420-LCU-05 Programming in Python - Assignment 1

February 10, 2022

Due Date: February 21st, 2022 at 23:59

Here are some general requirements that will apply to all of assignments in this course:

1. **Identification section** This section has to be enclosed within triple quotes (”’). The grader and I need this section for the *accurate processing of your assignment*. Assignments missing this may lose up to 5% of the total mark.

```
#Your Name & ID
#420-LCU Computer Programming
#Monday Feb 21, 2022
#S. Hilal, instructor
#Assignment 1
```

2. Always include additional comments with your code. You do not need to explain every line of your program, but consider using comments for the following situations:
   - A brief explanation of a particular variable’s purpose, included on the first line where the variable is defined.
   - A note mentioning any website or person you may have consulted with to help with the assignment.
   - A comment describing any constant value that appears in your code.
3. Submit you assignment in one .py file.
4. Be sure to respect carefully all instructions specified in the assignment.
5. Late assignments are accepted up to 1 week from deadline. But late penalty will be applied.

Assignment Description[1]

Your have a cell phone and after a month of use, you are trying to decide which price plan is the best for your usage pattern. There are 4 plan options available A, B, C, or D.

- Each plan has a base price per month that should be added to the total plan costs as indicated below.
- Free minutes are for day time only. Evening and week-end minutes are always at a cost.
- Each plan has different costs for daytime minutes, evening minutes and weekend minutes.

Plan	**Costs**			
	Base Price	Daytime	Evening	Weekend
A	10	100 free minutes, then 15¢/minute	20¢/minute	25¢/minute
B	12	200 free minutes, then 20¢/minute	25¢/minute	30¢/minute
C	12	250 free minutes, then 30¢/minute	35¢/minute	40¢/minute
D	15	$39 for unlimited minutes.	unlimited	unlimited

Program Menu

Welcome to My Cellphone Calculator
1. Determine the Best Plan for my usage pattern and Display the average cost for all plans.
2. Exit
Enter your selected option :
Your program displays a simple menu as shown above. Your program continues until the user requests to exit. The main menu is displayed after each option is completed.

[1] Adapted from the Canadian Computer Competition, 2005.

Description of Menu Options

1. **Determine Best plan and average cost:** This option determines the best cellphone plan for a given cellphone usage pattern. Check examples 1-3. It also displays the average Cost among all plans.

2. Exit the program.

Example 1

```
Number of daytime minutes? 254
Number of evening minutes? 10
Number of weekend minutes? 60
Plan A costs $50.10
Plan B costs $43.30
Plan C costs $40.70
Plan D costs $54.0
choose Plan C.
```

Example 2

```
Number of daytime minutes? 162
Number of evening minutes? 71
Number of weekend minutes? 71
Plan A costs $51.25
Plan B costs $51.05
Plan C costs $65.25
Plan D costs $54.0
Choose Plan B.
```

Example 3

```
Number of daytime minutes? 260
Number of evening minutes? 20
Number of weekend minutes? 70
Plan A costs $55.5
Plan B costs $50.0
Plan C costs $50.0
Plan D costs $54.0
Choose Plan B.
```

Defining constant Variables

Define `constant variables` to represent *each calling plan*. This makes your program more self-explanatory and also easier to modify if values change in the future. For example, you can define the first calling plan as follows:

```
A_BASE_PRICE = 10 # Base price for plan A, in dollars.
A_FREE = 100   # Plan_A Number of free daytime minutes per month.
A_DAYTIME = 15 # Plan_A Cost of additional daytime minutes, in cents.
A_EVENING = 20 # Plan_A Cost of evening minutes, in cents.
A_WEEKEND = 25 # Plan_A Cost of weekend minutes, in cents.
```

Some hints for your program:

- To determine the best plan, you will need several `if` statements or you may use any other tools as seen in class.
- Test your program using the given examples and follow the example output as closely as possible.
- Do not worry about display format to the right of decimal point.