Part 02

General

1. Backup Types: Full, Differential, and Transactional

Full Backup:

- Copies all data in the database
- Provides a complete restore point
- Largest in size
- Foundation for other backup types

Differential Backup:

- Copies only data changed since the last full backup
- Smaller than full backups
- Faster to create than full backups
- Requires the last full backup for restoration

Transactional (Log) Backup:

- Copies all transaction log records since the last log backup
- Smallest in size
- Allows point-in-time recovery
- Only available in full or bulk-logged recovery models

2. Permissions: Grant vs Deny

Permissions are security rules that control access to database objects and operations.

GRANT:

- Explicitly allows a user/role to perform an action
- Example: GRANT SELECT ON Employees TO User1

DENY:

- Explicitly prevents a user/role from performing an action
- Overrides any GRANT permissions
- Example: DENY INSERT ON Employees TO User1

Levels of application:

- Server level (logins, server roles)
- Database level (users, database roles)
- Schema level
- Object level (tables, views, procedures)

3. SQL Profiler

SQL Profiler is a graphical tool that monitors and records SQL Server events.

When to use it:

- Troubleshooting performance issues
- Auditing database activity
- Capturing and analyzing T-SQL statements
- Identifying slow-running queries
- Debugging applications
- Monitoring login/logout activity

Note: In modern SQL Server versions, Extended Events is the recommended alternative to Profiler.

4. Triggers vs Stored Procedures

Trigger:

- Special type of stored procedure that automatically executes in response to specific events
- Bound to a table or view
- Executes implicitly when the triggering event occurs
- No direct invocation by users
- Runs within the transaction that fired it
- Commonly used for: auditing, enforcing complex business rules, maintaining referential integrity, logging changes

Stored Procedure:

- Precompiled collection of SQL statements
- Must be explicitly called by users or applications
- Can accept parameters and return values
- Runs in its own transaction unless specified otherwise
- Used for: complex business logic, data manipulation, as an API for applications

Levels:

- Triggers operate at table/view level (DML triggers) or server/database level (DDL/logon triggers)
- Stored procedures exist at database level but can be called from any context with proper permissions