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Administrivia

- Grade summaries mailed yesterday. Do let me know if it seems I have made a mistake.
- Reminder: Homework 6 due today.
- Next homework to be on the Web soon. I'll send mail if that's before Monday. You'll have at least a week to work on it.

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Minute Essay From Last Lecture

- Most but not all had used \LaTeX . (That surprised me!)

Processing L^AT_EX Source, Revisited

- Old way is to use `latex` to generate DVI file (possibly running it several times and also using `bibtex` if needed for bibliography) and then use `dvips` to generate PostScript (and then probably convert to PDF with `ps2pdf`).

Newer way is to use `pdflatex` to go directly to PDF.

(Why run several times? as with C compiler, it's kind of a one-pass process, and it takes more than one pass to resolve crossreferences.)

- Another way — use `lAtekmk`, which runs `latex` (as many times as needed) and `bibtex` if needed. Many useful options, including:

`-outdir` to put all output in (sub)directory.

`-c` to clean up intermediate files.

Normally generates DVI file, but you can go direct to PDF, or use `dvipdf`.

- Remember on our machines to do a

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```
module load texlive-latest.
```

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LaTeX Basics — Document Structure

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- Overall structure:
 - `\documentclass[options]{foo}`
 - “Preamble” with global settings.
 - `\begin{document}`
 - Your text.
 - `\end{document}`
- Can use `\input` to pull in other files (similar to C `#include`).

LaTeX Basics — Features

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- “Sectioning commands” provide consistent layout and automatic numbering. Also allows collecting info to make table of contents.
- “Environments” provide support for lists (bulleted and numbered), tables, centered text, “verbatim” (equivalent of HTML preformatted text), etc.
- Predefined macros provide simple markup, e.g., `\textit{foo}`.

\LaTeX Basics — More Features

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- Math — inline with $\$,$ “displayed” as in example. point-and-click equation editor. Support for
- Graphics can be included. Traditional toolchain supports only EPS but newer tools support other formats. A benefit of EPS is that it can easily be scaled to fit.
- Support for tables with “tabular” environment. Something of a pain to use but oh well (and would lend itself to being produced programmatically).

\LaTeX Basics — More Features

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- Figures and tables can “float” (\LaTeX will put them where they fit). Also footnotes.
- Lots of cross-referencing features — declare symbolic label (for section, figure, equation, etc.) with `\label{foo}`, reference with `\ref{foo}`.
- Support for bibliography / list of references — usually use companion package `BibTeX`.
- Support for indexes. (Also glossaries, through add-on packages.)

LaTeX Basics — Still More Features

- Facilities to define your own “commands” and “environments”. Makes it easy to get consistent formatting; also can provide convenient shorthand ways of doing things.
- Document classes for producing “slides”. (I use `seminar`; there are others.)

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Related Tools

- `gnuplot` integrates nicely with LaTeX.
- Many possible ways to draw figures, but I use `xfig` — old, but nice integration with LaTeX. (Also what it saves/loads is plain-text files.)
- Tools to convert LaTeX source to HTML. (I use `latex2html`; there are others.)
- Tools for editing LaTeX source. Support in both `emacs` and `vim` (`auctex` and `vimlatex` respectively). Also GUI frontends. See “useful links” page.

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Minute Essay

- Anything noteworthy about Homework 6?
- We still have many weeks left. I plan a lecture or two on miscellaneous text-mode tools, and maybe one on installing from source, but there's time for other topics. Suggestions?

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