TOPS TECHNOLOGY

Module 4 – Introduction to DBMS

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SQL Stored Procedure

1.What is a stored procedure in SQL, and how does it differ from a standard SQL query?

- A **stored procedure** in SQL is a precompiled collection of one or more SQL statements that are stored in the database and can be executed as a single unit. It allows you to encapsulate logic and reuse code, improving performance and maintainability.

Aspect	Stored Procedure	Standard SQL Query
Definition	A named, reusable block of SQL code stored in the database.	A single, ad-hoc SQL command executed directly.
Reusability	Can be reused multiple times by calling its name.	Not reusable; written and executed each time.
Logic	Can include conditional logic (e.g., `IF`, `WHILE`).	Executes a single SQL statement or simple batch.
Performance	Precompiled, so it runs faster on repeated executions.	Parsed and executed every time it is run.
Security	Access can be controlled via permissions.	Permissions apply only to the executed query.

- **Example of a Stored Procedure**:
- CREATE PROCEDURE GetEmployeeDetails (IN emp_id INT)
- BEGIN
- SELECT * FROM employees WHERE id = emp_id;
- END;

2. Explain the advantages of using stored procedures.

- **Advantages of Using Stored Procedures**:

- **Performance**: Stored procedures are precompiled, which reduces the overhead of parsing and compiling SQL statements at runtime, leading to faster execution.
- **Reusability**: They can be reused across applications, reducing redundancy and simplifying code maintenance.
- **Security**: Permissions can be granted on stored procedures without exposing the underlying table structures or data.

- **Reduced Network Traffic**: A single call to a stored procedure can perform multiple SQL operations, reducing the number of interactions between the application and the database.
- **Modularity**: Complex business logic can be encapsulated in stored procedures, making the code easier to understand, maintain, and debug.
- **Consistency**: Ensures consistent implementation of logic and rules across different applications accessing the database.
- **Ease of Updates**: Updating a stored procedure does not require changes to the application code, making maintenance easier.