**The While and Do-While Loops**

**Phone Plan**

This lab has significant similarity to last week’s lab, but is NOT THE SAME. Read the instructions carefully.

A mobile phone service provider has three different service plans for its customers. All three plans have unlimited calls and texts; they differ in price and in the amount of data.

**Plan A**

$39.99 per month for up to 4 gigabytes of data. Additional data costs $9.99 per gigabyte.

**Plan B**

$59.99 per month for up to 8 gigabytes of data. Additional data costs $4.99 per gigabyte.

**Plan C**

$69.99 per month for unlimited data.

Design and write a program that calculates bills for multiple customers. It should repeatedly prompt the user for a customer’s plan and the number of gigabytes the customer used. Fractional amounts of gigabytes are accepted, but of course it is not possible to use a negative amount of data. The program should then display the total invoice amount for that customer before prompting for the next customer’s information. The program should run as long as the user wishes to continue entering data. The user can quit the program when finished.

In this program, you must implement data validation for the plan type. You should only allow the user to enter A, B, C, or Q for the plan; any other letter should generate a prompt for re-entry. You must check for this in a data validation loop.

You must also implement data validation for the amount of gigs entered. Assume that the user will always enter a numerical value for data, but that they might incorrectly enter a negative amount. You must check for this in a data validation loop.

Here is an example single run of the program. Your program’s output may be slightly different depending on how you implement your input validation loops, but it should be very similar to this.

Choose a plan (A, B, or C) or Q to quit: A

How many gigs of data were used? -3.4

Data usage cannot be negative. Please re-enter: -2.3

Data usage cannot be negative. Please re-enter: 18.7

Invoice total: 186.84

Choose a plan (A, B, or C) or Q to quit: F

Invalid choice.

Choose a plan (A, B, or C) or Q to quit: G

Invalid choice.

Choose a plan (A, B, or C) or Q to quit: C

Invoice total: 69.99

Choose a plan (A, B, or C) or Q to quit: B

How many gigs of data were used? 3.4

Invoice total: 59.99

Choose a plan (A, B, or C) or Q to quit: Q

You should use a Boolean flag variable to control the main loop, and validation loops to ensure correct input. You may allow upper- and lower-case input for the plans, but this is not required.

As previously, do not use features of the language beyond chapter 5, and adhere to the style guide.