

CS116 – Variables, Assignment, and Expressions

Purpose: Writing and working with a programming language involves an interactive development environment (IDE) in which you compose, edit and execute programs. We will use both the interactive console and the editor in this module in order to introduce the concepts of variables, assigning variables values, and calculations on numeric and logical data.

Skills: After completion of this module you should be able to

1. Use the console in the IDE
2. Compose and edit a program in the IDE
3. Load and execute a program in the IDE

Knowledge: This module will help you become familiar with the following content knowledge:

1. Variables
2. Assignment
3. Numeric Operations
4. Logical Operations

Activity: With your group perform the following tasks and answer the questions. You will be reporting your answers back to the class in 30 minutes.

1. Open up the IDE and type the following in the console:

```
2+3
```

This shows that we can type numeric expressions and get the result. Try the following expressions and explain the result for each.:

```
5 / 2
5 // 2
5 % 2
```

We can also store values of these into variables. Variables are just named storage for values that we want to use later. Try the following two lines:

```
x = 2 * 3
x
```

The second line gives the value stored in the variable x. What does the "=" mean in the first line that we typed? (Hint: It does not mean that we are seeing if values are equal!)

Predict what the following will produce before typing it in the console:

```
y = x / 3 + 1
y
```

Explain why you got the result that you did.

2. In addition to being able to use numeric computation we can also do logical operations. Type the following lines in the console.

```
2 < 3
x < y
x == 6
x != x
```

The "`<`" operator tests to see if the first value is less than the second value and gives us either True or False. What does the "`==`" operator do? Try it on a few more cases to verify your prediction.

What does the "`!=`" operator do? Try it on a few more cases to verify your prediction.

3. We are now going to use the editor pane to type a very short python function. Type the following in the editor. Indentation is **very** important in python so make sure that the first line is not indented but the following lines are indented.

```
def hello():
    print ("hello")
    print ("hello, again!")
```

Hit the load arrow in the top menubar. You are now ready to use this function in the console by typing:

```
hello()
```

4. Edit the `hello` function so that it now prints your name.

Complete the following assignment to be submitted for grading. It should be done individually but you can consult with a classmate to discuss your strategies or if you get an error message that you do not understand.

Assignment 1:

Open the lab0 program in the editor and run it. Extend this program so that it also prints out the turtle time in minutes and weeks. To get the weeks you probably will want to calculate hours, and days.

Criteria for Success: Your output should look like:

```
Time in seconds for turtle to Maimi to Seattle:
10559644.08
In minutes:
175994.068
In weeks:
17.45972896825397
```

Submit your python file in Canvas for grading.