CS 115 - Introduction to Programming in Python

Lab 03

Lab Objectives: Functions

Notes:

- Upload your solutions as a single .zip file to the Lab03 assignment for your section on Moodle. You must use the following naming convention: Lab03_Surname_FirstName.zip where Surname is your family name and FirstName is your first name
- **You should not use lists, tuples, dictionaries in your solution.**
- For each of the functions below, you should include a docstring comment. The docstring should have the following format:

```
"""
Summary of what the function is for
Parameters:
param1 (param1 type): Description of param1
Returns:
type: variable/value
"""
```

Q1: Write a script, `Lab03_Q1.py`, that does the following:

a. Write a function **`swap`** that takes a sentence and swaps the first and last word of the sentence. If there is one word in the sentence, no swaps should be made. You may assume that each word is separated by a single space.

b. Write a program to input a number of sentences until 'Exit' (not case sensitive) is entered and by calling the above function display the new sentence for each input sentence.

Sample Run:

```
Enter your sentence: this
New Sentence: this

Enter your sentence: this is
New Sentence: is this

Enter your sentence: children are the champs
New Sentence: champs are the children

Enter your sentence: EXIT
```

Q2: Write a script, `Lab03_Q2.py`, that converts a given string using the key given below.

a. Write a function, `convert_char`, which takes a sentence and for each character in the sentence, if the character is lowercase, it should be shifted down by 3 (according to its ascii value, if it is uppercase, it should be shifted up by 3, and if it is non-alphanumeric it should be replaced with a hash symbol (#).

   Hint: `ord( ch )` returns the integer equivalent of a character and `chr( val )` returns the character equivalent for the given integer.

b. Write a program to take a sentence and output the modified sentence using the above function.

Sample Run: (Input is shown in red)

```
Enter a phrase for conversion: HellO! This is a SENtence...
Text you entered: 'HellO! This is a SENtence...'
After conversion: 'KbiiR##Wefp#fp#^#VHQqbk`b###'
```

Q3: Write a script, `Lab03_Q3.py`, that includes the following:

a. Write a function named `throwUntil(x)` that takes integer x as parameter, and throws a pair of dice randomly until their sum is equal to x, displays the values of dice with the given sum, and returns the number of rolls it takes to roll the given sum. Your function may assume that x is an int and that $2 \leq x \leq 12$.

b. Write a program that inputs a sum between 2 and 12 from the user, and using the function from step a, displays the value of two dice adding to the sum, and the number of times it takes to roll the dice. Your program should validate that the input sum is between 2 and 12 and prompt for another input until it is in the correct range.

Sample run 1:

```
Enter sum of dice: 1
Sum must be between 2 and 12 inclusive

Enter sum of dice: 13
Sum must be between 2 and 12 inclusive

Enter sum of dice: 12
Die1 6 Die2 6
Dice are rolled 5 times to get the sum 12
```

Sample run 2:

```
Enter sum of dice: 4
Die1 1 Die2 3
Dice are rolled 2 times to get the sum 4
```