

# CS 105

Introduction to Scientific Computing

Lecture #7 –Scripts and Debugging

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# MOTIVATION

- Typing all these commands every time we want to do the same, or close to the same, thing is annoying ☹
- Can we save the commands somewhere and just let them run one after another to complete the job?

# TOPICS

1. What are Scripts?
2. Making Scripts
3. Running Scripts
4. Debugging Scripts

# READING

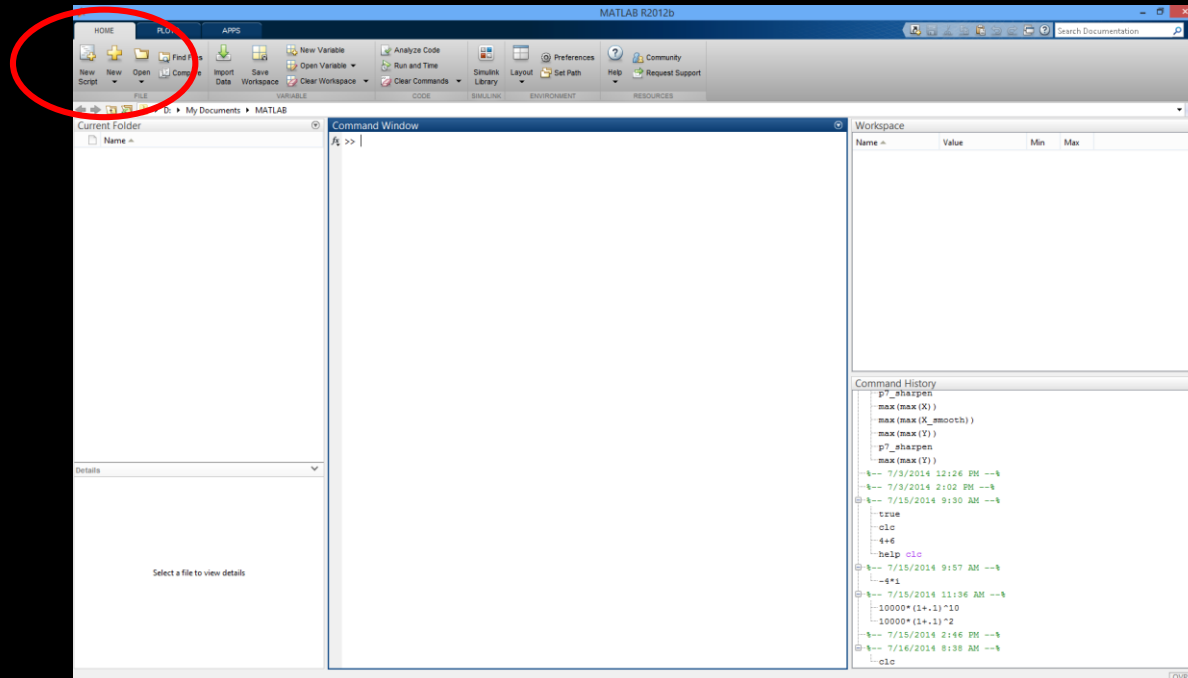
- None

# COMMANDS VS SCRIPTS

- Thus far we've been doing a single command at a time in the command line
- Often we want to be able to run multiple commands, one after another, with a click of a button (literally!)
- • We also may want to save these so we don't have to type them all again.
- *Files* containing commands are called *scripts*
  - In MATLAB, this is synonymous with *programs*

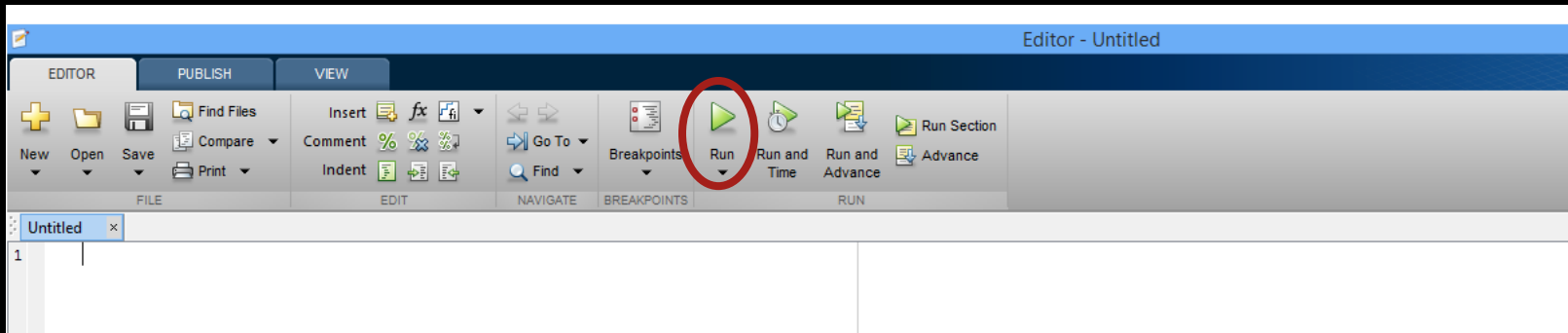
# SCRIPTS

- In the MATLAB interface you can create new scripts or open old ones



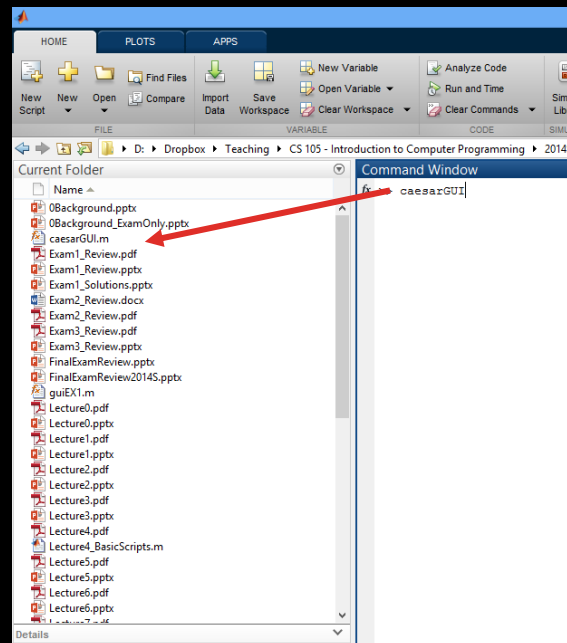
# SCRIPTS

- In this file you can type your commands and save the file
- You can then click *Run* to run the commands



# SCRIPTS

- You can also run the script by typing its name in the command line
  - As long as you're in the directory containing the script



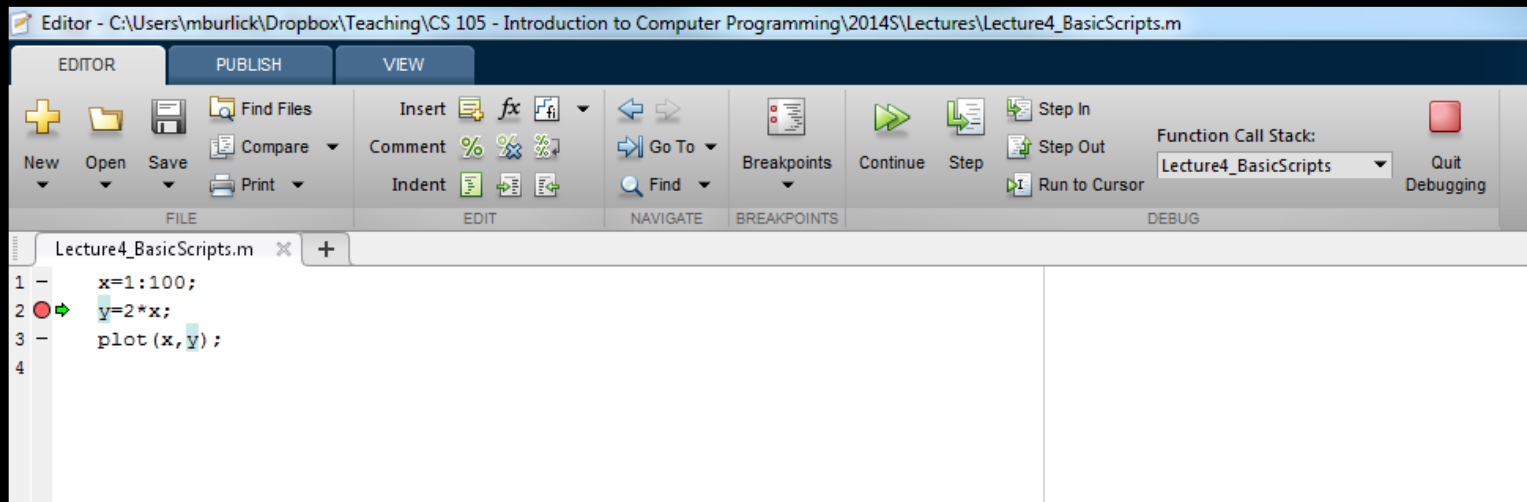


# COMMENTS

- It is often useful to write *comments* in our scripts
- Anything after a percent sign % doesn't get run
- Comments can have several purposes:
  - Give you or others clues as to what's going on
  - *Comment out* stuff that shouldn't run
    - Old ideas you don't want to delete yet

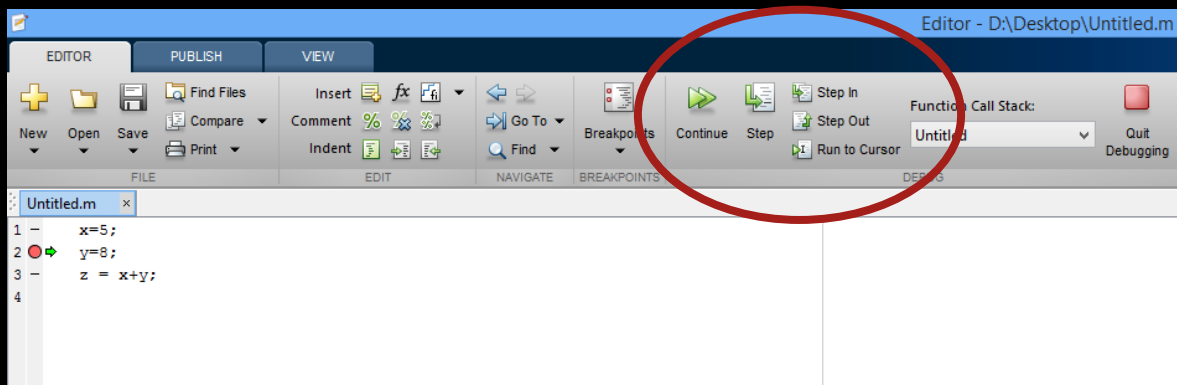
# DEBUGGING

- In the script's file view you can place a **breakpoint** by clicking on the left where you want to stop the program
  - Then when you click Run, it will stop at the next breakpoint
  - This allows you to check the values of a variable at this moment



# DEBUGGING

- In debugging mode you can also
  - Continue – go to the next breakpoint (or run the rest of the code if there are no more breakpoints)
  - Step – go to the next line of code
  - Step In – If you're at a function call, this allows you to go into the function's code
  - Step Out – If you're **in** a function, this allows to finish the function and get out of it



# EXAMPLE

- Write a *script* called *plotLinear.m* that plots the function  
 $y=3x+5$   
for values of  $x=\{1\ 2\ 5\ 7\ 9\}$