**The University of Lahore, CS & IT Department**

**Programming Fundamentals**

**Lab Assignment # 01**

**Start Date:** 04/10/2023 **Total Marks: 20**

**Due Date:** 13/10/2023 **Program:** BSCS

**Instructions**

1. Understanding the problems is part of the assignment. So, no query, please.
2. You will get zero marks if found any type of plagiarism.
3. No submission after due date.
4. Upload pdf file containing your code and screenshots of outputs.

**Q1:** Write a program that calculates and prints the bill for a cellular telephone company. The company offers two types of service: regular and premium. Its rates vary, depending on the type of service. The rates are computed as follows:

Regular service: $10.00 plus first 50 minutes are free. Charges for over 50 minutes are $0.20 per minute.

Premium service: $25.00 plus:

1. For calls made from 6:00 a.m. to 6:00 p.m., the first 75 minutes are free; charges for more than 75 minutes are $0.10 per minute.
2. For calls made from 6:00 p.m. to 6:00 a.m., the first 100 minutes are free; charges for more than 100 minutes are $0.05 per minute.

Your program should prompt the user to enter an account number, a service code (type char), and the number of minutes the service was used. A service code of r or R means regular service; a service code of p or P means premium service. Treat any other character as an error. Your program should output the account number, type of service, number of minutes the telephone service was used, and the amount due from the user.

For the premium service, the customer may be using the service during the day and the night. Therefore, to calculate the bill, you must ask the user to input the number of minutes the service was used during the day and the number of minutes the service was used during the night. [7]

**Q2:** A new author is in the process of negotiating a contract for a new science fiction novel. The publisher is offering three options.

* In the first option, the author is paid $5,000 upon delivery of the final manuscript and $20,000 when the novel is published.
* In the second option, the author is paid 12.5% of the net price of the novel for each copy of the novel sold.
* In the third option, the author is paid 10% of the net price for the first 4000 copies sold, and 14% of the net price for the copies sold over 4000.

The author has some idea about the number of copies that will be sold and would like to have an estimate of the royalties generated under each option.

Write a program that prompts the author to enter the net price of each copy of the novel and the estimated number of copies that will be sold. The program then outputs the royalties under each option and the best option the author could choose. (Use appropriate named constants to store the special values such as royalties rates and fixed royalties.) [7]

**Q3:** Write a C++ program to print swastik pattern. Sample output is given below. [6]

