Computing for mathematics handout 10 - File paths, formatting, floating figures, cloud.sagemath, plagiarism and next semester.

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What you have learnt this week:

LaTeX.

Paths

There are two (popular) types of operating systems:

- *nix (which powers Linux and Mac computers): more popular for coding.
- Windows: more popular for gaming.

File paths on *nix machines use / to separate directories:

/home/vince/photos

On Windows machines \ is used:

C:\vince\photos

LaTeX uses the *nix syntax **even** on Windows.

Good practice:

- No spaces in files and/or directory names.
- Have a directory in your folder with your images: Images. Refer to those images:

  \includegraphics{./Images/pic.png}

  This helps keep your directory tidy.

Page formatting

The following in your 'preamble' (before the \begin{document}) will use up the full page:

\usepackage{fullpage}
\usepackage{parskip}

There are other ways to change the layout of a LaTeX page: http://en.wikibooks.org/wiki/LaTeX/Page_Layout.

Floating figures

We can include figure and tables in LaTeX using:

```
\begin{figure}
\begin{center}
\includegraphics{...}
\end{center}
\end{figure}

\begin{table}
\begin{tabular}
\begin{center}
...
\end{center}
\end{tabular}
\end{table}
```

Figures and Tables *move* in LaTeX, ie if we put them in some specific place in the code they potentially do not appear there in the pdf. This is called *floating.*

In general 'trust' LaTeX to put them in the correct place and refer to figure and tables using \ref and \label.

LaTeX places these things in such a way as to format documents in an esthetically pleasing way. You can pass certain options to LaTeX to get it to ignore certain constraints:

- h indicates that it can place the float inline;
- t indicates that it can place the float in the top area;
- b indicates that it can place the float in the bottom area;
- p indicates that it can place the float on a float page or column area;
- ! indicates that further constraints can be ignored.

In practice this means, use:

```
\begin{figure}[!htbp]
```

cloud.sagemath

The inventor of Sage: William Stein has recently been working on a very ambitious project: cloud.sagemath.

> "There are 288 cores, 1216GB RAM and 50TB disk space dedicated to the Sagemath Cloud cluster."

You can read about the progress of cloud.sagemath on G+ but at the moment you can use it as a (more or less) full linux machine with access to:

- Python;
- Sage;
- LaTeX;
- R;
- Bash...

Note that this is an external service (the servers sit at Washington University).

Plagiarism

Be careful to not not plagiarise. Here are the University's guidelines on plagiarism and unfair practice: http://cardiff.ac.uk/regis/ifs/p

As long as you reference any work that you use as a source you'll be fine (for example a website from which you have taken some code).

Note that the submission details have been detailed in the coursework instructions.

What you should do next:

- Think of groups and topics for next semester
- **Finish the coursework**
- If anything is still unclear **please** come and see me during office hours.