NATIONAL UNIVERSITY
OF COMPUTER AND EMERGING SCIENCES

Course: Programming Fundamentals

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Due Date: November 15, 2019 5:00 PM

A note of warning: Start work on assignments as soon as they are given. Do not underestimate the demanding nature of this course.

Instructions:

- Plagiarism will result in **zero** credit in the assignment.
- Three functions are a must in Chocolate Lover's Problem but if you divide it into four or five functions that should be appreciated.
- Try to divide the task into smaller task and then solve it and make function of it.
- Hint of School Locker's Problem is on third page.

Chocolate Lover's Problem:

Kelly is a chocolate lover and she's been tasked with a programming challenge which if she completes, she'll get invited to Charlie's Chocolate Factory. Your job is to help her solve it and if you succeed she'd take you along! What you need to do is to to write a function which takes in a number as a parameter. The program should be able to divide the numbers into two parts such that the two parts add up to make the original number.

e.g. 8 will be divided into 1+7=8, 5+3=8, 4+4=8, 6+2=8.

The output of your program will go into 3 files:

- Even file will contain those parts which are both even parts .
- Odd file will contain those parts which are both odd parts.
- Even_Odd file will contain where one part is even and the other is odd.

First function you need is to write a data into file. This function have three parameters one is filename and other two parameters are integer type data i.e both parts that you need to write into the file. This function is called when you need to write data into file.

Second function you need is to check whether the both parts are even or odd or one even, one odd. This function have two parameters i.e both parts that you need to check. On the basis of this function you will write the data into their particular file.

So, in total we need three functions one which is called from main function and takes in a number as a parameter and where you would write some code in that function to generate those parts and these parts would then be sent to 'even_odd' function to check for even or odd parts and then on the result of this function you have to call another function to write those parts into their specific files.

For example if input number is 8. output files will be.
Odd_file.txt
1 7
5 3

Even_file.txt
2 6

4 4

Odd_Even_file.txt

In this case Odd_Even_file.txt is empty.

School Locker's Problem:

A high school has 1000 students and 1000 lockers, one locker for each student. On the first day of school, the principal plays the following game: She asks the first student to go and open all the lockers. She then asks the second student to go and close all the even-numbered lockers. The third student is asked to check every third locker. If it is open, the student closes it; if it is closed, the student opens it. The fourth student is asked to check every fourth locker. If it is open, the student closes it; if it is closed, the student opens it. The remaining students continue this game. In general, the nth student checks every nth locker. If the locker is open, the student closes it; if it is closed, the student opens it. After all the students have taken their turn, some of the lockers are open and some are closed. Write a program that prompts the user to enter the number of lockers in a school. After the game is over, the program outputs the number of lockers that are opened. Test run your program for the following inputs: 1000, 5000, 10000. Do you see any pattern developing?

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