**COMSATS University Islamabad**

**Lahore Campus**

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DEPARTMENT OF COMPUTER SCIENCE

Programming Fundamentals

LAB TASK (CSC103)

PREPARED BY

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**Doc File Format for labwork submission**

**Title Page:**

* Name,
* registration number,
* instructor’s name,
* Programme and Section

**Lab task Solution:**

* Problem statement
* Flowchart or Pseudo code (if asked)
* Solution (C code)
* Screen shot of sample output

**CSC103 Programming Fundamentals Lab**

***Week 5: while Loops & Sentinel Controlled Repetition***

**Learning Objectives:** The objective of this exercise is to get you to write, compile and run more

complex programs in C which make use of while loops and sentinel-controlled repetition.

**OBS: For each exercise you need to draw the flowchart or write algorithm before translating to your C program.**

**Exercises**: For each question:

(a) Read the problem statement

(b) Write a C program

(c) Include comments in the C program

(d) Test, debug, and execute the C program.

**Exercise 1:** Because of the high price of petrol, you are concerned with the fuel consumption of your car. As a result you have a record of the kilometers driven and liters used for each tank of petrol you purchase. Write a program that will display the kilometers driven, liters used, and consumption (in liters/100km) for each tankful. After processing all the input information, the program should calculate the overall average consumption: (Hint The liters/100km is (Liters/KM driven) x 100)

Enter the liters used (-1 to end): 57.6

Enter the kilometers driven: 459

The liters/100km for this tank was 12.5

Enter the liters used (-1 to end): 45.3

Enter the kilometers driven: 320

The liters/100km for this tank was 14.2

Enter the liters used (-1 to end): -1

The overall average consumption was: 13.4

**Exercise 2:** Write a C program that uses a while loop to calculate and print the sum of the even integers from 1 to 30.

**Exercise 3:** Write a C program that uses a while loop to calculate and print the product of the odd integers from 0 to 19.

**Exercise 4:** Write a program that reads in a four-digit number, separates the number into its individual digits and prints them separated by three spaces. Thus given the number 4233, the program should print:

4 2 3 3

(Hint use / and % operators)

**Exercise 5:** Write a C program that will determine if a department store customer has exceeded the credit limit on a charge account. For each customer, the following facts are available:

1. Account number

2. Balance at beginning of month

3. Total of all items charged by the customer this month

4. Total of all credits applied to the account this month

5. Allowed credit limit

The program should input each of these facts, calculate the new balance (initial balance + charges - credits) and determine if the new balance exceeds the credit limit. If it does, a suitable message should be displayed.

Enter account number (-1 to end): 100

Enter initial balance: 5394.78

Enter total charges: 1000

Enter total credits: 500.00

Enter credit limit: 5500.00

Account: 100

Credit limit: 5500

Balance: 5894.78

Credit Limit Exceeded

Enter account number (-1 to end): 200

Enter initial balance: 1000.00

Enter total charges: 123.45

Enter total credits: 321.00

Enter credit limit: 1500.00

Account: 200

Credit limit: 1500

Balance: 802.45

**Exercise 6:** A large chemical company pays its sales staff on a commission basis. They receive £200 per week plus 9% of their gross sales for that week. For example, someone who sells £5000 of chemicals in one week will earn £200 plus 9% of £5000, a total of £650. Develop a C program that will input each salesperson’s sales for the previous week, and print out their salary. Process one person’s figures at a time.

Enter sales in pounds (-1 to end): 5000.00

Salary is: 650.00

Enter sales in pounds (-1 to end): 00.00

Salary is: 200.00

Enter sales in pounds (-1 to end): 1088.89

Salary is: 298.00

Enter sales in pounds (-1 to end): -1