Submission of proposal for MTE innovative project for Object Oriented Programming(SE 203)

Topic

Menu driven program to access/add and retrieve data from a database and create a simulation by properly organizing and structuring the code using object oriented programming methodology.

Introduction/Project brief

This project involves coding a menu driven program with multiple menus using object oriented methodology where the user can use to add customers to a queue and create a simulation for adding/retrieving data from a database for the customers.

The entire program will be structures in a way in which there will be maximum utilization of all the object oriented programming methodology that I learned/will be learning.

From the menus to the data structures used, everything will be part of different classes and the code will be written in a way where the objects and methods of these classes will communicate with each other to get the desired outcome. The code will also be structured/divided into different header files and all the header files will be included in the main.cpp file from where the code can be compiled and executed.

Features of OOP like data abstraction and inheritance will also be incorporated in the program.

Data structures like queue and linked lists will be used in this project for the simulation system.

The menus in the program will also include options to add/retrieve data from a database.

This database will be implemented using a RDBMS SQLite.

Objective

There are mainly 3 objectives for this project.

1. To understand the features and advantages of OOP and implement those features to properly structure and organize the code and perform complex tasks within the program with ease.
2. To learn how to implement different features of OOP in a real world scenario or a big project.
3. To improve, sharpen and get in depth knowledge about Object oriented programming and its implementation with C++ programming language.

Project System Configuration/Software Requirement

To build this very project I am using a MacBook Pro 2019 and the tool/text editor I am using for the project is Visual Studio code.

On the completion of the project, the program can run on any operating system that has a text editor/IDE that can compile and run C++ programs.

It is also to be noted that for inserting and retrieving data from the database I will be using a RDBMS called SQLite.

Mac OS usually comes with this RDBMS installed but that might not be the case for windows and linux operating systems. Relevant resources and methods to install this feature will be provided with the final submission of the program source code(if needed).

Programming Language and other technologies to be used

The programming language that I will be using for this project will be C++.

In addition to that, RDBMS SQLite will also be used for managing the database.

Proposal Methodology/Innovative idea

For the completion of this project, I will be using my programming knowledge to extensively use OOP and implement some complex data structures like queue and linked list and make them work together and create a feel for a basic simulation.

I also want to explore the uses and real world implementations of object oriented programming and ultimately gain in-depth knowledge about this methodology of programming.

Other form of innovation in this project is the implementation of database in the program.

I am only just starting with database management but through some research and my interest this field I was able to learn the very basics of database management and was able to successfully implement it in a demo C++ project.

Now I am very excited to implement it in my final OOP project!

References

For the completion of this project I learned/will need to learn a lot of new techniques and technologies and implement them.

Some of those, I learned in the past couple of days trying to figure out what ideas I can and what ideas I cannot successfully implement in my project.

An example for that is learning SQL and implementing SQLite will C++.

This was a rather complex part as C++ isn't widely used for database management so it was challenging to find relevant resources in the web.

However websites like stackoverflow.com , geeksforgeeks.org , zetcode.com really helped me through the process and I most certainly will get more help from them for the completion of this project.

I also learned the basics of OOP during the lockdown period when classes had not commenced.

I am also taking reference from our recommended course book Object Oriented Programming with C++ by E Balagurusamy to gain more in-depth knowledge in topics like inheritance of class and lot more.

I will also be referring to the notes I created during our lectures and the presentation notes provided by our course instructor for SE 203 Mr. Manoj Sethi.

Conclusion

This project brings great opportunities for me as I will be able to sharpen my coding skills and develop a basic knowledge about using object oriented programming in real world applications.

It is also to be noted that this project will be build with main purposes being learning and demonstrating the the uses and advantages of OOP in real world scenarios but the actual implementation of this simulation and data management program in the real world might be limited as in real world scenarios a lot of factors like user interface, user experience, better defined and organized inputs/outputs have to be considered which might not be possible with my skill level. However this could be a good starting point and hopefully enough to be within the scope of the MTE innovative project for Object oriented programming.

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