A beginners guide to LaTeX

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1 Intro

Latex is an open source, cross platform document markup language. It is perfered by many academics because of its maturity, the fact that it is open source, that it has a version for every operating system, including Haiku, and that it has an advanced library for making and displaying mathematical equations.

2 Starting using latex

The first step of latex is downloading a LaTeX compiler for your chosen platform:

Windows: MikTex
Mac: MacTex
Linux: apt-get install texlive/pacman install texlive/emerge texlive
(You will figure it out as you probably have chosen a distribution equal to your skill, and most distributions have TexLive in their repository)

3 Markup

3.1 Header

The general markup of LaTeX is starting with a header specifying document-class, what packages to use, title, author, a command to make the title, a document begin tag and an end document tag:

```
\documentclass{article}
\usepackage{graphicx}
\usepackage{hyperref}

\begin{document}

\title{A beginners guide to LaTeX}
\author{Lars H Lunde}
\date{\today\\v1.0}

\maketitle
\end{document}
```

However for the purposes of simplicity I advice not using using packages that need custom package downloads. Everything in latex that is not plain

text uses a tag \markup. This much like learning code or how to use linux requires mucking about with it and tweaking until you have a result that you find satisfying, and ask Google PhD.

4 Example section

The format of the rest of the document is making sections.

4.1 Subsection

With sub sections

4.1.1 Subsubsection

and subsubsections

```
\section{Example section}
The format of the rest of the document is making sections.
\subsection{Subsection}
With sub sections
\subsubsection{Subsubsection}
and subsubsections
```

All sections and subsections are automatically enumerated, however there is an override, specified in the "Tips and tricks section".

4.2 Markup

Everything but plain text in latex start with a tag formatted using a backslash a codeword and a pair of curly brackets:

5 Pictures

Adding pictures to a document is essential. Because of compatibility issues I highly encourage only using .png files, and when putting them in to the document not to specify file ending, LaTeX does this automatically. There are generally 2 ways of inputting pictures in to a LaTeX document.
The easy way, which might require you to manipulate your pictures downward in size to fit the page.


```
\includegraphics{ubuntu}
```

and the more customizable way:

```
\begin{figure}[p]
    \makebox[\linewidth]{
        \includegraphics[width=1]{ubuntu}
    }
\caption{Ubuntu logo}
\end{figure}
```

Figure 1: Ubuntu logo

However using the figure has way too many options for me to list, for further information read this article:
WikiBooks LaTeX: Floats Figures and Captions

5.1 Reducing the margin

In some cases the document can be too big for the document, and even though reducing margins is VERY frowned upon as it reduces printer compatibility, there is a way to do so in a pinch. As I will demonstrate with my shippo incredibly awful Shippo sudoku UML:

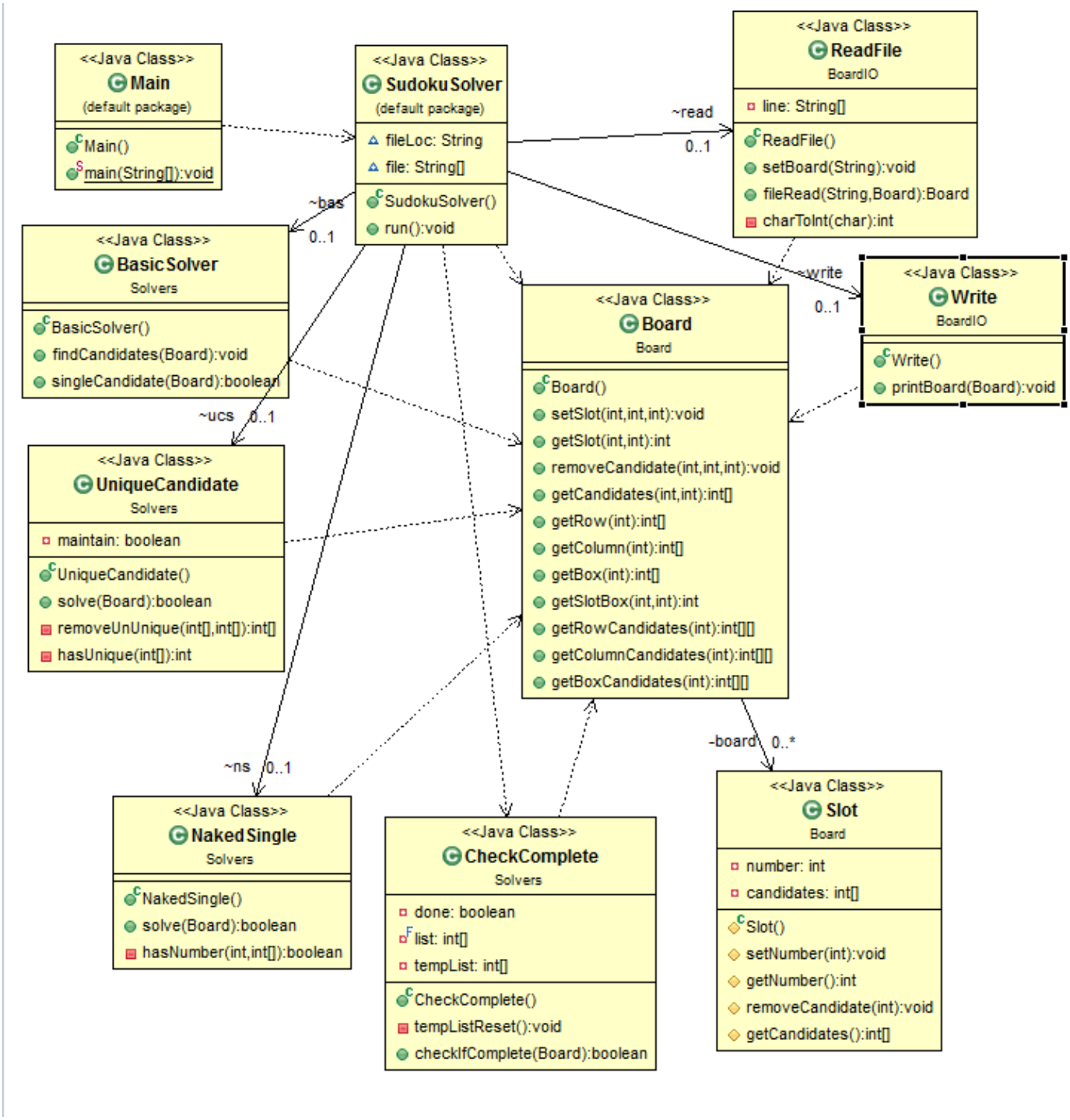

Figure 2: UML Diagram

```
\begin{figure}[p]
    \vspace*{-4cm}
    \makebox[\linewidth]{
        \includegraphics[width=1.5\linewidth]{uml}
    }
\caption{UML Diagram}
\end{figure}
```

The keyword being:

```
\vspace*{-4cm}
```

6 Tables

Tables will be essential for making the test data documents, I reccomend using the template I am using here, for more information go to Wiki Books LaTeX: Tables.

Test Red	Req being tested	Test Content	Input	Output	Pass Criteria
SE-F-001	FR1	Check that system can store the first two days of the earliest permitted year	Enter 1st March 1971 at date prompt. Hit return, and enter 2nd March 1971 at date prompt	List of stored dates should now include those dates.	Data is stored correctly

There is no denying this is a proper pain in the arse, but it has to be done.

```
\begin{flushleft}
\begin{tabular}{ | p{1cm} | p{1cm} | p{2.5cm} | p{2.5cm} | p{2.5cm} | p{2.5cm} |}
\hline
Test Red & Req being tested & Test Content & Input & Output & Pass Criteria \\ \hline
SE-F-001 & FR1
& Check that system can store the first two days of the earliest permitted year
& Enter 1st March 1971 at date prompt. Hit return, and enter 2nd March 1971 at date prompt
& List of stored dates should now include those dates.& Data is stored correctly \\ \hline

\end{tabular}
\end{flushleft}
```

7 Writing code in to a LaTeX document

Writing code in to a LaTeX document, or writing any text that contains markup signs must be encapsulated in:

\begin{verbatim}
Tags
\end{verbatim}

And looks like this, this example is the FizzBuzz test written in LUA:

```
local boolean fb = true

for i = 1, 100 do
    if i % 3 == 0 then
        io.write("Fizz")
        fb = false
    end

    if i % 5 == 0 then
        io.write("Buzz")
        fb = false
    end

    if fb then
        io.write(i)
    end

    io.write("\n")
    fb = true
end
```

As you can see it got printed out as is, with spaces and all the trimmings. There are ways of making the code look more vibrant with plugins and special packages, for simplicity sake we will not be using those as recompiling the LaTeX on another machine can be tricky.

8 Tips and Tricks, making LaTeX abide by your will

8.1 Pictures

At times it seems that pictures in latex have a mind of their own, this is partially true, it does what it finds best, but is in fact not sentient, there are 2 ways of forcing the picture in to place. The first way is to make a include the:

\usepackage{float} in the header and use the figure way of inputting a picture and using H as a parameter.


```
\begin{figure}[H]
    \makebox[\linewidth]{
        \includegraphics[width=0.7\linewidth]{arch}
    }
\end{figure}
```

However making some spacing around is always a good thing to do. The command to do so is "\bigskip", this will yield an empty line, whatever element comes before or after. On the same note "\newline" will clear the rest of the line and start a new one.

Another good trick in case you have a particularly big image is to use the "\clearpage". This will start an entirely new page, and if you read the source of this document you will find it being used quite frequently.

8.2 Disabling section enumeration

Disabling section enumeration can be done by specifying:

```
\setcounter{secnumdepth\}{0}
```

9 Useful links

Italisize and Bold
Special Characters and symbols in LaTeX
List Structures
Tables, especially for the test documents.