Programming Assignment #3

Cellular Data Plan Charges

CS 1428.302, Spring 2018
Instructor: Jill Seaman

Due: before class **Tuesday, 2/20/2018** (upload electronic copy by 9:00am)

Problem:

Your have been asked by a cell phone service provider to write a program that will calculate the amount of the data portion of a customer's monthly bill. Write a C++ program that will calculate the amount of the bill given which data plan the customer subscribes to and how many gigabytes of data they used during the month.

The cellular service provider offers the following data plans:

Package A: 1 gigabyte for $10/month.
Package B: 5 gigabytes for $25/month.
Package C: 10 gigabytes for $40/month. $5 for each extra GB used

Note: If a user goes over their plan's limit of data during the month, they will be automatically upgraded to a plan that covers the amount that they used (and be charged the new plan's rate). If a user goes over the 10 gigabyte limit for Package C, they are charged an additional $5.00 for each extra gigabyte used.

Input:

Use the following menu to prompt the user for the customer's data plan:

```
Data Plans:
A. The 1 gigabyte plan ($10)
B. The 5 gigabyte plan ($25)
C. The 10 gigabyte plan ($40+)
Enter which data plan the customer subscribes to:
```

Then the program should ask the user to input the number of gigabytes used in the month. This value could have fractional amounts included (like 2.875).

For both inputs, use an **if** statement to perform input validation. The user should select only A, B, or C from the menu, and the gigabytes should be greater than or equal to 0. If either input is invalid, <u>the program should exit with an appropriate error message.</u>

Processing: Compute the <u>amount</u> of the monthly bill according to the plan descriptions above.

Additionally, if the customer was on plan A or B and was automatically moved to plan B or C, output a <u>message</u> indicating this fact.

Output: Display the amount of the monthly bill with a dollar sign and formatted to 2 decimal places. If the customer was moved to another plan, output a message (this message may come before or after the amount). Here are 5 different sample executions of the program:

```
Data Plans:
A. The 1 gigabyte plan ($10)
B. The 5 gigabyte plan ($25)
C. The 10 gigabyte plan ($40+)
Enter which data plan the customer subscribes to: A
Enter the amount of data used during the month, in gigabytes: 0.75

The amount due for the month is $10.00

Data Plans:
A. The 1 gigabyte plan ($10)
B. The 5 gigabyte plan ($25)
C. The 10 gigabyte plan ($40+)
Enter which data plan the customer subscribes to: A
Enter the amount of data used during the month, in gigabytes: 6

You have been switched to plan C
The amount due for the month is $40.00

Data Plans:
A. The 1 gigabyte plan ($10)
B. The 5 gigabyte plan ($25)
C. The 10 gigabyte plan ($40+)
Enter which data plan the customer subscribes to: B
Enter the amount of data used during the month, in gigabytes: 3.75

The amount due for the month is $25.00

Data Plans:
A. The 1 gigabyte plan ($10)
B. The 5 gigabyte plan ($25)
C. The 10 gigabyte plan ($40+)
Enter which data plan the customer subscribes to: C
Enter the amount of data used during the month, in gigabytes: 4.2

The amount due for the month is $40.00
```

```
Data Plans:
A. The 1 gigabyte plan ($10)
B. The 5 gigabyte plan ($25)
C. The 10 gigabyte plan ($40+)
Enter which data plan the customer subscribes to: B
Enter the amount of data used during the month, in gigabytes: 10.5

You have been switched to plan C
The amount due for the month is $42.50
```

Additional Requirements:

- Your program **must compile** and run, <u>otherwise you will receive a 0.</u>

- Do NOT use ANY LOOPS! The program should compute one bill only.

Style:

See the Style Guidelines document on the course website. The grader will deduct points if your program violates the style guidelines.

- Use named constants for all <u>numeric</u> literals (char literals are permitted).

- Make sure your code is indented neatly (see the book for good examples: all statements inside of an if or else branch should be indented).

Logistics:

Name your file **assign3_xxxxx.cpp** where xxxxx is your TX State NetID (your txstate.edu email id). The file name should look something like this: assign3_js236.cpp

There are two steps to the turn-in process:

1. Submit an **electronic copy** using the Assignments tool on the TRACS website for this class (tracs.txstate.edu). Submit the .cpp file only.

2. Submit a **printout** of the .cpp file at the beginning of class on the day the assignment is due. Please print your name on the front page. Print the .cpp file only.

See the assignment turn-in policy on the course website (cs.txstate.edu/~js236/cs1428) for more details, including deadlines, penalties, and where to submit printouts after class.