WAKE TECH
Biotechnology, Engineering, & Skilled Technologies

Python Lab 4 – Scope of Variables

BAT-212: BAT Logic and Programming

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Python Lab 4 – Scope of Variables

OBJECTIVES

Upon completion of this activity the student will be able to:

- Pass data to a function via argument
- Demonstrate the difference in variable local to the function and a global variable
- Generate an analog output to drive a servo motor.

PARTS AND EQUIPMENT

- Circuit Playground Express board.
- Computer
- Access to internet for Mu IDE download.
- microServo (SG90)
- alligator clip leads

REFERENCES

The following are immediately relevant to the lab:

- https://www.w3schools.com/python/python_variables.asp
- https://www.w3schools.com/python/python_functions.asp
- https://www.w3schools.com/python/python_scope.asp
- https://realpython.com/python-scope-legb-rule/

The following are general references:

- https://greenteapress.com/thinkpython/html/thinkpython002.html#toc5
- https://docs.python.org/3/tutorial/

BACKGROUND

In this lab you will use the functions you wrote in the previous lab to experiment with the placement of the initialization and update of a variable.

PROCEDURES

Exercise:

Work through the Python scope section on W3Schools and screenshot your answer for each Exercise question at the end before you submit the answer. Include the screenshots in your lab report. (Link: https://www.w3schools.com/python/python_scope.asp)

Program 1:

In this program you will use the functions "roll_CW" and "roll_CCW" with a passed parameter written for the previous lab. You also will use button_a and button_b. You will pass an argument for the value for the rate of the roll. The rate will be given a starting value, and then will be adjusted up and down with the buttons. Where should the variable be initialized – setup (part of program before the while True), while True loop or in the function definition? Design the process and flowchart as a class. Set a reasonable starting value and an appropriate increment value. **Comment your code and submit.**

Program 2:

In this program, you will use button_a and button_b to adjust the level of red and blue in the neopixel colors. Use the slider switch to select which color you are adjusting. You will use the functions roll_CW and roll_CCW, but now the rate will be fixed, and you will pass in the color values. Create a flow chart for this program. **Comment your code and submit program and flow chart.**