

CS103 – Spring 2019 – Lab4 Exercises

Exercise Instructions

- Download the files from Lab4 folder in Canvas (`lab4_103sp19.pdf`, `lab4_graded.py`, and `lab4_ungraded.py`).
- Make a folder **Lab4** inside your **103sp19** folder.
- Move the downloaded files from Downloads folder into **Lab4** folder.
- Always edit your files using Canopy editor, run your code through Canopy Terminal. You are not allowed to test your code in the editor.

You have two types of exercises; the first half of the exercises (Exercise 1 to 3) are for practice only and they will not be graded, however; the second half will be graded. The **`lab4_ungraded.py`** contains the first 3 exercises (will not be graded), and the `lab4_graded.py` contains the last three exercises (will be graded). You will submit only the **`lab4_graded.py`** script file.

Grade by #correct: A:2+, B:1, C:0

Exercise 1 (*ungraded*)

Write the function “**evenNumbers**” that takes an int “**x**” and prints all even numbers between 0 and **x**.

Sample Input

`x = 12`

Expected Output

`0, 2, 4, 6, 8, 10, 12`

Exercise 2 (*ungraded*)

Write a function “**factorial**” that receives an int “**f**” and returns “**f!**” (f factorial) (Do not use `math.factorial` function).

Sample Input

`f = 6`

Expected Output

`720`

Exercise3 (*ungraded*)

Write a function “**randNumbers**” that receives an int “**r**” and generates r different random numbers. The randomized number must be $0 \leq r < 10$

The function prints each generated random value and their average. Consider that randomized number may be different in every call because of that with the same r value, you may get different values and different averages than the examples below.

1. Sample Run

Example program run for randNumbers(5)

1. random number: 4

2. random number: 4

3. random number: 3

4. random number: 7

5. random number: 2

Average of these random numbers is 4

2. Sample Run

Example program run for randNumbers (3)

1. random number: 2

2. random number: 0

3. random number: 1

Average of these random numbers is 1

Exercise 4 (*graded*)

Write a function “**letterCount**” that receives two string **s1** and **s2**. The first string (s1) is a full sentence and the second string(s2) is a word. The function checks the sentence(s1) for each letter in the word(s2). For each letter in the word, it prints out the frequency of occurrence of that letter in the sentence.

Sample Input

s1: “do you want to go to the movies tonight”

s2: qwerty

Expected Output

q 0

w 1

e 2

r 0

t 6

y 1

Exercise 5 (*graded*)

Write a function “**fibonacci**” that receives an int “**n**” and prints the first **n numbers** in Fibonacci series.

Sample Input

n= 10

Expected Output

0, 1, 1, 2, 3, 5, 8, 13, 21, 34

Exercise 6 (*graded*)

Write a function “**oddChecker**” that receives a tuple **t** and prints out all the odd numbers in this tuple. Assume the tuple only includes integers.

Sample Input

t = (1,2,3,5,8,22,35,92,123)

Expected Output

1
3
5
35
123

Extra Exercises (*ungraded*)**Exercise 7** (*ungraded*)

Write a function to get a string from a given string where all occurrences of its first char have been changed to '\$', except the first char itself

Sample Input

s = 'restart'

Expected Output

resta\$t

Exercise 8 (*ungraded*)

Write a function to print alphabet pattern 'A'

Expected Output

```
  * * *
*       *
*       *
* * * * *
*       *
*       *
*       *
```

Exercise 9 (*ungraded*)

Write a function to check whether an alphabet is a vowel or consonant

Sample Input

s = 'e'

Expected Output

e is a vowel