﻿ ﻿CS 171

Lab Assignment 7

This lab assignment uses many elements provided in the main bibliographic reference for

these lectures:

Programming in Python 3

A Complete Introduction to the Python Language,

2nd Edition,

Mark Summerfield

﻿**Exercises**

**﻿Exercise 1** Define a function named “*digital\_root”, which is the recursive sum of all the digits in a number.*

*Given n, take the sum of the digits of n. If that value has more than one digit, continue reducing in this way until a single-digit number is produced. The input will be a non-negative integer.*

Examples:

16 --> 1 + 6 = 7

942 --> 9 + 4 + 2 = 15 --> 1 + 5 = 6

132189 --> 1 + 3 + 2 + 1 + 8 + 9 = 24 --> 2 + 4 = 6

493193 --> 4 + 9 + 3 + 1 + 9 + 3 = 29 --> 2 + 9 = 11 --> 1 + 1 = 2

**Exercise 2** *Number of people in the bus*

*There is a bus moving in the city, and it takes and drop some people in each bus stop.*

*You are provided with a list (or array) of integer arrays (or tuples). Each integer array has two items which represent number of people get into bus (The first item) and number of people get off the bus (The second item) in a bus stop.*

*Your task is to return number of people who are still in the bus after the last bus station (after the last array). Even though it is the last bus stop, the bus is not empty and some people are still in the bus, and they are probably sleeping there :D*

*Take a look on the test cases.*

*Please keep in mind that the test cases ensure that the number of people in the bus is always >= 0. So the return integer can't be negative.*

*The second value in the first integer array is 0, since the bus is empty in the first bus stop.*

Examples:

Input:[[10,0],[3,5],[5,8]]

Output:5

Intput:[[3,0],[9,1],[4,10],[12,2],[6,1],[7,10]]

Output:17

Input:[[3,0],[9,1],[4,8],[12,2],[6,1],[7,8]]

Output:21

**Exercise 3** *Define a function named “longest”, which take 2 strings s1 and s2 including only letters from a to z. Return a new sorted string, the longest possible, containing distinct letters - each taken only once - coming from s1 or s2.*

Examples:

a = "xyaabbbccccdefww"

b = "xxxxyyyyabklmopq"

longest(a, b) -> "abcdefklmopqwxy"

a = "abcdefghijklmnopqrstuvwxyz"

longest(a, a) -> "abcdefghijklmnopqrstuvwxyz"

**Exercise 4** *Write a function that accepts an array of 10 integers (between 0 and 9), that returns a string of those numbers in the form of a phone number.*

Examples:

create\_phone\_number([1, 2, 3, 4, 5, 6, 7, 8, 9, 0]) # => returns "(123) 456-7890"

**Exercise 5** *Our task is to sort a given string. Each word in the string will contain a single number. This number is the position the word should have in the result.*

*Note: Numbers can be from 1 to 9. So 1 will be the first word (not 0).*

*If the input string is empty, return an empty string. The words in the input String will only contain valid consecutive numbers.*

Examples:

"is2 Thi1s T4est 3a" --> "Thi1s is2 3a T4est"

"4of Fo1r pe6ople g3ood th5e the2" --> "Fo1r the2 g3ood 4of th5e pe6ople"

"" --> ""