BMGT 404 Homework 3 Python

Data types & Functions

What to turn in

Turn in your Python codes through ELMS by **10:00AM on Wednesday, March 8th**.

Learning objectives:

- Lists
- Tuples
- Dictionaries
- Conditional and loop statements
- Functions

You will write the following functions and call them in the main function.

1) Dice probability distribution simulation (30 points)

Function name: sim_dice
Parameters:
None
Return:
A dictionary with 6 elements: keys are integers 1 to 6, values are corresponding number of occurrence
Description:
You roll the dice 10,000 times. Each time you get one of six sides with a probability of 1/6. You need to generate the total number of occurrence for each side, store them in a dictionary as a returned value.

Hint: 1. This rolling is equal to choosing a number in [0,1) while dividing it into 6 sections: [0, 1/6), [1/6, 2/6), [2/6, 3/6), [3/6, 4/6), [4/6, 5/6), [5/6, 1)
2. You need to use random() to randomly generate a floating number between 0 and 1.

2) Sentence comparison (30 points)

Function name: sent_compare
Parameters:
sentence 1, sentence 2
Return:
An integer: the number of common unique characters in two sentences
Description:
You receive two sentences as inputs from the keyboard and compare them. Your function should be able to output the number of common unique characters in two sentences. For example, sentence 1: "I like Python programming", sentence 2: "I like java", then the output is: 6. (they are: i, l, k, e, a, and space). It should be case insensitive. To convert a string (s) to a lowercase string, use s.lower(). For example,
>>> x = 'HELLO'
>>> print x.lower().
hello

3) Sentence split (30 points)

Function name: sent_split
Parameters:
sentence, delimiter1, delimiter 2, …
Return:
A list: containing all separated strings
Description:
You receive one sentence and uncertain number of delimiters from the keyboard. Then you separate all strings in that sentence. For example, sentence: "I like computer programming, including Python, Java, and C/C++", delimiter 1: , (comma), delimiter 2: /, then the output list will be:

['I like computer programming', 'including Python', 'Java', 'and C', 'C++']

Hint: 1. You should use variable length arguments

4) Main function (10 points)

This function is the starting point of the entire code. It includes all functions above and can call them as many times as the user likes. You should have an infinite loop with break statement somewhere in the function.