**Designing a School Management Database with SQL Server**

**Introduction:**

Rainbow School is creating software for school management. The first stage is to design a database in SQL Server which will manage all the data. This database will then be used in the web-based application for school management.

**Table Structure:**

Three essential master tables are important to our database design: Students, Subjects, and Classes.

* Students Table: This table stores comprehensive student information, including their names, date of birth, class, and subjects. The table includes fields such as StudentID, FirstName, LastName, DateOfBirth, ClassID, and SubjectID.
* Subjects Table: In the Subjects table, we maintain a list of subjects taught across all classes. It includes fields such as SubjectID and SubjectName.
* Classes Table: The Classes table lists all classes within the school. It includes fields like ClassID and ClassName.

**Index Optimization:**

To enhance query performance, indexes are employed, primarily on columns commonly used in joins or searches. Here, we add indexes on the foreign key columns (ClassID and SubjectID) within the Students table

**DQL (Data Query Language):**

The DQL subset of SQL is primarily used for retrieving and querying data from a database. The primary statement within DQL is the SELECT statement, which allows you to retrieve specific columns or expressions from one or more tables based on specified conditions.

**Join Clause:**

In SQL, when you use the JOIN keyword without specifying a specific type of join (like INNER JOIN, LEFT JOIN, RIGHT JOIN, etc.), the default behaviour is an INNER JOIN. An INNER JOIN returns only the rows where there is a match in both the left and right tables based on the specified condition.

**Conclusion:**

By creating and optimizing tables using SQL Server and SSMS, Rainbow School lays the foundation for efficient data storage and retrieval by the use of student, subjects, and classes tables, along with indexes.

**GitHub Link:**