Cheatsheet for the GSNS LaTeX Workshop

TeXniCie, A-Eskwadraat

September 1, 2020

This document is intended as a summary of the workshop which can be useful at later times to refresh your memory. It also includes a few things which we didn't have time for in the workshop but which are still very useful when actually using LaTeX.

Basics A LaTeX file starts with `\documentclass{article}`. There are options for other document classes, such as book or report. The file first contains preamble (with `\usepackage{...}` calls) and then the document itself, encased in `\begin{document}` ... `\end{document}`.

The documentclass also has optional arguments; example options are twocolumn for two columns and [12pt] for a larger font. Multiple commands are separated by a comma, e.g. `\documentclass[twocolumn, 12pt]{article}`.

The babel, geometry, graphicx, amssymb and amsmath packages are recommended. The babel and geometry packages work best with optional arguments; syntax `\usepackage[⟨optional⟩]{⟨package⟩}`.

A title can be made with `\maketitle`, which requires you give an `\author{}` and `\title{}`. A `\date{}` is optional. A table of contents can be made using `\tableofcontents` and requires an extra time compiling to fully work.

Accented letters can be created by putting the corresponding accent-command in front of the letter, e.g. `\'o` for ó. The accents are given by ', `, ", ^ and ~.

Some symbols have meaning in LaTeX; to print the symbol include a \ in front of it, e.g. `\$`. Exception is the backslash itself: `\textbackslash`.

Paragraphs and Listings Headings can be made using the commands {`\chapter`, `\section`, `\subsection`, `\subsubsection`, `\paragraph`}. The `\chapter` command is only available in some document classes. The `\paragraph` command gives no table of contents entry, the `\subsection` might or might not depending on other settings. The `\appendix` command clarifies that all later chapters/sections are appendices and are to be numbered differently.

Paragraph manipulation happens through `\\` (or `\newline`), `\par` (or double enter) and `\bigbreak`. Page manipulation through `\newpage` and `\clearpage`. Out of these, `\par`, `\bigbreak` and `\clearpage` are recommended for daily use.

The listings are itemize, enumerate and description. The syntax is `\begin{itemize}` `\item` ...`\item` ...`\end{itemize}` and for description each `\item` needs an entry of the form `\item[⟨entry⟩]`.

Mathematics Math mode can be opened via `\(` ... `\)` or `$` ... `$` for *inline* math and `\[` ... `\]` or `$$` ... `$$` for *display* math. *Inline* is recommended for smaller or unimportant formula, otherwise *display* is preferred.

Numbers and operations like plus and minus work as expected. Multiplication uses `\times` or `\cdot` (centre dot). Sub- and superscript uses a hat ^ (Shift 6) respectively a dash _ (Shift minus).

Commands use a abbreviation for their name, like `\sqrt[power]{⟨number⟩}`, `\log⟨number⟩` or `\infty`. Greek letters use the English name for the letter, `\lambda`. For a comprehensive list see CTAN or use detexify by Kirelabs. A final helpful reference is wikibooks.

For automatically scaling parentheses use `\left(` ... `\right)`, this also works for other brackets.

AMSmath gives more options for displaymath, like align and equation. It can also be used for vectors and matrices, see the AMSmath documentation or search 'latex matrix' with your favourite search engine. We also recommend amssymb for it gives many symbols as well as math fonts like $\mathbb{R}$ (`$\mathbb{R}$`).

Pictures The basic command to include pictures is `\includegraphics`, e.g. `\includegraphics[scale=0.4]{picture.png}`. Size regulation can be done by scale=⟨number⟩ or width=⟨value⟩. For width it is useful to use `0.4\linewidth` or similar.

Use `\begin{figure}[htp]` ... `\end{figure}` around the picture for a more natural placement.