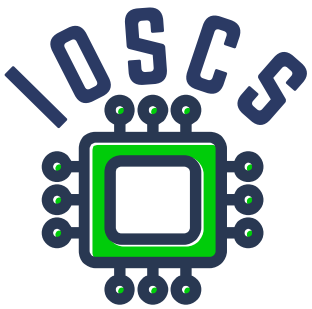
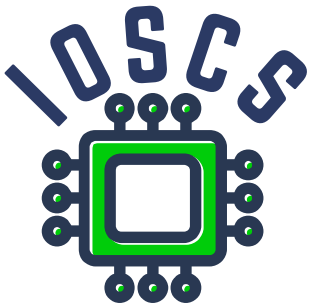


Project: Innovative Open Source Courses for Computer Science

Open source tools for text processing
Material for Laboratories

Jiří Rybička
Mendel University in Brno

29. 5. 2021



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Project information

Project was implemented under the Erasmus+.
Project name: **"Innovative Open Source courses for Computer Science curriculum"**
Project nr: **2019-1-PL01-KA203-065564**
Key Action: **KA2 – Cooperation for innovation and the exchange of good practices**
Action Type: **KA203 – Strategic Partnerships for higher education**

Consortium
ZACHODNIOPOMORSKI UNIWERSYTET TECHNOLOGICZNY W SZCZECINIE
MENDELOVA UNIVERZITA V BRNĚ
ŽILINSKÁ UNIVERZITA V ŽILINE

Co-funded by the
Erasmus+ Programme
of the European Union

Laboratories

Open source tools for text processing

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Project: Innovative Open Source Courses for Computer Science

Funded by
the European Union

Contents

- TEX system – basic principles

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- Tables – `tabbing` and `tabular` environments; numbers aligning

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- Graphics operations, inserting pictures, `picture` environment, floating environments

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- Running heads, table of contents, list of figures and tables; pages imposition

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- Document as a whole – document elements, proposal of parameters, realisation

- The first document:

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\documentclass{article}
\usepackage{xltxtra}
\begin{document}
The first document -- my own text, default
font, size, aligning.
\end{document}
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- This document we will use and supplement during all the laboratories

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TEX system

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- View the final PDF
- View the log file and search line starting with "!"
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- Experiment with longer text – add min. 3 paragraphs (approx. 30 lines)
- Watch possible warnings – underfull or overfull boxes

Fonts, main font

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- Experiment with setting `\defaultfontfeatures`
- Set additional fonts: sans serif, typewriter

Macro definition

- The command `\def` and definition of simple commands

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- Commands for default document information: author, name, date etc.
- Alternative definition commands: `\newcommand`, `\renewcommand`
- Environment definition `\newenvironment`, `\renewenvironment`

Macro definition with parameters

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- Macros for complete structural marking of letter
- The style file, link to style file (example of letter marking)

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- Change main font and test presence of special characters

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- Insert various national characters – package `polyglossia` and setting `\setdefaultlanguage`
- Insert various math symbols and test if it is in main font
- Change main font and test presence of special characters
- Insert and test various national characters from different languages

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- Change the macro `\fplace` so that the size will be from 2 to 4 cm depending on the alignment of the paragraph

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- Create macro for code typeset (for typewriter shape)

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- Experiment with command `\pagecolor`

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- Experiment with `\pagestyle` command – parameter `headings`
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- Experiment with initials – apply very large first letter in selected paragraph, can be used for example `yinit` font

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- Create page reference to selected sections in text

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- Use `\leftskip` or `\rightskip` registers to change left and right paragraph margin

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- Use manual hyphens to appropriate word divide
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- Redefine the `\baselinestretch` to change line spacing of selected part of text

Math expressions

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-
$$\begin{aligned} C &\leq 2^N && (2) \\ \log C &\leq N \log 2 \\ N &= \left\lceil \frac{\log C}{\log 2} \right\rceil && (3) \end{aligned}$$

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- $$\text{discontinuous function } g(\xi) = \begin{cases} 0 & \text{for } \xi < 0 \\ 2\xi & \text{for } \xi \in (0, 1) \\ 2 & \text{for } \xi \leq 1 \end{cases}$$

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- $$\text{transfer matrix: } \begin{bmatrix} \alpha_{11} & \beta_{12} \\ \gamma_{21} & \delta_{22} \end{bmatrix} \qquad (4)$$

The `tabbing` environment

- Typeset the following table:

The `tabbing` environment

- Typeset the following table:
- **City** **Temperature at 7 AM**

Philadelphia	17.5° C
New York	16.8° C
Washington	15.9° C*
*uncalibrated scale	
Boston	19.5° C
Los Angeles	12.8° C
San Francisco	16.6° C
Anchorage	−0.5° C
Fairbanks	−2.8° C

The `tabbing` environment

- Typeset the following source code:

The `tabbing` environment

- Typeset the following source code:
- **procedure** Number(**var** C: longint);
  var R: **string**;
  Position: byte;
  begin Position:=5;
  while not eof **do begin**
  readln(R);
  //now will be write the main information:
  writeln(C: Position, '–', R)
  end
  end;

The `tabular` environment

- 1. Typeset the following table:

The `tabular` environment

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O.	Country	Score	Points
1.	Italy	23: 4	14
2.	France	18: 7	10
3.	Sweden	14: 10	8
4.	Switzerland	3: 18	3
5.	Austria	1: 19	0

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- 2. Typeset your personal timetable

Insert graphics

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- Prepare a graphics file of JPG format (from internet or own sources)

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- Insert graphics file into document and set it width to 70% of text width

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- Experiment with other parameters of `\includegraphics` command

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- Experiment with other parameters of `\includegraphics` command
- Rotate the previous picture to 35° counterclockwise

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- Prepare a graphics file of JPG format (from internet or own sources)
- Insert graphics file into document and set it width to 70% of text width
- Experiment with other parameters of `\includegraphics` command
- Rotate the previous picture to 35° counterclockwise
- Reflect selected part of text

The `picture` environment

- Prepare any scheme (blocks, oriented links, texts)

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- Use the `picture` environment to draw prepared scheme

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- Use the `\multiput` command to repeat selected part of picture

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- Combine commands for line and text with various colors

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- Combine commands for line and text with various colors
- Use the `picture` environment with zero dimensions for draw the cropmarks
- Use the `picture` environment with zero dimensions for draw the watermark under text of selected page

Running heads

- Use the document from previous laboratory

Running heads

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- Set the twoside document and default page headings

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- Redefine the command `\ps@headings` to set your own shape of headings
- Use the command `\markboth` to set the content of running heads
- Experiment with `fancyhdr` package for set running heads
- Set the name of section to the left heading and the name of subsection to the right heading; set page numbering in bold face to the outer margin of page foot

Table of contents

- Use the document from previous laboratory

Table of contents

- Use the document from previous laboratory
- Create title page of document

Table of contents

- Use the document from previous laboratory
- Create title page of document
- Create special page with table of contents after title page

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- Add all star-form titles to the table of contents

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- Create title page of document
- Create special page with table of contents after title page
- Add all star-form titles to the table of contents
- Wrap all tables with `table` environment and all pictures with `figure` environment; add all captions

Table of contents

- Use the document from previous laboratory
- Create title page of document
- Create special page with table of contents after title page
- Add all star-form titles to the table of contents
- Wrap all tables with `table` environment and all pictures with `figure` environment; add all captions
- Add list of tables and list of figures after table of contents

Page imposition

- Use the document from previous laboratory and add the `geometry` package

Page imposition

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- Set the page dimensions to format A5 and correct all possible overfulls

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- Create a new document with `pdfpages` package

Page imposition

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- Set the page dimensions to format A5 and correct all possible overfulls
- Create a new document with `pdfpages` package
- Insert previous document and impose 2 pages to 1 A4 paper in brochure format

Document proposal

- Collect material to the new document (texts, pictures, tables etc.)

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- Establish typographics and logical links between individual document elements

Document realisation

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- Use proposed structural marks in document material
- Create style file and create all macros for structural markup
- Prepare and realise tables and math expressions
- Insert all pictures and complete the document