National University of Computer and Emerging Sciences, Lahore Campus

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| C:\Users\saif\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\final design.jpg | **Course:** | **PF Lab** | **Course Code:** | **CL 118** |
| **Program:** | **BS (Data Science)** | **Semester:** | **Fall 2021** |
| **Duration:** |  | **Total Marks:** |  |
| **Paper Date:** |  | **Weight** | **20 %** |
| **Section:** | **A 1&2** | **Page(s):** | **2** |
| **Exam:** | **MidTerm(Paper A)** | **Reg. No.** |  |

**Instruction/Notes:**  You have 120 minutes to submit , Late submission will be marked as zero

* Submit your paper in your relevant section A1 or A2
* Make a folder with named as RollNo\_Name\_Paper type (A or B).
* Submit just .cpp files like Q1.cpp
* Please strictly follow the naming convention otherwise you will be penalized
* Honesty always gives fruit and Dishonesty is always harmful.

**Question#1- [10 marks] [30 minutes]**

Write a program that computes the cost of a long-distance call. The cost of the call is determined according to the following rate schedule:

1. Any call started between 8:00 am and 6:00 pm, Monday through Friday, is billed at a rate of $0.40 per minute.
2. Any call starting before 8:00 am or after 6:00 pm, Monday through Friday, is charged at a rate of $0.25 per minute.
3. Any call started on a Saturday or Sunday is charged at a rate of $0.15 per minute.

The input will consist of the day of the week, the time the call started, and the length of the call in minutes. The output will be the cost of the call. The time is to be input in 24- hour notation, so the time 1:30 pm is input as 13:30

**The day of the week will be read as**

1: For Monday 2: For Tuesday 3: For Wednesday 4: For Thursday

5: For Friday 6: For Saturday 7: For Sunday

The number of minutes will be input as a value of type int. (You can assume that the user rounds the input to a whole number of minutes.) Your program should include a loop that lets the user repeat this calculation until the user says she or he is done.

**Question#2- [10 marks] [30 minutes]**

You have invented a vending machine capable of deep frying Twinkies. Write a program to simulate the vending machine. It costs $3.50 to buy a deep-fried Twinkie, and the machine only takes coins in denominations of a dollar, quarter, dime, or nickel. Write code to simulate a person putting money into the vending machine by repeatedly prompting the user for the next coin to be inserted. Output the total entered so far when each coin is inserted. When $3.50 or more is added, the program should output “Enjoy your deep-fried Twinkie”

consider characters ‘**D’**,**’Q’**,**’d’**,**’N’** for dollar, quarter, dime and nickel respectively.

1 Quarter=0.25 $

1 dime=0.1 $

1 Nickel= 0.05 $

**Question#3- [10 marks] [30 minutes]**

**[ZIG\_ZAG, ZAG\_ZIG or NEITHER]**

A sequence of n numbers a1, a2, … , an is called zig-zag if a2< a1 , a3 > a2 , a4 < a3 …

similarly the sequence is called zag-zig if a2> a1 , a3< a2 , a4 > a3 …

Write a program that ask the user to enter length of the sequence i.e. value of n. The

program must then input n numbers and display the message “ZIG-ZAG” or “ZAG-ZIG”

or “NEITHER” based on the type of sequence entered by the user.

A SAMPLE RUN OF PROGRAM FOR PROBLEM 2 WILL BE AS FOLLOWS

Sample Run of Program for Problem No 2

**Enter value of n 5**

**Enter 5 Numbers**

**1**

**50**

**2**

**14**

**1**

**Output**:It is a ZAG-ZIG Sequence

Values in bold face are user entered

values and messages/output printed by

program is without boldface

Enter value of n 5

**Enter 5 Numbers**

**5**

**1**

**20**

**17**

**30**

**Output**:It is a ZIG-ZAG Sequence

**Question#4- [10 marks] [40 minutes]**

Take N as input from the user and print a hollow triangle as given in examples below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| \*\*  \* | \*\*\*  \*\*  \* | \*\*\*\*  \* \*  \*\*  \* | \*\*\*\*\*  \* \*  \* \*  \*\*  \* | \*\*\*\*\*\*  \* \*  \* \*  \* \*  \*\*  \* |
| N = 2 | N=3 | N=4 | N=5 | N=6 |

These are just sample examples. Your program must work for any input.

**\*\*\*Best of Luck\*\*\***