Homework Assignment 3 (20 Points)
CSE 100, ASU Online
CIDSE, Arizona State University

Introduction: **The aim of this assignment is to make sure that you understand and are familiar with the concepts covered in the lectures including selection and repetition statements in C++.**

Important: **This is an individual assignment. Please do not collaborate.**

Grading policy for part II: **We will check**
> a) **The correctness of your program/solution**
> b) **Variable naming (self describing)**
> c) **Appropriate commenting and Indentation.**

PART – I

1.[8 Points] This problem enhances your ability to read and understand programs written by others. Also, this program demonstrates the usage of selection statements in C++.

Study the program "homework3Question1.cpp" given with the assignment and answer the questions.

a) [2 Points] Determine the program output for the following inputs for the choice.

Run 1:   1 4
Run 2: 1 0
Run 3: 4 -1

b) [3 Points] Draw a flow chart that represents the flow of control (logic) of this program (Please read lecture notes posted). – **You can submit this as a jpg format or pdf format.**

c) [3 Points] Modify the program so that it asks the user if he/she needs to run the program again. If the user enter 'Y' menu should be displayed again otherwise if the user enter 'N' exit from the program. Submit the modified program within comment lines. **See the skeleton of the Assignment3.cpp given.**

PART – II (12 Points + 5 Bonus Points)

Important: Start early so that you can complete the program in time. Also, you are welcome to talk to me if you need more clarifications about the assignment.

I) Suppose you are given a contract to develop a system that generates bills for a cellular phone company. Company has two types of customers: Regular (R), Business (B).

For business customers:

Monthly base payment is $99.99 and the first 600 minutes are free. For next 100 minutes (stage1) company charges $0.45 per minute. Other remaining minutes (stage2) cost $0.99 per minute.

For regular customers:
Monthly base payment is $ 29.99 and the first 200 minutes are free. Next 250 units (stage 1) cost $0.55 per minute. Other remaining units (stage 2) cost $ 0.88 per unit.

Develop a system that reads customer information including the phone usage (in minutes) from the keyboard and produces the phone bill according to the criteria given above. Please see the sample system input/output given below for a Regular Customer. Similar output will be produced for Business Customers.

Also, your program so that it is capable of producing as many bills as needed. This can be done by asking the user if he/she has more bills to produce. If yes, return to the bill generation, else exit from the program. Please see the sample output give below.

Input Validation:
a) If user enters any category other than R, r and B, b then the program should display an error message saying "invalid customer type. Please enter R, r for regular and B, b for business customers" and ask the user to re-run the program correctly.

b) Minutes used should be greater than or equal to zero.

II)[5 Bonus Points] – Include the modified program as comment lines in the program. See the skeleton of the Assignment3.cpp given.

Input Validation:
   a) If the user enter invalid customer type, program should allow the user to enter valid customer type up to 3 times. Similarly, your program should give the user max three chances to enter valid number for the minutes used.

Phone Bill Generation Software

Pleas Enter the Customer Type (R for Regular, B for Business): R [enter]
Pleas Enter the Customer Phone Number: 480-897-8978 [enter]
Enter the phone usage in minutes: 476 [enter]

<p align="center">Power Bill for: 480-897-8978</p>
<p align="center">= = = = = = = = = = =</p>

Total Minutes Used= 476
I Monthly base payment : $ 29.99
Cost for stage1 units: $ 137.50
Cost for stage2 units: $ 22.88
Total Cost: 190.37

More bills? **[Y/N]:** Y

Pleas Enter the Customer Type (R for Regular, B for Business): R [enter]
Pleas Enter the Customer Phone Number: 480-897-8978 [enter]
Enter the phone usage in minutes: 346 [enter]

<p align="center">Power Bill for: 480-897-8978</p>
<p align="center">= = = = = = = = = = =</p>

Total Minutes Used= 346
I Monthly base payment : $ 29.99
Cost for stage1 units: $ 80.30
Cost for stage2 units: $ 0.00
Total Cost: $110.29

More bills? **[Y/N]:** N

Exciting the program………

Submit your homework by following the instructions below:

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- Submit your **Assignment3.cpp** file on-line.
- **Assignment3.cpp** should have the following, in order:
  - In comments, the assignment Header.
  - In comments, the answers to written exercises for Part I
  - In comments, the answers to the bonus point program in Part II

- o The working C++ code requested in Part II
- o Submit the Assignment3.cpp file.

Important Note: You may resubmit up to 3 times as you like until the deadline, but we will only mark your last submission.

NO LATE ASSIGNMENTS WILL BE ACCEPTED