Session 2. Text and Math

Digital Skills for Research

March 2, 2022

Contents

1 Explore the interface of your desktop TeX editor

- line numbers are useful for fixing errors

- use the toolbar to insert typical commands, if you prefer

2 Text formatting

2.1 Languages

International language support

```
\usepackage[T1, T2A]{fontenc}
\usepackage[french,russian,main=english]{babel}
```

See specific packages names for individual languages here.
For example, you need `\usepackage{arabtex}` and `\usepackage[LFE,LAE]{fontenc}` for Arabic.

T1 encoding for Latin script

T2A encoding for Cyrillic script

- You might want to install languages to your **local** TeXdistribution on Linux with
  `sudo apt install texlive-lang-polish`
  or install them all `sudo apt-get install -y texlive-lang-all`

- You might need to specifically import fonts for other languages.

- NB! main (or last one) in `\usepackage[french,russian,main=english]{babel}` is the language for automatic structural elements (e.g. Contents)

- In some templates short text snippets in non-main language are inserted with `\foreignlanguage{spanish}{.`

Examples in Spanish and Russian:

> Sección Introductoria
> Спасибо.
>
> Sección Introductoria Спасибо.

2.2 Fonts and colours

font style roman (serif), bold, italics, typewriter, sans serif, small caps respectively in `\textrm,\textbf,\textit, \texttt, \textsf, \textsc`

e.g. ENCYCLOPEDIA GALACTICA

Don't Panic

font size `\tiny, \scriptsize, \footnotesize, \small, \normalsize, \large, \Large, \LARGE, \huge,`
e.g. cf. `\huge{text formatting}` and `\tiny{text formatting}`:

text formatting

text formatting

underline Google strikethrough!

font colour `{\color{red!50!white}your_coloured_text}`
e.g. my pink text

2.3 Special characters

The following characters are reserved to have special meaning in LaTeX:
$ % & ~ ^ { } _ \
To print them literally you need to escape them with backslash (\), except

- for \ itself use `$\backslash$`

- for ~ and ^ Use `\verb`

Formatting conventions:

- quotes: use ànd ór `\lq` and `\rq`

- non-breaking space: `Fig.~\ref{fig:logo}`

- dots: `\ldots`

- superscripts and subscripts: `2^2 and CO_2` $\rightarrow 2^2, CO_2$
  e.g. Proceedings of the 11th conference...

- accents: `\^{a}, \'{o}, \v{c}, \"{e}, \~{o}` $\rightarrow$ â, ó, č, ë, õ

- language-specific ligatures: `\ss{}, \l{}, \L{}` $\rightarrow$ ß, ł, Ł

Useful tool: Detexify symbol table and classifier

3 Math

3.1 Mathmode

- inline: `$your_formula$`

- on a separate line: `\[your_formula\]`

- special environment with a counter in label: `\begin{equation}` ... `\end{equation}`

This formula $f(x) = 5x$ is incorporated in the body of text. It is the same as in the environment 1

$$f(x) = 5x$$

$$f(x) = 5x \tag{1}$$

3.2 Fractions

$$\frac{1 + \frac{4}{2}}{6} = 0,5$$

3.3 Brackets

$$\left(2 + \frac{9}{3}\right) \times 5 = 25$$

$$[2 + 3]$$

$$\{2 + 3\}$$

3.4 Standard functions

$\sin x = 0$, $\cos x = 1$, $\ln x = 5$

3.5 Symbols

$2 \times 2 \neq 5$
$A \cap B$, $A \cup B$

3.6 Characters from other scripts

$\operatorname{tg} \Phi = 1$
ϵ, ϕ

Copy formatted formulas from html source code (Inspect $\rightarrow$ Copy $\rightarrow$ Copy element):
Second Law of Thermodynamics

$$\mathrm{d}S = \frac{\delta Q}{T} - \frac{1}{T}\sum_j \Xi_j\,\delta\xi_j$$

Task 2. Reproduce a pdf formatting, inc. formulas

- Reproduce text formatting on this page

- Link your resulting pdf for Task 2 in the Achievement Tracker