SQL Server Homework - Explanations

# Easy

## 1. Definitions

- Data: Raw facts and figures without context (e.g., "John", 22).

- Database: A structured collection of related data stored and accessed electronically.

- Relational Database: A type of database that stores data in tables with relationships using keys.

- Table: A set of data organized in rows and columns in a database.

## 2. Five Key Features of SQL Server

- High availability and disaster recovery

- Advanced security features (encryption, authentication)

- Scalability and performance tuning

- Integration with other Microsoft tools

- Support for transactions and stored procedures

## 3. Authentication Modes

- Windows Authentication – Uses your Windows credentials.

- SQL Server Authentication – Requires a username and password created inside SQL Server.

# Medium

## 1. Create a New Database

SQL Command: CREATE DATABASE SchoolDB;

## 2. Create Students Table

SQL Command:  
CREATE TABLE Students (  
 StudentID INT PRIMARY KEY,  
 Name VARCHAR(50),  
 Age INT  
);

## 3. Difference Between SQL Server, SSMS, and SQL

- SQL Server: The RDBMS (engine) that stores your data.

- SSMS: A graphical tool to interact with SQL Server.

- SQL: The language used to query and manipulate the data.

# Hard

## 1. SQL Command Types

- DQL (Data Query Language): Retrieves data  
 Example: SELECT \* FROM Students;

- DML (Data Manipulation Language): Inserts, updates, deletes  
 Example: INSERT INTO Students VALUES (1, 'Ali', 20);

- DDL (Data Definition Language): Creates/modifies schema  
 Example: CREATE TABLE, ALTER, DROP

- DCL (Data Control Language): Controls access  
 Example: GRANT, REVOKE

- TCL (Transaction Control Language): Manages transactions  
 Example: BEGIN TRAN, COMMIT, ROLLBACK

## 2. Insert Records into Students Table

SQL Command:  
INSERT INTO Students (StudentID, Name, Age) VALUES  
(1, 'Ali', 20),  
(2, 'Laylo', 21),  
(3, 'Jasur', 19);

## 3. Restore AdventureWorksDW2022.bak File

- Download the .bak file from the official GitHub link.

- Move the file to SQL Server’s backup directory.

- Open SSMS and connect to your server.

- Right-click 'Databases' > 'Restore Database...'.

- Under 'Source', choose 'Device' and select the .bak file.

- Choose a name for the database (e.g., AdventureWorksDW2022).

- Click OK to restore the database.