**INFSCI 0017 – Fundamentals of Object-Oriented Programming (Fall 2018)**

**Lab 3**

## Topics Reviewed

1. Variables
2. Constants
3. Data Types
4. Typecasting
5. Handling user input
6. Working with strings

## Grading and Submission

You are to write a complete Java program that meets the requirements outlined in the Lab 3 Tasks section.

Once you have completed the program, you should demonstrate your program for your Lab TA.

There will be 5 points for this lab, broken down in the following way:

1. Program correctly accepts and handles user input (2 point)
2. Program correctly parses and converts user input into different units (2 points)
3. Program correctly displays results (1 point)

Note that if your program does not compile, the TA will not grade it.

## Lab 3 Tasks

In this lab you are going to develop a simple metric/imperial system converter to convert:

* centimeters to inches
* inches to centimeters
* yards to meters
* meters to yards
* ounces to grams
* grams to ounces
* pounds to kilograms
* kilograms to pounds

1. Create a Eclipse project named **[your pitt id]\_assignment2**
2. Create a class named ***UnitConverter***
3. In the *main* method, ask the user to input a distance or a weight amount. Assume that the input string will contain a number (with or without decimals) followed by a space followed by a unit of measurement that can be one of the following: in, cm, oz, gm, kg, lb, yr, m. Here are 5 examples of inputs:
   1. "19.342124 cm"
   2. "10 oz"
   3. "8.3 gm"
   4. "111.5 in"
   5. “10.7 m”
4. Process the input to store the number and the unit separately, in two variables. Remember to name the variables following naming conventions covered in class. **TIP**: you know that the value and the unit of measurement are separated by a space (one space character).
5. Depending on the unit value, the number should be transformed to the other measurement system. For example, if the unit is "cm", then the number will be converted to inches, or if the unit is "oz", the number will be converted to grams (gr). You can find conversion factors at <https://www.britannica.com/science/British-Imperial-System> or at <https://en.wikipedia.org/wiki/United_States_customary_units> or <https://en.wikipedia.org/wiki/Imperial_units>  
   **TIP**: when comparing the unit of measurement to "cm", "in", "oz" and "gr", remember that these are string and comparing string should be done using the *equals()* method. You can also use *equalsIgnoreCase()* method, which will make your program less fragile.
6. Display the result of the conversion. Your output should contain both the original value and units, as well as the converted value and units. For example, if input is "19.342124 cm" , the system should output :

19.342124 cm = 7.61501 in