What is a Stored Procedure?

stored procedure is a saved collection of SQL statements that you can run whenever you need.

Benefits of using stored procedures

- ❖ **Code Reusability**
  Write SQL once and reuse it many times without rewriting the same queries.
- ❖ **Better Performance**
  Stored procedures run faster because SQL Server reuses the execution plan.
- ❖ **Improved Security**
  Users can run procedures without seeing or directly accessing database tables, helping prevent SQL injection.
- ❖ **Data Integrity**
  Data is entered and processed in a consistent and controlled way.
- ❖ **Easy Maintenance**
  If database logic changes, only the stored procedure needs to be updated—not the whole application.
- ❖ **Easier Troubleshooting**
  Stored procedures are modular, making errors easier to find and fix.
- ❖ **Reduced Network Traffic**
  Only one call is sent to the server instead of many SQL statements.

Why use stored procedures?

Stored procedures are used to automate repeated tasks, so the same SQL code doesn't need to be rewritten each time. They store compiled SQL statements as a single execution plan, which improves efficiency. Stored procedures can also perform multiple database operations in one call, such as inserting, retrieving, updating, or deleting data, making database work faster and easier.

There are three main types of stored procedures in SQL:

- ❖ **System Stored Procedures**
  Built-in procedures provided by SQL Server. They usually start with **sp_** and help manage and control SQL Server functions.
- ❖ **User-Defined Stored Procedures**
  Created by users to perform specific tasks in their own databases. Written in **T-SQL**. They should **not** use the sp_ prefix.
- ❖ **Temporary Stored Procedures**
  Stored in **tempdb** and used temporarily.

- ❖ **Local temporary procedures**: Available only to the current user and deleted when the connection closes.
- ❖ **Global temporary procedures**: Available to all users and deleted when the last user finishes using them.