Introduction to Computers for Engineers:

Recitation #1

Welcome to Recitation!

- TA: Soo Min Kwon (Kenny)
- Email: smk330@scarletmail.rutgers.edu
- Website: soominkwon.github.io
- Office Hours:
  - Online (by appointment)
  - CoRE 531 (by appointment & walk-ins)

How will Recitation Work?

- Get into groups of **5 students max**.
- We will ask you to do activities every recitation.
- Each activity will have questions that you can answer as a group, however:
  - **Everybody** should code individually
  - **Groups** should talk to each other about the code they are writing, ask each other questions
  - **Groups** should keep track of progress on the recitation worksheet each week
    - **Available on Canvas**
  - **The whole class** will review each activity before moving on to the next

Recitation 1 – Activity 1

- Find the command window in MATLAB
- Create the following variables:

```
variable_one = 5;
variable_two = "5";
```

- Find the workspace in MATLAB
- Find and double click on the name of both variables.

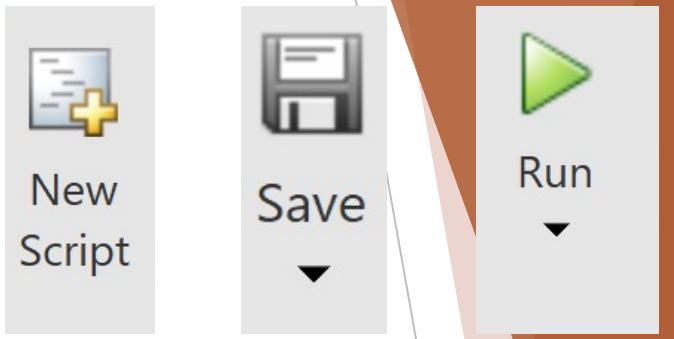
- **Question: What are the data types for these two variables?**
- Run the following code in the command window:

```
new_variable_one = variable_one + 2;
new_variable_two = variable_two + 2;
```

- **Question: What are the values for these two new variables? How are they different and why?**

Recitation 1 – Activity 2

- Find the “New Script” button in MATLAB and press it
- In your new script, create the following:
  - A Double precision floating point decimal (aka a double)
  - A **row** array of doubles
  - A **column** array of doubles
  - A character
  - A string
  - A numerical variable created using another numerical variable and an operator
- Save your script. Name your script “recitation_one.m”. **Remember that you cannot have spaces in the name.**
- **Press Run.**
- Now write a comment for each line of code and run the script.



- **Question: Did commenting your code affect the outcome of your code?**
- **Question: Why might comments in your code be useful?**
- **Question: Why might working with scripts be useful?**

Recitation 1 – Activity 2

```
%% Activity 2:

decimal = 2.5;
double_row_array = [1, 2, 3, 4];
double_column_array = [1; 2; 3; 4];
character = 'a';
string = "hello";
new_numerical = decimal * 2;

% The purpose of this activity was for you to get familar with constructing
% different datatypes.
```

Recitation 1 – Activity 3

- In the command window, write a few lines of code.
- In the command window, type `clc` .
- **Question: What happened to the command window and workspace?**
- Type `clear all` in the command window.
- **Question: What happened to the command window and workspace?**
- Write a line of code without a semicolon.
- Write the same line of code with a semicolon.
- **Questions:**
  - **Look at the command window and the workspace. What was different?**
  - **While in the command window, press the up and down arrows on your keyboard. What do they do?**
  - **Type the name of the script you created last activity. What happened?**

Recitation 1 – Activity 4

- Find the New Script button in MATLAB and press it
- In the Editor, write the following lines of code:
  - Create a numerical variable with any positive value. This will represent a radius
  - Write a line of code that calculates the circumference of a circle with that radius
  - Write a line of code that calculates the area of a circle with that radius
  - Write a line of code that calculates the volume of a sphere, $V=\frac{4}{3}\pi r^3$
- **Question:**
  - **Why was it useful to have a variable for radius?**

Recitation 1 – Activity 4

```
%% Activity 4:

% Circumference of a circle: 2 * pi * r
% Area of a circle: pi * r^2
% Volumne of a sphere: (4/3) * pi * r^3
radius = 5;

circumference = 2 * pi * radius;
area = pi * radius^2;
volume = (4/3) * pi * radius^3;
```

Wrap Up

- The Semester Cheat Sheet!