**Part 02**

**General**

1. What’s the difference between Batch ,Script, Transaction, Backup?

Batch: it is a group of one or more SQL queries sent to the server together and they are separated by a GO Statement.

Script: it is a complete file of SQL commands that can include multiple batches and can represent the structure of the database.

Transaction:

It is a sequence of SQL Queries that are executed as a single unit of work.

Note: The whole transaction gets cancelled if a single query returns an error.

Backup:

It is a copy of a database stored for recovery purposes (DB Admin Work).

2. What meant by logging transaction and why this happens?

It means recording all the actions performed during a transaction (INSERT, UPDATE, DELETE) into a transaction log file (ldf).

It happens mostly for the data recovery purposes.

3. What’s the difference between soft delete and hard delete?

A hard delete permanently removes data from a database, making it inaccessible and unrecoverable without backups. While soft delete doesn't actually remove the data, instead it marks it as deleted, often by updating a "deleted" flag on the data.

**Part 03**

**Bonus**

1. Self study report

1.1) Database Recovery

Database recovery is the process of restoring a database, our database might get corrupt due to system crash, power outage, or data corruption.

1.2) Dynamic Query >> Execute Keyword

A dynamic query is a database query whose structure or content is not fixed at **compile time** but is instead constructed or modified at **runtime**, often based on user input or changing conditions. This flexibility allows applications to adapt to different data scenarios and user requirements, **making them more versatile than static queries.**

In SQL Server, EXECUTE or EXEC is used to **run dynamic SQL strings**.

1.3) Case - if - wait for – choose

Case:

Used to return a value based on conditions (like an if-else chain).

CASE

WHEN Salary > 5000 THEN 'High'

WHEN Salary BETWEEN 3000 AND 5000 THEN 'Medium'

ELSE 'Low'

IF:

Used to perform logic operations in stored procedures, functions, or scripts.

IF (Hamada)

PRINT 'Hamada Yes’

ELSE

PRINT ‘Hamada No’

Wait For:

Used to pause SQL execution for a time or until a specific time.

WAITFOR DELAY '00:00:30' \*wait 30 seconds\*

-- or

WAITFOR TIME '23:59:00' \*wait until 11:59 PM\*

Choose:

Returns the **n-th item** from a list based on a 1-based index.

SELECT FirstName, CHOOSE(Class, ‘Silver’, ‘Gold’,’Platinum’ )

FROM Employees

2. What is trigger and why use it?

A trigger is a special stored procedure in a database that automatically runs when certain events happen on a table with the (INSERT, UPDATE, DELETE).  
  
Triggers helps with Automation and it eliminates repetitive statements.

3. What is permissions and how w grant and revoke it  
  
Permissions in a database control what actions users can perform on database objects.

These actions include:

* SELECT –> read data
* INSERT –> add data
* UPDATE –> modify data
* DELETE –> remove data

GRANT SELECT, INSERT ON Employees TO Ali

REVOKE INSERT ON Employees FROM Ali