Assignment 1: Control Flow and Loops

45 Points scaled to 20 Points

Introduction

This assignment asks you to perform simple tasks using control flow and/or loops. Complete each task using either Python or R. No data are required to complete this assignment.

Objectives

- *Implement control flow in code to obtain desired results*
- *Implement loops to iterate over data*

Deliverables

- *Jupyter Notebook (Python) or R Markdown file (R) with all code embedded. Files can be rendered to HTML webpages if your instructor requires this. Include the task text using Markdown.*

Tasks

Task 1: Create an If...Else statement that will test whether a number is divisible by three. "YOUR VALUE is divisible by 3" should be printed if the value is divisible by three. "YOUR VALUE is not divisible by three" should be printed if it is not divisible by three. Test the statement on a numeric variable. Upper case text in the print statement should be replaced with the tested number. (5 Points)

Task 2: Create an If...Else statement that will test whether a number is divisible by three and four. "YOUR VALUE is divisible by 3 and 4" should be printed if the value is divisible by three and four. "YOUR VALUE is not divisible by three and four" should be printed if it is not divisible by three and four. Test the statement on a numeric variable. Upper case text in the print statement should be replaced with the tested number. (5 Points)

Task 3: Create an If...Else statement that will test whether a type of fruit, represented as a text string, is in a list or vector of acceptable fruits (apple, orange, pear, kiwi, or strawberry). If the fruit is in the list or vector, the following should be printed: "YOUR FRUIT is acceptable." If not, then the following should be printed: "YOUR FRUIT is not acceptable." Upper case text in the print statement should be replaced with the tested fruit. (5 Points)

Task 4: Create an If...Else statement that will test whether a type of fruit, represented as a text string, is a citrus fruit (orange, grapefruit, mandarin, or lime), a tropical fruit (banana or mango), or a berry (strawberry, raspberry, blueberry, kiwi, or passionfruit). If the fruit is in one

of these lists, a print statement should be returned that indicates the type of fruit. If it is not in any of these lists, the print statement should indicate that the fruit is not a citrus fruit, tropical fruit, or berry. (5 Points)

Task 5: Edit your code for Task 4 so that it is not sensitive to the letter case. (5 Points)

Task 6: Edit your result for Task 5 so that a list of fruits can be tested. This will require using both a for loop and an If...Else statement. You will need to create a list or vector of fruits to test the code. There should be a separate print statement for each element in the list. (5 Points)

Task 7: Create a new list or vector that contains all of your fruits from your example list in Task 6 but converted to all upper case. If using Python, this can be accomplished with list comprehension. (5 Points)

Task 8: Repeat Task 7 but only have upper case versions of the fruit names printed to the new list or vector if the fruit is a berry. All other fruit types should not be returned to the list or vector. (5 Points)

Task 9: Create a list or vector of items. Have all odd indexed items save to a new list or vector and all even indexed items save to a different list or vector. Note that enumerate() will be useful here if you are working in Python. If you are working in Python, the first item in the list should be treated as index 1 as opposed to 0 in the logic. R treats the first element in the vector as index 1 by default. (5 Points)