
SQL Assignment 1

1. What is a relational database management system (RDBMS)? What are the advantages of a database management system over a file system?

In RDBMS, the data is stored in tables which is a combination of rows and columns. Advantages of file systems include data integrity, efficient querying, concurrent access, and scalability, enabling data consistency, security, and ease of management.

2. In a database management system, explain the ACID properties.

ACID (Atomicity, Consistency, Isolation, Durability) properties ensure the reliability of database transactions. Atomicity guarantees that transactions are treated as a single unit. Consistency ensures that data remains in a valid state. Isolation prevents concurrent transactions from interfering, and Durability ensures that committed changes persist even after system failures.

3. Explain the concept of normalization.

Normalization is the process of organizing a database to reduce redundancy and dependency. It involves breaking down tables into smaller, related ones to minimize data duplication and maintain data integrity. This improves efficiency, reduces anomalies, and ensures a more streamlined and maintainable database structure.

4. Explain the many types of query languages used in relational databases. DQL, DML, DCL, and DDL are some examples.

In relational databases, various query languages serve distinct purposes. Data Query Language (DQL) retrieves information with SELECT statements. Data Manipulation Language (DML) manipulates data using INSERT, UPDATE, and DELETE statements. Data Control Language (DCL) manages access permissions with GRANT and REVOKE. Data Definition Language (DDL) defines database structure using CREATE, ALTER, and DROP statements.

5. What is the difference between the main key and a composite key? Give instances of how primary key and composite are used.

A primary key is a unique identifier for a single record in a table. A composite key, on the other hand, involves multiple columns to uniquely identify a record. For

example, a table of employees might have an "EmployeeID" as a primary key, while a table tracking projects assigned to employees might use a composite key of "EmployeeID" and "ProjectID" to uniquely identify each assignment.

6. Create a table with a primary key, a column default value, and a column unique constraint in SQL.

