CS 105

Introduction to Scientific Computing

Lecture #8 – Command-Line I/O

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ASSIGNMENT 5

- Compute the distance between two points, where the points are specified by the users
  - Output the distance to the command line
- Plot the velocity of a ball over time using the equations
  - $h(t) = \frac{1}{2}gt^2 + v_0t + h_0$
  - $v(t) = gt + v_0$

  where the initial vertical and horizontal distances, v_0 and h_0 are specified by the user

TOPICS

1. Command Line output
2. Command Line input
3. Interactive Scripts

READING

- Section 2.6.2 – The display function

MOTIVATION

- Thusfar all of our scripts have been pretty boring ☹
  - They just run
- It would be more interesting if we could *interact* with them
- Examples:
  - Plot the function y=ax+b over the range x={1,2,…,100} where the user specifies a and b
  - Ask the user their name and then say 'Hi *name'*

MATLAB I/O

- Often we want to interact with our programs.
  - This is called I/O (input and output)
- The easiest way to output *strings* in MATLAB is with the ***disp*** function
  - disp only displays strings, so you'll need to convert numerical types before displaying
    - num2str function
  - We can *concatenate* vectors by putting them inside brackets
    - X=[3 2 4]
      Y=[1 2]
      Z = [X Y]
    - X='Hello'
      Y = num2str(4);
      Z = [X Y]

MATLAB INPUT

- We can use the MATLAB *input* function to get input from the user.

- There are two versions of the input function, one to get numbers, one to get strings
    - X=input('Message');
    - X=input('Message','s');

I/O EXAMPLE

- Ask the user for 2 numbers, add them, then display the sum.
- Ask the user for a string and display the 1st character.