Lecture 11: Bash Shell & Command Line

LING 1340/2340: Data Science for Linguists

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Objectives

- Finally, shell (bash, zsh)
  - Running things in command line
  - Interacting with text files in command line
  - Regex-based text search using grep

Bash/Zsh shell

- What is a "shell"?
  - https://en.wikipedia.org/wiki/Shell_(computing)
  - Usually refers to the command-line interface (CLI) as opposed to graphical user interface (GUI).
  - Bash is the most common flavor of shell in Unix-like OS.
- Mac users
  - Mac OS is a Unix-type OS.
  - Terminal is a built-in terminal. Zsh is the default shell, very similar to bash.
- Windows users
  - We installed "git bash": a bash environment for running command-line git.
  - As a bonus, it came with pretty much all of popular Unix command-line tools!

Shell introduction, navigating

- Introducing the shell
  - http://swcarpentry.github.io/shell-novice/01-intro/
- Navigating & working with files and directories
  - http://swcarpentry.github.io/shell-novice/02-filedir/
  - http://swcarpentry.github.io/shell-novice/03-create/

- We've been doing some of these already, as part of our git routine. You should know:
  - `.` `..` `~`
  - `pwd`
  - `cd`
  - `ls`
  - Command-line history with ↑ and ↓
  - Using TAB for file name completion
  - Using Control+C to quit

Settling in, customizing

- You can customize your shell via editing:

  `.bash_profile`

  `.zprofile`

- In your home directory:
  - *your_editor* `.bash_profile &`
  - After adding entries or editing, you should either log back in, or execute `source .bash_profile`

- Aliasing is the most common customization method:

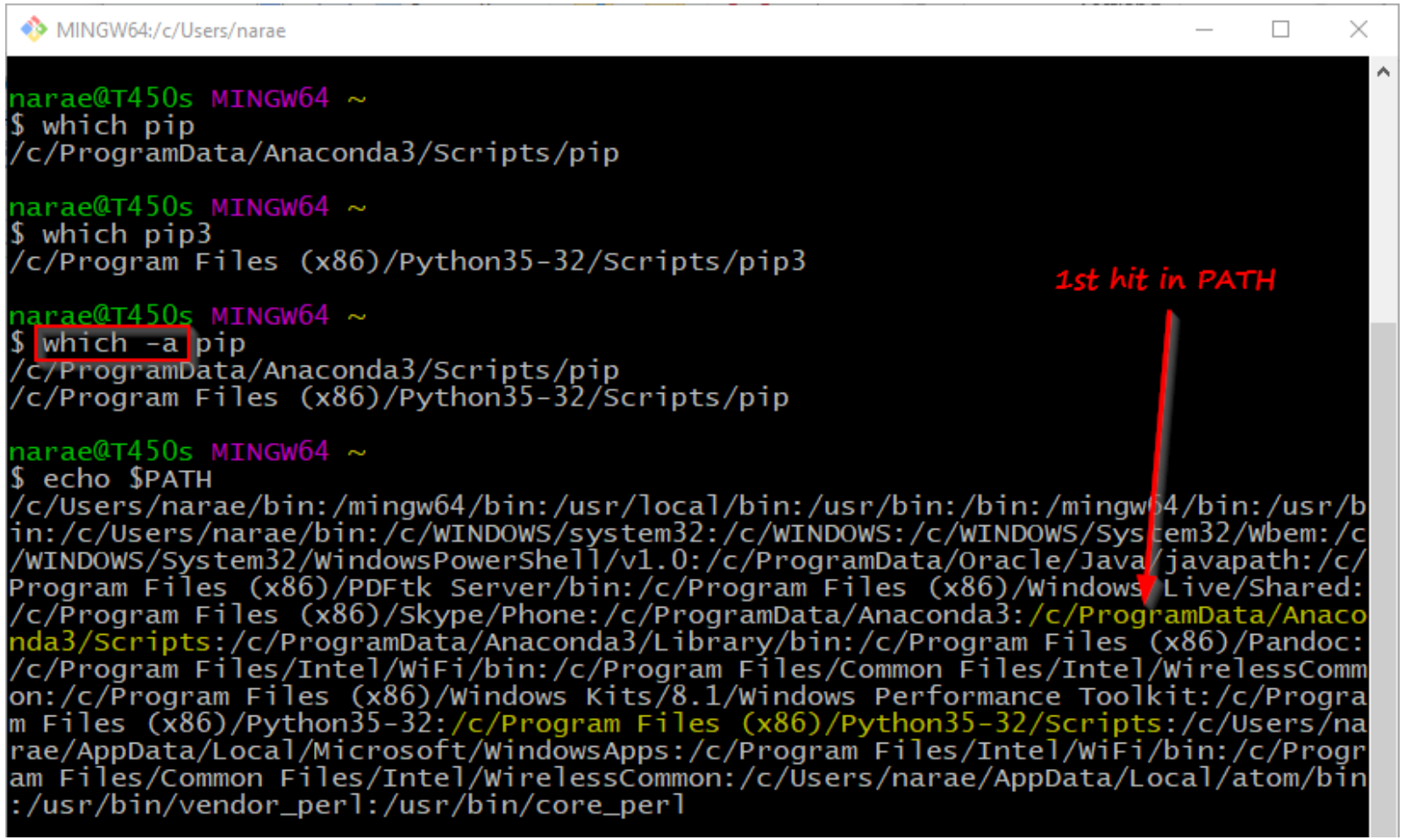
```
alias calc='/c/windows/system32/calc.exe'
alias ls='ls -hF --color=tty'
```

← Your favorite shortcuts and command-line options

Mac users: color option is not supported by default unless you customize Terminal.

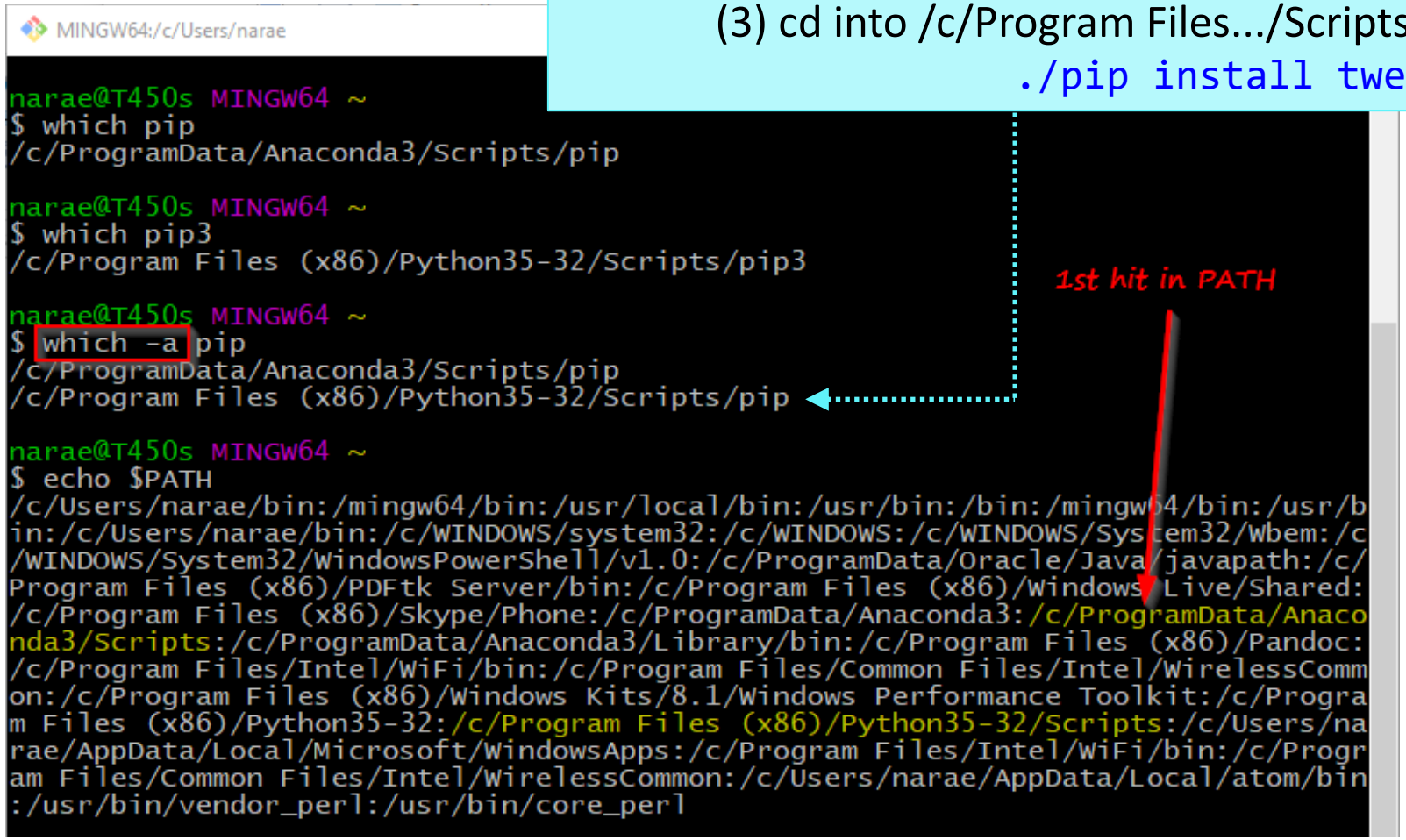
PATH, which, where

- We have been occasionally using `pip` to install Python libraries. Where is this `pip`? Which pip are you using?

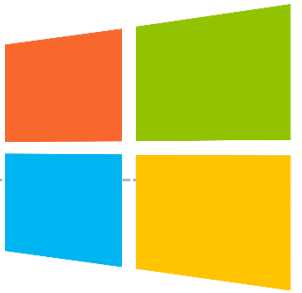


PATH, which, where

If you want to install tweepy for this version of python, you can do:
(1) `pip3 install tweepy`
(2) `/c/Program\ Files.../Scripts/pip install tweepy`
(3) cd into /c/Program Files.../Scripts directory and then
`./pip install tweepy`



Windows users



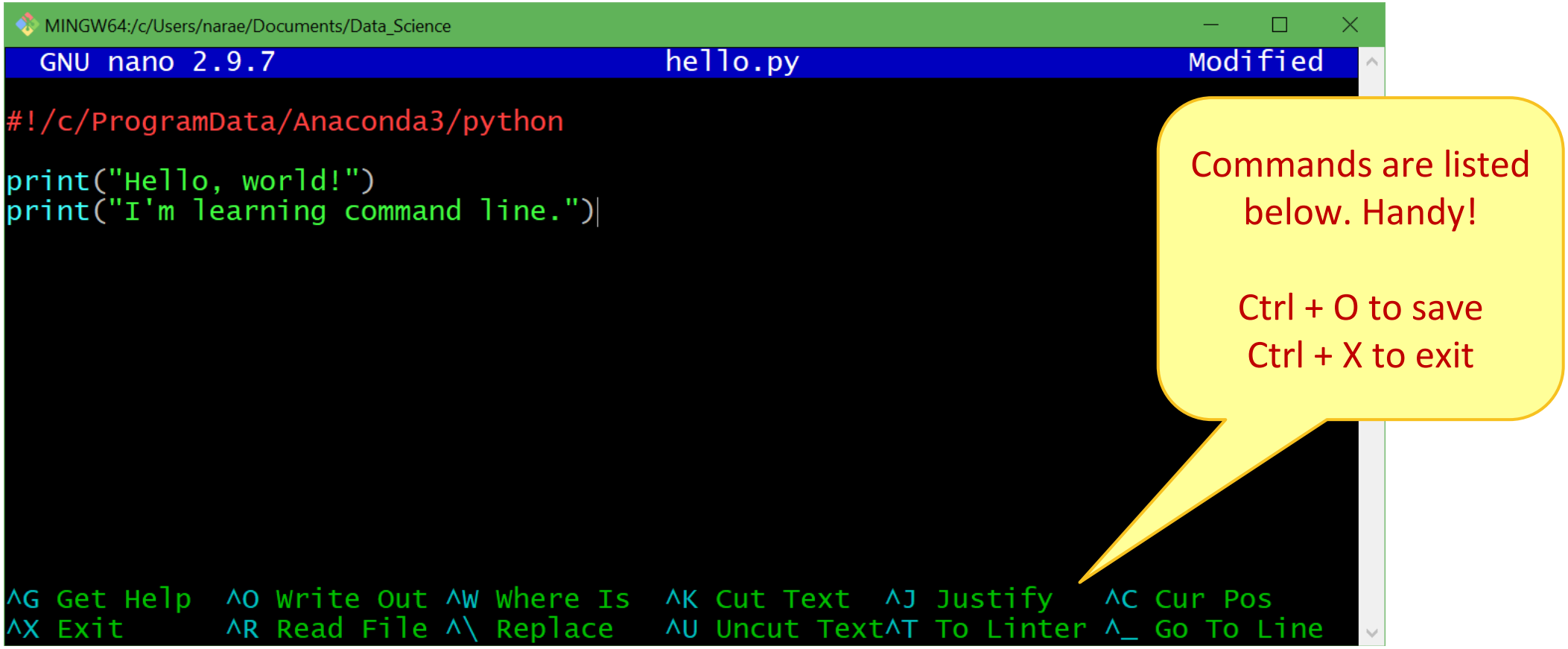
- Because git-bash is not a native command-line shell for Windows (`cmd` is), there are a few additional wrinkles.
- Certain programs are designed to run within a console window. Those need to be prefixed with *winpty*. So if you want Python interactive shell:
  - `winpty python`
- Pay attention to your directory path.
  - In git-bash, full path starts with `/c/`.
  - In cmd (Windows native), it is `C:\...`
  - In Python, full path can be written as `'C:/...'` or `'C:\\...'` or `r'C:\...'`.
- Not included:
  - `more` (use `less` instead)
  - `man` (you're going to have to Google)

Mac users

- Add some aliases to your `.zprofile`
- Like in Windows, you should be able to launch any app that is found in your PATH.
- Surprise! You also get a handy command for launching *any* GUI application from command-line.
  - `open -a Application-Name`
  - http://osxdaily.com/2007/02/01/how-to-launch-gui-applications-from-the-terminal/

nano

- nano is a simple command-line based editor. It is found on all Linux distros.
  - Already present on Macs, and also part of Windows git Bash.



Running python script from command-line

1. `python hello.py`
   - Assuming python is in your $PATH, and hello.py is in your current working directory
2. `hello.py`
   - Assuming your current working directory is in your $PATH. If not, you should execute `./hello.py`
   - Assuming your script begins with a line (called 'shebang' line):

     `#!/systempath/to/python`
     - In my case, it's `#!/c/ProgramData/Anaconda3/python`
     - If your path contains a SPACE... tough luck! (Just kidding, there are ways around it.)

Wrapping up

- Progress report #2 due on Thu!
- Next class
  - More command line, grep, bash shell scripting
  - Supercomputing at CRC