latex, examples

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outline

misc

intro to latex

searching, checking, exporting and code/tex examples

advanced latex / weaving

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git

- you did great with cross-commenting in git
- but class git repo is a mess
- if i start adding my comments on your files and on comments it will be even a bigger mess
- please do not push anything until after tomorrow
- i will figure out a way to clean it up
  - possibly slicing commits into branches
- so that it is easier to read
- any ideas from you? let's see few readable commits in Paula's repo, and more commits and also 2 branches in Julie's repo
- for now, given our current git workflow, few tips...

git

- with cross-comenting we bumped into merging problem
- it happens when there are two versions of the same file that are conflicting
- say, A edited B's file and pushed it
- at the same time B edited the same (B's) file and pulled A's edits
- that creates a conflict that you need to resolve
- git will tell you that "automatic merge failed"

git

- git would put conflicting two versions of a file into one file
  - and conflicts will be delimited by

    $<<<<<<< HEAD : README.txt$

    meeplib for CSE 491, 2012, at MSU. YYY something else!

    $=======$

    meeplib for CSE 491, 2012, at MSU. XXXXX conflict!!!

    $>>>>>>> conflict : README.txt$
- merge two files by manually editing the combined file
  - and by removing git delimiters
  - and commit the resulting file
- and there are some specialized tools to do the merge;
  - see SO for discussion

npp

- as mentioned in my email...
- it is important to effectivelly do “diff”
  (dfifferentiate two versions of the same file)
- diff in npp

`http://www.addictivetips.com/windows-tips/`

`compare-two-source-codes-and-text-files-in-notepad-with-compare/`

today

- we will do 5 things:
- introduction to latex
- exporting results from stata
  - latex only
  - if you want word or excel: findit outreg2 findit xml_tab
- some checking with commands like assert
- searching data labels, etc
- replication of my papers: code and latex

the end of stata

- we finish stata today, and discuss couple of things that you should do with the code you wrote so far:
  - **search it**
  - **check it**
  - **export what it produces**

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any users?

- anybody using latex?

why we talk about this?

- this is data management class – why exporting results and latex?
- because results are data
- and text is (rich) data

why latex ?

- why latex? reproducible research
- let's see some beautiful graphs on first several pages from here...
- `http://repec.org/nasug2005/Schumm_NASUG-presentation.pdf`

skip it: installation at home

- installation is painful...on windows
- probably the easiest `http://www.tug.org/protext`
  - download
  - there is a pdf file, open it and follow instructions
- feel free to post questions on listserv
- and a really nice frontend for latex is kile `http://kile.sourceforge.net/`
- Young says that Lyx is good `http://www.lyx.org/`
- but the old good text editor like npp would do

the awful truth about latex

- many people don't know about it
- many people don't install it because installation process in complicated (on windows)
- configuration is not straightforward either
- many people don't use it because you need to learn yet another language

learn by example

- the key is to learn by example – i will give you some templates and you can just recycle them ...
- you do not have know latex syntax, commands, etc
- you do not have to even know everything in the template
- just replace my text with yours and you have a ready document

why use it

- saves time (after initial hardship)
- if you write a lot (most of us do) – it is worth investing time
- time saving increases if you use it with stata or R
  - stata and R work great with latex
  - you can export anything from stata and R to latex
  - and exporting is automated, no copy-paste, no clicking
- time saving increases if you use math symbols
- it is fun to use

what is latex

- latex is a markup language (like html)
- you use markup like $< b > bold < /a >$
- it is not a WYSIWYG word processor like microsoft word
- latex is cross-platform

intuition

- with latex you are supposed to focus on writing, not on formatting
- that is, you just type, and latex formats it ...
- also, latex forces on you a clear structure – sections, comments
- and you automate – latex will take care of tables/figure numbering
- you can have loops in latex
- you can define your own latex commands
- remember singularity principle from previous classes?

singularity

- this principle is often overlooked
- LaTeX (now even ms word) and html with css are based on this principle – take out the (common) formatting
- you should not have the same line of code in more than one dofile
- if you have, it is inefficient, and leads to mistakes when you change your code
- take out the common code and put into common (root) dofile
- make programs (.ado)

singularity example

```
<font size=2 face="Helvetica" color=red>formatted text
</font>
regular text
<font size=2 face="Helvetica" color=red>formatted text agai
</font>
-----------------------------------
adam_tag1 {
font size=2; face="Helvetica"; color=red;
}
<adam_tag1>formatted text</adam_tag1>
regular text
<adam_tag1>formatted text again</adam_tag1>
% then you can just change tag definition and all
% intsatnces in 150 files changed automatically !
```

usage

- journal-style articles
- powerpoint-like presentations (beamer)
- this presentation is written in latex (beamer)
- dissertation
- i wrote utdallas latex style for dissertation

  `http://utd.edu/~ajo021000/myweb/latex/`

- it is a template
- and it will format everything

files

- your latex file will have a name like myfile.tex
- if you latex a document, you will create myfile.dvi
- if you pdflatex a document, you will create myfile.pdf (this is most common now)
- you will also have files with .log, .aux, .bbl, .blg, .nav, .out extensions (don't worry about them)

preamble

- latex document has a bunch of code in the preamble
- this is where we declare the packages that we want to use
  - something like stata findit or net install
- apart from that, you just type plain text
  - and apply tags to format it, like in html
  - e.g. **bold** is done with

    `\textbf{bold}`
- again, like in stata, don't memorize those; i will give you some templates and start working by editing them

text editor

- you edit latex code with text editor
- so we have another efficiency – same software: use npp (or whatever you use) for stata, R, latex, python, PHP, HTML, ...
- programmers say that they live in text editor ...

why not to use latex

- it is a code so sometimes it won't run and you need to debug it (find error)
- unfortunately, many people will ask you for word document, and there is no easy way to transfer from latex to word
- there are some free utilities that work ok with text but not with tables, graphs or footnotes
- there are some non-free utilities that i do not know how they work

latex and stata

- latex integrates well with any other software, e.g. stata, R
- the reason is that latex can insert any text file
- and stata can write anything into text file
  - remember file write from previous classes ?
  - stata can write into text file content of a macro
  - and you can put into macro anything
- do not copy-paste from stata to latex; use \input

latex and stata

- you can export anything with file write
- but mots of the time you want to export estimation results
- the most useful command for that is estout
- at the same time it is one of the most complicated stata commands...
- say help estout and you will get 1700 lines
- we will see some examples in my paper
- but see here for more
- `http://repec.org/bocode/e/estout/installation.html`
- `http://www.ats.ucla.edu/stat/stata/faq/estout.htm`

how to run it?

- you need to run (compile) latex document to get pdf (pdflatex)
- how to run depends on what you use to type it
- you need a text editor to type latex code
- there are many choices: general text editors: emacs, npp
- specialized text editors: kile, texnic center
- we will use kile
- let's have a look at kile and explore menus

your first latex example

```
%\documentclass{article}
%\usepackage[pdftex]{graphics}
%\begin{document}
%bla bla
%\end{document}
```

bibtex: any users

- anybody using bibliography manager e.g. endnote ?

what is it

- bibtext manages your bibliography, like endnote
- you can export to bibtex from ebsco, citeulike etc
- probably google scholar is the best – just change the defaults

frontends

- there are many nice frontedns for bibtex
- kile has one, too
- try `www.mendeley.com/` at home...

reference sheet

- i have figured out that natbib is nice
- here's a reference sheet

  `http://merkel.zoneo.net/Latex/natbib.php`

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code

- instead of talking let's run some code
- dofile
- exporting.do on website

replication

- let's have a look at zipped files that contain replication of my papers
- we'll run both, stata code and latex

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literate programming

- write code and documentation in one file, and then
- weave – produce printable document optimized for human perception
- tangle – produce compile-ready source code
- R and tex is called "sweave"; and stata (SAS) and tex is called "statweave"

my experience

- i do not like it
- yes, i tried to use it (R and tex)
- but it does not work for me
- i will explain why ... but don't get discouraged

my workflow

- this is just an example, you need to find your workflow
- i do not label graphs/tables in dofile like “table1” or ”graph2”– save them as something_meaningful
  e.g. gdp_inf.pdf and then include in tex
- you can search for that in both docs at once in npp
- you’ll immediately see where it comes from
- just have 2 docs opened side to side

my workflow

- so i have 2 different files and exported file names (tables/graphs) are anchors
- what sweave does – it splits code into two files and then run them both at the same time
- i like interactive sessions – run little bit of latex, little bit of stata – but separately, not both at the same time

my workflow

- and, i think, the information flows in one direction only: from stata to latex
- then you can output anything (incl. comments) from stata `file write` into text files
- and pull them into latex with `\input`
- again i do not want to discourage you from literate programming, maybe it will work for you better

try weaving yourself

- `http://www.jpberlin.de/d.becker/stata-latex.html`
- `http://www.cs.uiowa.edu/~rlenth/StatWeave/`
- findit texdoc
- `http://fmwww.bc.edu/repec/dsug2009/jann.pdf`
- `http://www.stata.com/meeting/germany09/jann.pdf`