Lab # 01: Mini Project
Library Database Simulation with File Handling

Overview:

The project assigned for the Database Systems course is a console-based application that will use file storage to perform several operations on the data. The main objective of this project is to familiarize students with the basic operations of a database system and the use of file storage as a means of data storage.

The idea is to create a simple console-based application for managing a small library. The application would allow users to perform basic CRUD (create, read, update, and delete) operations on a file that stores information about the library's books, such as the **title**, **author**, **ISBN**, and **number** of copies available. The application could also have a simple user interface that allows the user to perform simple searches on the library books. The student can use file-handling techniques to store, update, read and delete the data from file.

The project will consist of the following major operations:

1. **Insert into file**: This operation allows the user to insert new data into the file. The user will be prompted to enter the necessary information, such as data fields and their values, and the application will then write this information to the file.

2. **Read/view from file**: This operation allows the user to view the data stored in the file. The user can choose to view all data or specific data based on certain criteria.

3. **Modify in file**: This operation allows the user to update the data stored in the file. The user will be prompted to enter the necessary information, such as the data field to be updated and its new value, and the application will then update the data in the file.

4. **Delete from file**: This operation allows the user to delete data from the file. The user will be prompted to enter the necessary information, such as the data field to be deleted and its value, and the application will then remove the data from the file.

The project will be implemented using C++ programming. It is expected that students will use basic data structures, such as arrays and lists, to store the data in memory and file I/O operations to perform the above-mentioned operations.

In order to successfully complete this project, students are required to follow the instructions provided in the project manual and to submit their work on time. The project will be graded based on several factors, such as the functionality of the application, the quality of the code, and the overall design of the application.

This project will be a great opportunity for students to get hands-on experience with database systems and the use of file storage as a means of data storage. It will also help students to improve their programming skills and to develop a deeper understanding of database systems.

Some Hints for Getting Started

1. When creating the insert function, students should focus on how to write data to a file and how to format the data in a way that it can be easily read and understood.

2. For the read/view function, students should focus on how to open and read a file, and how to display the data in a user-friendly format.

3. The modify function should focus on how to update specific data within a file, and how to save the changes made to the file.

4. The delete function should focus on how to delete specific data from a file.

Lastly, students should test the application thoroughly by inserting, reading, modifying and deleting data from the file to make sure that all the operations are working as expected.

Additionally, students can enhance their project by adding more functionalities such as input validation, error handling and providing graphical user interface for their application for **extra marks**.

Instructions:

- Individual Project.
- You are required to do the complete project by using file handling (without database).
- Deadline = = 1st Feb,2023 till 10:00 pm. Submit Your Project on Google Classroom.

GOOD LUCK 😍