

LaTeX-Beginners : Exercise sheet for 19/10/2023

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1 Base document

a) Type on the keyboard the base document:

```
1 \documentclass[a4paper,11pt]{article}
2 \usepackage[utf8]{inputenc}
3 \usepackage[french,english]{babel}
4 \usepackage[margin=28mm]{geometry}
5 \usepackage[T1]{fontenc}
6 \usepackage{lmodern}
7 \begin{document}
8 some text...
9 \end{document}
```

b) Save it with the name `sandbox.tex` in a dedicated folder (without spaces in name).

c) Check that it compiles successfully with `pdflatex`¹. If case of errors, keep in mind that only the first one is meaningful, as the following often a side effect of the first one.

d) Try the same with the `latex` command, and make sure that a `sandbox.dvi` file has been created, but no `sandbox.pdf`.

2 Options on the command line

If what follows, “LIN” means “Linux and similar”, including Mac OS X.

a) **Run from command line** For this, follo the following steps:

1. Open a terminal (aka console) on your system.
2. Move to the “working directory”² containing your `sandbox.tex` :

```
LIN> cd_/pathto/working/folder/
WIN> cd_/D_/pathto\working\folder\
```

and delete all the generated files (or copy `sandbox.tex` to another empty directory).

3. Execute :

```
> pdflatex sandbox
```

b) To use `latex` (optionnal) and nevertheless get a `.pdf`, you can chain the compilation and the conversion by using :

```
> latex -interaction=nonstopmode sandbox
&& dvipdfmx sandbox
```

c) Use now the option `-jobname=...` which modifies the name of the output file:

```
> pdflatex -interaction=nonstopmode
-jobname=myFirstdoc sandbox
```

and look at `sandbox.log`.

¹Selecting this motor and click on the “compile” or “type-set” button in your IDE

²The slash / separator is used by Linux, MasOsX and (La)TeX, and work too in Windows in place of the default \.

d) Repeat c) by removing `-jobname=...` and adding the option `-recorder`, then look at the file `sandbox.fls`.

Correction

The option `-recorder` asks `pdftex` to produce (in addition to the `.log`) a list of all the files included in the compilation. This option may be useful for debugging, but should not be used in "production" mode. Here the file `sandbox.fls` contains :

```
PWD <WRKDIR>\exos
INPUT <DATADIR>\data\le\pdftex\pdflatex.fmt
INPUT sandbox.tex
OUTPUT sandbox.log
INPUT <TEXMF>\tex\latex\base\article.cls
INPUT <TEXMF>\tex\latex\base\size11.clo
INPUT <TEXMF>\fonts\tfm\public\cm\cmr10.tfm
INPUT <TEXMF>\tex\latex\base\inputenc.sty
INPUT <TEXMF>\tex\generic\babel\babel.sty
INPUT <TEXMF>\tex\generic\babel\switch.def
INPUT <TEXMF>\tex\generic\babel-french\french.ldf
INPUT <TEXMF>\tex\generic\babel\babel.def
INPUT <TEXMF>\tex\generic\babel\txtbabel.def
INPUT <TEXMF>\tex\latex\carlisle\scalesfnt.sty
INPUT <TEXMF>\tex\latex\graphics\keyval.sty
INPUT <TEXMF>\tex\latex\geometry\geometry.sty
INPUT <TEXMF>\tex\generic\oberdiek\ifpdf.sty
INPUT <TEXMF>\tex\generic\oberdiek\ifvtex.sty
INPUT <TEXMF>\tex\generic\ifxetex\ifxetex.sty
INPUT <TEXMF>\tex\latex\geometry\geometry.cfg
INPUT <TEXMF>\tex\latex\base\fontenc.sty
INPUT <TEXMF>\tex\latex\base\tlenc.def
INPUT <TEXMF>\tex\latex\base\tlenc.def
INPUT <TEXMF>\fonts\tfm\jknappen\ec\ecrm1095.tfm
INPUT <TEXMF>\tex\latex\lm\lmodern.sty
INPUT sandbox.aux
OUTPUT sandbox.aux
INPUT <TEXMF>\tex\latex\lm\t1lmr.fd
INPUT <TEXMF>\fonts\tfm\public\lm\ec-lmr10.tfm
OUTPUT sandbox.pdf
INPUT <DATADIR>\pdftex\config\pdftex.map
INPUT sandbox.aux
INPUT <TEXMF>\fonts\enc\dvips\lm\lm-ec.enc
INPUT <TEXMF>\fonts\type1\public\lm\lmr10.pfb
```

where `<TEXMF>`, `<DATADIR>`, `<WRKDIR>` are respectively the `texmf` root, a directory of temporary `pdftex` files, and the one that contains the file `sandbox.tex`. Note that I removed the duplicated lines for short.

e) Adjust the command used by your editor to add the options `-interaction=nonstopmode`, `-synctex=1` and, if you dare, `-shell-escape`

Correction

The option `-shell-escape` allows `pdftex` to launch an external program; this is is considered as poten-

tially dangerous but very useful, even essential. For example, if your PDF viewer blocks the compilation, you can close it (under Windows) by passing to `\immediate\write18{...}` one of the two commands :

```
(tasklist|find "AcroRd32.exe">nul)
  &&(taskkill /f /im acroRd32.exe>nul)}
```

or

```
taskkill /F /FI "WINDOWTITLE eq \jobname*"
/IM PDFXCview.exe
```

3 Styles

a) Produce text using declarations:

```
\tiny \scriptsize \footnotesize \small
\normalsize \large \Large \LARGE \huge \Huge
```

Correction

The important thing is that size declarations do not take any argument, i.e. `\small{small text}` is incorrect and will put the entire rest of the group (by default the document) in small characters. The correct code is therefore:

```
{\tiny very small text,\par}
{\footnotesize like in footnotes,\par}
{\Large Larger\par}
```

giving:

very small text,
like in footnotes,

Larger

b) Produce text using declarations:

```
\textrm (\rmfamily)      \textsf (\sffamily)
\textit (\itshape)        \textsl (\slshape)
\textmd (\mdseries)       \textbf (\bfseries)
\textsc (\scshape)        \texttt (\ttfamily)
\textup (\upshape)        \textnormal
```

Correction

The commands in parenthesis behave like the statements in the previous paragraph, for example :

`{\itshape text in italics}` gives *text in italics*. as well as `\textit{text in italics}`, as `\textit` is this time a command accepting an argument. A more elaborate code may be:

```
1 \begin{small}
2 \slshape the normal text is \emph{slanted}
3 and {\large smaller} size,
4 but I can transform it in
5 \textbf{\upshape bold and normal}
6 \end{small}
```

giving :

the normal text is slanted and smaller size, but I can transform it in bold and normal

If we also load the package `color`, I can write:

```
\begin{small} \color{magenta}
\slshape the normal text is \emph{slanted}
and {\large smaller} size,
but I can transform it in
```

```
\textbf{\upshape bold and normal}
\end{small}
```

that gives :

the normal text is slanted and smaller size, but I can transform it in bold and normal

4 Structure and references

a) By editing `sandbox.tex` and saving it under another name, say `doc.tex`, add two `\section`, in each two `\subsection`, and in one of these `\subsection`, one `\subsection` containing a `\paragraph`. Observe.

b) Add the package `lipsum` and use it to complete the document (This package produces dummy text, `\lipsum[3-5]` gives paragraphs 3 to 5).

c) Add at the top of the document the command `\tableofcontents`. What's going on?

d) Look at `.aux` and `.toc` files. Compile again.

Correction

These two files are read at `\begin{document}` and continuously update until `\end{document}`. Hence, at the first run, the `.toc` file is written down, but the "Table of contents" page produced by the command `\tableofcontents` is empty, and it is completed only at the second run. The same holds for the cross-references listed in the `.aux` file.

e) Add after the declaration of the first section `\label{s:firstsec}`, and at the end of the second section `\ref{s:firstsec}`. See what happens after one, then two compilations.

f) Add in the preamble:

```
\title{<My document>}
\author{<name>}
\date{\today}
```

and at the beginning of the `<document>` the command `\maketitle`.

Correction

The code resulting from the questions a) to f) (with some small arrangements to fit on a page) is as follows

```
1 \documentclass[a4paper,10pt]{article}
2 \usepackage[utf8]{inputenc}
3 \usepackage[french]{babel}
4 \usepackage[margin=20mm]{geometry}
5 \usepackage[T1]{fontenc}
6 \usepackage{lmodern}
7 \usepackage{lipsum}
8 \usepackage{nameref}
9 \title{Mon premier document}
10 \author{S  raphin \bsc{Lampion}}
11 \date{\today}
12 \begin{document}
13 \maketitle
14 \tableofcontents
15 \section{The First Section}\label{s:firstsec}
16 \subsection{A subsection}
```

Mon premier document

Séraphin LAMPION

25 octobre 2023

Table des matières

1	The First Section	1
1.1	A subsection	1
1.2	Another subsection whith children	1
1.2.1	A nice subsubsection	1
2	The Second Section	1
2.1	Again a subsection	1
2.2	Another subsection	1

1 The First Section

1.1 A subsection

1.2 Another subsection whith children

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

1.2.1 A nice subsubsection

Pretty paragraph Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Very pretty subparagraph Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

2 The Second Section

2.1 Again a subsection

A you can see, we should complete the section § 1, named “The First Section”.

2.2 Another subsection

```

17 \subsection{Another subsection whith children}
18 \lipsum[2]
19 \subsubsection{A nice subsubsection}
20 \paragraph{Pretty paragraph}
21 \lipsum[3]
22 \subparagraph{Very pretty subparagraph}
23 \lipsum[4]
24 \section{The Second Section}
25 \subsection{Again a subsection}
26 A you can see, we should complete
27 the section~\S~\ref{s:firstsec},
28 named "\nameref{s:firstsec} ".
29 \subsection{Another subsection}
30 \end{document}

```

resulting in the document show on page ??.

g) Add just before `\begin{document}` the command `\usepackage{hyperref}`. Observe the result.

h) Pass to `hyperref` the options:

`[colorlinks,bookmarks,bookmarksnumbered=true]`.

Observe in AcroReader, Preview or an other PDF viewer.


Correction

The addition to the previous code of:

```

\usepackage[colorlinks,%
bookmarks,bookmarksnumbered=true]{hyperref}!

```

after 2 compilations, gives the result shown on the following pages numbered i and ii, where the red colored hyperlinks are not functional. But this documents is also attached to the present file  and can be extracted by using Acrobat Reader.

Mon premier document

S raphin LAMPION

25 octobre 2023

Table des mati res

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1.1 A subsection	i
1.2 Another subsection with children	i
1.2.1 A nice subsubsection	i
2 The Second Section	ii
2.1 Again a subsection	ii
2.2 Another subsection	ii

1 The First Section

1.1 A subsection

1.2 Another subsection with children

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

1.2.1 A nice subsubsection

Pretty paragraph Nulla malesuada porttitor diam. Donec felis erat, congue non, volutpat at, tincidunt tristique, libero. Vivamus viverra fermentum felis. Donec nonummy pellentesque ante. Phasellus adipiscing semper elit. Proin fermentum massa ac quam. Sed diam turpis, molestie vitae, placerat a, molestie nec, leo. Maecenas lacinia. Nam ipsum ligula, eleifend at, accumsan nec, suscipit a, ipsum. Morbi blandit ligula feugiat magna. Nunc eleifend consequat lorem. Sed lacinia nulla vitae enim. Pellentesque tincidunt purus vel magna. Integer non enim. Praesent euismod nunc eu purus. Donec bibendum quam in tellus. Nullam cursus pulvinar lectus. Donec et mi. Nam vulputate metus eu enim. Vestibulum pellentesque felis eu massa.

Very pretty subparagraph Quisque ullamcorper placerat ipsum. Cras nibh. Morbi vel justo vitae lacus tincidunt ultrices. Lorem ipsum dolor sit amet, consectetur adipiscing elit. In hac habitasse platea dictumst. Integer tempus convallis augue. Etiam facilisis. Nunc elementum fermentum wisi. Aenean placerat. Ut imperdiet, enim sed gravida sollicitudin, felis odio placerat quam, ac pulvinar elit purus eget enim. Nunc vitae tortor. Proin tempus nibh sit amet nisl. Vivamus quis tortor vitae risus porta vehicula.

2 The Second Section

2.1 Again a subsection

A you can see, we should complete the section § 1, named **The First Section**.

2.2 Another subsection