Latex exercises

Intsructions

1. Boot the computer in Linux.
2. Create a dircetory, e.g. `mkdir sciwri` and move there by `cd sciwri`.
3. Start a browser and save file
   `http://cs.joensuu.fi/pages/whamalai/sciwri/basiclatex.tex`
   into your directory.
4. Check what a latex file looks like by `less basiclatex.tex`.
5. Compile the file by `latex basiclatex.tex`. The resulting file is `basiclatex.dvi`. (You can always check the contents of the directory by `ls` or `ls -la`.)
6. Now you can look it by `xdvi basiclatex.dvi`.
7. If you want to print the document, transform it to postcript by `dvips basiclatex.dvi -o basiclatex.ps`. If you prefer pdf, use transformation `dvipdfm basiclatex.dvi`.
8. Use `basiclatex.tex` as you example, and write your own latex file where you solve the following tasks. You can copy the `basiclatex.tex` and just modufy it. Copying happens by `cp basiclatex.tex latexercise.tex` (you can invent the name yourself, just remember the suffix `.tex`).
9. Open your file in an editor. For example, you can use *emacs* or *xemacs*. `xemacs` is heavier to run, but maybe easier to use, if you are used to graphical interphase. In `emacs`, the file is opened by `emacs latexercise.tex`.
10. When you finish, you can transfer your file to cs, where it can be accessed from windows, if needed. The command is
    `scp latexercise.tex user@cs.joensuu.fi:directory`, where `user` is your username and `directory` is the directory name.

Exercises

Give your document title "Exercises 1" and create a section for each task.

1. **Writing lists**: Write the following list

   - Understanding domain
   - Preprocessing data
   - Learning the *model* from data
   - Interpreting the results

   Can you add a sublist into your list?

   - Understanding domain
   - Preprocessing data
   - Learning the *model* from data
     - Data mining or
     - Machine learning step
   - Interpreting the results

2. **Writing tables**: Write the following table

	Data Mining	Machine Learning
Assumptions:	Data primarly	Model primarly
Model:	Often local patterns	Global
Data size:	even millions of rows	hundreds or thoudans of rows

3. **Writing basic equations by Latex**: Write the following expressions by latex.

   a) $(a+b)^2 = a^2 + 2ab + b^2$
   b) $(a-b)(a+b) = a^2 - b^2$
   c) $n! = 1 \times 2 \times ... \times n$
   d) $a = v/t$
   e) $1 + 2 + ... + n = \frac{(n+1)\times n}{2}$