.g.

```
\setupbackgrounds
  [page]
  [background=Gotocontents]
```

The interaction screen is as big as the paper defined for this screen document. The menu will be placed in the `rightedge` with a width of 5 cm and 1 cm to the right of the text area. The document is of course single sided and the pagenumber will be placed at the bottom to the right. In the table of contents the chapters are clickable to move quickly to a certain chapter in the screen document. An interaction menu is normally created with at least three clickable links to jump to the table of contents from anywhere in the document, going directly to the index and as for a proper screen document only decent a button to exit the document.

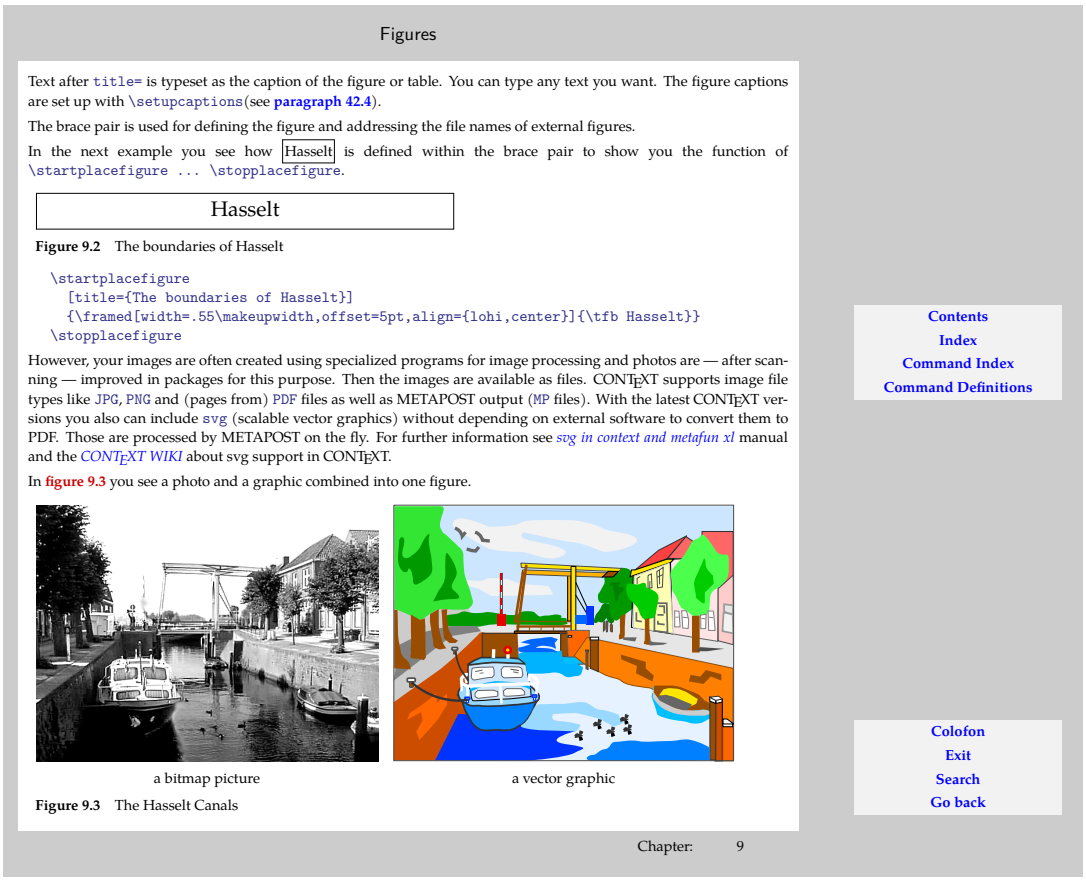
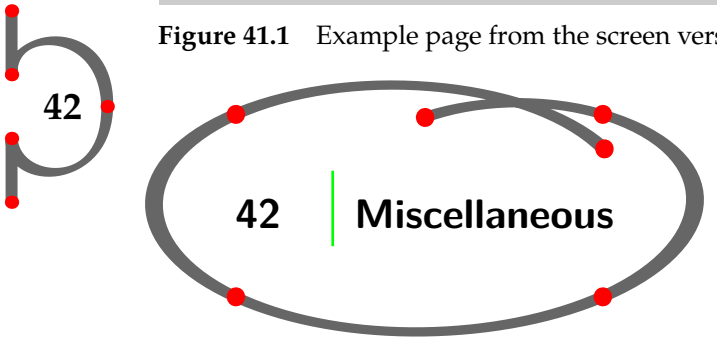


Figure 41.1 Example page from the screen version



42.1 A title page

In the first example of this manual on page 8 we used the command

```
\startstandardmakeup    [..,..=..,..] ... \stopstandardmakeup
                              OPT
```

This command can be used to define title pages. Such a command is needed since title pages often have a different layout than those of the body text. With the command pair `\startstandardmakeup ... \stopstandardmakeup` you can make up a page within the default page dimensions.

A simple title page may look like this

```
\startstandardmakeup
```

```
\blank
\rightaligned{\tfd Hasselt in the 21st century}
\blank
\rightaligned{\tfb The future}
\vfill
\rightaligned{\tfa C. van Marle}
\rightaligned{Hasselt, 2013}
\stopstandardmakeup
```

In a double-sided document you have to go through some additional actions to typeset the back of the title page.

```
\startstandardmakeup[doublesided=no]
\blank
\rightaligned{\tfd Hasselt in the 21st century}
\blank
\rightaligned{\tfb The future}
\vfill
\rightaligned{\tfa C. van Marle}
\rightaligned{Hasselt, \currentdate[year]}
\stopstandardmakeup
\startstandardmakeup[page=no]
\vfill
\copyright \currentdate[year]

This book is dedicated to the people living in Hasselt. We
want to thank photographer J. Jonker for manipulating the
photos in this book in such a way that readers can get a
clear picture of Hasselt's future look.
\stopstandardmakeup
```

Your own makeups can be made and set up with

```
\definemakeup   [...]   [...]   [..,..=..,..]
                          OPT             OPT
```

and

```
\setupmakeup   [...,...]   [..,..=..,..]
                  OPT
```

Please refer to the *CONTEXT WIKI* for more information on the `\startmakeup ... \stopmakeup` command.

42.2 Setups

While defining the layout of a document you can define setups with `\startsetups ... \stopsetups`. Setups are placed in the setup area of the input file and mostly used to combine a number of commands.

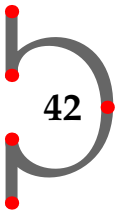
```
\startsetups colorize
  \blue
\stopsetups

\startsetups decolorize
  \black
\stopsetups

\setupitemize
  [before=\setups{colorize},
   after=\setups{decolorize}]
```

Some data about the church are

```
\startitemize[packed,3*broad]
  \sym{~~997}  mentioned for the first time
  \sym{1380} destroyed by fire
  \sym{1466} rebuild
  \sym{1657} restored after shelling by enemy troops
  \sym{1725} struck by lightning
\stopitemize
```

Which would result in:

997 mentioned for the first time
1380 destroyed by fire
1466 rebuild
1657 restored after shelling by enemy troops
1725 struck by lightning



Another way of invoking the setups is by the `setups` option that comes with some CONTEXT commands.

```
\definestartstop[Remark]

\setupstartstop[Remark]
  [before=\startframed,
   after=\stopframed]

\startsetups important
  \inleftmargin
    [scope=local,
     hoffset=1em]{\bf\color[blue]{→}}
\stopsetups

\setupframed
  [align=normal,
   setups=important,
   frame=on,
   framecolor=blue,
   offset=5pt]

\startRemark
  The Stephanus Church was built in 997. After an enormous
  fire in 1380 it was rebuilt and that's why it has Gothic
  features. The rebuilding was finished in 1466.\endgraf
\stopRemark
```

This becomes:

→ The Stephanus Church was built in 997. After an enormous fire in 1380 it was rebuilt and that's why it has Gothic features. The rebuilding was finished in 1466.

42.3 Variables

There is a mechanism in CONTEXT that enables you to compact information in a list of variables that you can recall throughout the document.

```
\setvariables   [..]   [..,..=..,..]
```

The example below shows how to use variables in defining a coverpage called `Cover`.

```
\setvariables
  [Cover]
  [set=\setups{coverpage},
   student=no,
   teacher=yes,
   booktitle=From Hasselt to America,
   subtitle=An Odyssey,
   authors=\setup{allauthors},
   edition=2012,
   isbn=0123456789]
```

The moment you need the title on your cover page (or somewhere else in your document) you can summon it by using the command `\getvariable` which has two arguments i.e. the name of the variable set and the variable itself.

```
\getvariable{Cover}{booktitle}
```

If you use `\startdocument ... \stopdocument` you can join to this command a set of variables to your free choosing as already described in chapter 5 at page 11. In the framework of calling a variable there is also the possibility to use `\structurevariable`.

```
\structurevariable   {..}
```

```
\startdocument
  [title=\CONTEXT\ LMTX an Excursion,
   subtitle=An introduction to \CONTEXT,
   editor={T. Otten},
   design={H. Hagen},
   publisher={Pragma ADE}]
  \startchapter[title=Hasselt in the early ages]
    ... \structurevariable{title} ...
  \stopchapter
  ...
\stopdocument
```

```
We are currently at the section level. What is the title of this section? It is
\color[blue]{\structurevariable{title}}
```

This results in:

We are currently at the section level. What is the title of this section? It is Variables

Yet another possibility is to assign a user defined variable to a section command with

```
\structureuservariable   {..*..}
```

```
\startsubject[title=Hasselt][carnaval=Hazelnöttenstad]

During carnaval \color[blue]{\structurevariable{title}} is officially called
\color[blue]{\structureuservariable{carnaval}.}

\stopsubject

\startsubject[title=Den Bosch][carnaval=Oeteldonck]

During carnaval \color[blue]{\structurevariable{title}} is officially called
\color[blue]{\structureuservariable{carnaval}.}

\stopsubject
```

Hasselt

During carnaval Hasselt is officially called Hazelnöttenstad.

Den Bosch

During carnaval Den Bosch is officially called Oeteldonck.

42.4 Floating blocks

A block in CONTEXT is a text element, for example a table or a figure that you can process in a special way. You have already seen the use of

```
\startplacefigure ... \stopplacefigure,
\startplacetable ... \stopplacetable and
\startplaceintermezzo ... \stopplaceintermezzo
```

These are all examples of floating blocks and are predefined in CONTEXT. The floating mechanism is described in chapter 9 and chapter 10.

You can define these kind of blocks yourself with

```
\definefloat   [..1..]   [..2..]   [..,..3=..,..]
                                OPT             OPT
```

The bracket pairs are used for the name in singular and plural form. For example

```
\definefloat[Myfloat][Myfloats]
```

Now the following commands are available

```
\startplaceMyfloat[]{} ... \stopplaceMyfloat
\startMyfloattext[][]{}{} ... \stopMyfloattext
\placelistofMyfloats
\completelistofMyfloats
```

The newly defined floating block can be set up with

\setupfloat *[...,...]*$^{1}_{\text{OPT}}$ [..,..=..,..]^{2}

This means that you can type `\setupfloat[Myfloat][...]` and adjust the appearance of each float block individually.

\setupcaption *[...,...]*$^{1}_{\text{OPT}}$ [..,..=..,..]^{2}

The layout of the individual floating block's caption can be adjusted by

`\setupcaption[Myfloat][...]`.

You can set up the layout of *all* floating blocks with

\setupfloats *[...,...]*$^{1}_{\text{OPT}}$ [..,..=..,..]^{2}

Without optional argument `\setupfloats` will affect all floating blocks. You can restrict the adjustments to a list of floating blocks that you want to appear differently with `\setupfloats[figure,Myfloat][...]`.

You can set up the numbering and the labels with

\setupcaptions *[...,...]*$^{1}_{\text{OPT}}$ [..,..=..,..]^{2}

Also this command will influence all floating blocks or when joined with a list the mentioned floating blocks only.

These commands should be issued in the setup area of your input file.

```
\setupfloat[Myfloat][location=center]
\setupcaption[Myfloat][location=bottom,headstyle=boldslanted]

\startplaceMyfloat
  [location=middle,
   title={An intermezzo}]
  \startframedtext
At the beginning of this century there was a tram line from
Zwolle to Blokzijl via Hasselt. Other means of transport became
more important and just before the second world war the tram line
```

```
was stopped. Nowadays such a tram line would have been very
profitable.
  \stopframedtext
\stopplaceMyfloat
```

At the beginning of this century there was a tram line from Zwolle to Blokzijl via Hasselt. Other means of transport became more important and just before the second world war the tram line was stopped. Nowadays such a tram line would have been very profitable.

Myfloat 42.1 An intermezzo

Tables or figures may take up a lot of space. The placing of these text elements can be postponed till the next page break. This is done with `\startpostponing ... \stoppostponing`.

```
\startpostponing
  \startplacefigure
    [location=here,
     reference=fig:postponing,
     title={A postponed figure}]
    {\externalfigure[excursion-16][width=.6\textwidth]}
  \stopplacefigure
\stoppostponing
```

The figure will be placed at the top of the next page and will cause minimal disruption of the running text.

42

42.5 Storing text for later use

You can store information temporarily for future use in your document in so called buffers.

```
\startbuffer [.*.] ... \stopbuffer
               OPT
```

For example:

```
\startbuffer[visit]
If you want to see what Hasselt has in store you should
come and visit it some time. If you take this manual
with you, you will recognise some locations.
\stopbuffer
```

```
\getbuffer[visit]
```

With `\getbuffer[visit]` you recall the stored text and it will be processed. The logical name is optional. With `\typebuffer[visit]` you get the buffer's contents typeset verbatim.

Buffers are set up with

```
\setupbuffer [...,1...] [..,..=2..,..]
                 OPT
```

Figure 42.1 A postponed figure

You can also save a buffer to an external file with

```
\savebuffer   [...,...]   [..,..=..,..]
                 OPT
```

If you want to save the buffer `visit` in an external file you type

```
\savebuffer[visit][sightseeing]
```

What you get is a file named as the current filename with appended 'sightseeing' with the extension `tmp` i.e. `current-filename-sightseeing.tmp`.

42.6 Lines

There are many commands to draw lines. For a single line you type

```
\hairline
```

or:

```
\thinrule
```

For more lines you type

```
\thinrules   [..,..=..,..]
                OPT
```

Text in combination with lines is also possible.

Hasselt – Amsterdam
If you draw a straight line from Hasselt to Amsterdam you would have to cover a distance of almost 145 km.

If you draw two straight lines from Hasselt to Amsterdam you would have to cover a distance of almost 290 km.

Amsterdam

Hasselt

The code of this example is

```
\starttextrule{Hasselt -- Amsterdam}
If you draw a straight line from Hasselt to Amsterdam
you would have to cover a distance of almost 145 \unit{Kilo Meter}.
\stoptextrule

If you draw two straight lines from Hasselt to Amsterdam you would
have to cover a distance of almost 290 \unit{Kilo Meter}.

Amsterdam \thinrules[n=3] Hasselt
```

You always have to be careful with drawing lines. Empty lines around `\thinrules` must not be forgotten and the vertical spacing is always a point of concern.

You can set up line spacing with

```
\setupthinrules   [..,..=..,..]
```


There are a few complementary commands that might be very useful.

```
\setupfillinrules   [..,..=..,..]
```

These commands are introduced in the examples below.

```
\setupfillinrules[width=2cm]
\setupfillinlines[width=3cm]

\fillinrules[n=1]{\bf name}
\fillinrules[n=1]{\bf address}

\fillinline{Can you please state the \underbar{number}
of houses in Hasselt.} \par

Strike out \overstrikes{Hasselt in this text}\periods[18]
```

This will become:

name

address

Can you please state the number of houses in Hasselt.

Strike out ~~Hasselt~~ ~~in~~ ~~this~~ ~~text~~ . . . . . .

These commands are used in questionnaires. Text which is struck out or underlined will not be hyphenated.

In chapter 33 you have already seen the use of the \blackrule command that can be set up with

\setupblackrules [..,..=..,..]

```
\blank
\blackrule[width=\textwidth,height=8mm,color=blue]
```

This will result in a rather fat line.

42.7 Super- and subscript in text

Hasselt's economy has known its $^{\text{ups}}$ and $_{\text{downs}}$. Since the nineties of the last century its economy is $\overset{\text{so}}{\text{so}}$.

This ugly text was made with \low{}, \high{} and \lohi{}{}. The text was placed between the curly braces.

42.8 Date

You can invoke the system date in your text with

\currentdate [...,...] (OPT)

With \currentdate[day], \currentdate[month] and \currentdate[year] you can invoke day, month and year separately.

You can setup the presentation of the date according to your wish. Table 42.1 shows the preconfigured setup for different languages and examples how to change the formatting.

Language	Preconfigured	Alternative format	
English	June 26, 2026	\currentdate[d:highord,{~of~},month,{~},year	26th of June 2026
Dutch	26 juni 2026	\currentdate[dd,{-},mm,{-},year]	26-06-2026
French	26 juin 2026	\currentdate[dd,{~},month:mnem,{~},year]	26 juin 2026
Italian	26 giugno 2026	\currentdate[dd,{/},mm,{/},year]	26/06/2026
Swedish	26 juni 2026	\currentdate[year,{-},mm,{-},dd]	2026-06-26

Table 42.1 Date formats

42.9 Rotating text

Sometimes you may want to rotate text or images. You can rotate text and other objects with

```
\rotate   [..,..=..,..]   {...}
          OPT
```

The first bracket pair is optional. Within that bracket pair you specify the rotation: `rotation=90`. The curly braces contain the text or object you want to rotate.

```
Hasselt got its municipal rights in 1252. From that time
on it had the \rotate[rotation=90]{right} to use its own
seal on official documents. This seal showed Holy
Stephanus known as one of the first Christian martyrs,
and was the \rotate[rotation=270]{patron} of Hasselt.
After the Reformation the seal was redesigned and
Stephanus lost his \quote{holiness} and was from that
time on depicted without his aureole.
```

This results in a fairly strange paragraph.

Hasselt got its municipal rights in 1252. From that time on it had the right to use its own seal on official documents. This seal showed Holy Stephanus known as one of the first Christian martyrs, and was the patron of Hasselt. After the Reformation the seal was redesigned and Stephanus lost his 'holiness' and was from that time on depicted without his aureole.

You can rotate an image just as easily.

```
\startplacefigure
  [location=here,
   reference=fig:rotation,
   title={The 180 \unit{Degrees}
          rotated fish gate (de Vispoort)}]
  {\rotate[rotation=180]
    {\externalfigure[excursion-15][width=.5\textwidth]}}
\stopplacefigure
```

You can see in figure 42.2 that it is not always clear what you get when you rotate.

We can set up rotating with

```
\setuprotate   [..,..=..,..]
               *
```

In the example above you could also rotate image and caption by:

```
\startplacefigure
  [location=here,
   reference=fig:rotation,
   rotation=180,
```

Figure 42.2 The 180° rotated fish gate (de Vispoort)

```
    title={The 180 \unit{Degrees}
           rotated fish port (de Vispoort)}]
  {\externalfigure[excursion-15][width=0.5\textwidth]}
\stopplacefigure
```

42.10 Scaling text

For some obscure reasons you may want to scale text. You can scale text and other objects with

```
\scale  [..]  [..,..=..,..]  {...}
          OPT            OPT
```

```
After 1810 the Dedemsvaart brought some prosperity
to Hasselt. All ships went through the canals of
Hasselt and the \scale[factor=10]{shops} on both
sides of the canals \scale[factor=10]{prospered}.
```

Which will result in:

After 1810 the Dedemsvaart brought some prosperity to Hasselt. All ships went through the canals of Hasselt and the shops on both sides of the canals prospered.

42.11 Space

The command `\space` will produce a space. In CONTEXT the `~` (tilde) is a non-breakable space.

```
The Ridderstraat in Hasselt is about 160~m long and 5 to 6~m wide
with houses on both sides of the street.
```

Tildes can also be used to align numbers in a table row. The command `\fixedspaces` will give the tilde the fixed width of a number.

```
\fixedspaces

\bTABLE
\bTR \bTD Street        \eTD \bTD Length \eTD \eTR
```

```
\bTR \bTD Ridderstraat  \eTD \bTD 160 m  \eTD \eTR
\bTR \bTD Prinsengracht \eTD \bTD 240 m  \eTD \eTR
\bTR \bTD Kalverstraat  \eTD \bTD ~60 m  \eTD \eTR
\bTR \bTD Meestersteeg  \eTD \bTD ~45 m  \eTD \eTR
\eTABLE
```

Street	Length
Ridderstraat	160 m
Prinsengracht	240 m
Kalverstraat	60 m
Meestersteeg	45 m

42.12 Carriage return

A new line can be enforced with

```
\crlf
```

As a CONTEXT user you should use this command only as a last resort.

When a number of lines should be followed by a *carriage return and line feed* you can use

```
\startlines   [..,..*=..,..] ... \stoplines
                  OPT
```



```
\startlines
...
\stoplines
On a wooden panel in the town hall of Hasselt you can read:
\startnarrower[left]
  \startlines
  Heimelijcken haet
  eigen baet
  jongen raet
  Door diese drie wilt verstaen
  is het Roomsche Rijck vergaen.
  \stoplines
\stopnarrower
This little rhyme contains a warning for the magistrates of
Hasselt: don't allow personal benefits or feelings to
influence your wisdom in decision making.
```

This will become:

On a wooden panel in the town hall of Hasselt you can read:

Heimelijcken haet
eigen baet
jongen raet
Door diese drie wilt verstaen
is het Roomsche Rijck vergaen.

This little rhyme contains a warning for the magistrates of Hasselt: don't allow personal benefits or feelings to influence your wisdom in decision making.

In a few commands new lines are generated by `\\`. For example if you type `\inmargin{in the\\ margin}` then the text will be divided over two lines.

42.13 Hyphenation

When writing multi-lingual texts you have to be aware of the fact that hyphenation may differ from one language to another.

To activate the primary language in a document you type

```
\mainlanguage   [.*.]
```

in the setup area.

Between the brackets you fill in `af`, `ca`, `cs`, `cs`, `da`, `de`, `en`, `fi`, `fr`, `it`, `la`, `nl`, `nb`, `nn`, `pl`, `pt`, `es`, `sv` and `tr` for afrikaans, catalan, czech, slovak, danish, german, english, finnish, french, italian, latin, dutch, bokmal, nnynorsk, polish, portuguese, spanish, swedish and turkish respectively.

To change from one language to another you can use

```
\language[nl] \language[en] \language[de] \language[fr] \language[es] ...
```

or the shorthand versions

```
\nl  \en  \de  \fr  \es ...
```

An example:

```
If you want to know more about Hasselt, the best book
to read is probably \quote{\nl Uit de geschiedenis
van Hasselt} by F.~Peereboom.
```

If you want to know more about Hasselt, the best book to read is probably 'Uit de geschiedenis van Hasselt' by F. Peereboom.

If a word is wrongly hyphenated you can define the hyphenation points yourself. This is done in the setup area of your input file:

```
\registerhyphenationexception[en][his-to-ry]
```

Note that the language setting is also responsible for the way quotes are placed around quotations (see section 14).

In some languages (like Dutch) compound words are used which are connected with a hyphen. The separate words have to be hyphenated correctly. In order to do that you can use `||`.

```
If you are looking for an English||speaking person
in Hasselt you should go to the Tourist Information
```

```
Office. There you may expect to find full|| and
part||time employees who are fluent in German,
English, French and of course Dutch.
```

This will become:

If you are looking for an English–speaking person in Hasselt you should go to the Tourist Information Office. There you may expect to find full– and part–time employees who are fluent in German, English, French and of course Dutch.

The double || takes care of the hyphen and the correct hyphenation of the separate words. Also note the suspended compounds.

42.14 Comment in input file

All text between \startdocument ... \stopdocument will be processed while running CONTEXT. Sometimes however you may have text fragments you don't want to be processed or you want to comment on your CONTEXT commands.

If you precede your text with a percentage sign % it will not be processed.

```
% In very big documents you can use the command \input for
% different files.
%
% For example:
%
% \input{hass01.mkxl}  % chapter 1 on Hasselt
% \input{hass02.mkxl}  % chapter 2 on Hasselt
% \input{hass03.mkxl}  % chapter 3 on Hasselt
```

When you delete the % before \input the respective files will be processed. The comment describing the contents of the files will not be processed.

42.15 Notes

If you want your comment in the input file visible as a 'sticky note' in the PDF file you can use

```
\startcomment  [...]  [..,..=..,..] ... \stopcomment
                OPT          OPT
```

```
\startcomment
    The image of the Vispoort should be in color.
\stopcomment
```

The command will produce a sticky note in the PDF.

The note is only visible when interactivity is set with \setupinteraction and the comment with \setupcomment.

You could define your own comment style and assign other comment styles for others e.g.

```
\setupinteraction[state=start]

\definecomment[Ton]
\setupcomment
  [Ton]
```

```
[symbol=Note,color=lightgreen,location=rightmargin]
```

In the document comments per author are placed in the following way.

```
\startWilli
  This is Willi's signet.
\stopWilli
Some other text \dots
\startTon
  This is Ton's signet!
\stopTon
```

These icons show up when opening the PDF file on screen. They are clickable for showing the content of the note. When printing, these annotation icons are not printed. So what you see here on paper are two pictures for illustration!

42.16 Hiding text

Text can be hidden with

```
\starthiding ... \stophiding
```

The text between `\starthiding ... \stophiding` will not be processed.

42.17 Input of another `tex` file

In a number of situations you may want to insert other TEX files in your input file. For example, sometimes it is more efficient to specify CONTEXT sources in more than one file in order to be able to partially process your files.

Another file (with the name `another.mkxl`) can be inserted by

```
\input{another.mkxl}
```

The extension is optional so this will work too:

```
\input{another}
```

The command `\input` is a TEX primitive (command).

For a more systematic approach in maintaining your documents CONTEXT supports a project structure with commands like `\startenvironment ... \stopenvironment` and `\startproduct ... \stopproduct`. Please refer to the magazine *Project structure* for more information.

42.18 XML

Normally you code your document with CONTEXT commands so you can tell CONTEXT what to do with the coded text elements.

A more rigid way to code your content is XML (EXTENDED MARKUP LANGUAGE) which enables you to have more control over your content (scripting, xslt, validation).

A simple XML coded document could look like this:

```
<?xml version='1.0' standalone=yes?>

<document>
  <section>
    <title>Hasselt in winter</title>
    <content>
      <p>In winter scating is a very popular sport in
         Hasselt. All over Hasselt the frozen canals
         offer children a great play ground.</p>
      <p>...</p>
    </content>
  </section>
</document>
```

CONTEXT is able to deal with XML directly without underlying XML2TEX conversions. Please refer to the manual *Dealing with XML* for more information on how to process XML documents.

CONTEXT also supports MATHML (presentational and content markup) which is useful when adding math to XML documents. For more info please refer to the *MathML* manual.

43 Bidi typesetting

Western typesetting is horizontal and from left to right. Other scripts run horizontally but from right to left as Arabic or Hebrew. CONTEXT supports left to right typesetting. For getting information on right to left typesetting please refer to the *l2r-r2l a few tips* manual.

44 Using modules

For reasons of efficiency CONTEXT comes with a number of modules that contain specific functionality. Loading a module is done in the setup area of your input file by means of

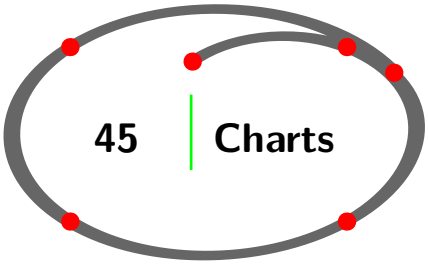
```
\usemodule [..1..] [...,2,...] [..,..=3..,..]
            OPT                     OPT
```

When you load a module CONTEXT looks for a file with the following (prefix-)name

- m-modulename (core module)
- p-modulename (private module)
- s-modulename (CONTEXT style file)
- x-modulename (XML module)
- t-modulename (third party module)
- modulename

A few example core modules are

- m-chart (`m-chart.mkvi`): for flow diagrams
- m-fields (`m-fields.mkiv`): for PDF forms
- m-morse (`m-morse.mkvi`): for morse
- m-spreadsheet (`m-spreadsheet.mkiv`): for spreadsheets
- m-visual (`m-visual.mkiv`): for visual debugging
- m-zint (`m-zint.mkiv`): for generating bar codes, QR code etc.
- s-pre-** (`s-pre-**`): for presentations



To enable drawing flow diagrams CONTEXT provides the core module `chart`. For using the `chart` module you have to load it in the preamble with

```
\usemodule[chart]
```

There are a couple of commands to know for working with charts.

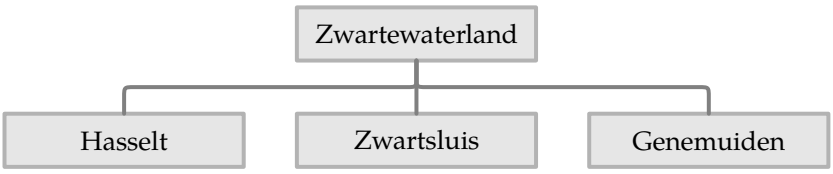

```
\setupFLOWcharts   [..,..=*..,..]
```

```
\startFLOWchart   [.=*.] ... \stopFLOWchart
```

```
\startFLOWcell   [..,..=1..,..]   [..,..=2..,..] ... \stopFLOWcell
                      OPT               OPT
```

```
\setupFLOWlines   [..,..=*..,..]
```

A simple organisational chart may look like this:



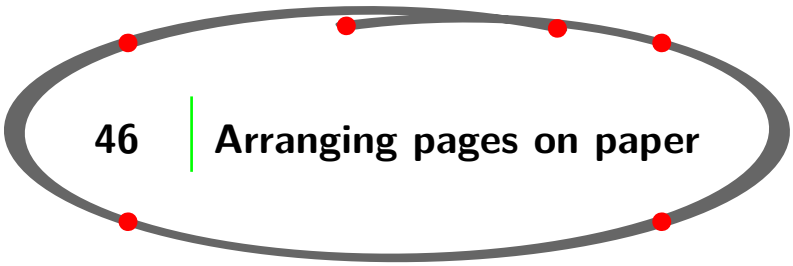
This diagram is defined with the commands below:

```
\setupFLOWcharts
  [width=9\bodyfontsize,
   height=2\bodyfontsize,
   dx=1\bodyfontsize,
   dy=1\bodyfontsize]

\setupFLOWlines
  [arrow=no]

\startFLOWchart[organogram]
  \startFLOWcell
    \shape    {action}
    \name     {01}
    \location {2,1}
    \text     {Zwartewaterland}
    \connect  [bt]{02}
    \connect  [bt]{03}
    \connect  [bt]{04}
  \stopFLOWcell
  \startFLOWcell
    \shape    {action}
    \name     {02}
    \location {1,2}
    \text     {Hasselt}
  \stopFLOWcell
  \startFLOWcell
    \shape    {action}
    \name     {03}
    \location {2,2}
    \text     {Zwartsluis}
  \stopFLOWcell
  \startFLOWcell
    \shape    {action}
    \name     {04}
    \location {3,2}
    \text     {Genemuiden}
  \stopFLOWcell
\stopFLOWchart
```

It is of good practice to define your setups and flow diagrams in separate definition files (environments). The flowchart can then be invoked by:

```
\FLOWchart[organogram]
```

There is a manual with a detailed description of the charts module: *Charts-mkiv*.



We are accustomed to see documents made up as A4 and we print them single or double sided. However if we want to prepare a book with folded pages for binding then the pages must be arranged in a well defined order before you can print. CONTEXT supports arranging pages in many different ways, actually the capability is quite astonishing.

Willi Egger's manual of *Layout in CONTEXT* contains a whole chapter on arranging pages.

46.1 XY arranging

Assume you want to put address labels on a sheet of sticky labels where in this case the sheet contains 3 × 8 labels. According to the specification of the label sheet you setup the document.

```
\setupbodyfont[12pt]
\definepapersize[Label][height=37.1mm,width=70mm]
\setuppapersize [Label][A4,portrait]
\setuppaper % A4 parameters
  [topspace=0mm,
   backspace=5mm,
   dx=0.1mm,
   dy=0.1mm,
   nx=3,
   ny=8,
   margin=0pt,
   width=210mm,
   height=294mm]

\setuplayout  % Label layout
  [topspace=4mm,
   backspace=5mm,
   margin=0mm,
   width=middle,
   height=middle,
   header=0mm,
   footer=0mm]
\setuparranging[XY]
```

After the size of the label is defined you need to setup the paper i.e. the sheet on which the labels are printed. `dx` and `dy` determine the distance in horizontal and vertical direction between the individual labels. The `nx` and `ny` values give the number of labels in horizontal and vertical direction and add up to the total number of labels available on the sheet. In the `\setuplayout` you define parameters belonging

to the individual label. In order to process the labels you start \setuparranging. In CONTEXT this is called XY arranging.

```
\setupmakeup
  [standard]
  [top=,bottom=]

\startdocument
  \showframe
  \dorecurse
    {24}
    {\startstandardmakeup[page=yes]
       Address \recurselevel
     \stopstandardmakeup}
\stopdocument
```

The \standardmakeup centers the contents vertically, in order to switch it off you need to issue the \setupmakeup command. In this sample document we use a simple loop running from 1 up to 24 repeating the contents inside the \standardmakeup. The \recurselevel is the actual count of the loop. \showframe is used to check for the result and will be commented for the production process.

46.2 A simple booklet

Assume you have a document with a couple of pages which you would like to print and then fold into a booklet. For this purpose CONTEXT has an arranging mode called 2UP. For the simplicity of the example we will use A4 paper and typeset our document on a A5 layout.

```
\setuppapersize[A5][A4,landscape]

\setuplayout
  [topspace=1cm,
   backspace=1cm,
   header=0pt,
   footer=1.5/bodyfontsize,
   height=middle,
   width=middle]

\setuppagenumbering
  [location={bottom,right},alternative=doublesided]

\setuparranging[2UP]
```

You want to print 2 A5 pages on A4, this requires the paper to be rotated by 90 degrees, which is indicated by landscape. As usual you define the layout of the A5 page. You intend to have the page number placed non standard so you indicate the desired place with the location inside the \setuppagenumbering command. The document further should be a double sided one. The alternative tells CONTEXT to take care of mirroring the layout for odd and even pages. The page number will be put into the footer at the outside corner of the text area.

```
\startdocument
  \dorecurse
    {16}
    {\startsection[title=Paragraph]
       \input bryson
     \stopsection
     \page[yes]}
```

```
\stopdocument
```

For the simplicity to show how this works again a loop is used to produce the booklet. On purpose the loop runs over 16 pages. This is the number of pages generally considered a good amount to create a section. Of course you can include more pages, but the booklet is quickly getting bulky.

46.3 More arranging schemes

For getting acquainted with page arrangements one should start with simple layouts and play with the different page arrangements. In order to understand the mechanism it is easiest to print the created samples and "bind" the obtained section. After cutting the edges the section can be looked through.

Mind you there are arranging schemes intended for single sided printing only. While developing a style it is best to set `\showframe` on.

For playing purposes the table 46.1 can be of help.

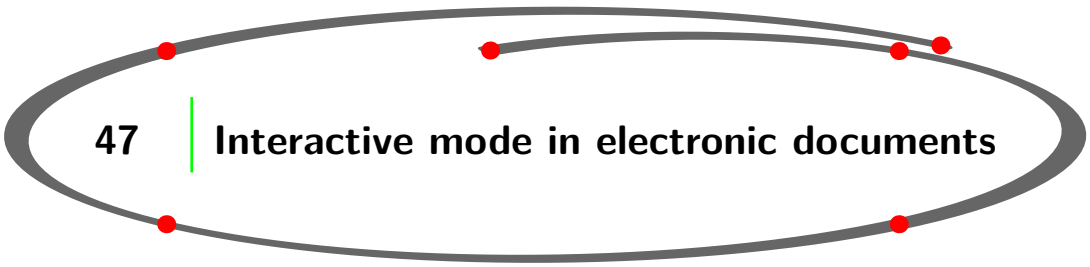
Arranging scheme	Printing	Description
`\setuparranging[XY]`	single sided	one sheet with x rows and y columns
`\setuparranging[1*4]`	single sided	section: one sheet 1 × 4 pages = 4 pages
`\setuparranging[1*8]`	single sided	section: one sheet 1 × 8 pages = 8 pages
`\setuparranging[2SIDE]`	single sided	2 pages next to each other
`\setuparranging[2TOP]`	single sided	2 pages above each other
`\setuparranging[2*16]`	double sided	section: one sheet 2 × 16 pages = 32 pages
`\setuparranging[2*8]`	double sided	section: one sheet 2 × 8 pages = 16 pages
`\setuparranging[2*8*Z]`	double sided	section: one sheet 2 × 8 pages = 16 pages, special folding: zig-zag
`\setuparranging[2*4]`	double sided	section: one sheet 2 × 4 pages = 8 pages
`\setuparranging[2*2]`	double sided	section: one sheet 2 × 2 pages = 4 pages
`\setuparranging[2**2]`	double sided	section: one sheet 2 × 2 pages = 4 pages
`\setuparranging[2*2*4]`	double sided	section: 2 × 2 pages on 4 sheets = 16 pages
`\setuparranging[2*4*2]`	double sided	section: 2 × 4 pages on 2 sheets = 16 pages
`\setuparranging[2UP]`	double sided	2 pages next to each other, n sheets arranged for a single booklet! Folding edge along the long side of the printing paper
`\setuparranging[2DOWN]`	double sided	2 pages above each other, n sheets arranged for a single booklet! Folding edge along the short side of the printing paper
`\setuparranging[2TOPSIDE]`	double sided	two odd pages on one side, two even pages verso, above each other

Table 46.1 Page arrangement schemes

Another application for arranging pages is the production of flyers. CONTEXT provides a couple of them as shown in table 46.2.

Arrangement	Result	Number of pages
\setuparranging[TRYPTICHON]	flyer: one sheet 2 × 3 pages	6 pages
\setuparranging[DOUBLEWINDOW]	flyer: one sheet 2 × 4 pages	8 pages
\setuparranging[ZFLYER-8]	flyer: one sheet 2 × 4 pages	8 pages
\setuparranging[ZFLYER-10]	flyer: one sheet 2 × 5 pages	10 pages
\setuparranging[ZFLYER-12]	flyer: one sheet 2 × 6 pages	12 pages
\setuparranging[MAPFLYER-12]	flyer: one sheet 2 × 6 pages	12 pages

Table 46.2 Flyers in CONTEXT

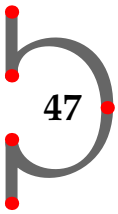


47 Interactive mode in electronic documents

47.1 Introduction

Documents that are electronically available for consulting and displaying on a computer screen are called interactive documents.

Interaction means that you can click on active areas and jump to the indicated locations. For example if you consult a register you can click on a (active) page number and you will jump to the corresponding page.



Interaction relates to:

- active chapter numbers in the table of content
- active page numbers in registers
- active page numbers, chapter numbers and figure numbers in internal references to pages, chapters, figures etc. in the running text
- active titles, page numbers, and chapter numbers in external references to other interactive documents
- active menus as navigation tools
- references to webpages and programs

Interactivity depends on the program you use to view the interactive document. Not all viewers have the same features.

CONTEXT is a very powerful system for producing electronic or interactive PDF documents. However, only a few standard features are described in this chapter. Allmost all manuals of CONTEXT are provided with the distribution, including their sources. Reverse engineering is one of the options to become more acquainted with the possibilities of CONTEXT.

Good examples of interactive documents are CONTEXT presentations (see chapter 48).

For more complex interactive PDF documents with forms you should read the *CONTEXT interaction* manual.

47.2 Bookmarks

One of the interactive options in PDF documents are bookmarks. CONTEXT is capable of putting such bookmarks into the PDF document. The bookmarks are displayed in the PDF-READER/BROWSER in a side bar and they are clickable to jump to the respective place in the document.

For using interaction, this mode has to be activated.

```
\setupinteraction   [...,...]   [..,..=..,..]
                       OPT
```

A second command tells CONTEXT to produce bookmarks

```
\setupinteractionscreen   [..,..=..,..]
```

There is a command to put a bookmark at any place in a document with

```
\bookmark   [..]   {..}
              OPT
```

An example of a simple document with bookmarks could look like this.

```
\setupinteraction
  [state=start]

\setupinteractionscreen
  [option=bookmark]

\definelist
  [Mylist]

\startdocument
  \placebookmarks[chapter,Mylist]

  \bookmark[Mylist]{A Bookmark used as a title at the top of the bookmarks}

  \placelist[chapter][criterium=all]

  \startchapter[title=Hasselt,reference=city:Hasselt]
    Something about the history of Hasselt
  \stopchapter

  \startchapter
    [title=Rivers around Hasselt,reference=rivers:Hasselt]
    A description of the different rivers around Hasselt
  \stopchapter
\stopdocument
```

In this setup the chapter-bookmarks are generated automatically, however bookmarks created with `\bookmark` need their own list which is in this case `Mylist`. For placing a bookmark in the list to which it belongs must be stated between brackets after the command. The following braces can contain any text.

`\placelist[chapter,Mylist]` is responsible to use the indicated list levels and lists to produce the entries in the PDF file. The `\placelist[chapter][criterium=all]` places a table of contents which is in itself also interactive.

You can copy this example to a file and compile it in order to see how this mechanism works.

47.3 Interactive mode

For example:

```
\setupinteraction
  [state=start,
   color=blue,
   style=bold]
```

The hyper links are now generated automatically and the active words are displayed in bold blue.

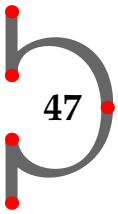
The interactive document is considerably bigger (in MB's) than its paper cousin because hyperlinks consume space. You will also notice that processing time becomes longer. Therefore it is advisable to deactivate the interactive mode as long as your document is under construction.

47.4 Interaction within a document

Earlier you have seen how to make a reference with `\in` and `\at`. You may have wondered why you had to type `\in{chapter}[chap:introduction]`. In the first place *chapter* and its corresponding chapter number will not be separated at line breaking. In the second place the word *chapter* and its number are typeset differently in the interactive mode. This gives the user a larger clickable area.

47.5 Interaction between documents

It is possible to link one document to another. First you have to state that you want to refer to another document. This is done by using the command `\useexternaldocument`.




```
\useexternaldocument   [...1]   [...2]   [...3]
                                          OPT
```

The first bracket pair must contain a logical name of the document, the second pair the file name of the other document and the third pair is used for the title of the document.

For referring to these other documents you can use

```
\from   [...*]
```

The brackets contain the reference to the external file.

Look at the example below.

```
\useexternaldocument
   [hia][excursion-en-hasseltbook][Festivities in Hasselt]

Most tourist attractions are described in \from[hia].\crlf
A description of the \about[hia::euifeest] is found in \from[hia]. \crlf
```

```
The eui||feest is described on \at{page}[hia::euifeest] \crlf
in \from[hia].
See for more information \in{chapter}[hia::euifeest] in \from[hia].
```

The \useexternaldocument is usually typed in the setup area of your input file.

After processing the file excursion-en-hasseltbook.mkxl and your input file you will have two PDF documents.

In order however to make this work it is important to remember that for linking a file through references its *.tuc files must be present.

The references come out like this:

Most tourist attractions are described in **Festivities in Hasselt**.
A description of the "**Euifeest**" is found in **Festivities in Hasselt**.
The eui–feest is described on **page 5**
in **Festivities in Hasselt**. See for more information **chapter 4** in **Festivities in Hasselt**.

For more information on cross referencing look at *CONTEXT Magazine 1103*.

47.6 Interaction with the world wide web

In interactive mode there is one other command that has little meaning in the paper version.

```
\goto   {...}   [...]
```

The curly braces contain text, the brackets contain a reference (logical name or a location).

```
In \goto {Hasselt[url (https://www.stadindex.nl/plattegrond/hasselt)]
all streets are built in a circular way.
```

In the interactive document Hasselt will be blue and active. When you click the text you will jump to a map of Hasselt.

For a consistent definition of the urls there is the command

```
\useURL   [...]   [...]   [...]   [...]
                          OPT     OPT
```

The address is defined with

```
\useURL
  [loc:cityplan]                      % id / logical name
  [https:// ... /plattegrond/hasselt] % web address
  []                                  % document
  []                                  % text
```

The web-address is recalled by its logical name

```
\goto{Hasselt} [ url(loc:cityplan) ].
```

It is of good practice to define and maintain the urls either in the setup area of the document or in a separate file.

47.7 buttons

The command to define a button is

```
\button   [..,..1=..,..]   {..2..}   [..3..]
                OPT
```

The first bracket pair contains the setup keys, the curly braces contain the button text and the last bracket pair the destination.

```
\button
  [height=8mm,width=35mm,
   background=color,backgroundcolor=blue,
   foregroundcolor=white]
   {Website Hasselt} [ url(https://www.hasselt.nl) ]
\button
  [height=8mm,
   foregroundcolor=blue]
  {MSWord Document} [ program(hasselt.docx) ]
```

The first example results in a jump to a webpage, the second opens the file `hasselt.doc` in a programme that can open `*.docx` files.

Website Hasselt

MSWord Document

Naturally buttons are only visible in screen documents!

47.8 Menus

You can define a menu with

```
\startinteractionmenu   [..*..] ... \stopinteractionmenu
```

And set it up with

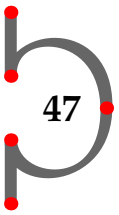
```
\setupinteractionmenu   [...,...1...]   [..,..2=..,..]
                              OPT
```

The first bracket pair is used for the menu's name and the second pair for setting it up.

A menu can be used in an interactive document. Below you can find a simple example that you can copy to do some experimenting.

```
\setuppapersize
  [S6][S6]

\setuplayout
```

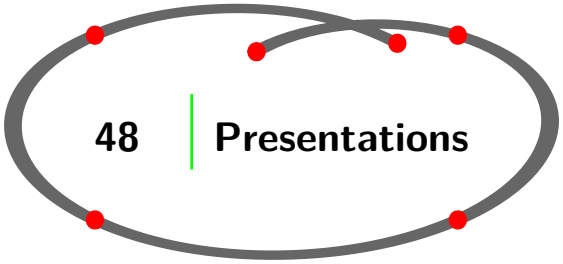
```
  [header=0cm,topspace=.5cm,backspace=2cm,
   margindistance=.5cm,margin=1cm,rightmargin=0cm,
   edgedistance=.5cm,rightedge=2cm,width=fit,
   height=13.8cm,footer=1cm,bottom=1cm]

\setupinteraction
  [state=start,menu=on]

\setupinteractionmenu
  [bottom]
  [background=color,backgroundcolor=gray, frame=off]

\startinteractionmenu[bottom]
\hfill
\startbut [content]       contents      \stopbut \quad
\startbut [index]         index         \stopbut \quad
\startbut [PreviousJump]  last location \stopbut \quad
\startbut [NextPage]      next page     \stopbut \quad
\startbut [CloseDocument] exit          \stopbut \quad
\stopinteractionmenu

\startdocument

\startstandardmakeup
  \midaligned{\tfd Festivities in Hasselt}
\stopstandardmakeup

\completecontent

\startchapter[title=Introduction]
  An introduction.
\stopchapter

\startchapter[title=Kingsday]
  Something about Kingsday in Hasselt.\index{Kingsday}
\stopchapter

\startchapter[title=Hassailt]
  Something about Hassailt.\index{Hassailt}
\stopchapter

\startchapter[title=Euifeest,reference=euifeest]
  Something about the Euifeest.\index{Euifeest}
\stopchapter

\completeindex

\stopdocument
```



The definition of the `\startinteractionmenu ... \stopinteractionmenu` will produce a menu at the bottom of every screen. The menu buttons contain the text *contents*, *index*, *last location*, *next page* and *exit* with respectively the following functions: jump to the table of contents, jump to the index, goto the last location in the document, goto next page and close the document. The labels to obvious destinations like `content` and `index` are predefined. Other predefined destinations are `FirstPage`, `LastPage`, `NextPage` and `PreviousPage`.

An action like `CloseDocument` is necessary to make an electronic document self contained. Other predefined actions you can use are `PrintDocument`, `SearchDocument` and `PreviousJump`. The meaning of these actions is obvious.

Remember that there is also a manual *CONTEXT interactivity*.



48 Presentations

You can use CONTEXT for making your own presentations. A CONTEXT presentation is an interactive PDF document with a screen layout. Often presentations are good examples of the cooperation between CONTEXT and METAPOST.

CONTEXT comes with a number of ready-to-use presentations. A presentation is a module with the prefix `s-` which you can load with the `\usemodule` command.

You can run the different available presentation styles directly from the command line. e.g.

```
context --mode=demo --autopdf=auto s-pre-06
```

Assuming you have one of the supported PDF readers installed and you use

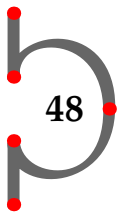
```
context --autopdf=auto yourfile
```

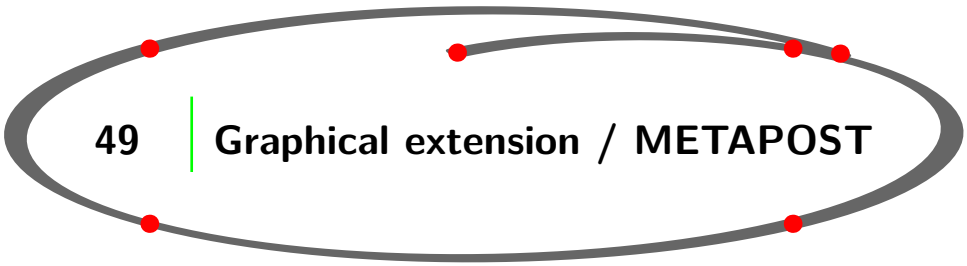
on the command line then the PDF reader will be opened after a successful compilation run.

If you want to use an existing presentation as a base for your own presentation the best way to proceed is:

- goto
  `.../tex/texmf-context/tex/context/modules/common`
  in your text editor
- open a presentation: for example `s-pre-07.tex`
- goto the end of the file and study the commands between the `\starttext ... \stoptext` pair
- copy the commands into your own presentation file
- invoke the presentation with `\usemodule[pre-07]` in de setup area of your presentation file
- process the file to view the result
- edit the content of your presentation

A stepwise setup of a presentation is given on the *CONTEXT WIKI*.





49 Graphical extension / METAPOST

The graphical possibilities of TEX–related macro packages are rather limited. However, by using the graphical package METAPOST of John Hobby a complete range of graphical features has become available that may improve the look of your documents.

CONTEXT is closely linked to METAPOST. You have direct access to this graphical environment. Running a document containing METAPOST code will generate the figure on the fly.

E.g. The decorative elements of chapter headers and page numbers of this manual are generated by METAPOST.

METAPOST is the base and many extensions were built for it. Due to these extensions in the CONTEXT environment the graphical environment is called METAFUN.

If you look carefully at these METAPOST extensions you will notice a lot of contextual adaptation (width and height dependent) and randomization. So you can do things in your document that are not possible in other typesetting applications.

A more practical example (for a mathematician at least) is drawn in figure 49.1:

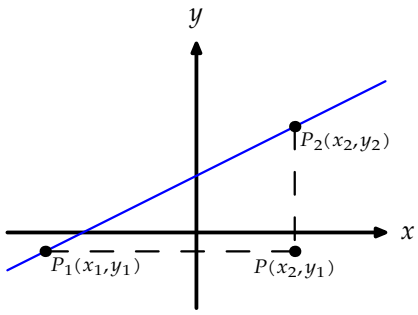


Figure 49.1 METAPOST example.

This example is taken from the mathematical text book *Algetrigulus* by Philip Brown. All graphics in his book are made by means of METAPOST.

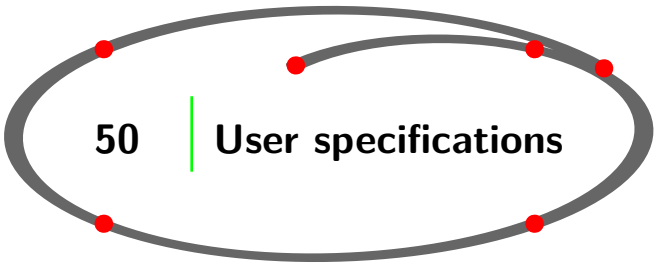
This one is defined by:

```
\startreusableMPgraphic{origin}
  path pb; pb:=(5.5cm,0cm)..(10.5cm,0cm);
  path qb; qb:=(8cm,-1cm)..(8cm,2.5cm);
  pickup pencircle scaled 0.5mm;
  drawarrow pb;
  drawarrow qb;
  draw thelabel.rt(textext("\im{x}"),(10.6cm,0cm));
  draw thelabel.top(textext("\im{y}"),(8cm,2.6cm));
  path l; l:=(5.5cm,-0.5cm)..(10.5cm,2cm);
  pickup pencircle scaled 0.3mm;
  draw l withcolor blue ;
  pair A; A:=(6cm,-0.25cm);
  pair B; B:=(9.3cm,1.4cm);
  pair C; C:=(9.3cm,-0.25cm);
  pickup pencircle scaled 0.15cm;
  drawdot A; drawdot B; drawdot C;
  draw thelabel.lrt(textext
    ("\im{\scriptstyle P_1(x_1,y_1)}") ,A);
  draw thelabel.lrt(textext
    ("\im{\scriptstyle P_2(x_2,y_2)}") ,B);
  draw thelabel.bot(textext
    ("\im{\scriptstyle P(x_2,y_1)}"  ) ,C);
```

```
    path s; s:=A..(9.3cm,-0.25cm);
    draw s dashed (evenly scaled 1mm)
      withpen pencircle scaled 0.3mm;
    path t; t:=B..(9.3cm,-0.25cm);
    draw t dashed (evenly scaled 1mm)
      withpen pencircle scaled 0.3mm;
  \stopreusableMPgraphic
```

The usage and features of METAPOST within CONTEXT are described in the extensive *METAFUN manual*.

There is another graphical system out in the TEX world. Its name is *TikZ*. CONTEXT supports this software even though its development completely takes place outside the CONTEXT environment. For installation see *CONTEXT WIKI, Installing TikZ and pgfplot* and *CONTEXT WIKI, Drawing graphics and diagrams with TikZ*. TikZ's user manual is *TikZ & PGF manual*.



The setup area of your document is the area before the `\startdocument` command. For example:

```
                                first line of your file
\setuplayout[width=25cm]        set the width of your text
                                empty line for readability
\startdocument                  starts your text
  Hello Hasselt.                your text
\stopdocument                   ends your text
```


Note that the first line of this file is empty. However, this first line is a preamble and can be used for specific user specifications. For example:

```
%engine=luatex                  use the luatex engine
                                empty line for readability
\setuplayout[width=25cm]        set the width of your text
                                empty line for readability
\startdocument                  starts your text
  Hello Hasselt.                your text
\stopdocument                   ends your text
```

Note that CONTEXT sees the text after the `%` sign in this first line not as a comment. Specifying the engine is only necessary if you want to use a different engine than is used standard i.e. LUAMETATEX for the latest standalone installation of CONTEXT.

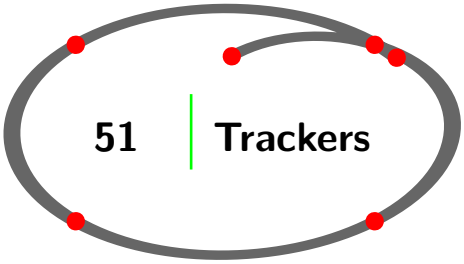
The preamble can have a meaning for both CONTEXT and SCITE:

```
% engine=luatex interface=english modes=screen language=uk

\startdocument
Hello Hasselt.
\stopdocument
```

This first line will be interpreted as shown in table 50.1.

First line	for	Effect
engine=pdftex	CONTEXT	run as PDFTEX (CONTEXT MKII)
engine=luatex	CONTEXT	run as LUATEX (CONTEXT MKIV)
engine=luametatex	CONTEXT	run as LUAMETATEX (CONTEXT LMTX)
interface=en	CONTEXT	expect english CONTEXT commands (lexing)
	SCITE	use english lexing
modes=Screen	CONTEXT	invoke mode `Screen` that is set in the text
language=uk	SCITE	use the english spell checker

Table 50.1 Interpretation of first line comments



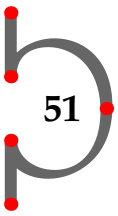
Trackers are tools to track down information on certain aspects, which are normally not shown in the log file. Some of the trackers output their results in the log file only. Enabling trackers may slow down the compilation process and the log file can become huge.

In total there are currently a couple of hundred such tracking tools. However to a large extent they are meant for the developers. Still there are some which might be of interest for the work at hand. First concentrate on visualizers, font, figure and float trackers. For seeing what is available you can run

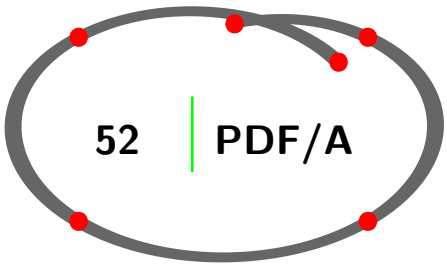
```
context --showtrackers
```

If you want to enable a tracker you would place an enabling command at the front of your document e.g.

```
\enabletrackers[figure.*]
\enabletrackers[font.*]
```



Enabling a tracker family you achieve with `.*`. If you need to run a specific tracker you will have to use the `\enabletrackers` command with the full tracker's name.



52.1 Introduction

PDF/A stands for PDF for archiving or PDF for long-time preservation. This standard has grown during

time adding more elements to it. PDF/A is a family of standards, so there is e.g. PDF/A-1 up to PDF/A-4 where PDF/A-4 is based on the ISO32000-2 (2017, 2020) standard and PDF 2.0.

CONTEXT also supports PDF/A-3a archiving. One aspect of this format is, that inside the PDF file tagging has to be applied for enabling accessibility for visually impaired users.

52.2 Example PDF/A file

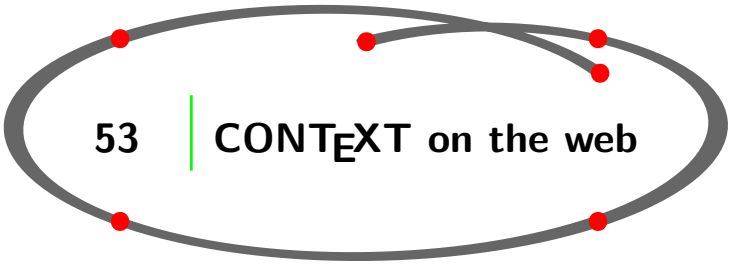
In order to get a PDF/A document, you will have to setup the system. The commands used for this are:

```
\setupbackend   [..,..*=..,..]
```

```
\setuptagging   [..,..*=..,..]
```

Most important to get a well tagged document is using a strict structure.

```
\setupinteraction
  [state=start,
   title={Your Document Title},
   author={Your Name},
   subject={Document Subject},
   keywords={keyword1, keyword2}]

\setupbackend
  [format=PDF/A-2a, %2b, 3a
   intent={Coated FOGRA39 (ISO 12647-2:2004)}, % paper
   profile={default_cmyk.icc,
            default_rgb.icc,
            default_gray.icc}, % color profile
   export=yes]

\setuptagging
  [state=start,
   method=auto]

\startdocument
  ...
\stopdocument
```

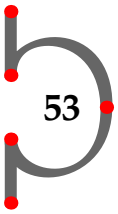


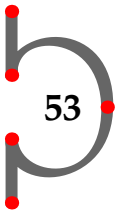
53 CONTEXT on the web

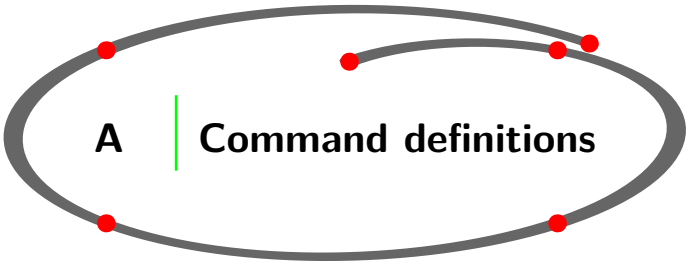
It is possible to use / try out CONTEXT without installing the software on the computer. In this case it is to use the web-version created at the University of Brno (Slovakia) under supervision of Tomáš Hala.

Under the following link you can start your explorations after having created an account.

CONTEXT on web: `https://context-on-web.eu/`




53



A Command definitions

Here we summarize the commands we introduced in the previous chapters. This is just a selection of the whole repertoire of CONTEXT commands. Those who want to see them all can take a look at the *CONTEXT commands manual*.

```
\about   [.*.]
*  REFERENCE
```

```
\at   {.1.}   {.2.}   [.3.]
      OPT     OPT
1  TEXT
2  TEXT
3  REFERENCE
```

```
\blank   [...,*,...]
                OPT
*  preference samepage max force enable disable nowhite packed back overlay always keep weak strong default before inbetween after fixed flexible none
   small medium big line halfline halflinebefore halflineafter quarterline formula white height depth standard NUMBER*small NUMBER*medium NUMBER*big
   NUMBER*line NUMBER*halfline NUMBER*quarterline NUMBER*formula NUMBER*white NUMBER*height NUMBER*depth category:NUMBER order:NUMBER penalty:NUMBER
   DIMENSION NAME
```

```
\bookmark   [.1.]   {.2.}
            OPT
1  SECTION LIST
2  TEXT
```

```
\bTABLE   [..,..*=..,..] ... \eTABLE
                 OPT
*  inherits: \setupTABLE
```

```
\button   [..,..1=..,..]   {.2.}   [.3.]
                OPT
1  inherits: \setupbutton
2  TEXT
3  REFERENCE
```

```
\cap   {..*..}
*   TEXT
```

```
\chemical   [..1..]   [...,...2...]   [...,...3...]
                OPT                         OPT
1   NAME
2   TEXT
3   TEXT
```

```
\cite   [..,..1=..,...]   [..2..]
              OPT
1   reference    = REFERENCE
    alternative  = default category entry short page num textnum year index tag keywords author authoryears authornum authoryear
    before       = COMMAND
    after        = COMMAND
    left         = COMMAND
    right        = COMMAND
    inherits: \setupbtx
2   REFERENCE
```

```
\crlf
```

```
\currentdate   [...,*...]
                    OPT
*   year year:NAME y y:NAME yy Y Y:NAME YY month month:mnem month:hebrew month:jalali m m:mnem m:hebrew m:jalali MONTH MONTH:mnem MONTH:hebrew MONTH:jalali
    mm M day day:NAME day:+ day:ord day:++ day:highord d d:NAME d:+ d:ord d:++ d:highord dd dd:+ dd:ord dd:++ dd:highord D D:+ D:ord D:++ D:highord
    weekday weekday:mnem weekday:hebrew weekday:jalali w w:mnem w:hebrew w:jalali WEEKDAY WEEKDAY:mnem WEEKDAY:hebrew WEEKDAY:jalali W referral space
    \␣ TEXT hebrew:to jalali:to jalali:from
```

```
\define   [..1..]   \..2..   {..3..}
              OPT
1   NUMBER
2   CSNAME
3   CONTENT
```

```
\definebodyfont   [...,...1...]   [...,...2...]   [...,...3...]   [..,..4=..,..]
                        OPT                         OPT
1   NAME default
2   NAME DIMENSION
3   rm ss tt hw cg
4   tf    = FILE
    bf    = FILE
    it    = FILE
    sl    = FILE
    bi    = FILE
    bs    = FILE
    sc    = FILE
    mr    = FILE
    mrlr  = FILE
    mrrl  = FILE
    mb    = FILE
    mblr  = FILE
    mbrl  = FILE
```

\definebtxdataset [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupbtxdataset

\definecombinedlist [.1..] [...,2...] [..,..3=..,..]
OPT
1 NAME
2 LIST
3 inherits: \setupcombinedlist

\definedescription [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupdescription

\definedocument [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupdocument

\defineenumeration [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupenumeration

\definefloat [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 SINGULAR
2 SINGULAR PLURAL
3 inherits: \setupfloat
instances: chemical figure table intermezzo graphic

\definehead [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 NAME
2 SECTION
3 inherits: \setuphead

\definehighlight [.1..] [.2..] [..,..3=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setuphighlight

\defineindenting [...] [...,...]
1 NAME
2 [-+]small [-+]medium [-+]big none no not first next yes always never odd even normal reset toggle DIMENSION

\definelayer [...] [...] [..,..=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setuplayer

\definemakeup [...] [...] [..,..=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupmakeup

\definemathcases [...] [...] [..,..=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupmathcases

\definemode [...,...] [...]
OPT
1 NAME
2 yes no keep

\definenarrower [...] [...] [..,..=..,..]
OPT OPT
1 NAME
2 NAME
3 inherits: \setupnarrower

\defineoverlay [...,...] [...] [...]
OPT
1 NAME
2 NAME
3 COMMAND

\definepapersize [...] [..,..=..,..]
1 NAME
2 width = DIMENSION
height = DIMENSION
top = COMMAND
bottom = COMMAND
left = COMMAND
right = COMMAND
distance = DIMENSION
page = inherits: \setuppapersize
paper = inherits: \setuppapersize

\defineparagraph [..=..] [..=..] OPT [..,..=..,..] OPT
1 NAME
2 NAME
3 inherits: \setupparagraph

\definereferenceformat [..=..] [..=..] OPT [..,..=..,..] OPT
1 NAME
2 NAME
3 inherits: \setupreferenceformat

\defineregister [..=..] [..=..] OPT [..,..=..,..] OPT
1 NAME
2 NAME
3 inherits: \setupregister

\definesorting [..=..] [..=..] [..=..] OPT
1 SINGLAR
2 PLURAL
3 none CSNAME

\definestartstop [..=..] [..=..] OPT [..,..=..,..] OPT
1 NAME
2 NAME
3 inherits: \setupstartstop

\definesynonyms [..=..] [..=..] [..=..] OPT [..=..] OPT
1 SINGULAR
2 PLURAL
3 CSNAME
4 CSNAME

\definetabulate [..=..] [..=..] OPT [|..=..|] OPT
1 NAME
2 NAME
3 TEMPLATE

\definetextbackground [..=..] [..=..] OPT [..,..=..,..] OPT
1 NAME
2 NAME
3 inherits: \setuptextbackground

```
\enablemode   [...,*,...]
*   NAME
```

```
\externalfigure   [..,1,..]   [..,2,..]   [..,..,3,..,..]
                                OPT           OPT
1   FILE
2   NAME
3   inherits: \setupexternalfigure
```

```
\framed   [..,..,1,..,..]   {..,2,..}
                OPT
1   inherits: \setupframed
2   CONTENT
```

```
\from   [..,*,..]
*   REFERENCE
```

```
\godown   [..,*,..]
*   DIMENSION
```

```
\goto   {..,1,..}   [..,2,..]
1   CONTENT
2   REFERENCE
```

```
\hairline
```

```
\in   {..,1,..}   {..,2,..}   [..,3,..]
          OPT         OPT
1   TEXT
2   TEXT
3   REFERENCE
```

```
\mainlanguage   [..,*,..]
*   LANGUAGE
```

\inmargin [..,..=..,..]1OPT [..,..=..,..]2OPT {...}3

1 reference = REFERENCE
inherits: \setupmargindata
2 inherits: \setupmarginframed
3 CONTENT

\note [...]1OPT [...]2

1 NAME
2 REFERENCE

\footnote [...,...]1OPT {...}2

1 REFERENCE
2 TEXT

\page [...,*...]OPT

* inherits: \pagebreak

\pagereference [...,*...]

* REFERENCE

\placebtxrendering [...]1OPT [..,..=..,..]2OPT

1 NAME
2 inherits: \setupbtxrendering

\placefootnotes [..,..=*..,..]OPT

* inherits: \setupnote

\placelist [...,...]1 [..,..=..,..]2OPT

1 LIST
2 inherits: \setuplist

\placelistofpublications [...]1OPT [..,..=..,..]2OPT

1 NAME
2 inherits: \setupbtxrendering

\placelocalfootnotes [..,..*=..,..] OPT
* inherits: \setupnote

\registerunit [..=..1..] OPT [..,..=..2..,..]
1 prefix unit operator suffix symbol packaged
2 KEY = VALUE

\rotate [..,..=..1..,..] OPT {..2..}
1 inherits: \setuprotate
2 CONTENT

\savebuffer [...,...1...] OPT [..,..=..2..,..]
1 BUFFER
2 inherits: \setupsavebuffer

\scale [..=..1..] OPT [..,..=..2..,..] OPT {..3..}
1 NAME
2 inherits: \setupscale
3 CONTENT

\setlayer [..=..1..] [..=..2..] OPT [..,..=..3..,..] OPT {..4..}
1 NAME
2 left right even odd
3 inherits: \setuplayer
4 CONTENT

A

\setupalign [...,*...]
* broad wide bottom height depth line high low lohi flushright flushleft middle yes no width normal reset inner outer flushinner flushouter left right center disable last end paragraph lefttoright righttoleft l2r r2l table lesshyphenation morehyphenation hanging hangingboth nothanging hz fullhz nohz hyphenated nothyphenated collapsed notcollapsed explicit tolerant verytolerant stretch extremestretch final 1*final 2*final 3*final 4*final more 1*more 2*more hangleft hangright flushforward flushbackward always profile fit noorphans keeporphans notwins keeptwins notoddlers keeptoddlers tight granular lesswidows lessclubs lessbroken lessorphans lessorphans:2 lessorphans:3 lessorphans:4 defaultwidows defaultclubs defaultbroken strictwidows strictwidows:2 strictwidows:3 strictwidows:4 strictclubs strictclubs:2 strictclubs:3 strictclubs:4 strictbroken defaultmath strictmath nonstrictmath default snapping nosnapping snapping:yes snapping:normal snapping:0 snapping:1 snapping:2 snapping:0:10 snapping:1:10 snapping:2:10 snapping:2:20 snapping:1:top snapping:1:bottom snapping:2:top snapping:2:bottom

\setupbackend [..,..*=..,..]

```
*  export   = yes FILE
   xhtml    = FILE
   file     = FILE
   intent   = Coated␣FOGRA39␣(ISO␣12647-2:2004) GRACoL2006_Coated1v2.icc ISO␣Coated␣v2␣300%␣(ECI) ISO␣Coated␣v2␣(ECI) ISOnewspaper26v4 ISOnewspaper26v4_gr
              ISO␣Uncoated ISO␣Uncoated␣Yellowish ISO␣Web␣Coated Japan␣Color␣2001␣Coated Japan␣Color␣2002␣Newspaper Japan␣Web␣Coated␣(Ad) SNAP␣2007
              SWOP2006_Coated3v2.icc SWOP2006_Coated5v2.icc Uncoated␣FOGRA29␣(ISO␣12647-2:2004) Web␣Coated␣FOGRA28␣(ISO␣12647-2:2004) PSR_LWC_PLUS_V2_PT
              PSR_LWC_STD_V2_PT PSR_SC_PLUS_V2_PT PSR_SC_STD_V2_PT PSRgravureMF
   space    = yes no
   hyphen   = yes no
   xmpfile  = FILE
   format   = version default PDF/X-1a:2001 PDF/X-1a:2003 PDF/X-3:2002 PDF/X-3:2003 PDF/X-4 PDF/X-4p PDF/X-5g PDF/X-5pg PDF/X-5n PDF/A-1a:2005
              PDF/A-1b:2005 PDF/A-2a PDF/A-3a PDF/UA-1
   level    = NUMBER
   option   = always never
   profile  = FILE
```

\setupbackgrounds [...,1=...] [...,2=...] OPT [..,..3=..,..]

```
1  top header text footer bottom
2  leftedge leftmargin text rightmargin rightedge
3  inherits: \setupframed
```

\setupblackrules [..,..*=..,..]

```
*  width          = max DIMENSION
   height         = max DIMENSION
   depth          = max DIMENSION
   distance       = DIMENSION
   n              = NUMBER
   alternative    = a b
   style          = STYLE COMMAND
   color          = COLOR
   type           = mp yes no
   mp             = NAME
   rulethickness  = DIMENSION
   shrink         = DIMENSION
   stretch        = DIMENSION
   on             = DIMENSION
   off            = DIMENSION
   snapping       = yes normal 0 1 2 0:10 1:10 2:10 2:20 1:top 1:bottom 2:top 2:bottom
```

\setupblank [...,*=...] OPT

```
*  inherits: \blank
```

\setupbodyfont [...,*=...] OPT

```
*  DIMENSION NAME global reset keep x xx small big script scriptscript rm ss tt hw cg roman serif regular sans sansserif support type teletype mono
   handwritten calligraphic
```

```
\setupbtx [...] [..,..=..,..]
            1        2
           OPT
1 NAME
2 specification    = default apa aps NAME
  dataset          = default NAME
  command          = \...#1
  left             = COMMAND
  right            = COMMAND
  authorconversion = normal normalshort normalinverted invertedshort short
  etallimit        = NUMBER
  etaldisplay      = NUMBER
  etaloption       = last
  stopper          = initials
  interaction      = start stop number text page all
  alternative      = default category entry short page num textnum year index tag keywords author authoryears authornum authoryear
  sorttype         = normal reverse
  compress         = yes no
  default          = default NAME
  style            = STYLE COMMAND
  color            = COLOR
```

```
\setupbtxdataset [...,...] [..,..=..,..]
                     1          2
                    OPT
1 NAME
2 language = LANGUAGE
```

```
\setupbtxrendering [...,...] [..,..=..,..]
                       1          2
                      OPT
1 NAME
2 textstate     = start stop
  pagestate     = start stop
  separator     = COMMAND
  criterium     = previous cite here all none
  filter        = TEXT
  specification = NAME
  title         = TEXT
  before        = COMMAND
  after         = COMMAND
  dataset       = NAME
  method        = dataset label force local global none
  sorttype      = short dataset list reference used default cite index
  repeat        = yes no
  group         = NAME
  numbering     = yes no num index tag short page
  file          = FILE
```

```
\setupbuffer [...,...] [..,..=..,..]
                 1          2
                OPT
1 BUFFER
2 define = yes no
  before = COMMAND
  after  = COMMAND
  strip  = yes no
```

A

```
\setupcaption [...,...] [..,..=..,..]
                   1 OPT        2
1   NAME
2   suffix           =  COMMAND
    suffixseparator  =  COMMAND
    suffixstopper    =  COMMAND
    location         =  left right middle low high grid lines overlay inner outer innermargin outermargin leftmargin rightmargin lefthanging righthanging
                        hang top bottom stretch tolerant verytolerant none default
    command          =  \...#1
    numbercommand    =  \...#1
    textcommand      =  \...#1
    spacebefore      =  inherits: \blank
    spaceinbetween   =  inherits: \blank
    spaceafter       =  inherits: \blank
    distance         =  DIMENSION
    headstyle        =  STYLE COMMAND
    headcolor        =  COLOR
    headseparator    =  TEXT
    inbetween        =  COMMAND
    style            =  STYLE COMMAND
    color            =  COLOR
    topoffset        =  DIMENSION
    bottomoffset     =  DIMENSION
    number           =  yes no none
    group            =  TEXT
    leftmargin       =  DIMENSION
    rightmargin      =  DIMENSION
    innermargin      =  DIMENSION
    outermargin      =  DIMENSION
    align            =  inherits: \setupalign
    width            =  fit max DIMENSION
    minwidth         =  fit DIMENSION
    maxwidth         =  DIMENSION
    hang             =  yes no
    mode             =  NAME
    inherits: \setupcounterinherits: \setupframed
```

```
\setupcaptions [...,...] [..,..=..,..]
                    1 OPT        2
1   NAME
2   inherits: \setupcaption
```

```
\setupchemical [...,...] [..,..=..,..]
                    1 OPT        2
1   NAME
2   strut          =  yes no auto cap fit line default CHARACTER
    width          =  fit none NUMBER
    height         =  fit none NUMBER
    left           =  fit none NUMBER
    right          =  fit none NUMBER
    top            =  fit none NUMBER
    bottom         =  fit none NUMBER
    scale          =  small medium big normal NUMBER
    rotation       =  NUMBER
    symalign       =  auto
    axis           =  on off
    framecolor     =  COLOR
    rulethickness  =  DIMENSION
    offset         =  DIMENSION
    unit           =  DIMENSION
    factor         =  NUMBER
    frame          =  on off
    rulecolor      =  COLOR
    bodyfont       =  inherits: \setupbodyfont
    size           =  small medium big
    style          =  STYLE COMMAND
    color          =  COLOR
```

```
\setupcolumns [..,..=..,..]
                    *
*   inherits: \setupmixedcolumns
```

\setupcombinedlist [..] [..,..=..,..]

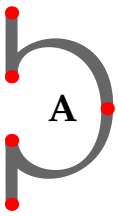
```
1  LIST
2  criterium    = local intro reference SECTIONBLOCK:reference all SECTIONBLOCK:all text SECTIONBLOCK:text current SECTIONBLOCK:current here previous
                  SECTIONBLOCK:previous component SECTION SECTIONBLOCK:SECTION
   reference    = NUMBER
   extras       = NAME
   order        = command all title
   alternative  = a b c d e f g left right top bottom command none interactive paragraph horizontal vertical NAME
```

\setupdescription [...,...] [..,..=..,..]

```
1  NAME                          OPT
2  title           = yes no
   define          = yes no
   level           = NUMBER
   text            = TEXT
   headcommand     = \...#1
   before          = COMMAND
   after           = COMMAND
   inbetween       = COMMAND
   alternative     = left right inmargin inleft inright margin leftmargin rightmargin innermargin outermargin serried hanging top empty command NAME
   align           = inherits: \setupalign
   headalign       = inherits: \setupalign
   indenting       = inherits: \setupindenting
   display         = yes no
   indentnext      = yes no auto
   width           = fit broad line DIMENSION
   distance        = none DIMENSION
   stretch         = NUMBER
   shrink          = NUMBER
   hang            = fit broad none margin NUMBER
   closesymbol     = COMMAND
   closecommand    = \...#1
   expansion       = yes no xml
   referenceprefix = + - TEXT
   sample          = TEXT
   margin          = yes no standard DIMENSION
   style           = STYLE COMMAND
   color           = COLOR
   headstyle       = STYLE COMMAND
   headcolor       = COLOR
   aligntitle      = yes no
   headindenting   = yes no
   delay           = text
```

\setupdocument [...,...] [..,..=..,..]

```
1  NAME                  OPT
2  before            = COMMAND
   after             = COMMAND
   metadata:author   = TEXT
   metadata:title    = TEXT
   metadata:subject  = TEXT
   metadata:keywords = TEXT
   KEY               = VALUE
```



\setupenumerations [...,...] [..,..=..,..]

```
1  NAME                  OPT
2  inherits: \setupenumeration
```

\setupFLOWcharts [..,..*=..,..]

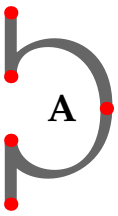
```
*  width           =  DIMENSION
   height          =  DIMENSION
   offset          =  DIMENSION
   clipoffset      =  DIMENSION
   dx              =  DIMENSION
   dy              =  DIMENSION
   nx              =  NUMBER
   ny              =  NUMBER
   x               =  NUMBER
   y               =  NUMBER
   labeloffset     =  DIMENSION
   commentoffset   =  DIMENSION
   exitoffset      =  DIMENSION
   split           =  yes no
   bodyfont        =  inherits: \setupbodyfont
   option          =  test
   hcompact        =  yes no
   vcompact        =  yes no
   focus           =  TEXT
   autofocus       =  TEXT
   background      =  foreground color NAME
   framecolor      =  COLOR
   backgroundcolor =  COLOR
   rulethickness   =  DIMENSION
   frame           =  on off
```

\setupFLOWlines [..,..*=..,..]

```
*  corner          =  round
   arrow           =  yes no
   dash            =  yes no
   radius          =  DIMENSION
   color           =  COLOR
   rulethickness   =  DIMENSION
   offset          =  none DIMENSION
```

\setupfillinrules [..,..*=..,..]

```
*  before          =  COMMAND
   after           =  COMMAND
   n               =  NUMBER
   interlinespace  =  small medium big NUMBER
   distance        =  DIMENSION
   width           =  fit broad DIMENSION
   separator       =  COMMAND
   style           =  STYLE COMMAND
   color           =  COLOR
```



```
\setupfloat [...,...] [..,..=..,..]
                1          2
               OPT
1   SINGULAR
2   indentnext          = yes no auto
    default             = inherits: \placefloat
    fallback            = inherits: \placefloat
    inner               = COMMAND
    criterium           = DIMENSION
    method              = NUMBER
    sidemethod          = NUMBER
    textmethod          = NUMBER
    sidealign           = height depth line halfline grid normal
    grid                = inherits: \snaptogrid
    local               = yes no
    command             = \...#1
    availablewidth      = DIMENSION
    availableheight     = DIMENSION
    minwidth            = DIMENSION
    maxwidth            = DIMENSION
    location            = left right middle flushleft flushright center max inner outer innermargin outermargin inneredge outeredge backspace cutspace
                          leftmargin rightmargin leftedge rightedge
    leftmargindistance  = DIMENSION
    rightmargindistance = DIMENSION
    leftmargin          = DIMENSION
    rightmargin         = DIMENSION
    innermargin         = DIMENSION
    outermargin         = DIMENSION
    bottombefore        = COMMAND
    bottomafter         = COMMAND
    expansion           = yes no xml
    referenceprefix     = + - TEXT
    xmlsetup            = NAME
    catcodes            = NAME
    freeregion          = yes no
    topdistance         = DIMENSION NUMBER
    bottomdistance      = DIMENSION NUMBER
    spacebefore         = none inherits: \blank
    spaceafter          = none inherits: \blank
    width               = DIMENSION
    height              = DIMENSION
    offset              = DIMENSION none overlay
    sidespacebefore     = none inherits: \blank
    sidespaceafter      = none inherits: \blank
    spacebeforeside     = none inherits: \blank
    spaceafterside      = none inherits: \blank
    sidethreshold       = old dimension
    margin              = DIMENSION
    ntop                = NUMBER
    nbottom             = NUMBER
    step                = small medium big line depth
    nlines              = NUMBER
    cache               = yes no
    compress            = yes no
    compressdistance    = DIMENSION
    inherits: \setupframed
```

```
\setupfloats [...,...] [..,..=..,..]
                 1          2
                OPT
1   SINGULAR
2   inherits: \setupfloat
```

\setupfooter [.[1].] [..,..[2]=..,..]
OPT

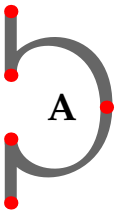
```
1   text margin edge
2   state        =  start stop empty high none normal nomarking NAME
    style        =  STYLE COMMAND
    color        =  COLOR
    strut        =  yes no
    n            =  NUMBER
    before       =  COMMAND
    after        =  COMMAND
    lefttext     =  TEXT
    middletext   =  TEXT
    righttext    =  TEXT
    leftstyle    =  STYLE COMMAND
    middlestyle  =  STYLE COMMAND
    rightstyle   =  STYLE COMMAND
    leftcolor    =  COLOR
    middlecolor  =  COLOR
    rightcolor   =  COLOR
    width        =  DIMENSION
    leftwidth    =  DIMENSION
    middlewidth  =  DIMENSION
    rightwidth   =  DIMENSION
```

\setupfootertexts [.[1].] [.[2].] [.[3].] [.[4].] [.[5].]
OPT OPT OPT OPT OPT

```
1   text margin edge
2   date pagenumber MARK TEXT COMMAND
3   date pagenumber MARK TEXT COMMAND
4   date pagenumber MARK TEXT COMMAND
5   date pagenumber MARK TEXT COMMAND
```

\setupfootnotes [..,..[*]=..,..]

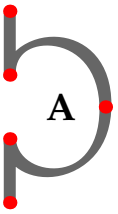
```
*   inherits: \setupnote
```



```
\setupframed   [...,...]   [..,..=..,..]
1   NAME                     OPT
2   corner             =  rectangular round NUMBER l r b t lr rl tb bt rt tr rb br bl lb tl lt trb rtl tlb blt ltr rtl lbr rbl ltrb trbl rblt bltr
    framecorner        =  rectangular round NUMBER l r b t lr rl tb bt rt tr rb br bl lb tl lt trb rtl tlb blt ltr rtl lbr rbl ltrb trbl rblt bltr
    backgroundcorner   =  rectangular round NUMBER l r b t lr rl tb bt rt tr rb br bl lb tl lt trb rtl tlb blt ltr rtl lbr rbl ltrb trbl rblt bltr
    radius             =  DIMENSION
    frameradius        =  DIMENSION
    backgroundradius   =  DIMENSION
    depth              =  DIMENSION
    framedepth         =  DIMENSION
    backgrounddepth    =  DIMENSION
    framecolor         =  COLOR
    topframe           =  on off small dash NAME
    bottomframe        =  on off small dash NAME
    leftframe          =  on off small dash NAME
    rightframe         =  on off small dash NAME
    region             =  yes no
    rulethickness      =  DIMENSION
    frameoffset        =  DIMENSION
    frame              =  on off overlay small dash closed none
    background         =  foreground color NAME
    backgroundoffset   =  frame DIMENSION
    backgroundcolor    =  COLOR
    component          =  NAME
    extras             =  COMMAND
    foregroundstyle    =  STYLE COMMAND
    foregroundcolor    =  COLOR
    setups             =  NAME
    offset             =  default overlay none DIMENSION
    width              =  local fit max broad fixed DIMENSION
    height             =  fit max broad DIMENSION
    minheight          =  DIMENSION
    align              =  inherits: \setupalign
    strut              =  yes no none local global
    autostrut          =  yes no
    location           =  height depth high low top middle bottom line lohi hanging keep formula mathematics normal inline
    autowidth          =  yes no force
    lines              =  NUMBER
    top                =  COMMAND
    bottom             =  COMMAND
    blank              =  yes no
    profile            =  NAME
    empty              =  yes no
    loffset            =  DIMENSION
    roffset            =  DIMENSION
    toffset            =  DIMENSION
    boffset            =  DIMENSION
    orientation        =  NUMBER
    anchoring          =  normal up down left right top bottom NAME
    xanchor            =  DIMENSION
    yanchor            =  DIMENSION
    linedirection      =  normal reverse
    dashstep           =  DIMENSION
    synchronize        =  yes no text background
    adaptive           =  yes delay NUMBER
    freezespacing      =  NUMBER
```

```
\setupframedtexts   [...,...]   [..,..=..,..]
1   NAME                          OPT
2   inherits: \setupframedtext
```

```
\setuphead   [...,...]   [..,..=..,..]
1   SECTION            OPT
2   frontpartlabel       =  NAME
    bodypartlabel        =  NAME
    appendixlabel        =  NAME
    backpartlabel        =  NAME
    expansion            =  yes no xml
    catcodes             =  NAME
    sectionresetset      =  NAME
    sectionseparatorset  =  NAME
    sectionconversionset =  NAME
    conversion           =  NAME
    sectionstarter       =  COMMAND PROCESSOR->COMMAND
    sectionstopper       =  COMMAND PROCESSOR->COMMAND
    sectionset           =  NAME
    sectionsegments      =  NUMBER NUMBER:NUMBER NUMBER:* NUMBER:all SECTION SECTION:SECTION SECTION:* SECTION:all current
    referenceprefix      =  + - TEXT
    style                =  STYLE COMMAND
    color                =  COLOR
    textstyle            =  STYLE COMMAND
    textcolor            =  COLOR
    numberstyle          =  STYLE COMMAND
    numbercolor          =  COLOR
    coupling             =  SECTION
    ownnumber            =  yes no
    beforesection        =  COMMAND
    aftersection         =  COMMAND
    insidesection        =  COMMAND
    beforehead           =  COMMAND
    afterhead            =  COMMAND
    incrementnumber      =  yes no list empty
    placehead            =  yes no hidden empty section
    number               =  yes no
    page                 =  inherits: \page
    marking              =  page reset new
    header               =  start stop high none normal empty nomarking NAME
    text                 =  start stop high none normal empty nomarking NAME
    footer               =  start stop high none normal empty nomarking NAME
    before               =  COMMAND
    after                =  COMMAND
    inbetween            =  COMMAND
    continue             =  yes no
    aligntitle           =  yes no float
    interlinespace       =  NAME
    interaction          =  list reference
    internalgrid         =  NAME
    grid                 =  normal standard yes strict tolerant top bottom both broad fit first last high one low none line strut box min max middle
                            math math:line math:halfline math:-line math:-halfline NAME
    align                =  inherits: \setupalign
    tolerance            =  inherits: \setuptolerance
    strut                =  yes no
    hang                 =  line broad fit none NUMBER
    margin               =  DIMENSION
    indentnext           =  yes no auto
    alternative          =  text paragraph normal margin inmargin top middle bottom reverse margintext NAME
    width                =  DIMENSION
    numberwidth          =  DIMENSION
    textwidth            =  DIMENSION
    distance             =  DIMENSION
    textdistance         =  DIMENSION
    commandbefore        =  COMMAND
    commandafter         =  COMMAND
    command              =  \...#1#2
    textcommand          =  \...#1
    deeptextcommand      =  \...#1
    numbercommand        =  \...#1
    deepnumbercommand    =  \...#1
    location             =  NAME
    criterium            =  strict positive all
    hidenumber           =  yes no
    extradata            =  COMMAND
    snapping             =  yes normal 0 1 2 0:10 1:10 2:10 2:20 1:top 1:bottom 2:top 2:bottom
```



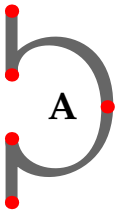
\setupheader [..=..] [..,..=..,..]
OPT
1 text margin edge
2 state = start stop empty high none normal nomarking NAME
style = STYLE COMMAND
color = COLOR
strut = yes no
n = NUMBER
before = COMMAND
after = COMMAND
lefttext = TEXT
middletext = TEXT
righttext = TEXT
leftstyle = STYLE COMMAND
middlestyle = STYLE COMMAND
rightstyle = STYLE COMMAND
leftcolor = COLOR
middlecolor = COLOR
rightcolor = COLOR
width = DIMENSION
leftwidth = DIMENSION
middlewidth = DIMENSION
rightwidth = DIMENSION

\setupheadertexts [..=..] [..=..] [..=..] [..=..] [..=..]
OPT OPT OPT OPT OPT
1 text margin edge
2 date pagenumber MARK TEXT COMMAND
3 date pagenumber MARK TEXT COMMAND
4 date pagenumber MARK TEXT COMMAND
5 date pagenumber MARK TEXT COMMAND

\setupheads [...=...,...] [..,..=..,..]
OPT
1 SECTION
2 inherits: \setuphead

\setupindenting [...=...,...]
OPT
* [-+]small [-+]medium [-+]big none no not first next yes always never odd even normal reset toggle DIMENSION NAME

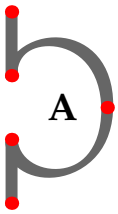
\setupinteraction [...=...,...] [..,..=..,..]
OPT
1 NAME
2 state = start stop
style = STYLE COMMAND
color = COLOR
contrastcolor = COLOR
title = TEXT
subtitle = COLOR
author = TEXT
date = TEXT
keyword = TEXT
focus = standard frame width minwidth height minheight fit tight
menu = on off
fieldlayer = auto NAME
calculate = REFERENCE
click = yes no
display = normal new
page = yes no page name auto
openaction = REFERENCE
closeaction = REFERENCE
openpageaction = REFERENCE
closepageaction = REFERENCE
symbolset = NAME
height = DIMENSION
depth = DIMENSION
focusoffset = DIMENSION
prefix = TEXT



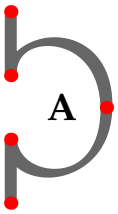
```
\setupinteractionmenu [...,...] [..,..=..,..]
                          1 OPT        2
1   NAME
2   alternative    =  vertical horizontal hidden
    category       =  NAME
    leftoffset     =  overlay frame none default DIMENSION
    rightoffset    =  overlay frame none default DIMENSION
    topoffset      =  overlay frame none default DIMENSION
    bottomoffset   =  overlay frame none default DIMENSION
    maxwidth       =  DIMENSION
    maxheight      =  DIMENSION
    itemalign      =  left middle right flushleft flushright low high lohi
    state          =  start empty local
    left           =  COMMAND
    right          =  COMMAND
    distance       =  overlay DIMENSION
    before         =  COMMAND
    after          =  COMMAND
    inbetween      =  COMMAND
    position       =  yes no
    middle         =  COMMAND
    style          =  STYLE COMMAND
    color          =  COLOR
    samepage       =  yes no empty none normal default
    contrastcolor  =  COLOR
    inherits: \setupframed
```

```
\setupinteractionscreen [..,..=..,..]
                               *
*   width      =  fit max tight DIMENSION
    height     =  fit max tight DIMENSION
    backspace  =  DIMENSION
    horoffset  =  DIMENSION
    veroffset  =  DIMENSION
    topspace   =  DIMENSION
    option     =  fit max singlesided doublesided bookmark auto none default fixed landscape portrait page paper attachment layer title lefttoright
                  righttoleft nomenubar
    copies     =  NUMBER
    print      =  LIST
    delay      =  none NUMBER
```

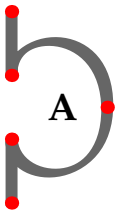
```
\setupitemize   [...,...]   [...,...]   [..,..=..,..]
                  1 OPT       2 OPT         3 OPT
1   each NUMBER
2   intro nointro random continue packed autointro broad text before after nowhite margin inmargin atmargin intext headintext loose fit nofit paragraph
    joinedup serried stopper nostopper unpacked repeat norepeat reverse columns overlay one two three four five six seven eight nine standard NUMBER*broad
    NUMBER*serried horizontal NAME
3   before               =  COMMAND
    after                =  COMMAND
    inbetween            =  COMMAND
    beforehead           =  COMMAND
    afterhead            =  COMMAND
    lefttext             =  COMMAND
    righttext            =  COMMAND
    left                 =  COMMAND
    right                =  COMMAND
    factor               =  NUMBER
    step                 =  DIMENSION
    width                =  DIMENSION
    distance             =  DIMENSION
    margin               =  yes no standard DIMENSION
    leftmargin           =  yes no standard DIMENSION
    rightmargin          =  yes no standard DIMENSION
    leftmargindistance   =  yes no standard DIMENSION
    rightmargindistance  =  yes no standard DIMENSION
    align                =  inherits: \setupalign
    indenting            =  inherits: \setupindenting
    start                =  NUMBER
    symalign             =  left middle right flushleft center flushright
    symbol               =  NAME
    n                    =  NUMBER
    indentnext           =  yes no auto
    inner                =  COMMAND
    command              =  CSNAME
    items                =  NUMBER
    maxwidth             =  DIMENSION
    itemalign            =  left right middle flushleft flushright inner outer
    alignsymbol          =  yes no
    textdistance         =  small medium big none space DIMENSION
    textseparator        =  COMMAND
    lasttextseparator    =  COMMAND
    placestopper         =  yes no display inline
    style                =  STYLE COMMAND
    color                =  COLOR
    headstyle            =  STYLE COMMAND
    headcolor            =  COLOR
    marstyle             =  STYLE COMMAND
    marcolor             =  COLOR
    symstyle             =  STYLE COMMAND
    symcolor             =  COLOR
    grid                 =  inherits: \definegridsnapping
    packcriterium        =  NUMBER
    columndistance       =  DIMENSION
    inherits: \setupcounter
```



```
\setuplanguage   [..[1]..]   [..,..=[2]..,..]
1   LANGUAGE default      OPT
2   default                 =  LANGUAGE
    state                   =  start stop
    date                    =  inherits: \currentdate
    time                    =  inherits: \currenttime
    patterns                =  FILE
    lefthyphenmin           =  NUMBER
    righthyphenmin          =  NUMBER
    lefthyphenchar          =  NUMBER
    righthyphenchar         =  NUMBER
    explicitlefthyphenchar  =  NUMBER
    explicitrighthyphenchar =  NUMBER
    setups                  =  NAME
    spacing                 =  broad packed
    font                    =  auto NAME
    bidi                    =  left right l2r r2l
    text                    =  TEXT
    limittext               =  TEXT
    hyphen                  =  TEXT
    compoundhyphen          =  TEXT
    leftcompoundhyphen      =  TEXT
    rightcompoundhyphen     =  TEXT
    leftquote               =  COMMAND
    rightquote              =  COMMAND
    leftquotation           =  COMMAND
    rightquotation          =  COMMAND
    leftspeech              =  COMMAND
    rightspeech             =  COMMAND
    leftsentence            =  COMMAND
    middlespeech            =  COMMAND
    rightsentence           =  COMMAND
    midsentence             =  COMMAND
    leftsubsentence         =  COMMAND
    rightsubsentence        =  COMMAND
    factor                  =  yes no
    goodies                 =  FILE
```

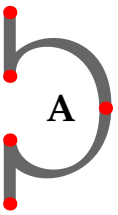


```
\setuplayout   [...]   [..,..=..,..]
1  NAME
2  state                =  start stop normal repeat
   margin               =  DIMENSION
   edge                 =  DIMENSION
   margindistance       =  DIMENSION
   edgedistance         =  DIMENSION
   leftedgedistance     =  DIMENSION
   rightedgedistance    =  DIMENSION
   leftmargindistance   =  DIMENSION
   rightmargindistance  =  DIMENSION
   topdistance          =  DIMENSION
   headerdistance       =  DIMENSION
   footerdistance       =  DIMENSION
   bottomdistance       =  DIMENSION
   preset               =  NAME
   leftmargin           =  DIMENSION
   rightmargin          =  DIMENSION
   leftedge             =  DIMENSION
   rightedge            =  DIMENSION
   header               =  DIMENSION
   footer               =  DIMENSION
   top                  =  DIMENSION
   bottom               =  DIMENSION
   backspace            =  DIMENSION
   topspace             =  DIMENSION
   setups               =  NAME
   cutspace             =  DIMENSION
   width                =  DIMENSION middle fit
   bottomspace          =  DIMENSION
   lines                =  NUMBER
   height               =  DIMENSION middle fit
   horoffset            =  DIMENSION
   veroffset            =  DIMENSION
   columns              =  NUMBER
   columndistance       =  DIMENSION
   method               =  default normal NAME
   location             =  left middle right top bottom singlesided doublesided
   textwidth            =  DIMENSION
   textheight           =  DIMENSION
   nx                   =  NUMBER
   ny                   =  NUMBER
   dx                   =  DIMENSION
   dy                   =  DIMENSION
   scale                =  NUMBER
   sx                   =  NUMBER
   sy                   =  NUMBER
   marking              =  on off page empty color one two four
   grid                 =  yes no snapping off
   textdistance         =  DIMENSION
   alternative          =  default normal makeup NAME
   clipoffset           =  DIMENSION
   cropoffset           =  DIMENSION auto
   trimoffset           =  DIMENSION
   bleedoffset          =  DIMENSION
   artoffset            =  DIMENSION
   direction            =  normal reverse
   limitstretch         =  yes auto DIMENSION
   vz                   =  yes NUMBER
   adaptive             =  DIMENSION
   rows                 =  NUMBER
   rowdistance          =  DIMENSION
   snapping             =  yes normal 0 1 2 0:10 1:10 2:10 2:20 1:top 1:bottom 2:top 2:bottom
```



```
\setuplinetable  [...]  [...]  [..,..=..,..]
                   OPT    OPT
1  r c
2  odd even header NUMBER
3  lines           =  fit NUMBER
   before          =  COMMAND
   after           =  COMMAND
   inbetween       =  COMMAND
   stretch         =  yes no DIMENSION
   maxwidth        =  fit DIMENSION
   nleft           =  NUMBER
   n               =  NUMBER
   repeat          =  yes no
   nx              =  NUMBER
   width           =  DIMENSION
   height          =  fit line DIMENSION
   distance        =  DIMENSION
   leftoffset      =  DIMENSION
   rightoffset     =  DIMENSION
   align           =  inherits: \setupalign
   background      =  color
   backgroundcolor =  COLOR
   xheight         =  max DIMENSION
   xdepth          =  max DIMENSION
   style           =  STYLE COMMAND
   color           =  COLOR
```

```
\setuplist  [...,...]  [..,..=..,..]
              OPT
1  LIST
2  state                    =  start stop
   location                 =  none here
   type                     =  simple command userdata
   criterium                =  local intro reference SECTIONBLOCK:reference all SECTIONBLOCK:all text SECTIONBLOCK:text current SECTIONBLOCK:current
                               here previous SECTIONBLOCK:previous component SECTION SECTIONBLOCK:SECTION
   list                     =  NAME
   width                    =  fit broad DIMENSION
   height                   =  fit broad DIMENSION
   depth                    =  fit broad DIMENSION
   symbol                   =  one two three none default
   label                    =  yes no none NAME
   starter                  =  COMMAND
   stopper                  =  COMMAND
   command                  =  \...#1#2#3
   numbercommand            =  \...#1
   textcommand              =  \...#1
   pagecommand              =  \...#1
   pagenumber               =  yes no always realpage
   headnumber               =  yes no always
   before                   =  COMMAND
   after                    =  COMMAND
   inbetween                =  COMMAND
   margin                   =  none DIMENSION
   distance                 =  none DIMENSION
   aligntitle               =  yes no
   numberalign              =  left right middle flushleft flushright inner outer
   align                    =  inherits: \setupalign
   hang                     =  yes no
   left                     =  COMMAND
   right                    =  COMMAND
   interaction              =  yes no all number text title page sectionnumber pagenumber
   limittext                =  yes no TEXT
   style                    =  STYLE COMMAND
   color                    =  COLOR
   numberstyle              =  STYLE COMMAND
   numbercolor              =  COLOR
   textstyle                =  STYLE COMMAND
   textcolor                =  COLOR
   pagestyle                =  STYLE COMMAND
   pagecolor                =  COLOR
   reference                =  NUMBER
   extras                   =  NAME
   order                    =  command all title
   levels                   =  NUMBER
   alternative              =  a b c d e f g left right top bottom command none interactive paragraph horizontal vertical NAME
   maxwidth                 =  DIMENSION
   pageprefix               =  yes no
   pageprefixseparatorset   =  NAME
   pageprefixconversionset  =  NAME
   pageprefixset            =  NAME
   pageprefixsegments       =  NUMBER NUMBER:NUMBER NUMBER:* NUMBER:all SECTION SECTION:SECTION SECTION:* SECTION:all current
   pageprefixconnector      =  COMMAND PROCESSOR->COMMAND
   pageconversionset        =  NAME
   pagestarter              =  COMMAND PROCESSOR->COMMAND
   pagestopper              =  COMMAND PROCESSOR->COMMAND
   inherits: \setupcounterinherits: \setupframed
```



```
\setupmakeup [...,...] [..,..=..,..]
                  OPT
1   NAME
2   page          =  inherits: \page
    command       =  COMMAND
    width         =  DIMENSION
    height        =  DIMENSION
    align         =  inherits: \setupalign
    setups        =  NAME
    top           =  COMMAND
    bottom        =  COMMAND
    before        =  COMMAND
    after         =  COMMAND
    location      =  top
    reference     =  REFERENCE
    pagestate     =  start stop
    headerstate   =  start stop high empty none normal
    footerstate   =  start stop high empty none normal
    topstate      =  start stop high empty none normal
    bottomstate   =  start stop high empty none normal
    textstate     =  start stop high empty none normal
    doublesided   =  yes no empty
    style         =  STYLE COMMAND
    color         =  COLOR
    label         =  TEXT
```

```
\setupmarginblock [...,...] [..,..=..,..]
                       OPT
1   NAME
2   state       =  start stop
    width       =  DIMENSION
    before      =  COMMAND
    after       =  COMMAND
    inbetween   =  COMMAND
    align       =  inherits: \setupalign
    style       =  STYLE COMMAND
    color       =  COLOR
    top         =  COMMAND
    bottom      =  COMMAND
    location    =  left right middle inmargin
    left        =  COMMAND
    right       =  COMMAND
```

```
\setupmargindata [...,...] [..,..=..,..]
                      OPT
1   NAME
2   strut         =  yes no auto cap fit line default CHARACTER
    command       =  \...#1
    width         =  DIMENSION
    align         =  inherits: \setupalign
    anchor        =  region text
    location      =  left right inner outer
    method        =  top line first depth height
    category      =  default edge
    scope         =  local global
    option        =  text paragraph
    margin        =  local normal margin edge
    distance      =  DIMENSION
    hoffset       =  DIMENSION
    voffset       =  DIMENSION
    dy            =  DIMENSION
    bottomspace   =  DIMENSION
    threshold     =  DIMENSION
    line          =  NUMBER
    stack         =  yes continue
    style         =  STYLE COMMAND
    color         =  COLOR
```

```
\setupmathcases [...,...] [..,..=..,..]
                    1 OPT       2
1   NAME
2   left            = COMMAND
    right           = COMMAND
    strut           = yes no
    mathstyle       = display text script scriptscript cramped uncramped normal packed small big
    distance        = DIMENSION
    numberdistance  = DIMENSION
    simplecommand   = NAME
    lefttext        = TEXT
    righttext       = TEXT
    leftmargin      = DIMENSION
    rightmargin     = DIMENSION
    fences          = cases sesac tekcarb parenthesis bracket brace bar doublebar triplebar angle doubleangle solidus ceiling floor moustache uppercorner
                      lowercorner group openbracket mirroredparenthesis mirroredbracket mirroredbrace mirroredbar mirroreddoublebar mirroredtriplebar
                      mirroredangle mirroreddoubleangle mirroredsolidus mirroredceiling mirroredfloor mirroredmoustache mirroreduppercorner mirroredlowercorner
                      mirroredgroup mirroredopenbracket interval openinterval closedinterval leftopeninterval rightopeninterval varopeninterval
                      varleftopeninterval varrightopeninterval integerinterval tupanddownarrows tupdownarrows tdownuparrows tuparrow tdownarrow abs
                      innerproduct integerpart norm set sequence tuple
    spaceinbetween  = inherits: \setupwhitespace
```

```
\setupmathoperators [...,...] [..,..=..,..]
                        1 OPT       2
1   NAME
2   mathclass     = all begin end unset ordinary operator binary relation open close punctuation variable active inner under over fraction radical
                    middle prime accent fenced ghost vcenter explicit imaginary differential exponential integral ellipsis function digit division
                    factorial wrapped construct dimension unary textpunctuation unspaced experimental fake numbergroup continuation
    symbolcolor   = COLOR
    method        = horizontal vertical auto autolimits limits nolimits
    size          = auto DIMENSION
    top           = TEXT
    topcolor      = COLOR
    bottom        = TEXT
    bottomcolor   = COLOR
    textcolor     = COLOR
    color         = COLOR
    numbercolor   = COLOR
    left          = NUMBER
```

```
\setupmathradical [...,...] [..,..=..,..]
                      1 OPT       2
1   NAME
2   color         = COLOR
    textcolor     = COLOR
    numbercolor   = COLOR
    symbolcolor   = COLOR
    plugin        = mp
    mp            = NAME
    left          = NUMBER
    right         = NUMBER
    top           = NUMBER
    n             = TEXT
    height        = none DIMENSION
    depth         = none DIMENSION
    mindepth      = DIMENSION
    leftmargin    = DIMENSION
    rightmargin   = DIMENSION
    rule          = yes no symbol bottom
    source        = NAME
    mathstyle     = display text script scriptscript cramped uncramped normal packed small big
    strut         = yes no height depth math
```

```
\setupnarrower [...,...] [..,..=..,..]
                   1 OPT       2
1   NAME
2   left      = DIMENSION
    middle    = DIMENSION
    right     = DIMENSION
    default   = [-+]left [-+]middle [-+]right NUMBER*left NUMBER*middle NUMBER*right reset
    before    = COMMAND
    after     = COMMAND
```

A

\setuppagenumbering [..,..*=..,..]

```
*   alternative  =  singlesided doublesided
    page         =  inherits: \page
    strut        =  yes no
    command      =  \...#1
    left         =  COMMAND
    right        =  COMMAND
    state        =  start stop
    width        =  DIMENSION
    location     =  header footer left middle right inleft inright margin inmargin atmargin marginedge none
    style        =  STYLE COMMAND
    color        =  COLOR
```

\setuppapersize [...1] [..,..2=..,..]
OPT

```
1   NAME
2   top        =  COMMAND
    bottom     =  COMMAND
    left       =  COMMAND
    right      =  COMMAND
    method     =  normal none NAME
    scale      =  NUMBER
    nx         =  NUMBER
    ny         =  NUMBER
    dx         =  DIMENSION
    dy         =  DIMENSION
    width      =  DIMENSION
    height     =  DIMENSION
    topspace   =  DIMENSION
    backspace  =  DIMENSION
    offset     =  DIMENSION
    page       =  reset landscape mirrored negative rotated 90 180 270 NAME
    paper      =  reset landscape mirrored negative rotated 90 180 270 NAME
    option     =  fit max
    distance   =  DIMENSION
```

\setupparagraph [...,...1] [..,..2=..,..]
OPT

```
1   NAME
2   style   =  STYLE COMMAND
    color   =  COLOR
    align   =  inherits: \setupalign
    setups  =  NAME
```

\setupparagraphs [...1] [...,...2] [..,..3=..,..]
OPT OPT

```
1   NAME
2   each NUMBER
3   n              =  NUMBER
    before         =  COMMAND
    after          =  COMMAND
    width          =  DIMENSION
    distance       =  DIMENSION
    height         =  DIMENSION fit
    top            =  COMMAND
    bottom         =  COMMAND
    align          =  inherits: \setupalign
    inner          =  COMMAND
    command        =  COMMAND
    rule           =  on off
    rulethickness  =  DIMENSION
    rulecolor      =  COLOR
    style          =  STYLE COMMAND
    color          =  COLOR
    direction      =  normal reverse
```

```
\setupregister [...] [..,..=..,..]
                 1 OPT      2
1   NAME NAME:NUMBER
2   referencemethod          = forward
    expansion                = yes no xml
    ownnumber                = yes no
    xmlsetup                 = NAME
    alternative              = a b A B
    method                   = default before after first last ch mm zm pm mc zc pc uc
    compress                 = yes no all packed text
    check                    = yes no
    criterium                = local text current previous all SECTION
    pageprefixseparatorset   = COMMAND
    pageprefixconversionset  = NAME
    pageprefixstarter        = COMMAND PROCESSOR->COMMAND
    pageprefixstopper        = COMMAND PROCESSOR->COMMAND
    pageprefixset            = NAME
    pageprefixsegments       = NUMBER NUMBER:NUMBER NUMBER:* NUMBER:all SECTION SECTION:SECTION SECTION:* SECTION:all current
    pageprefixconnector      = COMMAND
    pageprefix               = yes no
    pageseparatorset         = NAME
    pageconversionset        = NAME
    pagestarter              = COMMAND PROCESSOR->COMMAND
    pagestopper              = COMMAND PROCESSOR->COMMAND
    pagesegments             = NUMBER NUMBER:NUMBER NUMBER:* NUMBER:all
    maxwidth                 = DIMENSION
    indicator                = yes no
    before                   = COMMAND
    after                    = COMMAND
    command                  = \...#1
    textcommand              = \...#1
    deeptextcommand          = \...#1
    pagecommand              = \...#1
    distance                 = DIMENSION
    interaction              = text pagenumber
    pagenumber               = yes no
    symbol                   = a n none 1 2 COMMAND
    language                 = default DIN␣5007-1 DIN␣5007-2 Duden de-DE de-CH de-AT ru-iso9 ocs-scn LANGUAGE
    style                    = STYLE COMMAND
    color                    = COLOR
    textstyle                = STYLE COMMAND
    textcolor                = COLOR
    pagestyle                = STYLE COMMAND
    pagecolor                = COLOR
    pageleft                 = COMMAND
    pageright                = COMMAND
    n                        = NUMBER
    balance                  = yes no
    align                    = inherits: \setupalign
    numberorder              = numbers
    pagemethod               = page section
```

```
\setuprotate [..,..=..,..]
                   *
*   location  =  fit broad depth high middle default normal
    rotation  =  left right inner outer NUMBER
    inherits: \setupframed
```

```
\setupsectionblock [...,...] [..,..=..,..]
                       1 OPT       2
1   NAME
2   page    =  inherits: \page
    before  =  COMMAND
    after   =  COMMAND
    number  =  yes no
```

```
\setupsynonyms [...,...] [..,..=..,..]
                  1 OPT       2
1   SINGULAR
2   expansion       = yes no xml
    alternative     = first last normal NAME
    next            = COMMAND
    command         = \...#1#2#3
    textcommand     = \...#1
    synonymcommand  = \...#1
    language        = default DIN␣5007-1 DIN␣5007-2 Duden de-DE de-CH de-AT ru-iso9 ocs-scn LANGUAGE
    method          = default before after first last ch mm zm pm mc zc pc uc
    criterium       = current previous local text all SECTION
    style           = STYLE COMMAND
    color           = COLOR
    textstyle       = STYLE COMMAND
    textcolor       = COLOR
    synonymstyle    = STYLE COMMAND
    synonymcolor    = COLOR
    left            = COMMAND
    right           = COMMAND
    before          = COMMAND
    after           = COMMAND
    inbetween       = COMMAND
    hyphens         = yes no
    command         = \...#1#2#3
```

```
\setupTABLE [...,...] [...,...] [..,..=..,..]
               1 OPT     2 OPT       3
1   r c x y row column first last start header each odd even one NUMBER -NUMBER
2   first least each two odd even NUMBER -NUMBER
3   extras               = COMMAND
    left                 = COMMAND
    right                = COMMAND
    headcolor            = COLOR
    headstyle            = STYLE COMMAND
    leftmargindistance   = DIMENSION
    rightmargindistance  = DIMENSION
    columndistance       = DIMENSION
    maxwidth             = DIMENSION
    setups               = NAME
    textwidth            = DIMENSION local
    split                = yes no repeat page auto
    header               = repeat
    option               = stretch tight
    before               = COMMAND
    after                = COMMAND
    samepage             = before after both
    spaceinbetween       = inherits: \blank
    splitoffset          = DIMENSION
    aligncharacter       = yes no
    alignmentcharacter   = TEXT number->TEXT text->TEXT
    distance             = DIMENSION
    color                = COLOR
    style                = math STYLE COMMAND
    synchronize          = background
    direction            = normal reverse
    inherits: \setupframed
```

A

\setuptabulate [..=..] [..=..] [..,..=..,..]
OPT OPT

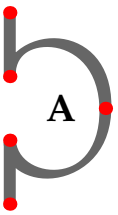
```
1   NAME
2   NAME
3   format          =  TEMPLATE none
    before          =  COMMAND
    after           =  COMMAND
    distance        =  small medium big none blank depth grid DIMENSION
    blank           =  preference samepage max force enable disable nowhite packed back overlay always keep weak strong default before inbetween after
                       fixed flexible none small medium big line halfline halflinebefore halflineafter quarterline formula white height depth standard
                       NUMBER*small NUMBER*medium NUMBER*big NUMBER*line NUMBER*halfline NUMBER*quarterline NUMBER*formula NUMBER*white NUMBER*height
                       NUMBER*depth category:NUMBER order:NUMBER penalty:NUMBER DIMENSION NAME
    headstyle       =  STYLE COMMAND
    headcolor       =  COLOR
    background      =  NAME
    backgroundcolor =  COLOR
    foregroundstyle =  STYLE COMMAND
    foregroundcolor =  COLOR
    align           =  left middle right dimension
    rule            =  line normal
    rulecolor       =  COLOR
    rulethickness   =  DIMENSION
    bodyfont        =  inherits: \setupbodyfont
    indenting       =  yes no
    split           =  yes no repeat auto
    unit            =  DIMENSION
    margin          =  DIMENSION
    inner           =  COMMAND
    EQ              =  COMMAND
    header          =  yes repeat text
    frame           =  on off
    title           =  TEXT
    keeptogether    =  yes no
    dashstep        =  DIMENSION
```

\setuptagging [..,..*=..,..]

```
*   state     =  start stop on off
    method    =  auto
    preset    =  basic demo mkiv uac
    level     =  NUMBER
    comment   =  TEXT
    option    =  interaction
```

\setuptextbackground [...=...] [..,..=..,..]
OPT

```
1   NAME
2   state           =  start stop
    location        =  text paragraph always none
    criterium       =  NUMBER
    alternative     =  NUMBER
    mp              =  NAME
    method          =  NAME
    background      =  color
    backgroundcolor =  COLOR
    corner          =  rectangular round
    level           =  NUMBER
    backgroundoffset=  DIMENSION
    before          =  COMMAND
    after           =  COMMAND
    align           =  inherits: \setupalign
    dash            =  NUMBER
    radius          =  DIMENSION
    frame           =  on off
    framecolor      =  COLOR
    rulethickness   =  DIMENSION
    voffset         =  DIMENSION
    frameoffset     =  DIMENSION
    leftoffset      =  yes no standard DIMENSION
    rightoffset     =  yes no standard DIMENSION
    topoffset       =  small medium big line DIMENSION
    bottomoffset    =  small medium big line DIMENSION
    style           =  STYLE COMMAND
    color           =  COLOR
```



\setupthinrules [..,..*=..,..]

```
*  height          =  max DIMENSION
   depth           =  max DIMENSION
   background      =  color
   frame           =  on off
   rulethickness   =  DIMENSION
   alternative     =  a b c none
   backgroundcolor =  COLOR
   color           =  COLOR
   interlinespace  =  small medium big NUMBER
   before          =  COMMAND
   after           =  COMMAND
   inbetween       =  COMMAND
   n               =  NUMBER
   on              =  DIMENSION
   off             =  DIMENSION
```

\setuptolerance [...,*,...]

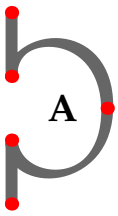
```
*  horizontal vertical verystrict strict tolerant verytolerant space stretch
```

\setuptype [...,1,...] [..,..2=..,..]

```
1  NAME                OPT
2  option   =  mp lua xml parsed-xml nested tex context none NAME
   command  =  CSNAME
   left     =  COMMAND
   right    =  COMMAND
   tab      =  yes no NUMBER
   compact  =  absolute last all
   escape   =  yes no TEXT PROCESSOR->TEXT
   style    =  STYLE COMMAND
   color    =  COLOR
   lines    =  yes no normal hyphenated
   space    =  on off normal fixed stretch
   setups   =  NAME
```

\setuptyping [...,1,...] [..,..2=..,..]

```
1  NAME                OPT
2  oddmargin     =  DIMENSION
   evenmargin    =  DIMENSION
   margin        =  yes no standard DIMENSION
   option        =  mp lua xml parsed-xml nested tex context none NAME
   style         =  STYLE COMMAND
   color         =  COLOR
   align         =  inherits: \setupalign
   lines         =  yes no normal hyphenated
   space         =  on off normal fixed stretch
   keeptogether  =  yes no paragraph
   before        =  COMMAND
   after         =  COMMAND
   strip         =  yes no NUMBER
   range         =  NUMBER NAME
   tab           =  yes no NUMBER
   paragraph     =  yes no
   escape        =  yes no TEXT PROCESSOR->TEXT
   indentnext    =  yes no auto
   continue      =  yes no
   start         =  NUMBER
   stop          =  NUMBER
   step          =  NUMBER
   numbering     =  file line no
   blank         =  inherits: \blank
   bodyfont      =  inherits: \setupbodyfont
```



```
\setupunit    [...,1,...]    [..,..=2..,..]
1   NAME                OPT
2   method       =  1 2 3 4 5 6
    language     =  LANGUAGE
    alternative  =  text mathematics
    order        =  reverse normal
    separator    =  small medium big normal none NAME
    space        =  small medium big normal none NAME
    style        =  STYLE COMMAND
    color        =  COLOR
    option       =  keep
```

```
\setupuserpagenumber    [..,..=*..,..]
*   viewerprefix  =  TEXT
    state         =  start stop none keep empty
    label         =  TEXT
    inherits: \setupcounter
```

```
\setupwhitespace    [...,*,...]
                        OPT
*   fix fixed flexible line halfline quarterline none small medium big default DIMENSION
```

```
\setupxtable    [...,1,...]    [..,..=2..,..]
1   NAME                OPT
2   textwidth             =  DIMENSION local
    bodyfont              =  inherits: \setupbodyfont
    spaceinbetween        =  inherits: \blank
    option                =  tight max stretch width height fixed
    textheight            =  DIMENSION
    maxwidth              =  DIMENSION
    columndistance        =  DIMENSION
    leftmargindistance    =  DIMENSION
    rightmargindistance   =  DIMENSION
    header                =  repeat
    footer                =  repeat
    rulethickness         =  DIMENSION
    split                 =  yes no repeat auto
    splitoffset           =  DIMENSION
    samepage              =  before after both
    distance              =  DIMENSION
    aligncharacter        =  yes no
    alignmentleftsample   =  TEXT
    alignmentrightsample  =  TEXT
    alignmentleftwidth    =  DIMENSION
    alignmentrightwidth   =  DIMENSION
    alignmentcharacter    =  TEXT
    inherits: \setupframed
```

```
\setvariables    [1..]    [..,..=2..,..]
1   NAME
2   set    =  COMMAND
    reset  =  COMMAND
    KEY    =  VALUE
```

```
\startalignment    [...,*,...] ... \stopalignment
*   inherits: \setupalign
```

\startbuffer [.*..] ... \stopbuffer
* NAME OPT

\starthiding ... \stophiding

\startchemical [.1..] [..,..2=..,..] ... \stopchemical
1 NAME OPT
2 inherits: \setupchemical OPT

\startchemicalformula ... \stopchemicalformula

\startcombination [.1..] [..,..2=..,..] ... \stopcombination
1 NAME OPT
2 inherits: \setupcombination OPT

\startcomment [.1..] [..,..2=..,...] ... \stopcomment
1 TEXT OPT
2 inherits: \setupcomment OPT

\startquotation [.1..] [...,2...] ... \stopquotation
1 LANGUAGE OPT
2 inherits: \startnarrower OPT

\startquote [.1..] [...,2...] ... \stopquote
1 LANGUAGE OPT
2 inherits: \startnarrower OPT

\startdocument [.1..] [..,..2=..,..] ... \stopdocument
1 NAME OPT
2 inherits: \setupdocument OPT

\startFLOWcell [..,..1=..,..] [..,..2=..,..] ... \stopFLOWcell
1 inherits: \setupFLOWshapes
2 inherits: \setupFLOWlines

\startFLOWchart [.*.] ... \stopFLOWchart
* NAME

\startframedtext [.1.] [..,..2=..,..] ... \stopframedtext
1 left right middle none
2 inherits: \setupframedtext

\startinteractionmenu [.*.] ... \stopinteractionmenu
* NAME

\startitemize [...,1=...] [..,..2=..,..] ... \stopitemize
1 inherits: \setupitemgroup
2 inherits: \setupitemgroup

\startlinecorrection [...,*=...] ... \stoplinecorrection
* blank inherits: \blank

\startlines [..,..*=..,..] ... \stoplines
* inherits: \setuplines

\startlinetable ... \stoplinetable

\startlocalfootnotes ... \stoplocalfootnotes

\startmakeup [.1.] [..,..2=..,..] ... \stopmakeup
1 NAME
2 inherits: \setupmakeup

\startstandardmakeup [..,..*=..,..] ... \stopstandardmakeup
OPT
* inherits: \setupmakeup

\startmarginblock [..*..] ... \stopmarginblock
OPT
* NAME

\startcolumns [..,..*=..,..] ... \stopcolumns
OPT
* inherits: \setupmixedcolumns

\startmode [...,*...] ... \stopmode
* NAME

\startnarrower [...,*...] ... \stopnarrower
OPT
* [-+]left [-+]middle [-+]right NUMBER*left NUMBER*middle NUMBER*right reset reverse

\startfootnote [...,*...] ... \stopfootnote
OPT
* REFERENCE

\startpacked [..*..] ... \stoppacked
OPT
* blank

\startplacefloat [..1..] [..,..2=..,..] [..,..3=..,..] ... \stopplacefloat
OPT OPT
1 SINGULAR
2 title = TEXT
bookmark = TEXT
marking = TEXT
list = TEXT
location = split keeptogether always left right inner outer backspace cutspace inleft inright inmargin leftmargin rightmargin leftedge rightedge innermargin outermargin inneredge outeredge text opposite reset height depth [-+]line halfline grid high low fit tight tolerant verytolerant 90 180 270 nonumber none local here force margin [-+]hang hanging tall both middle offset top bottom auto page leftpage rightpage paragraph somewhere effective header footer tblr lrtb tbrl rltb fxtb btlr lrbt btrl rlbt fxbt fixd append
reference = REFERENCE
referencetext = TEXT
3 KEY = VALUE

\startsectionblockenvironment [..*..] ... \stopsectionblockenvironment
* NAME

\startchapter [..,..1=..,..] [..,..2=..,..] ... \stopchapter

```
1  title          = TEXT
   bookmark       = TEXT
   marking        = TEXT
   list           = TEXT
   reference      = REFERENCE
   referencetext  = TEXT
   ownnumber      = TEXT
   placeholder    = TEXT
2  KEY = VALUE
```

\startsection [..,..1=..,..] [..,..2=..,..] ... \stopsection

```
1  title          = TEXT
   bookmark       = TEXT
   marking        = TEXT
   list           = TEXT
   reference      = REFERENCE
   referencetext  = TEXT
   ownnumber      = TEXT
   placeholder    = TEXT
2  KEY = VALUE
```

\startsubject [..,..1=..,..] [..,..2=..,..] ... \stopsubject

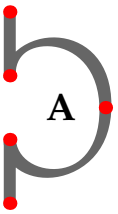
```
1  title          = TEXT
   bookmark       = TEXT
   marking        = TEXT
   list           = TEXT
   reference      = REFERENCE
   referencetext  = TEXT
   ownnumber      = TEXT
   placeholder    = TEXT
2  KEY = VALUE
```

\startsubsection [..,..1=..,..] [..,..2=..,..] ... \stopsubsection

```
1  title          = TEXT
   bookmark       = TEXT
   marking        = TEXT
   list           = TEXT
   reference      = REFERENCE
   referencetext  = TEXT
   ownnumber      = TEXT
   placeholder    = TEXT
2  KEY = VALUE
```

\startsubsubject [..,..1=..,..] [..,..2=..,..] ... \stopsubsubject

```
1  title          = TEXT
   bookmark       = TEXT
   marking        = TEXT
   list           = TEXT
   reference      = REFERENCE
   referencetext  = TEXT
   ownnumber      = TEXT
   placeholder    = TEXT
2  KEY = VALUE
```



\starttitle [..,..=..,..] [..,..=..,..] ... \stoptitle
1 title = TEXT
bookmark = TEXT
marking = TEXT
list = TEXT
reference = REFERENCE
referencetext = TEXT
ownnumber = TEXT
placeholder = TEXT
2 KEY = VALUE

\starttabulate [|..|..|] [..,..=..,..] ... \stoptabulate
1 TEMPLATE
2 inherits: \setuptabulate

\starttextbackground [..] [..,..=..,..] ... \stoptextbackground
1 NAME
2 inherits: \setuptextbackground

\starttyping [..,..=..,..] ... \stoptyping
* inherits: \setuptyping

\startunpacked ... \stopunpacked

\startxcell [..] [..,..=..,..] ... \stopxcell
1 NAME
2 nx = NUMBER
ny = NUMBER
nc = NUMBER
nr = NUMBER
inherits: \setupxtable

\startxrow [..] [..,..=..,..] ... \stopxrow
1 NAME
2 inherits: \setupxtable

\startxtable [..,..=..,..] ... \stopxtable
* inherits: \setupxtable

\startxtablebody [..,..*=..,..] OPT ... \stopxtablebody
* inherits: \setupxtable

\startxtablefoot [..,..*=..,..] OPT ... \stopxtablefoot
* inherits: \setupxtable

\startxtablehead [..,..*=..,..] OPT ... \stopxtablehead
* inherits: \setupxtable

\startxtablenext [..,..*=..,..] OPT ... \stopxtablenext
* inherits: \setupxtable

\structureuservariable {.*.}
* KEY

\structurevariable {.*.}
* KEY

\switchtobodyfont [...*...]
* inherits: \setupbodyfont

\textreference [...1=...] {.2.}
1 REFERENCE
2 TEXT

\thinrule

\thinrules [..,..*=..,..] OPT
* inherits: \setupthinrules

```
\type   [..,..=..,..]   {..}
1   inherits: \setuptype
2   CONTENT
```

```
\usebtxdataset   [..]   [..]   [..,..=..,..]
1   NAME
2   FILE
3   specification = NAME
```

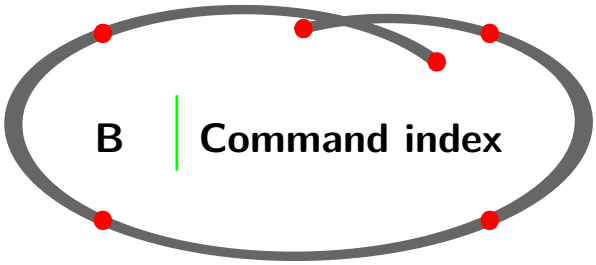
```
\useexternaldocument   [..]   [..]   [..]
1   NAME
2   FILE
3   TEXT
```

```
\usemodule   [..]   [...,...]   [..,..=..,..]
1   m p s x t
2   FILE
3   KEY = VALUE
```

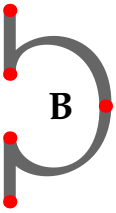
```
\useURL   [..]   [..]   [...]   [...]
1   NAME
2   URL
3   FILE
4   TEXT
```

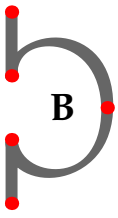
```
\writebetweenlist   [..]   [..,..=..,..]   {..}
1   LIST
2   inherits: \setuplist
3   COMMAND
```

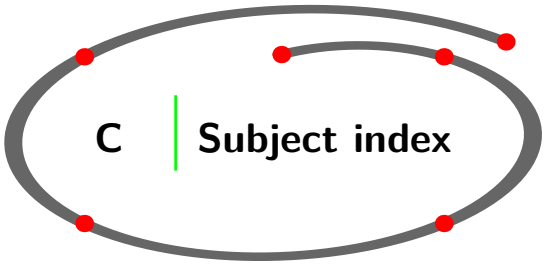
```
\writetolist   [..]   [..,..=..,..]   {..}   {..}
1   LIST
2   inherits: \setuplist
3   NUMBER
4   TEXT
```



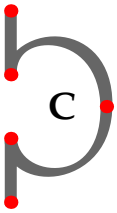
B Command index



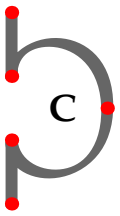

B

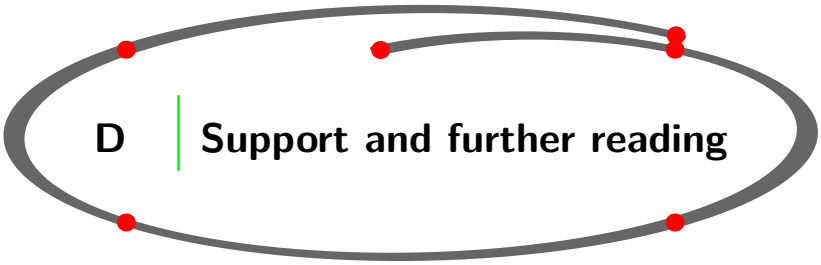


C Subject index



C


C



D Support and further reading

D.1 Websites for more information

Pragma ADE website	`http://www.pragma-ade.com`
Pragma ADE overview of manuals	`http://www.pragma-ade.com/overview.htm`
CONTEXT WIKI	`http://wiki.contextgarden.net`
CONTEXT WIKI, TikZ	`https://wiki.contextgarden.net/Installing_TikZ_and_pgfplots`
CONTEXT on web	`https://context-on-web.eu`
CONTEXT Third party modules	`https://modules.contextgarden.net/`

D.2 TEX users groups

The main TEX users group is situated in the United States. However there exist also a couple of local users groups.

If you use one of the TEX typesetting systems which all come free of charge it would be advisable to join one of the local users groups in order to support ongoing development of the TEX environments.

CONTEXT group	`https://group.contextgarden.net`
TEX Users Group	`https://tug.org`
Československé sdružení uživatelů TeXu Czech Users Group (CSTUG)	`http://www.cstug.cz`
Deutschsprachige Anwendervereinigung TeX e.V. German TEX users association (Dante e.V.)	`https://www.dante.de`
Nederlandstalige TEX Gebruikersgroep Dutch TEX Users Group (NTG)	`https://www.dante.de`
Groupe francophone des Utilisateurs de TEX, LATEX et logiciels compagnons French speaking TEX, LATEXand companion software users Group (GUTenberg)	`https://www.gutenberg-asso.fr/`
Polska Grupa Użytkowników Systemu TeX Polish TEX users group (GUST)	`https://www.gust.org.pl/index_html-en?set_language=en`
Gruppo Utilizzatori Italiani di TEX Italian speaking TEX users group (GuIT)	`https://www.guitex.org/home/en`

D.3 Mailinglist for CONTEXT users

For your Questions and Answers you can subscribe to the

CONTEXT mailing list	https://mailman.ntg.nl/mailman3/lists/ntg-context.ntg.nl

D.4 Installation help

CONTEXT installation help	https://wiki.contextgarden.net/ConTeXt_Standalone

D.5 Manuals

Please be informed, that you find the manuals as well on the Pragma ADE website as also in the standalone distribution and therefore on your own computer in

.../tex/texmf-context/doc/context/documents/general/...

CONTEXT general manual (screen version)	https://www.pragma-ade.com/general/manuals/cont-eni.pdf
CONTEXT general manual (paper version)	https://www.pragma-ade.com/general/manuals/cont-enp.pdf
METAFUN manual (screen version)	https://www.pragma-ade.com/general/manuals/metafun-s.pdf
METAFUN manual (paper version)	https://www.pragma-ade.com/general/manuals/metafun-p.pdf
TikZ & PGF manual	https://pgf-tikz.github.io/pgf/pgfmanual.pdf
svg in context and metafun xl	https://www.pragma-ade.com/general/manuals/svg-lmtx.pdf
Natural tables examples	https://www.pragma-ade.com/general/manuals/enattab.pdf
Extreme tables	https://www.pragma-ade.com/general/manuals/xtables-mkiv.pdf
CONTEXT Interaction	https://www.pragma-ade.com/general/manuals/interaction.pdf
It's in the details	https://www.pragma-ade.com/general/manuals/details.pdf
Fonts in CONTEXT	https://www.pragma-ade.com/general/manuals/mfonts.pdf
Charts with CONTEXT mkiv	https://www.pragma-ade.com/general/manuals/charts-mkiv.pdf
PPCHTEX, typesetting chemical formulas with CONTEXT	https://www.pragma-ade.com/general/manuals/ppchtex-mkiv.pdf
Chemical formulas in CONTEXT examples	https://www.pragma-ade.com/general/manuals/eppchtex.pdf
Adding text to graphics	http://www.pragma-ade.com/general/manuals/mlabels.pdf
Typograpic programming	http://www.pragma-ade.com/general/manuals/style.pdf
Dealing with XML in CONTEXT MKIV	http://www.pragma-ade.com/general/manuals/xml-mkiv.pdf

MathML	https://www.pragma-ade.nl/general/manuals/mmlprime.pdf
MathML in CONTEXT	https://www.pragma-ade.nl/general/manuals/mmlexamp.pdf
Units CONTEXT MKIV	http://www.pragma-ade.com/general/manuals/units-mkiv.pdf
luatools mtxrun context	http://www.pragma-ade.com/general/manuals/tools-mkiv.pdf
Figures CONTEXT XML	http://www.pragma-ade.com/general/manuals/xfigures-p.pdf
Graphics	https://www.pragma-ade.com/general/manuals/graphics.pdf
Mathematics in CONTEXT (screen version)	https://www.pragma-ade.com/general/manuals/mathincontext-screen.pdf
Mathematics in CONTEXT (paper version)	https://www.pragma-ade.com/general/manuals/mathincontext-paper.pdf
Meaningful math in CONTEXT examples	https://www.pragma-ade.com/general/manuals/examples-mathmeanings.pdf
Colors	https://www.pragma-ade.com/general/manuals/colors-mkiv.pdf
Color separation	http://www.pragma-ade.nl/general/manuals/msplit.pdf
Columnsets	https://www.pragma-ade.com/general/manuals/columnsets.pdf
Page columns	https://www.pragma-ade.com/general/manuals/pagecolumns.pdf
Bibliography the CONTEXT way	http://www.pragma-ade.nl/general/manuals/mkiv-publications.pdf
CONTEXT commands	http://www.pragma-ade.com/general/qrcs/setup-en.pdf
l2r-r2l a few tips	https://www.pragma-ade.com/general/manuals/bidi.pdf

D.6 Magazines

Good looking shapes	http://www.pragma-ade.com/general/magazines/mag-0010.pdf
Cross referencing documents	http://www.pragma-ade.com/general/magazines/mag-1103.pdf
Project structure	http://www.pragma-ade.com/general/magazines/mag-1101.pdf
Use of the natural table	https://wiki.contextgarden.net/images/8/8c/NaturalTables.pdf

D.7 Low level manuals

If you want to dive into the depth of how CONTEXT is working, there is a whole set of manuals which names start all with `lowlevel- ...`. These manuals are coming with the distribution.

D.8 Third party manuals

Henning Hraban Ramm. Drucksachen gestalten mit CONTEXT und LUAMETATEX. Lehmanns Media GmbH, Berlin. 2026. ISBN 978-3-96543-604-6 (Druckversion), ISBN 978-3-96543-637-4 (eBook).
Joaquín Ataz-López. A not so short introduction to ConTEXt Mark IV (Original title: Una introducción (no demasiado breve) a ConTEXt Mark IV). 2021.

D.9 SCITE editor

SCITE `http://www.pragma-ade.com/general/manuals`

D.10 Test suite

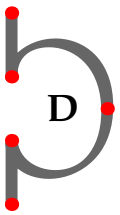
In case you need examples to test or to solve an issue typesetting with CONTEXT you might consult the test suite which contains a wealth of information. You can download it from:

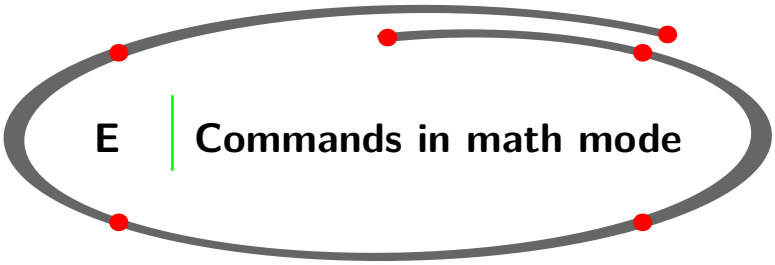
CONTEXT test suite `https://www.pragma-ade.com/context/latest/cont-tst.zip`

D.11 CONTEXT on Web

If you intend to try CONTEXT as an online tool then you might enjoy:

CONTEXT on Web `https://context-on-web.eu`



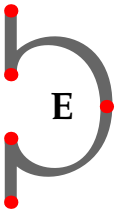


E.1 Greek characters

Character		Command	Character		Command	Character		Command
	α	\alpha		ι	\iota		ϱ	\varrho
	β	\beta		κ	\kappa	Σ	σ	\sigma
Γ	γ	\gamma	Λ	λ	\lambda		ς	\varsigma
Δ	δ	\delta		μ	\mu		τ	\tau
	ϵ	\epsilon		ν	\nu		υ	\upsilon
	ε	\varepsilon	Ξ	ξ	\xi	Φ	ϕ	\phi
	ζ	\zeta		o	o		φ	\varphi
	η	\eta	Π	π	\pi		χ	\chi
Θ	θ	\theta		ϖ	\varpi	Ψ	ψ	\psi
	ϑ	\vartheta		ρ	\rho	Ω	ω	\omega

E.2 Special symbols

Symbol	Command	Symbol	Command	Symbol	Command
$\aleph$	\aleph	$\prime$	\prime	$\forall$	\forall
$\hbar$	\hbar	$\emptyset$	\emptyset	$\exists$	\exists
$\imath$	\imath	∇	\nabla	$\neg$	\neg
$\jmath$	\jmath	$\surd$	\surd	$\flat$	\flat
ℓ	\ell	$\top$	\top	$\natural$	\natural
$\wp$	\wp	$\bot$	\bot	$\sharp$	\sharp
$\Re$	\Re	$\Vert$	\Vert	$\clubsuit$	\clubsuit
$\Im$	\Im	$\angle$	\angle	$\diamondsuit$	\diamondsuit
∂	\partial	$\triangle$	\triangle	$\heartsuit$	\heartsuit
∞	\infty	\	\backslash	$\spadesuit$	\spadesuit



E.3 Operators in addition to +, − and ∗

Operator	Command	Operator	Command	Operator	Command
±	\pm	∩	\cap	∨	\vee
∓	\mp	∪	\cup	∧	\wedge
∖	\setminus	⊎	\uplus	⊕	\oplus
·	\cdot	⊓	\sqcap	⊖	\ominus
×	\times	⊔	\sqcup	⊗	\otimes
∗	\ast	◁	\triangleleft	⊘	\oslash
⋆	\star	▷	\triangleright	⊙	\odot
◇	\diamond	≀	\wr	†	\dagger
∘	\circ	◯	\bigcirc	‡	\ddagger
•	\bullet	△	\bigtriangleup	⨿	\amalg
÷	\div	▽	\bigtriangledown		

E.4 Operators

Operator	Command	Operator	Command	Operator	Command
∑	\sum	∏	\prod	∐	\coprod
∫	\int	∮	\oint	⋂	\bigcap
⋃	\bigcup	⨆	\bigsqcup	⋁	\bigvee
⋀	\bigwedge	⨀	\bigodot	⨂	\bigotimes
⨁	\bigoplus	⨄	\biguplus		

E.5 Relation in addition to >, < and =

Relation	Command	Relation	Command	Relation	Command
$\leq$	\leq	$\geq$	\geq	$\equiv$	\equiv
$\prec$	\prec	$\succ$	\succ	$\sim$	\sim
$\preceq$	\preceq	$\succeq$	\succeq	$\simeq$	\simeq
$\ll$	\ll	$\gg$	\gg	$\asymp$	\asymp
$\subset$	\subset	$\supset$	\supset	$\approx$	\approx
$\subseteq$	\subseteq	$\supseteq$	\supseteq	$\cong$	\cong
$\sqsubseteq$	\sqsubseteq	$\sqsupseteq$	\sqsupseteq	$\bowtie$	\bowtie
$\in$	\in	$\ni$	\ni	$\propto$	\propto
$\vdash$	\vdash	$\dashv$	\dashv	$\models$	\models
$\smile$	\smile	$\mid$	\mid	$\doteq$	\doteq
$\frown$	\frown	$\parallel$	\parallel	$\perp$	\perp

E.6 Negated relations

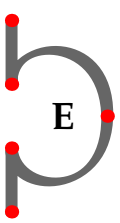
Relation	Command	Relation	Command	Relation	Command
$\not<$	\not<	$\not>$	\not>	$\not=$	\not=
$\not\leq$	\not\leq	$\not\geq$	\not\geq	$\not\equiv$	\not\equiv
$\not\prec$	\not\prec	$\not\succ$	\not\succ	$\not\sim$	\not\sim
$\not\preceq$	\not\preceq	$\not\succeq$	\not\succeq	$\not\simeq$	\not\simeq
$\not\subset$	\not\subset	$\not\supset$	\not\supset	$\not\approx$	\not\approx
$\not\subseteq$	\not\subseteq	$\not\supseteq$	\not\supseteq	$\not\cong$	\not\cong
$\not\sqsubseteq$	\not\sqsubseteq	$\not\sqsupseteq$	\not\sqsupseteq	$\not\asymp$	\not\asymp

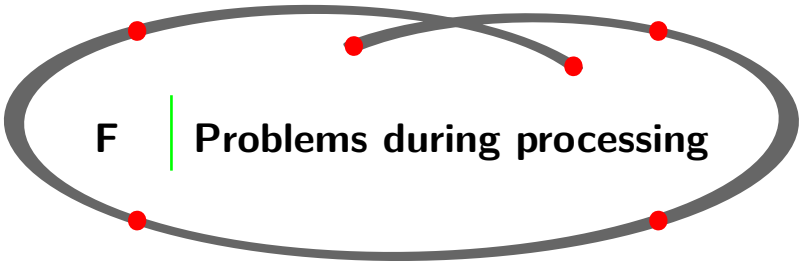
E.7 Some arrows

Arrow	Command	Arrow	Command	Arrow	Command
$\leftarrow x$	\leftarrow	$\longleftarrow$	\longleftarrow	$\uparrow$	\uparrow
$\Leftarrow$	\Leftarrow	$\Longleftarrow$	\Longleftarrow	$\Uparrow$	\Uparrow
$\rightarrow$	\rightarrow	$\longrightarrow$	\Rightarrow	$\downarrow$	\downarrow
$\Rightarrow$	\Rightarrow	$\Longrightarrow$	\Longrightarrow	$\Downarrow$	\Downarrow
$\leftrightarrow$	\leftrightarrow	$\longleftrightarrow$	\longleftrightarrow	$\updownarrow$	\updownarrow
$\Leftrightarrow$	\Leftrightarrow	$\Longleftrightarrow$	\Longleftrightarrow	$\Updownarrow$	\Updownarrow
$\mapsto$	\mapsto	$\longmapsto$	\longmapsto	$\nearrow$	\nearrow
$\searrow$	\searrow	$\swarrow$	\swarrow	$\nwarrow$	\nwarrow
$\hookleftarrow$	\hookleftarrow	$\hookrightarrow$	\hookrightarrow		

E.8 Alternative commands

Alternative	Command	Alternative	Command	Alternative	Command
$\neq$	\ne	{	{	$\wedge$	\land
$\to$	\to	|	\vert	$\leq$	\le
}	}	$\vee$	\lor	$\leftarrow$	\gets
$\|$	\Vert	$\geq$	\ge	$\ni$	\owns
$\neg$	\lnot				





F Problems during processing

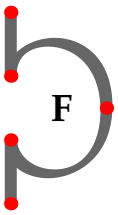
If processing is not successful — for example because you typed `\startchpter` instead of `\startchapter` — CONTEXT produces an error message giving you an indication or even a straight forward answer to what is wrong with the input i.e. your file. When a compilation run is aborted due to an error there is still a PDF file generated containing the colorful word `error`.

```
! Undefined control sequence
tex error       > tex error on line 4 in file ./example-file.mkxl:

<line 3.4>
    \startchpter
    [title=Test]

 1
 2     \startdocument
 3
 4 >>  \startchpter[title=Test]
 5
 6     A typo causing a fatal error \unknown
 7     \stopchapter
 8
 9
10
11     \stopdocument
12
The control sequence at the end of the top line of your error
message was never \def'ed.
You can just continue as I'll forget about whatever was undefined.
```

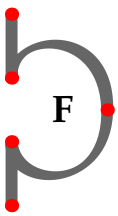
This error message is also included in the log file. In addition to this CONTEXT generates an error file like `example-file-error.log` with additional information.

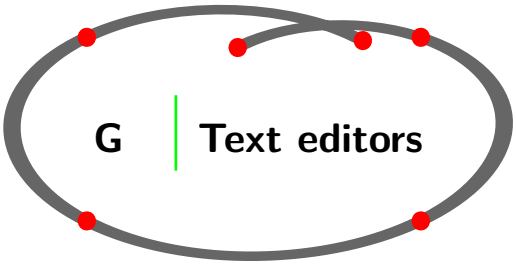
Sometimes the error messages are obscure and you can not point directly to the culprit. The reason for this is that the problem starts much earlier in the file before CONTEXT gives up because of an error. Finding the location of the error in an extensive document can then be a tedious job. In such a case you have to isolate the error using the following procedure:

- open the file in your text editor
- save a copy of your file (to be on the safe side)
- isolate the error by
  1. placing a `\stopdocument` command higher up in your text
  2. processing the file
  3. repeating step 1 and 2 until the file processes correctly
- study the content that produces the error
- fix the error
- place the `\stopdocument` command after the corrected error



- process your file
- etc.





The developers of CONTEXT have always been able to process their TEX files from a text editor. In that way CONTEXT became an effective authoring tool.

At this moment the text editors SCITE and TEXworks and VScode are supported by the CONTEXT distribution.

G.1 SCITE

Please refer to the *CONTEXT WIKI*, Input and compilation with SCITE and learn how to install SCITE.

SCITE supports the:

- processing TEX files
- colored display of commands (syntax highlighting, lexing)
- syntax checking of TEX, XML and LUA files
- spell checking of your text

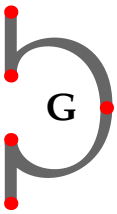
The CONTEXT specific support of SCITE is described in the manual *SCITE in CONTEXT*.

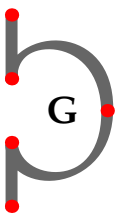
G.2 TEXworks

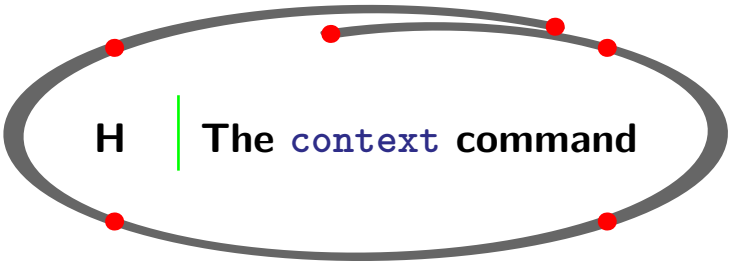
Please refer to the *CONTEXT WIKI*, Input and compilation with TEXworks.

G.3 VScode

For using VScode with the CONTEXT extension module please refer to *CONTEXT WIKI*, Input and compilation with VScode.







You can process a TEX file or run CONTEXT with the command context which you type at your command line:

```
context example-file
```

CONTEXT will make multiple runs to get the layout, references, lists and page numbering straight. You can see those runs echoed on your screen and listed in the example-file.log file.

You can add parameters to give the command context additional tasks while processing the file.

E.g. you can start up your PDF reader automatically, if you use one of the following programmes: evince, okular, pdfxcview, sumatra or zathura by typing on the command line

```
context --autopdf=auto example-file
```

Another example would be context --mode=Screen telling CONTEXT to use the mode Screen and do what is specified for this mode. See for a complete example in chapter 41.

If you want the resulting PDF file renamed directly after compiling you could issue

```
context --result=renamed-example-file
```

An overview of the parameters is given when you type:

```
context --help
```

Please refer to the manual *luatools mtxrun context* for more information on running CONTEXT.

Arranging pages for printing on paper is introduced in chapter 46. When running CONTEXT from the command line you can switch arranging on and off by issuing

```
context --arrange example-file.mkxl
```

and

```
context --noarrange example-file.mkxl
```

respectively. This requires, that the arranging is setup in example-file.mkxl e.g. \setuparranging[2UP].

In case that there is no setup of arranging pages in example-file.mkxl you still can tell CONTEXT to run an arranging pass at the end of the typeseting process by issuing

```
context --extra=arrange --printformat=XY paperformat=A6*A4 --nx=2 --ny=2
```

where the printformat contains one of the predefined arranging schemes. The paperformat tells the size of the arranged page on the printing paper size. Of course you need also to specify the layout of the arranged pages on the printing paper.

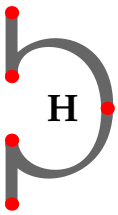
Sometimes it is necessary to extract a series of pages from a larger document. This can be achieved by

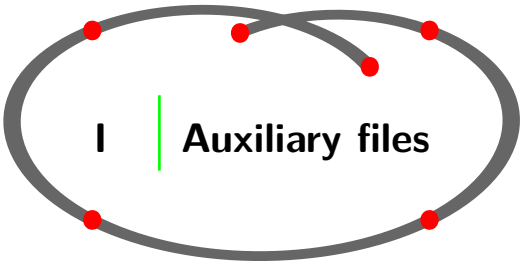
```
context --extra=select --selection=9:13  example-file.pdf
        --result=extract.pdf
```

Hereby you can indicate ranges and or single pages in a comma separated list e.g.

```
... --selection=9:13,50,60:62,200 ...
```

CONTEXT creates then a PDF file with the name extract.pdf containing for this example pages 9 to 13, 50, 60 to 62 and page 200 from the example-file.pdf

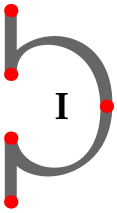


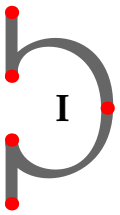


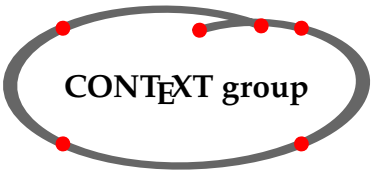
CONTEXT will produce a number of auxiliary files during processing. If your input file is called `example-file.mkxl` the following files will appear on your working directory.

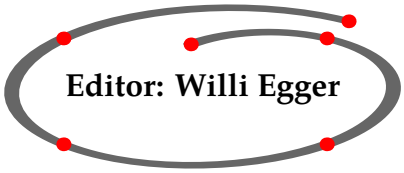
CONTEXT LMTX	Meaning
`example-file.mkxl`	your text file
`example-file.log`	log information
`example-file-error.log`	additional error log information
`example-file.tuc`	output information
`example-file.pdf`	result file

The `example-file.tuc` file contains information about registers, lists and references which will be used when necessary. The `example-file.log` can be viewed in case there are problems during processing.

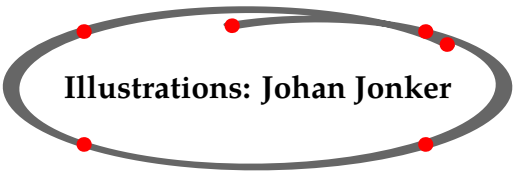


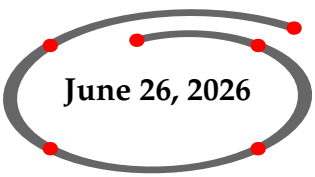



CONTEXT group


Editor: Willi Egger


Design and style: Hans Hagen


Illustrations: Johan Jonker


June 26, 2026

This manual describes some features of CONTEXT, a document production system, based on TEX.

CONTEXT offers the user a flexible and high quality typesetting environment. No in–depth knowledge of TEX is needed. The parameter driven character of CONTEXT enables users to define their own layout rather easily.

CONTEXT is developed and tested in a production environment and is used for typesetting simple books as well as complex documents, paper and/or screen based. This introduction manual describes the functionality needed for everyday publications, like manuals and educational materials.

This manual is also available as an interactive document, be it in a bit different layout. The macro package CONTEXT, some more advanced examples and additional information can be found at *Pragma Advanced Document Engineering*. (`http://www.pragma-ade.com`)