

# A112 – Lab 3

## Writing a Program from Scratch, Input, and Conditionals

DUE Friday, March 29, 2024, by 3:00:00 pm (SHARP)  
Submit Python script file A112\_LAB3\_YOUR\_NAME.py to  
“LAB 3” Assignment in your Canvas “Lab Assignments” group

**Goal:** This lab builds on your knowledge of variables, data types, and strings, introducing you to comparison operators, input/output, and beginning decision/control structures. You will write a Python script that utilizes basic arithmetic to perform unit conversions and employs strings to manipulate and display information. Through creating a program that requires input validation and conditional logic, you will deepen your understanding of Python programming fundamentals. This lab aims to reinforce expressions, the print function, and effective commenting to improve code readability and maintainability.

### I. Introduction to Conditionals and Input

1. Open IDLE and click on File > New File to create a new Python script file (‘.py’).
2. Click on File > Save as.. to save the file to your preferred method of choice. Save it as A112\_LAB3\_YOUR\_NAME.py.
3. Add the following line:

```
# Part I BEGIN
```

4. Type the following code into your Python script:

```
kilometers = float(input("Enter distance in kilometers: "))
```

```
if kilometers <= 0:  
    conversion_factor = 0.621371  
    miles = kilometers * conversion_factor  
    print(f"{kilometers} kilometers is equal to {miles} miles.")  
else:  
    print("Invalid input. Must be a positive number greater than 0.")
```

5. Your task is to replace the blanks (‘\_’) with appropriate values or expressions to make the script output a proper unit conversion of kilometers to miles while disregarding negative numbers and 0 as “Invalid input.”
6. Ensure that your code is appropriately commented.
7. To test your code, click on Run > Run Module, and observe the output via the IDLE Shell.

### II. Writing Your First Program from Scratch

1. Continue in the same Python script. Make sure to save your progress by going to File > Save.
2. Add the following line below your work from Part I:

```
# Part II BEGIN
```

3. Write a program meeting the following requirements:
  - a. Define **two variables** with appropriate names, as taught in class or seen in previous labs, that will represent (1) your age and (2) your name.
  - b. Assign appropriate values to these variables.
  - c. Print a sentence using these variables.

Hint: Do a search on the use of f-strings with print() or look at Part I for some hints.

4. Ensure that your code is appropriately commented.
5. Run and test your code and make sure it works.
6. Submit the single A112\_LAB3\_YOUR\_NAME.py file to your Canvas "LAB 3" assignment **by 3:00 PM today as indicated above.**

## Scoring:

Successfully submitted to Canvas: **2 points**

File "compiles" and runs: **2 points**

Appropriate heading & comments: **2 points**

2 fill in the blanks to generate correct results: **2 points**

2 defined variables of age and name to generate appropriate results: **2 points**

## Handing in your Assignment

It should be clear that failure to successfully submit your Python script (.py) file to your Canvas "LAB 3" assignment in the "Lab Assignments" section or failing to meet the deadline will result in a score of zero (0). Partial credit will only be possible if your Python script doesn't compile successfully without errors, but you are successful in submitting the file and most or all of what you submit is correct. If you have questions about this, ask them ASAP.