

## Programming Assignment #3

### Mobile Phone Voice Plan

CS 1428.253, Spring 2020

Instructor: Jill Seaman

**Due: Wednesday, 2/26/2020** (upload electronic copy by 11:59pm)

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#### Problem:

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

The mobile phone service provider offers the following voice plans:

Package A: 450 minutes for \$39.99. .45/minute for each additional minute.

Package B: 900 minutes for \$59.99. .40/minute for each additional minute.

Package C: Unlimited minutes for \$69.99.

#### Input:

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

```
Voice Plans:
```

```
A. The 450 minute plan
```

```
B. The 900 minute plan
```

```
C. The unlimited plan
```

```
Enter which voice plan the customer subscribes to:
```

Then ask the user to input the number of voice minutes used in the month.

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 minutes should be between 0 and 44640 (inclusive). If their input is invalid, output an error message and exit the program (do not ask the user to re-enter the value).

#### Processing:

Compute the amount of the monthly bill according to the plan descriptions above.

Additionally, for package A customers compute how much money they would have

saved this month a) if they had purchased package B instead and b) if they had purchased package C instead. For package B customers, compute how much money they would have saved this month if they had purchased package C instead.

### Output:

Display the amount of the monthly bill with a dollar sign and formatted to 2 decimal places. Also if the customer would have saved any money by purchasing another plan (as calculated above) output the amount of savings for the other plan(s). **If the savings are 0 or negative for a given plan, no message should be printed.**

Sample output:

```
Voice Plans:
A. The 450 minute plan
B. The 900 minute plan
C. The unlimited plan
Enter which voice plan the customer subscribes to: B
Enter the total number of minutes used during the month: 875

The amount due for the month is $59.99
```

```
Voice Plans:
A. The 450 minute plan
B. The 900 minute plan
C. The unlimited plan
Enter which voice plan the customer subscribes to: A
Enter the total number of minutes used during the month: 501

The amount due for the month is $62.94
Amount saved if you were on Plan B: $2.95
```

```
Voice Plans:
A. The 450 minute plan
B. The 900 minute plan
C. The unlimited plan
Enter which voice plan the customer subscribes to: D
Enter the total number of minutes used during the month: 303
The voice plan entered is invalid.
```

```
Voice Plans:
A. The 450 minute plan
B. The 900 minute plan
C. The unlimited plan
Enter which voice plan the customer subscribes to: A
Enter the total number of minutes used during the month: 44641
That is not a valid amount for the minutes.
```

### **Additional Requirements:**

- Your program **must compile** and run, otherwise you will receive a score of 0.
- Use appropriate data types. Use **int** unless you know the value could have non-zero digits after the decimal point.
- Your program must output the correct values given **any** valid input values.

### **Style:**

See the Style Guidelines document on the class website. In particular:

- **Named constants:** use these for numeric literals, and use uppercase and underscores in their names. Hint: there are several in this program.

### **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: assign2\_js236.cpp

Submit an **electronic copy** using the Assignments tool on the Canvas course for this class ([canvas.txstate.edu](https://canvas.txstate.edu)). Submit the .cpp file, (NOT a .cbp file!).

See the assignment turn-in policy on the course website ([cs.txstate.edu/~js236/cs1428](https://cs.txstate.edu/~js236/cs1428)) for more details, including late deadlines and penalties.