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LAB 08

INTODUCTION TO DATABASE SYSTEM

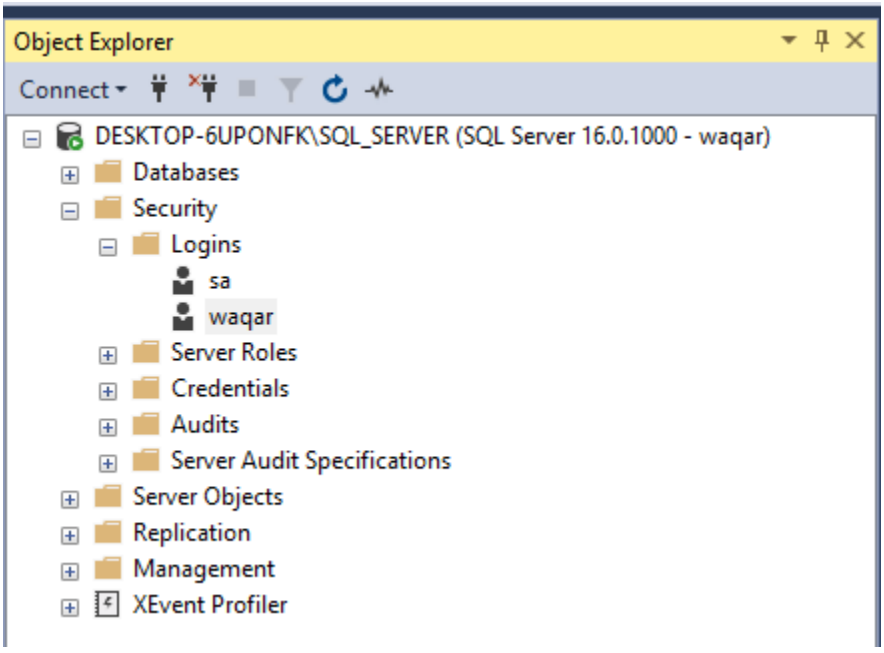
OBJECTIVE:

- To implement Server Authentication
- To learn and implement DCL (Grant and Revoke Commands).
- To learn and implement exception handling in SQL.
- To learn and implement TCL (Commit, Rollback and Save point)

LAB TASKS:

1. Create a Login with your name as User name and set the password accordingly. Perform the SQL server authentication with the created login.

```
Create user waqaruser for login waqar;
go
```



2. Create a role for the above login named “junior data base engineer” and grant all therights. Now create a user for this role and perform some simple database operations.

```
CREATE ROLE junior_database_engineer;
GO

ALTER ROLE junior_database_engineer ADD MEMBER WAQARUser;
GO

GRANT SELECT, INSERT, UPDATE, DELETE ON SCHEMA::dbo TO junior_database_engineer
GO

-- Create a table and insert data
CREATE TABLE SampleTable (
    ID INT PRIMARY KEY,
    Name VARCHAR(100)
);
GO

INSERT INTO SampleTable VALUES
(1, 'WAQAR'),
(2, 'ANEEQ'),
(3, 'USMAN');
GO
```

	id	s_name
1	1	WAQAR
2	2	ANEEQ
3	3	USMAN

3. Revoke the right for updating the record from the above role and now try to update anyrecord and observe the result.

```
REVOKE UPDATE ON SCHEMA::dbo FROM junior_database_engineer;
GO
```

Messages

```
Commands completed successfully.

Completion time: 2025-06-03T05:06:37.9802693-07:00
```

4. Suppose you are performing a credit debit transaction in your table. The table is based onthe following schema. (User_id (Primary Key), name, Account#, Balance).

   • Begin a transaction and insert some records. • Deduct an amount of 5000 from the user id 1. • Credit the amount to user Id 10 (which does not exist). • Rollback the deduction transaction. • Apply save points where necessary

```
CREATE TABLE AccountTable (User_id INT PRIMARY KEY,Name VARCHAR(100),
[Account#] VARCHAR(20),Balance INT);
GO

INSERT INTO AccountTable VALUES
(1, 'WAQAR', 'ACC0983', 20000),
(2, 'ANEEQ', 'ACC167', 18000),
(3, 'QASIM', 'ACC1322', 12000);
```

Results Messages

	User_id	Name	Account#	Balance
1	1	WAQAR	ACC0983	15000
2	2	ANEEQ	ACC167	18000
3	3	QASIM	ACC1322	12000

```
BEGIN TRANSACTION;
SAVE TRANSACTION AfterInsert;
UPDATE AccountTable SET Balance = Balance - 5000 WHERE User_id = 1;
SAVE TRANSACTION AfterDeduction;
UPDATE AccountTable SET Balance = Balance + 5000 WHERE User_id = 10;
ROLLBACK TRANSACTION AfterDeduction;
```

```
select * from AccountTable;
```

110 %

Results Messages

	User_id	Name	Account#	Balance
1	1	WAQAR	ACC0983	15000
2	2	ANEEQ	ACC167	18000
3	3	QASIM	ACC1322	12000

```
select * from SampleTable;
```

110 %

Results Messages

	ID	Name
1	1	WAQAR
2	2	ANEEQ
3	3	USMAN

5. Answer the following questions: • What have you learned from the lab task? • What was the most challenging task and how did you overcome that challenge?

What have you learned from the lab task?

- I learned how to use DCL commands to control user access and permissions using GRANT and REVOKE.
- I also practiced using TCL commands like BEGIN TRANSACTION, COMMIT, ROLLBACK, and SAVEPOINT to manage data consistency during transactions.

What was the most challenging task and how did you overcome it?

- The most challenging task was handling transaction rollback when an error occurs midoperation.
- I overcame this by learning how to use TRY...CATCH blocks with SAVE TRANSACTION to safely handle partial rollbacks.