Issues Faced During Project Execution

Throughout the development of the Training Management System, several technical and logical challenges were encountered that required careful troubleshooting and adjustments. One of the initial hurdles was setting up and configuring SQL Server and its companion SQL Server Management Studio (SSMS). Compatibility between SQL Server editions and local system settings (e.g., Windows authentication, instance names) occasionally caused connectivity issues, requiring configuration changes in the SQL Server Configuration Manager.

Another significant challenge was the design of the relational schema, particularly mapping many-to-many relationships between entities like Trainee and Course. This required the creation of bridge tables such as Enrollment, which added complexity to query writing and relationship visualization. Ensuring referential integrity via foreign keys and understanding how cascading updates or deletions could impact data integrity was also critical and needed testing.

On the querying side, writing multi-table JOIN queries to meet specific user requirements (e.g., showing trainee schedules or listing enrolled trainees per trainer) presented difficulties in maintaining readability, performance, and accuracy. A lack of properly aliased table names and mismatches in column names caused syntax errors, especially when queries joined three or more tables.

Finally, data insertion for testing often resulted in constraint violations such as duplicate emails or incorrect date formats. This highlighted the need for careful input validation and the importance of understanding data types and constraints (e.g., CHECK, UNIQUE, and NOT NULL).

Despite these challenges, each issue was addressed systematically, resulting in a functional and normalized relational database with appropriate support for trainee, trainer, and admin interactions.