As database-driven applications continue to evolve, developers are faced with multiple options for interfacing with databases. One common dilemma faced by developers is whether to use stored procedures or to pass raw queries directly. In the context of the class scheduler application, which involves assigning students to classes, viewing student and class data, and editing the Students\_Classes table, this paper aims to explore how each approach might be used to design a screen for searching for students, along with the advantages and disadvantages of each method.

Stored procedures are precompiled SQL scripts stored in the database that can be executed by applications. In the context of designing a student search screen for the class scheduler, a stored procedure can be created that accepts search criteria as input parameters and returns the matching student records. One advantage of stored procedures is improved performance, as they are precompiled and can be executed faster than raw queries. Another advantage is security, as stored procedures can enforce access controls on the data, ensuring that users can only view and edit the data they are authorized to access. A third advantage is maintainability, as changes to the database schema or logic can be made in the stored procedure without modifying the application code. However, the use of stored procedures can also introduce complexity in terms of writing, debugging, and maintaining them, and can make the application more tightly coupled to a specific database system.

Database-driven software applications continue to advance, providing developers with multiple options for interacting with data. One common dilemma faced by developers is whether to use stored procedures or raw queries. In the context of the class scheduler application, which involves assigning students to classes, viewing student and class data, and editing the Students\_Class table, this paper aims to explore each approach and how it might be used in the screen design for searching for students.

When considering security and data access control, stored procedure scripts are beneficial as they only allow the scheduler to execute what the administrators have authorized. Stored procedures are precompiled and stored in the database, providing better performance and control over data manipulation. While they can be complex, they ensure that the user can only run procedures authorized by their login credentials. One disadvantage is that stored procedures are tied to the database and software specific, making it more challenging to switch to a new software platform.

Raw queries are SQL statements that are constructed and executed directly by the application. For the student search screen, the software would create an SQL query based input from the user and execute it to retrieve the matching student records. Raw queries are flexible, providing greater flexibility in constructing complex queries based on user input, and are generally more portable across different database systems. However, raw queries may have lower performance when executed repeatedly, as they need to be compiled and optimized each time, and can be more challenging to enforce data access controls, increasing the risk of unauthorized access or data breaches. Finally, changes to the database schema or logic may require modifications to the application codebase, which can consume a lot of time and be riddled with errors.

The student search screen will enable the user to search for students given various criteria including name, their student ID, class, or enrollment status. Users can enter their search criteria in text boxes or select from drop-down lists and choose the sorting order of the search results. After clicking the "Search" button, the screen will display a list of matching students, which can be viewed, edited, or used for assigning to classes.

Both stored procedures and raw queries both have their advantages and disadvantages when it comes to designing a student search windows for a class scheduler. This choice between the two will depend on factors such as performance, security, maintainability, and database system compatibility. It is essential to carefully consider these factors before choosing the most appropriate approach for a specific application. Ultimately, the student search screen should be designed with the user in mind, providing them with a seamless and efficient search experience that helps them achieve their goals within the class scheduler application.

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