Beginners Tutorial

ConTEXt

Aditya Mahajan
Willi Egger

1 P1-1: Install and setup

1.1   Important source of information

— **Pragma site:**

http://www.pragma-ade.com/show-man-1.htm

— **ConTEXt wiki:**

http://wiki.contextgarden.net/Main_Page

— **TEXshow:**

http://texshow.contextgarden.net/

— **Module-documentation:**

http://groups.foundry.supelec.fr/modules/

1.2   Installation

— **Installation of Context Minimals on different platforms**
    — Windows
    — Mac
    — Linux/FreeBSD
— **Linux/Mac/FreeBSD:**

```
mkdir context
cd context

rsync -ptv rsync://contextgarden.net/minimals/setup/first-setup.sh

./first-setup.sh
```

The script `first-setup` will organize everything for you concerning the installation! So it will run:
— MKII & pdfTEX or XҙTEX
    — mktexlsr
    — texexec –make –all: the format files for ConTEXt, MetaFun, mptopdf
— MKIV & luaTEX
    — context –generate
    — texexec –lua –make –all: the format files for ConTEXt, MetaFun, mptopdf

— Windows
  There are two options to install the ConTEXt Minimals on a Windows machine:
  — Fetch the **installer** from Context-wiki
    In this case you should not have MikTEX or TEXlive installed. Both installations will interfere
    with ConTEXt Minimals installation!
  — Use commandline tools
    — md . . . context
    — cd . . . context
    — Download context-setup-mswin.zip
    — unzip it
    — Run `first-setup.bat`
— Installation of TEXlive
  TEXlive 2008 will come with a new installer for all platforms.
  Run this installer in such a way, that you just get "everything". Disadvantage: you get all which
  is needed for LATEX too.

1.3 Setting up the environment variables

Before being able to use ConTEXt you need to run `setuptex` to initialize the environment.

It is a good idea to simplify this procedure:

— **Linux/Mac/FreeBSD:**
  Edit the `~/.profile` and add the following line (adapted to your installation):

  ```
  ~/context/tex/setuptex ~/context/tex
  ```

  This guarantees, that the environment variables needed by TEX will be setup whenever you open a
  Terminal.
— **Windows**
  Create a file `startcontext.bat` (use any appropriate name) somewhere in PATH and put this line
  into it (adapt the line to your installation)

  ```
  C:\Programs\context\tex\setuptex.bat C:\Programs\context\tex
  ```

  Then, you can type `startcontext` into CMD whenever you want to use ConTEXt Minimals instead
  of MikTEX or TEXlive.

1.4 Testing the new installation

Make file `hello.tex`

```
\starttext
  Hello World!
\stoptext
```

Run `context hello`   →   By default luaTEX is run.
Run `texexec --lua hello`   →   luaTEX is invoked.
Run `texexec --xtx hello`   →   XꟻTEX is invoked.
Run `texexec hello`   →   pdfTEX is run.

1.5 First Document

To write a document use an editor.

Editors providing integration with ConTEXt are:

— Scite for Windows and Linux
— Emacs for Linux
— Textmate for Mac
— TeXshop for Mac

— and many more!

Editors supporting ConTEXt provide generally syntax-highlighting, compilation facilities, viewing facilities.

— Regime `\enableregime[utf]`, `\enableregime[windows]` ... This line is only needed for MKII. In MKIV/luaTEX utf-8 is enabled by default.
— Language `\mainlanguage[en]`, `\mainlanguage[de]` ... This line makes sure that the language specific issues are used: hyphenation, quotes etc.
— `\starttext` ... `\stoptext`

1.6 Compiling first document

— **MKII (pdfTEX):**
  `texexec myfirstdocument`
— **MKII (XꟻTEX):**
  `texexec --xtx myfirstdocument`
— **MKIV (luaTEX):**
  `context myfirstdocument or texexec --lua myfirstdocument`

1.7 Viewing first document

— Acrobat Reader
— Preview on the Mac
— xpdf/evince on Linux
— ...

1.8   Default values

— Paper is A_4 portrait
— Margins 30 mm
— Backspace 25 mm
— Topspace 25 mm
— Header 20 mm
— Footer 20 mm

— ...

If you want to know the actual values issue `\showlayout` in your document.

1.9   Where does Context look for files?

— Current folder
— Folders above the currentfolder
— Figure path can be setup like:

```
\setupexternalfigures[directory=~/Documents/TEXdata/Context-Bohinj]
```

1.10   Basic concepts

— **Load a file**
  `\input` filename

  Examples: `knuth.tex`, `ward.tex` ...

  Have a look at `.../tex/texmf-context/tex/context/sample`
— **Buffers**

  ```
  \startbuffer[Allkind]
  \midaligned{\color[blue]{Here comes all kind of information}}
  \stopbuffer
  ```

  Call the created buffer with `\getbuffer[Allkind]`

<div align="center">

Here comes all kind of information

</div>

— **Framed text**
  Within ConTEXt an important environment is `\framed` and `\framedtext`. It is a good idea to get familiar with the possibilities hereof, because ConTEXt relies heavily on this mechanism.

```
\framed [..,.¹⁼.,..] {.².}
          OPTIONAL
1   inherits from \setupframed
2   TEXT
```
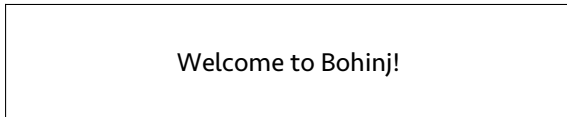
```
\startFRAMEDTEXT [.¹.] [..,.²⁼.,..] ... \stopFRAMEDTEXT
                   OPTIONAL      OPTIONAL
1   left  right  middle  none
2   inherits from \setupframedtexts
```

`\framed[width=.5\textwidth,offset=15pt,frame=on]{Welcome to Bohinj!}`

Welcome to Bohinj!

— **Files are simply textfiles with the extension tex.**

2 P2-1: Document design/workflow

2.1 Design on Paper

— Visualize what you want (this is the hardest part)

For example, the following is IEEE conference specification

— Paper Size: 8.5 inches by 11.0 inches (21.59cm by 27.94cm)
— Top Margin: 0.75 inch (1.905 cm)
— Bottom Margin: 1.0 inch (2.54 cm)
— Left Margin: 0.75 inch (1.905 cm)
— Right Margin: 0.75 inch (1.905 cm)
— Columns: Two (2) columns, each 3.33 inches (8.46 cm) wide
— Column Gutter: 0.34 inches (0.84 cm) column gutter

The layout of this document is:
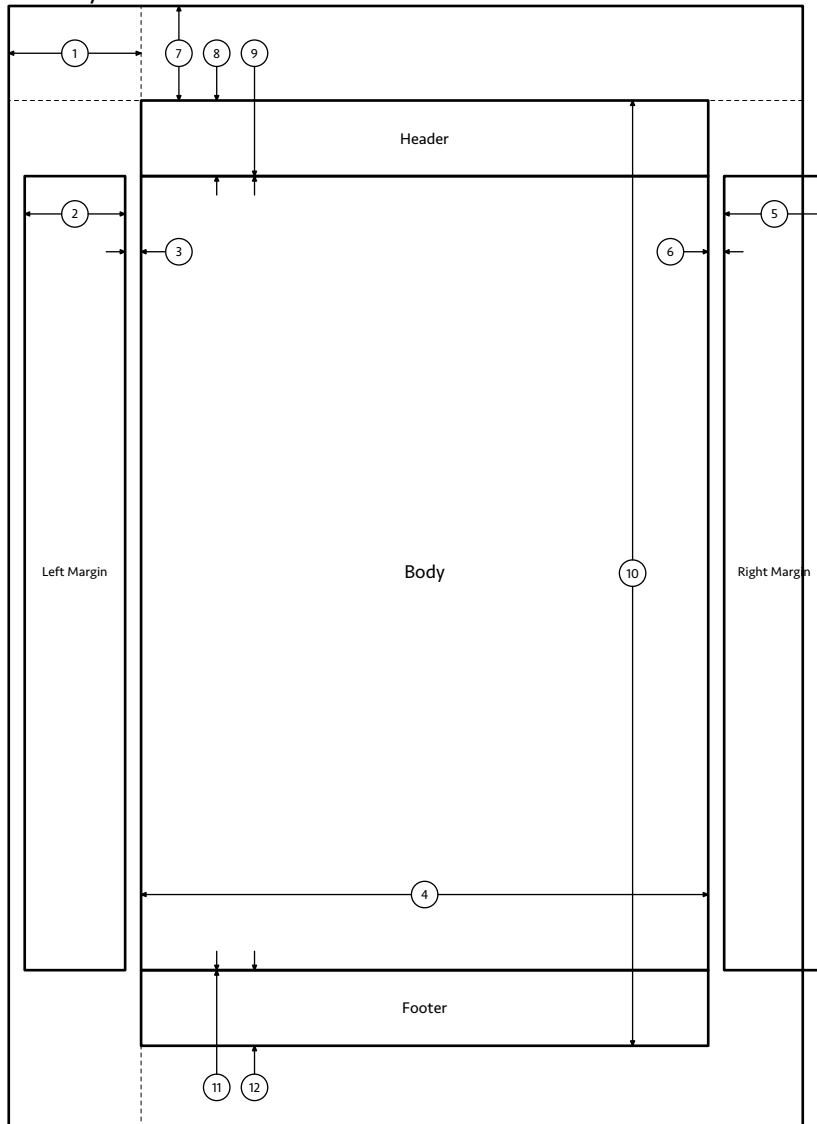
1	backspace 71.1 pt	9	headerdistance 0.0 pt
2	leftmargin 75.6 pt	10	height 711.3 pt
3	leftmargindistance 12.0 pt	11	footerdistance 0.0 pt
4	width 426.8 pt	12	footer 56.9 pt
5	rightmargin 75.6 pt		paperwidth 597.5 pt
6	rightmargindistance 12.0 pt		paperheight 845.0 pt
7	topspace 71.1 pt		
8	header 56.9 pt		

```
\setuplayout [..,..*..,..]

*   width               =  DIMENSION  fit  middle
    height              =  DIMENSION  fit  middle
    backspace           =  DIMENSION
    topspace            =  DIMENSION
    margin              =  DIMENSION
    leftmargin          =  DIMENSION
    rightmargin         =  DIMENSION
    header              =  DIMENSION
    footer              =  DIMENSION
    top                 =  DIMENSION
    bottom              =  DIMENSION
    leftedge            =  DIMENSION
    rightedge           =  DIMENSION
    headerdistance      =  DIMENSION
    footerdistance      =  DIMENSION
    topdistance         =  DIMENSION
    bottomdistance      =  DIMENSION
    leftmargindistance  =  DIMENSION
    rightmargindistance =  DIMENSION
    leftedgedistance    =  DIMENSION
    rightedgedistance   =  DIMENSION
    horoffset           =  DIMENSION
    veroffset           =  DIMENSION
    style               =  normal  bold  slanted  boldslanted  type  cap  small... COMMAND
    color               =  IDENTIFIER
    marking             =  on  off  color  screen  TEXT
    location            =  left  middle  right  bottom  top  singlesided  doublesided
    scale               =  DIMENSION
    nx                  =  NUMBER
    ny                  =  NUMBER
    dx                  =  DIMENSION
    dy                  =  DIMENSION
    lines               =  NUMBER
    columns             =  NUMBER
    columndistance      =  DIMENSION
    grid                =  yes  no
    bottomspace         =  DIMENSION
    cutspace            =  DIMENSION
    textdistance        =  DIMENSION
    textwidth           =  NUMBER
    textmargin          =  DIMENSION
    clipoffset          =  DIMENSION
    page                =  IDENTIFIER
    paper               =  IDENTIFIER
```

Back to IEEE layout

```
\setuplayout[
            width=middle,
           height=middle,
         location=middle,
         topspace=.75in,
      bottomspace=0.75in,
    bottomdistance=.25in,
```

```
              bottom=.25in,
          backspace=0.75in,
           cutspace=0.75in,
          leftmargin=0in,
         rightmargin=0in,
    leftmargindistance=0in,
   rightmargindistance=0in,
             header=0in,
             footer=0in,
       headerdistace=0in,
      footerdistance=.15in,
    ]
```

2.2   Visualizing layout

— `\showlayout` command
— `\ShowLayout` command from Patrick Gundlach's `layout` module

2.3   Setting the paper size

```
\definepapersize [..1..] [..,..2..,..]

1   IDENTIFIER

2   width   = DIMENSION
    height  = DIMENSION
    offset  = DIMENSION
    scale   = NUMBER
```

```
\setuppapersize [...,1,...] [...,2,...]
                              OPTIONAL
1   A3  A4  A5  A6  letter  ...  CD  IDENTIFIER  landscape  mirrored  rotated  90  180  270

2   negative   inherits from \setuppapersize
```

2.4   Makeup

A makeup is a separate page, like a title page or colofon. There is one standard makeup page, but you can define more if needed.

```
\startstandardmakeup
  My Fancy Title
\stopstandardmakeup
```

The associated commands are:

```
\definemakeup [..¹..] [..,..²..,..]

1    IDENTIFIER

2    inherits from \setupmakeup
```

```
\setupmakeup [..¹..] [..,..²..,..]

1    IDENTIFIER

2    width        = DIMENSION
     height       = DIMENSION
     voffset      = DIMENSION
     hoffset      = DIMENSION
     page         = left  yes  right
     commands     = COMMAND
     doublesided  = yes  no  empty
     headerstate  = normal  stop  start  empty  none  nomarking
     footerstate  = normal  stop  start  empty  none  nomarking
     textstate    = normal  stop  start  empty  none  nomarking
     topstate     = stop  start
     bottomstate  = stop  start
     pagestate    = stop  start
     color        = IDENTIFIER
```

— Standard is vertically centered. (top=\vss, bottom=\vss)

2.5 Framed

```
\defineframed [..¹..] [..,..²..,..]
                              OPTIONAL

1    IDENTIFIER

2    inherits from \setupframedtexts
```

```
\defineframedtext [..¹..] [..,..²..,..]
                                  OPTIONAL

1    IDENTIFIER

2    inherits from \setupframedtexts
```

```
\setupframed [..1..] [..,..2..,..]
             OPTIONAL

1   IDENTIFIER

2   height          = fit  broad  DIMENSION
    width           = fit  broad  fixed  local  DIMENSION
    autowidth       = yes  no  force
    offset          = none  overlay  default  DIMENSION
    location        = depth  hanging  high  lohi  low  top  middle  bottom  keep
    option          = none  empty
    strut           = yes  no  global  local
    align           = inner  outer  left  right  flushleft  flushright  middle  center  normal
                      no  yes
    bottom          = COMMAND
    top             = COMMAND
    frame           = on  off  none  overlay
    topframe        = on  off
    bottomframe     = on  off
    leftframe       = on  off
    rightframe      = on  off
    frameoffset     = DIMENSION
    framedepth      = DIMENSION
    framecorner     = round  rectangular
    frameradius     = DIMENSION
    framecolor      = IDENTIFIER
    background      = screen  color  none  foreground  IDENTIFIER
    backgroundscreen = NUMBER
    backgroundcolor = IDENTIFIER
    backgroundoffset = frame  DIMENSION
    backgrounddepth = DIMENSION
    backgroundcorner = round  rectangular
    backgroundradius = DIMENSION
    depth           = DIMENSION
    corner          = round  rectangular
    radius          = DIMENSION
    empty           = yes  no
    foregroundcolor = IDENTIFIER
    foregroundstyle = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    rulethickness   = DIMENSION
```

```
\setupframedtexts [...¹.] [..,.²..,..]
                    OPTIONAL

1   IDENTIFIER

2   bodyfont       = 5pt  ...  12pt  small  big
    style          = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    left           = COMMAND
    right          = COMMAND
    before         = COMMAND
    after          = COMMAND
    inner          = COMMAND
    linecorrection  = on  off
    depthcorrection = on  off
    margin         = standard  yes  no
    location       = left  right  middle  none
    indenting      = never  none  not  no  yes  always  first  next  small  medium  big  normal
                     odd  even  DIMENSION
    inherits from \setupframed
```

— Frame does not break across pages.
— Use textbackgrounds instead: (see the details manual)

3 P2-2: Fonts and colors

3.1 Colors

— **Introduction**

The support of colors has evolved during time. In this part of the tutorial we look at the color support as it is used in MKII. MKIV supports this still. However MKIV has its own color-mechanism (the key is attributes).

— **Supported color-schemes**
  — RGB
  — CMYK
  — Grayscale
  — Transparent colors
— **Basic colors like red, blue,yellow, green are predefined**
— **Defining a custom color**
  — RGB:

    ```
    \definecolor[mygreen][r=.1,b=.0,g=.7]
    ```

  — CMYK:

    ```
    \definecolor[myblue][c=.9,m=.5,y=0,k=.5]
    ```

  — Grayscale:

    ```
    \definecolor[mygray][s=.625]
    ```

  — Transparant: all 12 in PDF described methods are supported

    ```
    \definecolor [tgreen]  [b=0.5,g=1,t=.4,a=1]
    \definecolor [tblue]   [c=1,k=.2,t=.5,a=1]
    \definecolor [tc]      [s=.8,t=.3,a=11]
    ```

— **Starting use of colors:** `\setupcolors[state=start]`
— **Examples**

```
{\color[mygreen]{Green text in RGB color scheme\ }{\quotation{\mygreen Still green}}}
{\color[myblue]{Blue text in CMYK color scheme\ }{\quotation{\myblue Still blue}}}
{\color[mygray]{Gray text in gray-scale\ }{\quotation{\mygray Still gray}}}
{\color[tgreen]{Transparant green text\ }{\quotation{\tgreen Still transparant red}}}
{\color[tblue]{Transparant blue text\ }{\quotation{\tblue Still transparant red}}}
{\color[tc]{Transparant gray text\ }{\quotation{\tc Still transparant gray}}}
```

Green text in RGB color scheme "Still green"
Blue text in CMYK color scheme "Still blue"
Gray text in gray-scale "Still gray"

Transparant green text "Still transparant red"
Transparant blue text "Still transparant red"
Transparant gray text "Still transparant gray"

— **Further reading**

MetaFun manual. Hans Hagen, Ton Otten. 2002. (metafun-p.pdf)
RGB-CMYK-HSB. Hans Hagen. 2000. (rgb-cmyk.pdf)
ConTEXt MKII – MKIV.Hans Hagen. 2008. (mk.pdf)

3.2   Fonts

— **Systemfonts**
  — OTF
    — Latin-modern: this is the default font and the fallback font.
    — Tex-Gyre: Termes, Pagella, Bonum, Schola, Adventor, Heros, Cursor, Chorus
      TeX-Gyre is font-project: the aim is to develop OTF-fonts from the already available free
      fonts. The project will also cover math for those fonts.

Original	Free TEX variant	TEX-Gyre
Times Roman	Nimbus Roman No. 9 L	Termes
Palatino	URW Palatino L	Pagella
Bookman	URW Bookman L	Bonum
Schoolbook	URW Century Schoolbook	Schola
ITC Avant Garde Gothic	URW Gothic	Adventor
Helvetica	Nimbus Sans	Heros
Courier	Nimbus Mono L	Cursor
ITC Zapf Chancery	URW Chancery L	Chorus

    — Antykwa Torunska
    — Iwona
    — Kurier
  — Type1
    — Latin modern: this is the default font and the fallback font.
    — URW-times, URW-Palatino, URW-Helvetica see above.
    — Antykwa Torunska
    — Iwona
    — Kurier
    — txfonts, pxfonts (Math)
    — Utopia (Adobe), Fourier (Math) currently not in minimals
    — Antykwa Poltawskiego currently not in minimals
  — Using system fonts
    — Type 1

```
\usetypescript[times][texnansi]
\setupbodyfont[times,rm,12pt]
```

— OTF

```
\usetypescript[times]
\switchtobodyfont[times,rm,16pt]
```

Here a text typeset in
/Applications/lua/tex/texmf/fonts/opentype/public/tex-gyre/tex-
gyretermes-regular.otf at 16.0pt.

— OTF features
OTF fonts come with features e.g. ligatures depending on the language, different styles of
figures like lining figures, table figures, oldstyle figures, alternative glyph-forms, stylistic
sets . . .

Hello World! ABC ABCE 123 1 2 3 4 5 6 7 8 9

0123.4567	0123.4567
0846.9321	0846.9321
2009.3456	2009.3456

— **Using private fonts**
  — Type 1 fonts (MKII and MKIV)
    — Install fonts with T_EXfont
    — map-file
    — tfm and vf files
    — build typescripts
  — Using a private type 1 font in a document
    — Load mapfile: `\loadmapfile[type-canadatype-pendulum]`
    — Use typescriptfile: `\usetypescriptfile[type-canadatype-pendulum]`
    — Use typescript: `\usetypescript[CT-Pendulum][texnansi]`
    — Setup bodyfont: `\setupbodyfont[Pendulum,24pt]`

Welcome luatex, happy texing!

- OTF for MKIV and X_ETEX only
  Copy the new font to the appropriate location.
- Setup the font for use in ConTEXt
  - Build typescripts for the new font: `type-seravek.tex`
  - Define the typefaces to be used with this font.
  - Put this typescript file into `.../tex/texmf-context/tex/context/user`
  - Run `context --generate` or `luatools --generate`
- Use the font in ConTEXt
  - `\usetypescriptfile[type-seravek]`
  - `\usetypescript[Seravek]`
  - `\setupbodyfont[Seravek,12pt]`

Welcome luaTEX, happy TEXing!

- **Features**
  Which font-features does my font have?
  You can run:

```
mtxrun  --script font --info --list "seravek*.*"

   MtxRun | fontname: seravek
   MtxRun | fullname: Seravek
   MtxRun | filename: Seravek-Regular.otf
   MtxRun |
   MtxRun | feature: c2sc, script: latn, language: dflt
   MtxRun | feature: case, script: latn, language: dflt
   MtxRun | feature: dnom, script: latn, language: dflt
   MtxRun | feature: frac, script: latn, language: dflt
   MtxRun | feature: kern, script: latn, language: dflt
   MtxRun | feature: liga, script: latn, language: dflt
   MtxRun | feature: lnum, script: latn, language: dflt
   MtxRun | feature: locl, script: latn, language: mol rom
   MtxRun | feature: numr, script: latn, language: dflt
   MtxRun | feature: onum, script: latn, language: dflt
   MtxRun | feature: ordn, script: latn, language: dflt
   MtxRun | feature: ornm, script: latn, language: dflt
   MtxRun | feature: pnum, script: latn, language: dflt
   MtxRun | feature: salt, script: latn, language: dflt
   MtxRun | feature: sinf, script: latn, language: dflt
   MtxRun | feature: smcp, script: latn, language: dflt
   MtxRun | feature: ss01, script: latn, language: dflt
   MtxRun | feature: ss02, script: latn, language: dflt
   MtxRun | feature: subs, script: latn, language: dflt
   MtxRun | feature: sups, script: latn, language: dflt
```

```
MtxRun | feature: tnum, script: latn, language: dflt
MtxRun |
```

Seravek has several features: e.g. lining figures (default), table figures, oldstyle figures and ol-style-table figures:
In order to use these features define fontfeatures e.g.:

```
\definefontfeature[latin-tnum]    [default] [script=latn,tnum=yes]
\definefontfeature[latin-o-tnum]  [default] [script=latn,tnum=yes,onum=yes]
\definefontfeature[latin-lnum]    [default] [script=latn,lnum=yes]
\definefontfeature[latin-oldstyle][oldstyle][script=latn]
```

Enable the font features when you need them:

```
\starttabulate[|le|l|]
\NC {\setfontfeature{latin-lnum}1234567890}    \NC Lining figures \NC\NR
\NC {\setfontfeature{latin-oldstyle}1234567890} \NC Oldstyle lininig figures \NC\NR
\NC {\setfontfeature{latin-tnum}1234567890}    \NC Table figures \NC\NR
\NC {\setfontfeature{latin-o-tnum}1234567890}  \NC Oldstyle table figures \NC\NR
\stoptabulate
```

1234567890 : Lining figures
1234567890 : Oldstyle lininig figures
1234567890 : Table figures
1234567890 : Oldstyle table figures

— **Further reading:**

Fonts in ConTEXt. Hans Hagen. 2001. (mfonts.pdf)
MKII - MKIV ConTEXt. Hans Hagen. 2006. (mk.pdf);
My Way: A Beginner's Adventures with TEXFONT.
Adam Lindsay. 2003.(TeXFontExamined.pdf)
My Way: Installing Expert Fonts: Minion Pro.
Idris Samawi Hamid. 2005.(expertfonts.pdf)
ConTEXt wiki: **http://wiki.contextgarden.net/Main_Page**

4 P3-1: Document Structure

4.1 Document structure for small and medium sized documents

- **Predefined heads**
    - chapter/title
    - section/subject
    - subsection/subsubject
    - subsubsection/subsubsubject
- Heads can be configured by `\setuphead` and `\setupheads`
- New heads can be defined by `\definehead`

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

*   sectionnumber  = yes  NUMBER  no
    alternative    = normal  margin  middle  TEXT  paragraph
    separator      = TEXT
    stopper        = TEXT
    align          = inner  outer  left  right  flushleft  flushright  middle  center  normal  no
                     yes
    aligntitle     = yes  float  no
    tolerance      = verystrict  strict  tolerant  verytolerant  stretch
    indentnext     = yes  no
    command        = \...#1#2
    margin         = DIMENSION
```

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

1   SECTION

2   style             = normal  bold  slanted  boldslanted  type  cap  small... COMMAND
    textstyle         = normal  bold  slanted  boldslanted  type  cap  small... COMMAND
    numberstyle       = normal  bold  slanted  boldslanted  type  cap  small... COMMAND
    color             = IDENTIFIER
    textcolor         = IDENTIFIER
    numbercolor       = IDENTIFIER
    number            = yes  no
    ownnumber         = yes  no
    page              = left  right  yes
    continue          = yes  no
    header            = none  empty  high  nomarking
    text              = none  empty  high  nomarking
    footer            = none  empty  high  nomarking
    before            = COMMAND
    inbetween         = COMMAND
    after             = COMMAND
    alternative       = normal  inmargin  middle  TEXT
    hang              = none  broad  fit  line  NUMBER
    command           = \...#1#2
    numbercommand     = \...#1
    textcommand       = \...#1
    deepnumbercommand = \...#1
    deeptextcommand   = \...#1
    prefix            = +  -  TEXT
    placehead         = yes  no  empty
    incrementnumber   = yes  no  LIST  FILE
    resetnumber       = yes  no
    file              = IDENTIFIER
    expansion         = yes  no  command
    margintext        = yes  no
    inherits from \setupheads
```

```
\definehead [...] [...]
             1      2

1   IDENTIFIER

2   SECTION
```

```
\setuplabeltext [...] [..=.]
                 1      2
                      OPTIONAL
1   nl fr en uk de es cz ..

2   IDENTIFIER = TEXT
```

4.2 Document structure for large documents

— **Section blocks**

- \startfrontmatter ... \stopfrontmatter
- \startbodymatter ... \stopbodymatter
- \startbackmatter ... \stopbackmatter
- \startappendices ... \stopappendices
- New section blocks can be defined using \definesectionblock
- Section blocks can be configured using \setupsectionblock

```
\definesectionblock [...¹...] [..,..²..,..]
                                 OPTIONAL

1   inherits from \setupsectionblock

2   inherits from \setupsectionblock
```

```
\setupsectionblock [...¹...] [..,..²..,..]

1   IDENTIFIER

2   number  =  yes  no
    page    =  yes  right
    before  =  COMMAND
    after   =  COMMAND
```

```
\definesectionblock [\v!frontpart] [\v!frontmatter] [\c!number=\v!no]
\definesectionblock [\v!bodypart]  [\v!bodymatter]  [\c!number=\v!yes]
\definesectionblock [\v!appendix]  [\v!appendices]  [\c!number=\v!yes]
\definesectionblock [\v!backpart]  [\v!backmatter]  [\c!number=\v!no]
```

For example, if we want the page numbering in the frontmatter to be roman, we can say

```
\setupsectionblock[frontpart]
                 [before={\setuppagenumbering[conversion=romannumerals]}]
```

4.3 Page headers and footers

- Page header and footer text can be set up using \setupheadertexts and \setupfootertexts.
- Page top and bottom (recall page layout) can be set up using \setuptoptexts and \setupbottomtexts.

```
\setupheadertexts [...¹...] [...²...] [...³...]
                     OPTIONAL  OPTIONAL  OPTIONAL

1   text  margin  edge

2   TEXT  SECTION  date  MARK  pagenumber

3   TEXT  SECTION  date  MARK  pagenumber
```

```
\setupfootertexts [..1..] [..2..] [..3..]
                   OPTIONAL OPTIONAL OPTIONAL

1  text  margin  edge
2  TEXT  SECTION  date  MARK  pagenumber
3  TEXT  SECTION  date  MARK  pagenumber
```

```
\setuptoptexts [...1..] [...2..] [..3..]
                OPTIONAL  OPTIONAL  OPTIONAL

1  text  margin  edge
2  TEXT  SECTION  date  MARK  pagenumber
3  TEXT  SECTION  date  MARK  pagenumber
```

```
\setupbottomtexts [...1..] [..2..] [..3..]
                   OPTIONAL OPTIONAL OPTIONAL

1  text  margin  edge
2  TEXT  SECTION  date  MARK  pagenumber
3  TEXT  SECTION  date  MARK  pagenumber
```

— \setupheadertexts[...] middle of text
— \setupheadertexts[...][...] left and right of text
— \setupheadertexts[...][...][...][...] right and left of odd and even page

— Page headers and footers can be configured using \setupheader and \setupfooter

```
\setupheader [..1..] [..,..2..,..]
              OPTIONAL

1  TEXT  margin  edge
2  state      = normal  stop  start  empty  high  none  nomarking  IDENTIFIER
   strut      = yes  no
   style      = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
   leftstyle  = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
   rightstyle = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
   leftwidth  = DIMENSION
   rightwidth = DIMENSION
   before     = COMMAND
   after      = COMMAND
```

```
\setupfooter [..1..] [..,..2..,..]
              OPTIONAL

1  inherits from \setupheader
2  inherits from \setupheader
```

— New header header and footer like elements can be defined using `\definetext`

```
\definetext [.¹.] [.².] [.³.] [.⁴.] [.⁵.]
                                OPTIONAL  OPTIONAL
1   IDENTIFIER
2   header  footer
3   TEXT
4   TEXT
5   TEXT
```

— This can be used, for example, to set different headers and footers on chapter's first page. For example, to hide the header and show the page number on the footer of each chapter page (like the handout mode of this document) use

```
\definetext [chapterfooter] [footer]  [pagenumber]
\setuphead  [chapter] [header=high, footer=chapterfooter]
```

4.4 Itemizations

— `\startitemize ... \stopitemize`

For example

1. This is an example of an itemized list
2. Each new list starts with a `\item`
3. The `\startitemize` takes optional arguments
4. Same arguments are taken by `\setupitemize`
5. `itemize` is a special kind of `itemgroup`
6. `itemgroups` can be defined and configured using `\defineitemgroup` and `\setupitemgroup`
7. See ConTeXt an excursion for usage details.

```
\setupitemgroup [..1..] [..2..] [...3...] [..,..4..,..]
                    OPTIONAL   OPTIONAL      OPTIONAL

1   IDENTIFIER

2   NUMBER  each

3   standard  broad  serried  packed  unpacked  nowhite  before  after  stopper  joinedup
    atmargin  inmargin  autointro  loose  repeat  SECTION  paragraph  intext  random  reverse

4   margin      =  no   standard  DIMENSION
    leftmargin  =  no   standard  DIMENSION
    rightmargin =  no   standard  DIMENSION
    width       =  DIMENSION
    distance    =  DIMENSION
    factor      =  NUMBER
    items       =  NUMBER
    start       =  NUMBER
    before      =  COMMAND
    inbetween   =  COMMAND
    after       =  COMMAND
    left        =  TEXT
    right       =  TEXT
    beforehead  =  COMMAND
    afterhead   =  COMMAND
    headstyle   =  normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    marstyle    =  normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    symstyle    =  normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    stopper     =  TEXT
    n           =  NUMBER
    symbol      =  NUMBER
    align       =  inner  outer  left  right  flushleft  flushright  middle  center  normal  no
                   yes
    symalign    =  left  right  flushleft  flushright  middle  center
    indentnext  =  yes  no
```

4.5 Descriptions and enumerations

— descriptions are for parts of documents that are less important than heads but need to be high-
  lighted, for example, theorems and definitions.
— enumerations are numbered descriptions.

```
\definedescription [..1..] [..,..2..,..]
                                OPTIONAL

1   IDENTIFIER

2   inherits from \setupdescriptions
```

```
\defineenumeration [...,...] [..] [..,..=..,..]
                        1        2          3
                              OPTIONAL   OPTIONAL

1   IDENTIFIER

2   IDENTIFIER

3   inherits from \setupenumerations
```

```
\setupdescriptions [...,...] [..,..=..,..]
                        1            2
                               OPTIONAL

1   IDENTIFIER

2   style         = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    color         = IDENTIFIER
    width         = fit  broad  DIMENSION
    distance      = DIMENSION
    sample        = TEXT
    text          = TEXT
    closesymbol   = TEXT
    closecommand  = \...#1
    closesymbol   = TEXT
    titleleft     = TEXT
    titleright    = TEXT
    titledistance = DIMENSION
    titlestyle    = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    titlecolor    = IDENTIFIER
    align         = inner  outer  left  right  flushleft  flushright  middle  center  normal  no
                    yes
    margin        = standard  yes  no   DIMENSION
    location      = left  right  top  serried  inmargin  inleft  inright  hanging
    headstyle     = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    headcolor     = IDENTIFIER
    headcommand   = COMMAND
    hang          = fit  broad  NUMBER
    before        = COMMAND
    inbetween     = COMMAND
    after         = COMMAND
    indentnext    = yes  no
    indenting     = never  none  not  no  yes  always  first  next  small  medium  big  normal
                    odd  even  DIMENSION
    command       = COMMAND
```

```
\setupenumerations [...,...] [..,..=..,..]
                        1            2
                               OPTIONAL

1   IDENTIFIER

2   inherits from \setupdescriptions
```

5 P3-2: TOC, indexing and referencing

5.1 Predefined lists

— Table of contents (TOC)
— List of figures
— List of tables

5.2 TOC

```
\placecombinedlist [..1..] [..,..2..,..]
                                  OPTIONAL

1    IDENTIFIER

2    inherits from \setupcombinedlist
```

```
\completeCOMBINEDLIST [..1..] [..,..2..,..]
                                     OPTIONAL

1    IDENTIFIER

2    inherits from \setupcombinedlist
```

The contents of this part of the tutorial:

```
\placecontent[criterium=all,alternative=c]
```

— **Customizing a TOC with available options**

```
\setupcombinedlist [..1..] [..,..2..,..]

1   IDENTIFIER

2   level = 1 2 3 4 SECTION current
    inherits from \setuplist
```

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

1   IDENTIFIER

2   state           = start  stop
    alternative     = a  b  c  ...  none  command
    coupling        = on  off
    criterium       = SECTION  local  previous  current  all
    pageboundaries  = LIST
    style           = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    numberstyle     = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    textstyle       = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    pagestyle       = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    color           = IDENTIFIER
    command         = \...#1#2#3
    numbercommand   = \...#1
    textcommand     = \...#1
    pagecommand     = \...#1
    interaction     = cd:sectionnumber  TEXT  pagenumber  all
    before          = COMMAND
    after           = COMMAND
    inbetween       = COMMAND
    left            = TEXT
    right           = TEXT
    label           = yes  no
    prefix          = yes  no  none
    pagenumber      = yes  no
    headnumber      = yes  no
    cd:sectionnumber = yes  no
    aligntitle      = yes  no
    margin          = DIMENSION
    width           = DIMENSION  fit
    height          = DIMENSION  fit  broad
    depth           = DIMENSION  fit  broad
    distance        = DIMENSION
    separator       = TEXT
    stopper         = TEXT
    symbol          = none  1  2  3  ...
    expansion       = yes  no  command
    maxwidth        = DIMENSION
    inherits from \setupframed
```

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

1   a  b  c

2   command  = COMMAND
    width    = DIMENSION
    stretch  = DIMENSION
    distance = DIMENSION
```

— **The part title in the TOC**
Default the section "part" is not included in the TOC, nor it is numbered. Including a numbered part in the TOC can be achieved by:
\setuphead[part] [placehead=yes,number=yes]

— **Different levels of the TOC, local TOC**
  `\placecontent[content][level=all,alternative=b]`
  This will cause a TOC displaying all levels.
  `\placecontent[criterium=chapter,alternative=c]`
  This setup can be used to display a TOC per chapter i.e. a local TOC
— Further reading
  ConTEXt wiki: http://wiki.contextgarden.net/Table_of_Contents#Author_in_ToC

5.3 Own list

```
\definelist [...¹..] [..²..] [..,..³..,..]
                     OPTIONAL       OPTIONAL

1   IDENTIFIER

2    IDENTIFIER

3   inherits from \setuplist
```

```
\placelist [...¹,...] [..,..²..,..]
                            OPTIONAL

1   IDENTIFIER

2   inherits from \setuplist
```

5.4 Listing of float-blocks

```
\completelistofFLOATS
```

```
\placelistofFLOATS
```

Defining a float results also in defining a list:

Example:

```
\definefloat[SMUfigur][SMUfiguren]
\completelistofSMUfiguren
```

```
\setuplabeltext[de][SMUfigur=SMU-Abb. ]
```

5.5 Indexing, registers

— **Index**

```
\index{car}
\index{car+wheel}
\index{car+lights}
\seeindex{lamp}{car, lights}
```

Example:

c

car   *33*
  lights   *33*
  wheel   *33*

l

lamp
            see car, lights

— **Registers**
  — Defining a register

```
\defineregister [..1..] [..2..]

1    SINGULAR NAME

2    PLURAL NAME
```

```
\setupregister [.¹.] [.².] [..,.³.,..]
                          OPTIONAL

1   SINGULAR NAME

2   IDENTIFIER

3   n               = NUMBER
    balance         = yes  no
    align           = inner  outer  left  right  flushleft  flushright  middle  center
                      normal  no  yes
    style           = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    pagestyle       = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    textstyle       = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    indicator       = yes  no
    coupling        = yes  no
    cd:sectionnumber = yes  no
    criterium       = SECTION  local  all
    distance        = DIMENSION
    symbol          = 1  2  ...  n  a  ...  none
    interaction     = pagenumber  TEXT
    expansion       = yes  no  command
    referencing     = on  off
    command         = \...#1
    location        = left  middle  right
    maxwidth        = DIMENSION
    unknownreference = empty  none
    alternative     = a  b  A  B
    prefix          = both  first  none
    compress        = no  yes
    deeptextcommand = \...#1
```

Example:

```
\defineregister[person][persons]
\setupregister[person][indicator=yes]
```

— Filling the register

```
Hans Hagen \person{Hans Hagen}is the projectleader of the \LUATEX -project \par
Taco Hoekwater \person{Taco Hoekwater} is the programmer of MPlib.
```

Hans Hagen is the projectleader of the luaTEX-project
Taco Hoekwater is the programmer of MPlib.

```
\REGISTER [.¹.] {..+.².+..}
           OPTIONAL

1   TEXT

2   ENTRY
```

```
\seeREGISTER [..¹..] {..²..} {..+..³..+..}
                 OPTIONAL
1   TEXT
2   TEXT
3   ENTRY
```

```
\startREGISTER [.1.]{..+..2.+..} ... \stopREGISTER

1   TEXT
2   ENTRY
```

```
\writetoregister [..¹..] [..²..] {..+..³..+..}
                               OPTIONAL
1   SINGULAR NAME
2   TEXT
3   ENTRY
```

— Placing a register

```
\completeREGISTER [..,..*..,..]
                       OPTIONAL
*   inherits from \setupregister
```

```
\placeregister [..¹..] [..,..²..,..]
                            OPTIONAL
1   IDENTIFIER
2   inherits from \setupregister
```

Example:

h
Hans Hagen   *34*

t
Taco Hoekwater   *34*

5.6 Referencing

```
\setupreferencelist [...¹..] [..,..²..,..]
                        OPTIONAL

1   IDENTIFIER

2   state     = start  stop
    criterium = SECTION  local  previous  all
    command   = COMMAND
    before    = COMMAND
    after     = COMMAND
```

```
\setupreferencing [..,..*..,..]

*   state           = start  stop
    cd:sectionnumber = yes  no
    prefix          = +  -  TEXT
    interaction     = label  TEXT  all  symbol
    width           = DIMENSION
    left            = COMMAND
    right           = COMMAND
    convertfile     = yes  no  small  big
    separator       = TEXT
    autofile        = yes  no  page
    global          = yes  no
```

```
\usereferences [...,*...]

*   FILE
```

```
\definereference [..¹..] [...,²...]

1   IDENTIFIER

2   REFERENCE
```

```
\definereferenceformat [..¹..] [..,..²..,..]

1   IDENTIFIER

2   left  = TEXT
    right = TEXT
    text  = TEXT
    label = IDENTIFIER
```

```
\definereferencelist [..1..] [..,..=2..,..]
                                    OPTIONAL
1   IDENTIFIER

2   inherits from \setupreferencelist
```

— Placing a reference

```
\ref [..1..] [..2..]

1   t p r s e
2   REFERENCE
```

```
\reference [..1..] {..2..}

1   REFERENCE
2   TEXT
```

`\reference[my reference]{{Look}{at}{this}}`

The separate elements can be recalled by `\ref`:

p	the typeset pagenumber	`\ref [p][my reference]`	**37**
t	the text reference	`\ref [t][my reference]`	**Look**
r	the real pagenumber	`\ref [r][my reference]`	**39**
s	the subtext reference	`\ref [s][my reference]`	**at**
e	the extra text reference	`\ref [e][my reference]`	**this**

— **Calling a reference**
  — Referencing a section number:`\in{text}[ref]`

```
\in {..1..} {..2..} [..3..]

1   TEXT

2   TEXT

3   REFERENCE
```

We talked about table of content in **section 5.2**.

— Referencing a page: `\at{prefix-text}{suffix-text}[ref]`

```
\at {.¹.} {.².} [.³.]

1   TEXT
2   TEXT
3   REFERENCE
```

We talked about the table of content at **page 29 and following pages**.

— Calling a referenced text: `\about[ref]`

```
\about {.¹.} [.².]

1   TEXT
2   REFERENCE
```

Caution: `\about[ref]` does not accept a text as mentioned above!

We talked already about the issue "**Indexing, registers**" at **page 33**.

— Calling a reference URL, mailaddress: `\from[ref]`

```
\from [.*.]

*   REFERENCE
```

`\from[wiki]`

http://wiki.contextgarden.net/Main_Page

In order to be able to use the `\from[ref]` command you need of course to setup the reference where this command reads from:

```
\useURL [.1.][.2.][.3.][.4.]

1   reference for \from [ref]
2   URL
3   attached file URL
4   text
```

```
\useURL[author-email]
    [mailto:a.u.thor@somewhere.edu]
    [][a.u.thor@somewhere.edu]
```

```
\useURL[wiki][http://wiki.contextgarden.net][][\ConTeXt\ wiki]
\useURL[willi][mailto:willi@boede.nl][][willi@boede.nl]
```

a.u.thor@somewhere.edu
ConTEXt wiki
willi@boede.nl

6   P4-1: Specialized ingredients

6.1   Tables

— **Tabulation**

```
\starttabulate[|l|c|r|]
\NC 1  \NC Column is center \NC Column is right \NC \NR
\NC 10 \NC aligned          \NC aligned         \NC \NR
\stoptabulate
```

1   Column is center   Column is right
10   aligned   aligned

Key	Meaning	Key	: Meaning
l	: left aligned	R	: roman
c	: centered	S	: *slanted*
r	: right aligned	T	: `teletype`
i*n*	: set space left	m	: in line math mode
j*n*	: set space right	M	: display math mode
k*n*	: set space around	f\command	: font specification
w(*d*)	: fixed width one liner	b..	: put before entry
p(*d*)	: fixed width paragraph	a..	: put after entry
p	: maximum width paragraph	h\command	: do with entry (hook)
B	: **boldface**	e	: insert an equal symbol in the next column
I	: *italic*		:

```
\starttabulate[|*{4}{cBh\type|}]
\NC             \NC normal \NC raw  \NC hook \NC \NR
\RC \bf equal \HC {\EQ}  \HC {\RQ} \HC {\HQ} \NC \NR
\RC \bf none  \HC {\NC}  \HC {\RC} \HC {\HC} \NC \NR
\stoptabulate
```

	normal	**raw**	**hook**
equal	\EQ	\RQ	\HQ
none	\NC	\RC	\HC

— **Tabulate environments**

```
\definetabulate [.¹.] [.².] [.³.]
                    OPTIONAL OPTIONAL

1   IDENTIFIER

2   IDENTIFIER

3   TEXT
```

```
\definetabulate[Three][|lB|lI|p|]
\startThree
\NC first column
```

```
\NC second column
\NC third column
\NC \NR
\NC bold and left aligned
\NC italic and left aligned
\NC in paragraph mode, in this column we can write a long
    paragraph and \CONTEXT\ takes care of setting the
    proper width of the column.
\NC \NR
\stopThree
```

first column	*second column*	third column
bold and left aligned	*italic and left aligned*	in paragraph mode, in this column we can write a long paragraph and ConTEXt takes care of setting the proper width of the column.

The first argument contains the name of the environment, the optional second argument holds the preamble, and the optional third one can be used to change settings.

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

name	
unit	dimension
indenting	yes no
before	command
after	command
inner	command
EQ	text
rulecolor	name
align	left middle right normal
rulethickness	dimension
distance	blank grid depth dimension small medium big none
bodyfont	5pt ... 12pt small big
rule	normal line
split	yes no

— **T‌A‌B‌L‌E environment based on M.J. Wichura's work**

Day	Opening hours	
Monday	14.00 – 17.30	18.30 – 20.30
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	

```
\starttable[|l|c|c|]
\HL
\VL \bf Day    \VL \use2 \bf Opening hours \VL\SR
\HL
\VL Monday     \VL 14.00 -- 17.30 \VL 18.30 -- 20.30 \VL\AR
\VL Tuesday    \VL                \VL                \VL\AR
\VL Wednesday \VL 10.00 -- 12.00 \VL 14.00 -- 17.30 \VL\AR
\VL Thursday   \VL 14.00 -- 17.30 \VL 18.30 -- 20.30 \VL\AR
\VL Friday     \VL 14.00 -- 17.30 \VL                \VL\AR
\VL Saturday  \VL 10.00 -- 12.30 \VL                \VL\AR
\HL
\stoptable
```

— **Further reading:**

Read the ConTEXt an excursion manual pages 25 – 35.
ConTEXt basics for users: Table macros. Aditya Mahajan. TUGboat 28:3, 372-374, 2007.
ConTEXt basics for users: Table macros II. Aditya Mahajan. TUGboat 29:1, 219-222, 2008.

— **Natural tables (HTML-like tables)**

```
\bTABLE
   [split=repeat,option=stretch]% head on every page,
                                % stretch columns

% setup for all cells
\setupTABLE[r][each][style=\tfx\it, align=center]

% setup table head
\setupTABLE[r][first]
             [background=color,backgroundcolor=yellow]

% setup table footer
\setupTABLE[r][last]
             [style=bold,background=color,backgroundcolor=green]
```

```
% IMPORTANT: use \bTH ... \eTH to enclose the head|next cells
\bTABLEhead
\bTR
  \bTH  head1 \eTH
  \bTH  head2 \eTH
  \bTH  head3 \eTH
\eTR
\eTABLEhead

\bTABLEnext % setup for next table head
\bTR [background=color,backgroundcolor=cyan]
  \bTH  next1 \eTH
  \bTH  next2 \eTH
  \bTH  next3 \eTH
\eTR
\eTABLEnext

% the table body (main part)
\bTABLEbody
%
\doifmodeelse{screen}{\dorecurse{10}}{\dorecurse{50}}
{\bTR
  \bTC  body body body body body \eTC
  \bTC  body body body body body \eTC
  \bTC  body body body body body \eTC
\eTR}%

\eTABLEbody

% the table foot
\bTABLEfoot
\bTR
  \bTC  foot1 \eTC
  \bTC  foot2 \eTC
  \bTC  foot3 \eTC
\eTR
\eTABLEfoot
%
\eTABLE
```

head1	head2	head3
body body body body body	*body body body body body*	*body body body body body*

next1	next2	next3
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*

next1	next2	next3
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
body body body body body	*body body body body body*	*body body body body body*
foot1	**foot2**	**foot3**

More examples and possibilities for natural tables in enattab.pdf

— **Placing a table with a caption**

```
 \placetable[middle,force][]{A colorful table}
{\setupTABLE[row][odd]
            [background=color,backgroundcolor=red,frame=off]
\setupTABLE[row][even]
            [background=color,backgroundcolor=gray,frame=off]
\bTABLE
\bTR \bTD first \eTD \bTD alpha \eTD \bTD one \eTD \eTR
\bTR \bTD second \eTD \bTD beta \eTD \bTD two \eTD \eTR
\bTR \bTD third \eTD \bTD gamma \eTD \bTD three \eTD \eTR
\eTABLE}
```

first	alpha	one
second	beta	two
third	gamma	three

Table 6.1   A colorful table

— **Further reading:**

Tabulating in ConTEXt. Hans Hagen. MAPS nr. 22.153, 1999. (http://www.ntg.nl/maps/22/index.html)
http://wiki.contextgarden.net/TABLE
Natural tables in ConTEXt. Hans Hagen. 2001. (enattab.pdf)
http://wiki.contextgarden.net/table
ConTEXt an excursion. Ton Otten, Hans Hagen. 1999 (mp-cb-en.pdf)

6.2 Figures

— **The floats concept**
Elements like figures, tables, formulae are treated as blocks. They are placed on a page if enough space is available. Otherwise they are postponed to the next page.

— **Setting up floats**

```
\setupfloats [..,.=.,..]

*   location           = left  right  middle
    width              = fit  DIMENSION
    before             = COMMAND
    after              = COMMAND
    margin             = DIMENSION
    spacebefore        = small  medium  big  none
    spaceafter         = small  medium  big  none
    sidespacebefore    = small  medium  big  none
    sidespaceafter     = small  medium  big  none
    indentnext         = yes  no
    ntop               = NUMBER
    nbottom            = NUMBER
    nlines             = NUMBER
    default            = IDENTIFIER
    tolerance          = 0  1  2
    leftmargindistance = DIMENSION
    rightmargindistance = DIMENSION
    sidealign          = normal  line
    numbering          = yes  nocheck
    inherits from \setupframed
```

— **Defining a float**

```
\definefloat [.1.] [.2.]

1   SINGULAR NAME

2   PLURAL NAME
```

```
\setupfloat [..1..] [..,..2..,..]

1   IDENTIFIER

2   height              = DIMENSION
    width               = DIMENSION
    maxheight           = DIMENSION
    maxwidth            = DIMENSION
    minwidth            = DIMENSION
    default             = IDENTIFIER
    pageboundaries      = LIST
    leftmargindistance  = DIMENSION
    rightmargindistance = DIMENSION
    location            = left  middle  right
    inherits from \setupframed
```

— **Figure types handled by ConTEXt**
  — jpg
  — png
  — single pdf, pages from a pdf-file
  — METAPOST (mps)
— Placing a single figure

```
\externalfigure [..1..] [..,..2..,..]
                              OPTIONAL

1   FILE

2   inherits from \setupexternalfigures
```

```
\setupexternalfigures [.=.]

*   scale       = NUMBER
    yscale      = NUMBER
    yscale      = NUMBER
    factor      = max  fit  broad
    wfactor     = NUMBER  max  broad  fit
    hfactor     = NUMBER  max  broad  fit
    width       = DIMENSION
    height      = DIMENSION
    frame       = on  off
    preset      = yes  no
    display     = FILE
    preview     = yes  no
    repeat      = yes  no
    object      = yes  no
    type        = eps  mps  pdf  tif  png  jpg  mov  cd:tex
    method      = eps  mps  pdf  tif  png  jpg  mov  cd:tex
    option      = frame  empty  test
    frames      = on  off
    ymax        = NUMBER
    xmax        = NUMBER
    directory   = TEXT
    location    = local  global  default  none
    maxwidth    = DIMENSION
    maxheight   = DIMENSION
    conversion  = TEXT
    prefix      = TEXT
```

Example:

```
\placefigure[middle,here][fig:cow]
  {The dutch cow}
  {\externalfigure[cow][width=6cm]}
```
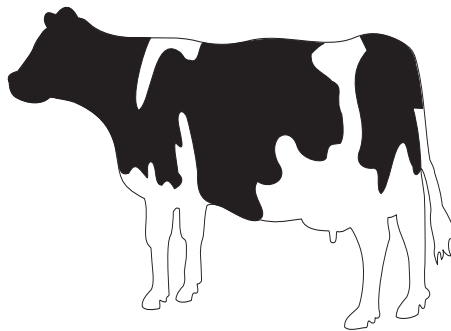

Figure 6.1   The dutch cow

— **Placing multiple figures in combinations**

```
\startcombination [.*.] ... \stopcombination

N*M
N    number of floats per row
M    number of rows
```

```
\setupcombinations [..,..=.,..]

*   before    = COMMAND
    inbetween = COMMAND
    after     = COMMAND
    distance  = DIMENSION
    height    = DIMENSION  fit
    width     = DIMENSION  fit
    location  = top  middle  bottom  left  right
    align     = inner  outer  left  right  flushleft  flushright  middle  center  normal  no
                yes
    style     = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    color     = IDENTIFIER
```

Example:

```
\placefigure[middle,force][fig:combination]
    {The sample figures}
    {\startcombination[2*2]
        {\externalfigure[cow][width=.25\makeupwidth]}{cow.pdf}
        {\externalfigure[hacker][width=.25\makeupwidth]}{hacker.jpg}
        {\externalfigure[mill][width=.25\makeupwidth]}{mill.png}
        {\framedtext
            [width=.25\makeupwidth]
            {A framed text
            \blank[2*line]
            \midaligned{\color[blue]\CONTEXT}}}{free framed text}
    \stopcombination}
```
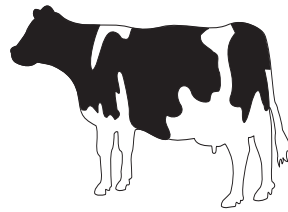
— **Placing text next to a float**

```
\startFLOATtext [.1.][.2.]{.3.} {.4.} ... \stopFLOATtext

1  left right high middle low offset tall
2  REFERENCE
3  TEXT
4  TEXT
```
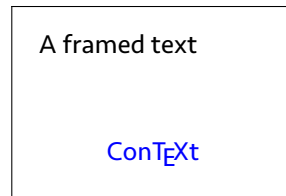
cow.pdf

hacker.jpg

mill.png

free framed text

A framed text
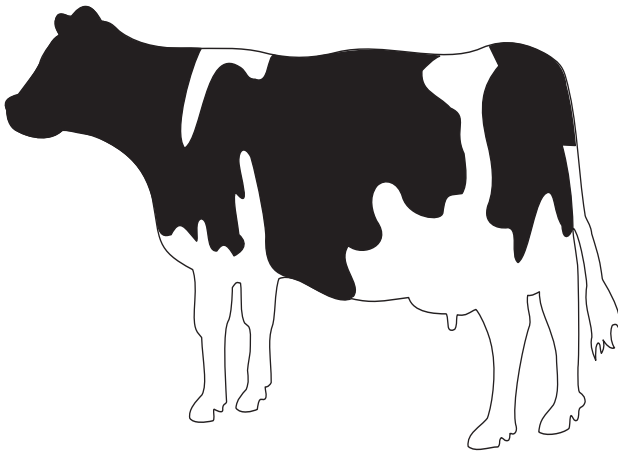
ConT_EXt

Figure 6.2   The sample figures

Example:

```
\startfiguretext
    [left]
    [fig:Cow2]
    {I am the Holstein-Frisian cow of \Context}
    {\externalfigure[cow][height=0.4\textwidth]}
    {\startlines
    {\bf Las peñas y las vaquitas}
    \blank[small]
    Las peñas y las vaquitas
    Se van por la misma senda.
    Las peñas son de nosotros,
    Las vaquitas son ajenas.
    \hfill Eugenio Coserius
    \blank
    Die Sorgen und die Kühe
    Auf demselben Pfad wandern.
    Die Sorgen sind die unseren,
    Die Kühe die der andern.
    \stoplines}
\stopfiguretext
```

Las peñas y las vaquitas

Las peñas y las vaquitas
Se van por la misma senda.
Las peñas son de nosotros,
Las vaquitas son ajenas.

Eugenio Coserius

Die Sorgen und die Kühe
Auf demselben Pfad wandern.
Die Sorgen sind die unseren,
Die Kühe die der andern.

Figure 6.3   I am the Holstein-Frisian cow of CONTEXT

— **Setting up captions**

```
\setupcaption [.¹.] [..,.²=.,..]

1   IDENTIFIER
2   inherits from \setupcaptions
```

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

*   location    = top  bottom  none  high  low  middle  left  middle  right  lefthanging
                  righthanging  leftmargin  rightmargin  innermargin  outermargin
    width       = fit  broad  max  DIMENSION
    minwidth    = fit  DIMENSION
    headstyle   = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    style       = normal  bold  slanted  boldslanted  type  cap  small...  COMMAND
    number      = yes  no  none
    inbetween   = COMMAND
    align       = inner  outer  left  right  flushleft  flushright  middle  center  normal  no
                  yes
    conversion  = numbers  characters  Characters  romannumerals  Romannumerals
    way         = bytext  bycd:section
    separator   = TEXT
    stopper     = TEXT
    command     = COMMAND
    distance    = DIMENSION
```

— \useexternalfigure — concept

```
\useexternalfigure [..¹..] [..²..] [..³..] [..,..⁴..,..]
                     OPTIONAL OPTIONAL OPTIONAL    OPTIONAL

1   IDENTIFIER

2   FILE

3   IDENTIFIER

4   inherits from \setupexternalfigures
```

— **Allocate space for a future float-block**

```
\reserveFLOAT [..,..¹..,..] [..²..] [...³...] {..⁴.}
                 OPTIONAL       OPTIONAL   OPTIONAL

1   height  = DIMENSION
    width   = DIMENSION
    frame   = on  off

2   TEXT

3   REFERENCE

4   TEXT
```

```
\reservefigure
    [height=4cm,width=10cm,frame=on][here][fig:reservation]
    {An example of a reservation.}
```
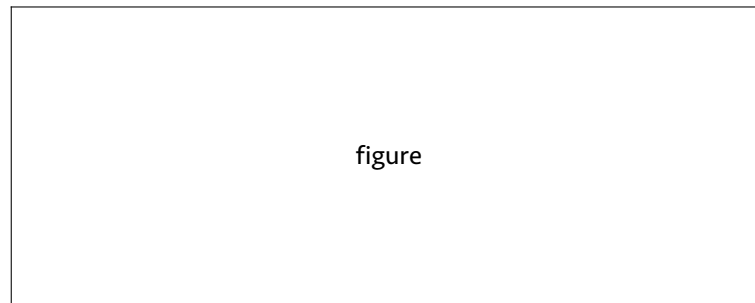
figure

Figure 6.4   An example of a reservation.

— **Further reading:**

MetaFun manual. Hans Hagen, Ton Otten. 2002. (metafun-p.pdf)
It's in the DETAILS. Hans Hagen, Ton Otten. 2003. (details.pdf)

6.3   Math

— Inline, display, formulae

The formula $f(x) = \max_{y} \int_0^y g(y)dy$

```
$f(x) = \max_{y} \int_0^y g(y)dy$
```

The formula typeset:

```
\startformula
  f(x) = \max_{y} \int_0^y g(y)dy
\stopformula
```

$$f(x) = \max_{y} \int_0^y g(y)dy$$

Notice the difference between the inline mode ($...$) and display mode (\startformula ... \stopformula)

```
\placeformula [...¹...] {.².} $$.³.$$
                OPTIONAL    OPTIONAL

1   REFERENCE

2   TEXT

3   UNKNOWN MESSAGE
```

```
\placeformula[formula:aformula]
    \startformula
        \int_0^1 x^2 dx
    \stopformula
```

$$\int_0^1 x^2 dx \tag{6.1}$$

A formula without numbering:

```
\placeformula[-]% Or you can leave out \placeformula
    \startformula
        y=x^3
    \stopformula
```

$$y = x^3$$

— Setting up formulae

```
\setupformulas [..,.=.,..]
                     *
*   location     = left  right
    left         = TEXT
    right        = TEXT
    align        = inner  outer  left  right  flushleft  flushright  middle  center  normal
                   no  yes
    option       = middle
    strut        = yes  no
    distance     = DIMENSION
    margin       = DIMENSION  standard  yes  no
    align        = flushleft  flushright  middle  center
    leftmargin   = DIMENSION
    rightmargin  = DIMENSION
    indentnext   = yes  no
    alternative  = IDENTIFIER
    spacebefore  = DIMENSION
    after        = DIMENSION
    separator    = TEXT
    conversion   = numbers  characters  Characters  romannumerals  Romannumerals  TEXT
```

— \startalign ... \stopalign

```
    \startformula \startalign
    \NC a_1 x + b_1 y \NC = c_1 \NR
    \NC a_2 x + b_2 y \NC = c_2 \NR
    \stopalign \stopformula
```

We get non numbered display math:

$$a_1 x + b_1 y = c_1$$

$$a_2 x + b_2 y = c_2$$

```
    \placeformula
    \startformula \startalign
    \NC a_1 x + b_1 y \NC = c_1 \NR[eq:1]
    \NC a_2 x + b_2 y \NC = c_2 \NR[eq:2]
    \stopalign \stopformula
    As seen from (\in[eq:1]) and (\in[eq:2]), referring equations is straight for-
ward.
```

$$a_1 x + b_1 y = c_1 \qquad (6.2)$$

$$a_2 x + b_2 y = c_2 \qquad (6.3)$$

As seen from (**6.2**) and (**6.3**), referring equations is straight forward.

Numbered formulae are preceded with \placeformula. One can place reference-points after each \NR command.

The `\startalign ... \stopalign` environment comes with many more options like:

— Multicolum placement of a series of formulae
— Individual numbering of specific formulae
— Subformula placement with and without incrementing the equation numbering

— Module: SI-units
  Examples:

```
2 \Square \Meter                        2 m²
1 \Kilo \Meter                          1 km
```

— Legends and facts

```
\placeformula$$ s = v t + \frac{1}{2} a t^2 $$
    \startlegend
        \leg s \\ displacement \\\Unit \Meter \\
        \leg v \\ velocity \\ \Unit \Meter \Per \Second  \\
        \leg t \\ time \\ \Unit \Second \\
        \leg a \\ acceleration \\ \Unit \Meter \Per\Square \Second  \\
    \stoplegend
```

$$ s = vt + \frac{1}{2}at^2 \tag{6.4} $$

s = displacement m
v = velocity   m/s
t = time   s
a = acceleration m/s²

```
\startfact
    \fact velocity \\ v \\ 10~m/s \\
    \fact accelaration \\ a \\ - 3~m/s^2 \\
    \fact time \\ t \\ 3~s \\
\stopfact
```

velocity v = 10m/s
accelaration a = $-3\mathrm{m/s^2}$
time t = 3s

```
\startfact
    \fact velocity \\ v \\ 10\Meter\Per\Second \\
    \fact accelaration \\ a \\ - 3\Meter\Per\Square\Second \\
    \fact time \\ t \\ 3\Second \\
\stopfact
```

The same facts-block with SI-units notation.

velocity $\quad v \;=\; 10 \text{ m/s}$
accelaration $\quad a \;=\; -3 \text{ m/s}^2$
time $\qquad\quad t \;=\; 3 \text{ s}$

— **Further reading:**

Context an excursion. Ton Otten and Hans Hagen. 1999. (mp-cb-en.pdf)
It's in the DETAILS. Hans Hagen, Ton Otten. 2003. (details.pdf)
Eenheid in Eenheden. Hans Hagen. MAPS 21, 53-60, 1998.
Using `startalign` and friends. Aditya Mahajan. My Way. 2006.
Extensible Arrows in ConTeXt. Aditya Mahajan. My Way. 2006.