

Lakehead University
Department of Computer Science
COMP-1411 – Computer Programming I
Fall 2021

Assignment 3 [20 Points]

Due: October 18th, 2021, at 11:55 PM

Note: Read the document of assignment expectations from the course account on D2L.

File (assignment) submission instructions:

- Submit two files using the link provided under 'Assignment' tab for the assignment 3 in the course account on D2L.
- The file name for the problem 1 will be calculateAverageGrade.c
- The file name for the problem 2 will be calculatePhoneBill.c

1. **[10 points]** Write a program in C that repeatedly receives grades from the standard input terminal (keyboard) and displays the average grade. In your program, the user will provide -999 to indicate the end of the data entry.

Your program **must** contain the following user-defined function:

- **totalGrade** – value returning function. This function receives user grade as argument and returns the summation of grades.
- **findAverage** – value returning function. This function receives the summation of grades and returns the average grade.

The output of your program **must** follow the format as shown in the test runs.

Test Run 1:

Enter grade (-999 to stop): 99

Enter grade (-999 to stop): 98

Enter grade (-999 to stop): 91

Enter grade (-999 to stop): -999

The average grade: 96.00

Test Run 2:

Enter grade (-999 to stop): -999

No Valid Grade

Program terminated!

Test Run 3:

Enter grade (-999 to stop): 90

Enter grade (-999 to stop): 85.5

Enter grade (-999 to stop): 60.5

Enter grade (-999 to stop): -999

The average grade: 78.67

2. [Points 10] A telephone company offers two types of services: regular and premium with the following plans.

Service	Basic Rate	Free minutes	Rate for additional minutes
Regular	15	100	\$0.25 per minute
Premium	25	200	\$0.15 per minute

Write a C program to calculate and display the balance/bill, account number, and minutes usages. At first, your program will prompt a user for an account number and a service code. The letters 'p' or 'P' indicate premium service and the letters 'r' or 'R' indicate regular service. The program then prompts the user for the number of minutes was used. The program terminates with an error message for a wrong entry of service code.

Your program **must** contain the following user-defined function:

- **regular** – value returning function. This function receives minutes usages and returns the bill/balance according to the regular plan.
- **premium** – value returning function. This function receives the minutes usages and returns the bill/balance according to the premium plan.

The output of your program **must** follow the format as shown in the test runs.

Test Run 1:

Enter user account number: 1234

Enter type of service (r for regular, p for premium): u

Wrong service type

Program terminated!

Test Run 2:

Enter user account number: 3476

Enter type of service (r for regular, p for premium): p

Enter minutes usage: 154

Account Number	Minutes Usages	Balance
3476	154	\$25.00

Test Run 3:

Enter user account number: 9805

Enter type of service (r for regular, p for premium): R

Enter minutes usage: 102

Account Number	Minutes Usages	Balance
9805	102	\$15.50