

Develop a functional flowchart using Visio and then write a menu-driven C++ program (using Visual Studio Enterprise), using control constructs and user-defined functions, to solve for the following problem. (Note: declare the parking fee schedule as **const** variables. Never use the bare bone constant values shown).

The sign on the attendant's booth at the **UH** parking lot is:

UH Visitors Parking

Cars:	First 1 Hours:	Free
	Next 2 hours:	\$ 3.00 per hour
	Thereafter:	\$ 1.50 per hour (for more than 3 hours)
Motorcycles:	First 1 hour:	\$ 2.00
	Next 5 hours:	\$ 1.50 per hour
	Thereafter:	\$ 1.00 per hour (for more than 6 hours)
Senior Citizens:	Free	

Upon execution of the program, the screen will be cleared and the following menu will appear at the top of the screen, properly centered:

Help	Cars	Motorcycles	Senior Citizens	Quit
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H or h (for **Help**) option will briefly explain how the program should be used. Display of the parking fees shown above along with explanatory notes will help here. Once the user finishes reading the help screen(s), striking any key (strike a key followed by Enter key) will clear the screen and the menu is displayed again.

C or c (for **Cars**) option will prompt the user for the number of minutes a vehicle has been in the lot. The program should then compute the appropriate charge and display the ticket on the monitor for the customer. Any part of an hour is to be counted as a full hour (e.g., 65 minutes will be two hours.) Once the user finishes viewing the ticket, striking any key will clear the screen and the above menu is displayed again.

M or m (for **Motorcycles**) option will prompt the user for the number of minutes a vehicle has been in the lot. The program should then compute the appropriate charge and display the ticket on the monitor for the customer. Any part of an hour is to be counted as a full hour (e.g., 45 minutes will be one hour.) Once the user finishes viewing the ticket, striking any key will clear the screen and the menu is displayed again.

S or s (for **Senior Citizens**) option will prompt the user for the number of minutes a vehicle has been in the lot. The program performs no computations. The ticket should show \$0.00. Once the user finishes viewing the ticket, striking any key will clear the screen and the menu is displayed again.

Q or q (for **Quit**) option will clear the screen and returns the control to the programmer's IDE.

Test your program with the values shown below.

for option **C, c** : 0, 50, 85, 125, 145, and 360 minutes
for option **M, m** : 0, 54, 60, 121, 155, and 175 minutes
for option **S, c** : 0, 200, and 380 minutes

Of course your program will work for other values within the integer boundary.

Grading:

1.	Flowchart	6
2.	Documentation	4
3.	Correct homework header file	2
4.	Solution and sample outputs	18

Notes:(please read very carefully)

1. Follow the instruction for submitting homework to the Blackboard.
- 1a. Make sure your media is **VIRUS FREE!**(grade of 0 will be given for infected diskettes). Use Technology lab PCs for the test.
2. Comment your program.
3. Use meaningful prompts.
4. Provide a brief description of the problem being solved (this is your Problem Statement).
5. Be sure to include a header file at the beginning of your program as shown in the course syllabus and How to Submit your Homework to the BlackBoard.
6. **NO global declarations of VARIABLES allowed** in any program that you develop in this course.
7. For this assignment, use selection and looping constructs as well as functions. Use many user-defined functions (*overloaded functions and inline functions included*).
8. Full function prototyping is required. Functions must have their purposes fully explained. Functions may call other functions, as needed, to facilitate modular programming.
9. Parameter passing to functions will be *by reference (no pointers)*, and return value from functions will be *by value*. ***Make sure you understand this.***
10. Use data type *int* for minutes and *float* for computing the parking fee. The float type data must have two digits after the decimal point using the *fixed* point flag. No artificial data should be used for comparison purposes or any other reasons. Use `<iostream>` and other include files with appropriate formatting.
11. Illegal menu selection must be handled properly without terminating the program.
- 11a. Use **Microsoft Visual Studio Enterprise 2015 or later** compiler using default compiler settings.
12. Use **Microsoft Visio 2013** or later to develop your flowchart.
- 12a. On the due date, submit your **H1 containing the components of the program specified in the guidelines**. Create a Word file that contains the header, the flowchart, the list of your .cpp file, and the sample runs of the program. Name this file **H1NAME.docx**. The source file for **H1NAME.cpp** and the Visio 2013 file **H1NAME.vsd** will be uploaded as well. Unrelated files should not be present when you upload them to the Blackboard. Homework must be uploaded to Blackboard by **9PM** of the due date. NAME is your last name.
13. Sample runs will include *all* data stream shown above.
14. Adherence to the *ANSI C++* required.
16. **No arrays** are to be used in this assignment.
17. **Do not** use `<stdio.h>` and `<conio.h>` in this assignment and all other assignments.
18. **Do not** use any `#define` in your program until the time that is required for class declaration header files.
19. No `goto` statements allowed in any program that you develop in this course.
22. ***Non-compliance with these notes will cost you points.***
23. No collaboration on this assignment and all other assignments allowed. If you violate this policy, your grade for the course will be **F**.
20. Homework is due by 9 PM of the due date and must be submitted to the Blackboard. ***Late homework will not be accepted.***