CS 1371
Spring 2020 Section A03
Week 2 Summary

1. **Variables**
    a. A variable is a bag in which you can store stuff (all kinds of stuff but must be homogeneous)
    b. We need variables for functions (idea of abstraction relies heavily on the use of variables)
    c. = --> Assignment operator (NOT equal sign!!)
        i. Takes whatever's on the right hand side and assign its value to the variable or spot in the left hand side
        ii. You can only have ONE assignment operator per line or it will error
    d. Common mistakes
        i. Not assigning any value to the output variable in a function
        ii. Typos in function name or variable names
        iii. In wrong directory
2. **Data types:**
    a. To find out the data type of a variable, use class(var)
    b. Double
        i. Any number has a class of double (5, 42, 0.001, 29423, ...)
        ii. You can do math with them! (+, -, .*, ./, .^, ...)
    c. Char
        i. Anything you can type on a keyboard and wrap them in single quotes (including numbers!)
        ii. Ex. 'Absk21jl' is a char
        iii. Difference between '12' and 12
            1. single quotes presented --> char
            2. no single quotes --> double
            3. '12' is length 2; 12 is length 1
        iv. Each and every char is seen by MATLAB as a double – reference to ASCII table
            1. Fun facts to know:
                a. Lower-case letters have ASCII values 32 greater than their corresponding upper-case letters
            2. If you need to look at ASCII table as reference, just google it!
            3. DO NOT MEMORIZE THIS TABLE!!
                a. You will be given anything you need regarding ASCII values on tests
        v. Some functions:
            1. double() --> takes in a char and gives back its ASCII value

        a. double('A') --> 65
    2. char() --> takes in a double and gives back the char associated to it in ASCII table
        a. char(65) --> 'A'

d. Logical
    i. true/false
        1. NOT 1/0
        2. NOT True/False
        3. NOT T/F
        4. If you write any of the expressions above, you will not get ANY credits for anything even if it's "correct"
    ii. Three main ways to define a logical
        1. Direct entry: log = true;
        2. Functions
            a. isequal, isnumeric, ischar, islogical (basically returns whether your input is a number/char/logical)
            b. Those functions give back a single logical depending on the result of the test
        3. Logical operators:
            a. == --> equal
            b. ~= --> not equal
            c. >/< --> greater/smaller than
            d. >=/<= greater than or equal/less than or equal
            e. Evaluates the expression and gives back the answer: Ex. is (left) greater than/ equal to (right)?
            f. & --> AND, both conditions need to be true to get back true
            g. | --> OR, at least one need to be true to get a true
            h. Those two operators check two logicals and gives back a single logical
            i. any() --> gives back a single true if anything is true
            j. all() --> gives back a single true if everything is true