CS 105

Introduction to Scientific Computing

Lecture #3 – Variables

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ASSIGNMENT 2

- Evaluate the expression $\frac{4u}{3v}$ for u=1, v=3

NECESSARY SKILLS

- How do we store values for later use (what are variables?)?
- What are valid variable names?
- How do we assign values to variables?
- When can we use variables?

TOPICS

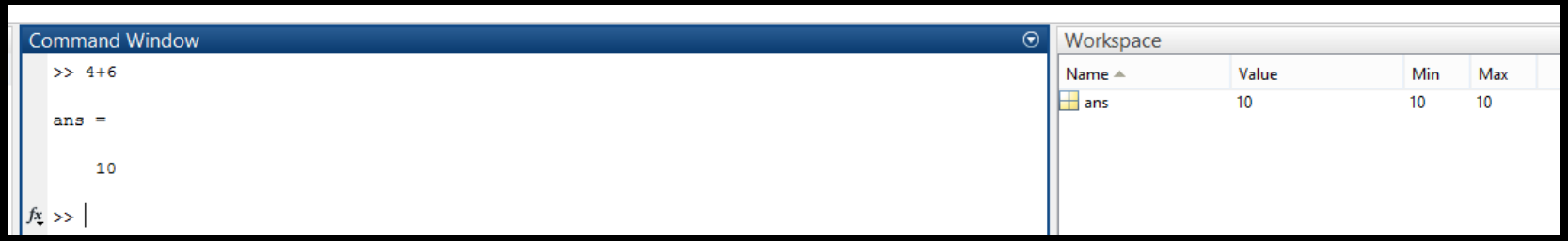
1. Variables
2. Assignments
3. Operations with Variables

READING

- Sections 2.1-2.2

VARIABLES

- Often we want to *store* data for later use
- We do this using *variables*
  - x=5;
- We already saw a variable automatically created for us!
  - ans



VARIABLES

- Most programming languages have restrictions on what variable names may be
- In MATLAB these rules are:
  - Must start with a letter
  - All other characters must be letters, numbers, or the underscore character.
  - MATLAB is *case-sensitive* meaning that x and X are different variables.
- Good practice:
  - You should use variables names that *mean* something (like what the variable is storing)

VARIABLE ASSIGNMENT

- To store a value in a variable we use the equals sign.
- The variable name to be assigned **into** is on the left side, and the data to be assigned **from** is on the right side
  - X=5
  - Rate1=2.0
  - Name='Matt'

OPERATIONS WITH VARIABLES

- You may assign one variable to another as long as all variables on the right side already have values
  - X=5
  - Y=X
  - Z=K %ERROR (if variable K didn't already exist)
  - Z = X^2+Y
  - Z=X^2+y %ERROR (if variable y didn't already exist)

EVALUATING EQUATIONS

- Now we can take equations like $y=mx+b$ and evaluate them for values m, x, and b
- What are some other common equations we might use?
  - Quadratic Equation: $y=ax^2+bx+c$
  - Simple interest: $A = P*r*t$
  - Compound interest: $A = P(1+r)^n$

SUPPRESSING COMMAND LINE OUTPUT

- You may notice that every time you typed a command, something got printed out to the command line.
- You can *suppress* this by putting a ***semicolon*** after the command
  - This is often good to do, since outputting to the command line can take time
  - X=5
  - X=5;