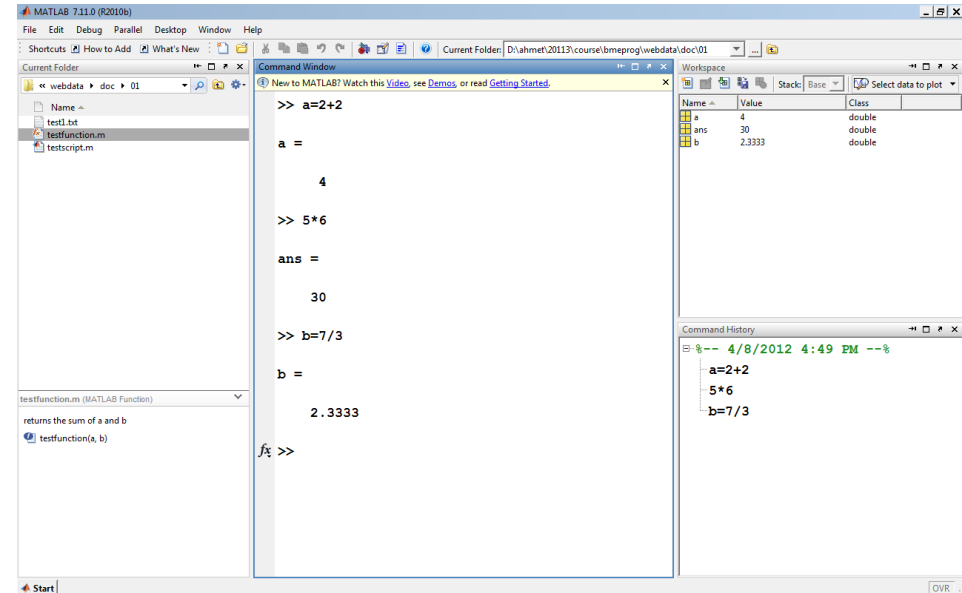# Introduction to Matlab

Matlab GUI, Variables, Printing, Scripts and Functions

Matlab Desktop Environment

- Command Window
  - Command prompt
- Command History
- Workspace
- Current Directory
- Help
- Dock/Close windows
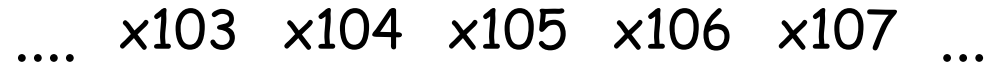 - Home->Layout to get them back.

Variables

- apple='b';

apple	char
'b'	

contents: ....

	'b'			

......

address: ....   x103   x104   x105   x106   x107   ...

variable name: apple

Variables

- letter[letter|digit|underscore]*
- names are CaSe SeNsItIvE
- Can be anything
  - Use short, meaningful names
  - reflect what they store
  - avoid using names of existing functions
- who, whos
- ans
- clear('apple')
- exist('apple','var')

Expressions & Assignments

- variablename = expression ;
- Semicolon at the end suppresses display of results.

- a=2*sin(1.4)

a =

  1.9709

- A=2+2;

Recommended semicolon use

- In command window:
  - Semicolon is optional.
  - Use semicolon when you want to see the result.

- In files (functions or scripts):
  - Always use semicolon.
  - Assignments require you to suppress all output within your functions.

Exercise

- Let a and b be two variables
- Swap the contents of a and b.

- As example, if a=5, b=3 to start with, your code should end up with a having 3, b having 5.

Printing Numbers

- format [short | long | short e | long e | hex | rational]

- fprintf('***%5d***%05d***%c***%.3f***\n',2,3,4,5)
- sprintf('$%.2f',6.234)

Operators

- Unary operators: -
- Binary operators: + - * / \ ^
- Operator precedence:
  - ()   ^   unary -   * / \   + -   =
- Exercise: What are the results of the following expressions?
  - 4 ^ 2 - 1
  - 4 ^ (2 - 1)
  - 2 * 3 ^ 2
  - -5^2
  - 1 /   2/4
  - 2 \ 3
  - 4 * 2 - 9 / 3
  - 5 - - 3
  - 5 - - - 3

Exercise 1.7

- The combined resistance of three resistors in parallel is given by:

  - $R_T = \dfrac{1}{\dfrac{1}{R_1} + \dfrac{1}{R_2} + \dfrac{1}{R_3}}$

- Create variables R1, R2, and R3 containing 1,2,3, respectively. Write an expression to calculate R_T in terms of R1,R2, and R3.