MONASH University

MONASH
ENGINEERING
ENG1060

MATLAB INTERFACE AND M-FILES

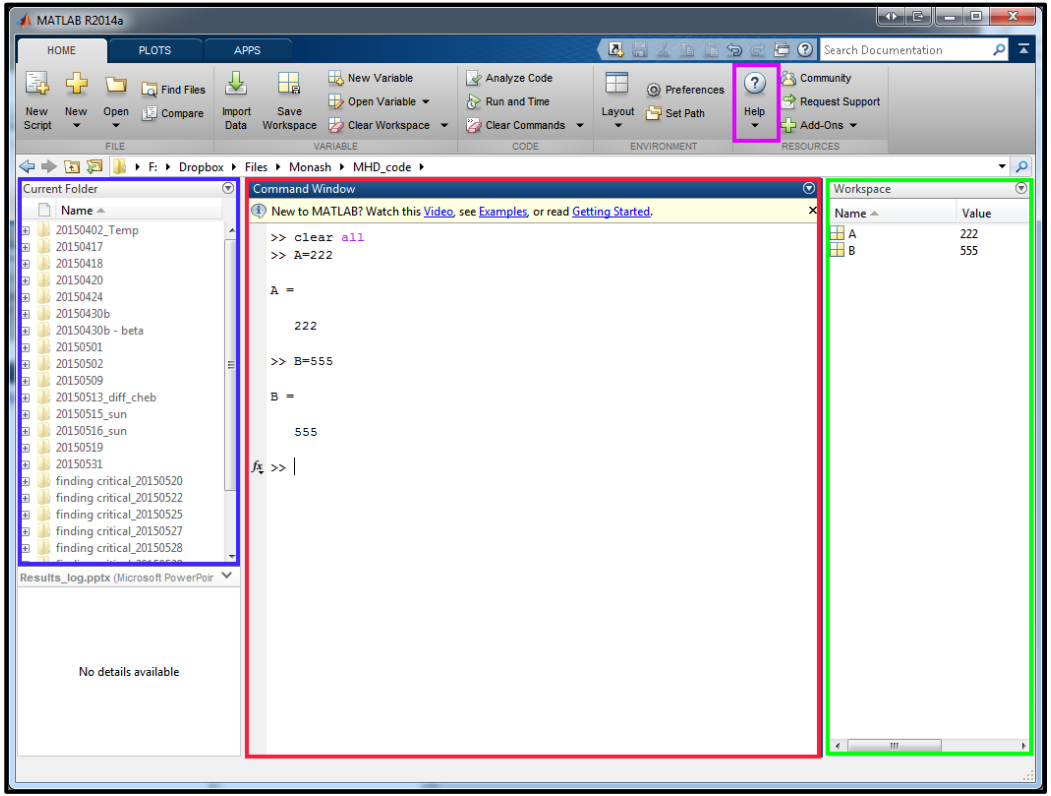
Presented by Tony Vo

Slides by Tony Vo

GROUP OF EIGHT AUSTRALIA

MATLAB INTERFACE

- Current folder
- Command window
- Workspace
- Help

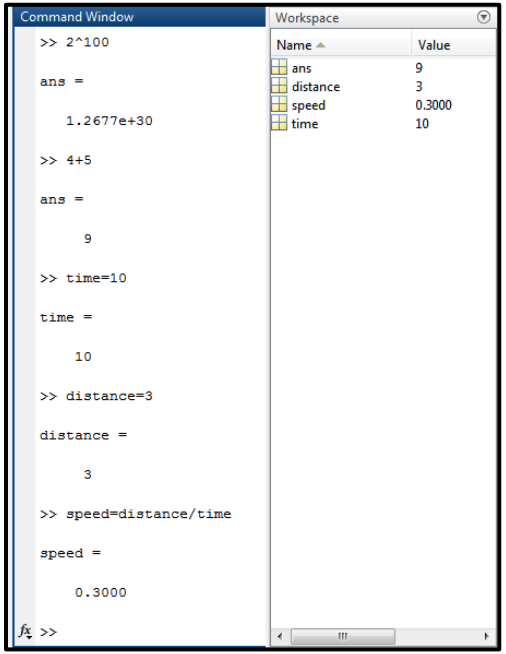


COMMAND WINDOW

- Treat the command window as a temporary calculator
  - ALWAYS assign a variable (do not use ans)

- Use basic operators to perform calculations

=	Assignment
+	Addition
-	Subtraction
*	Multiplication
/	Division
^	Exponentiation



OPERATOR PRECEDENCE

1. Parentheses ()
2. Transpose (.'), power (.^), complex conjugate transpose ('), matrix power (^)
3. Unary plus (+), unary minus (-), logical negation (~)
4. Multiplication (.*), right division (./), left division (.\), matrix multiplication (*), matrix right division (/), matrix left division (\)
5. Addition (+), subtraction (-)
6. Colon operator (:)
7. Less than (<), less than or equal to (<=), greater than (>), greater than or equal to (>=), equal to (==), not equal to (~=)
8. Element-wise AND (&)
9. Element-wise OR (|)
10. Short-circuit AND (&&)
11. Short-circuit OR (||)

OPERATOR ORDER EXAMPLES

- Very similar to BODMAS

- What are the answers?

  a = 3
  a = a + 5
  b = 4
  b = b + a

  x = 3
  y = 10
  z = x + y * x ^ (y – y)

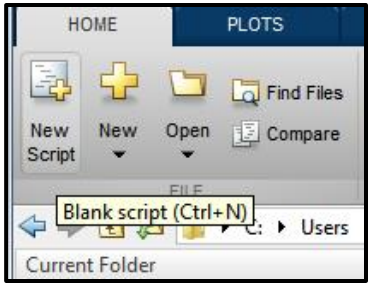
  21 / 7 + 5 * 3 ^ 2 – (8 – 0 / 67)

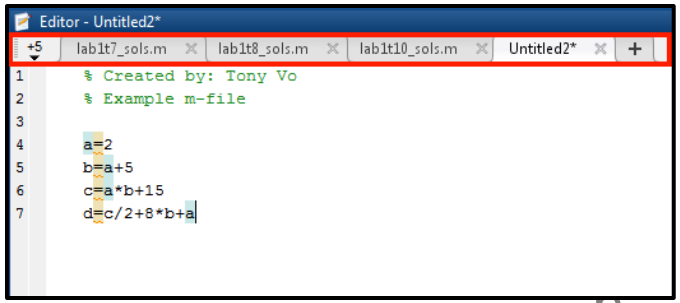
M-FILES

- The command window does not save your sequence of commands
  - The solution is to do your work in m-files

- M-files are known as script files
  - Allows you to easily make changes to your code
  - Do not need to rewrite your code
  - Click 'Run' to run scripts (top to bottom)

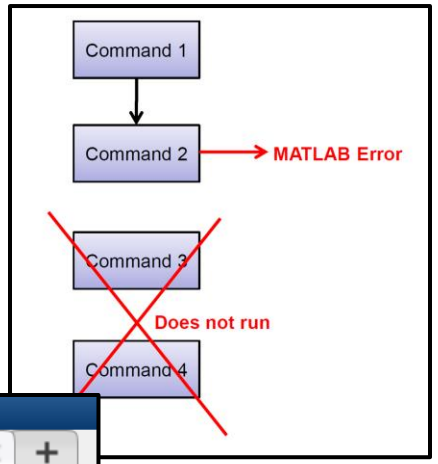
- Scripts are shown in the 'Editor' window as tabs

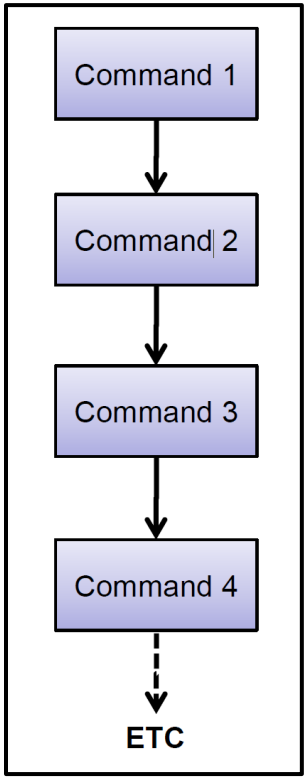




THE SEQUENCE IN M-FILES

- Runs commands from top to bottom
  - Order matters
- Stops if a line produces an error





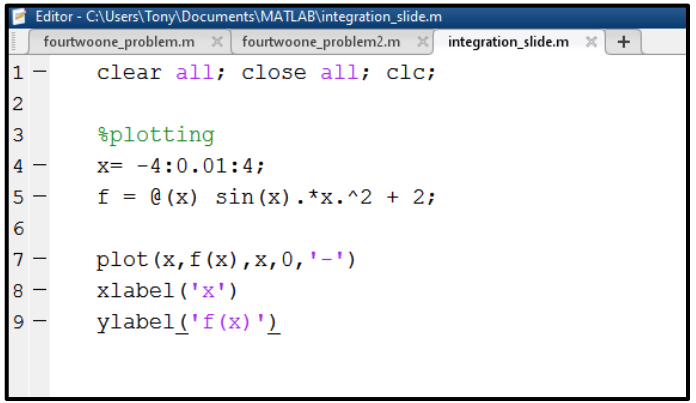
Editor - C:\Users\Tony\Documents\MATLAB\error_line_example.m

varB.m | sct.m | pseudocode_example.m | error_line_example.m

```
1     %error line example
2 -   time = 40;
3 -   speed = distance/time;
4 -   distance = 500;
5
6
```

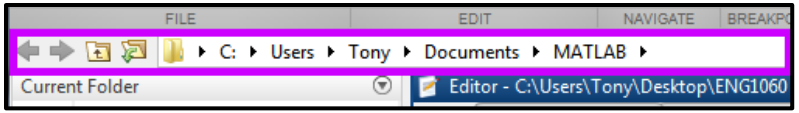
CLEAR ALL; CLOSE ALL; CLC;

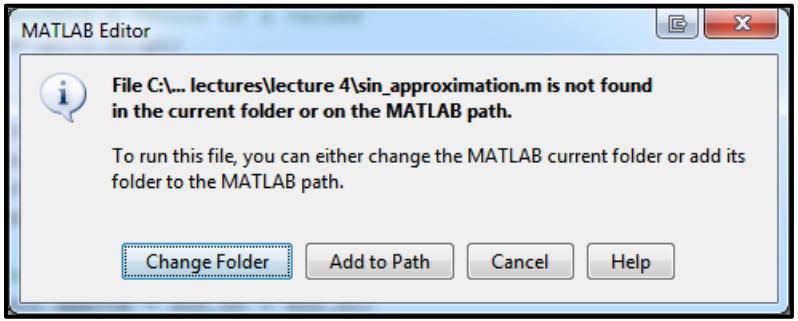
- Have these commands at the top of your m-files (if appropriate)
- clear all
  - Clears all variables in the workspace
- close all
  - Closes all figure windows
- clc
  - Clear the command window



RUNNING M-FILES: THE COMMAND WINDOW

- You can also run your m-file using the command window
  - Type the file name
  - Ensure that the file you are trying to run is in the current directory





SUMMARY

- MATLAB interface
- Basic operations in the command window and operation precedence
- How to create and run m-files
- clear all; close all; clc; commands

- When would you not want to use the clearing commands at the top of m-files?