NATIONAL UNIVERSITY OF TECHNOLOGY, ISLAMABAD

DATABASE SYSTEMS LAB

QUIZ # 3 & 4

NUTECH ID: F24605008

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Department: Computer Science

Course: CS161

Session: Fall 24

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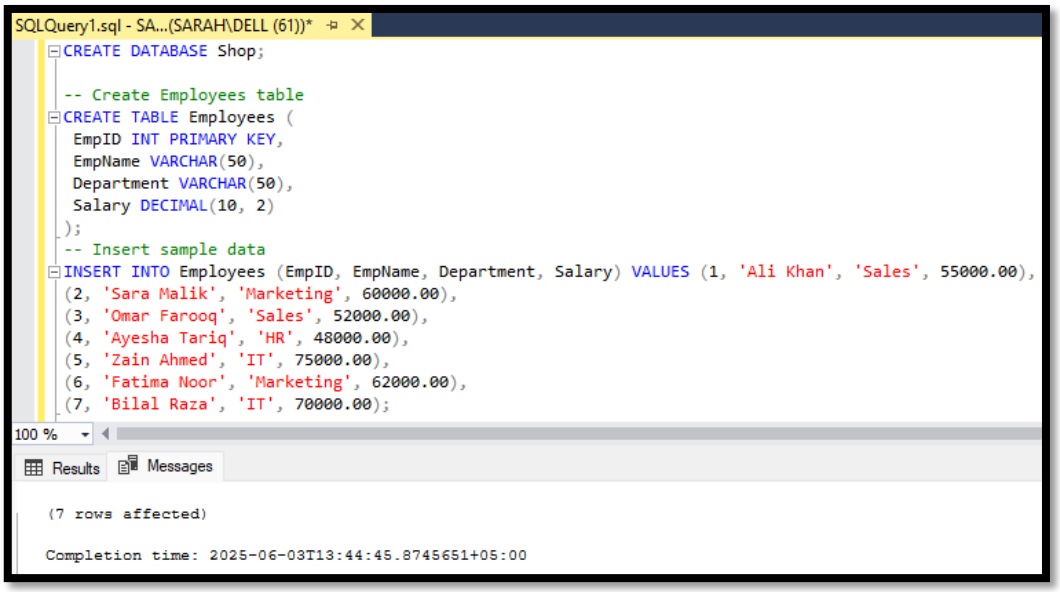
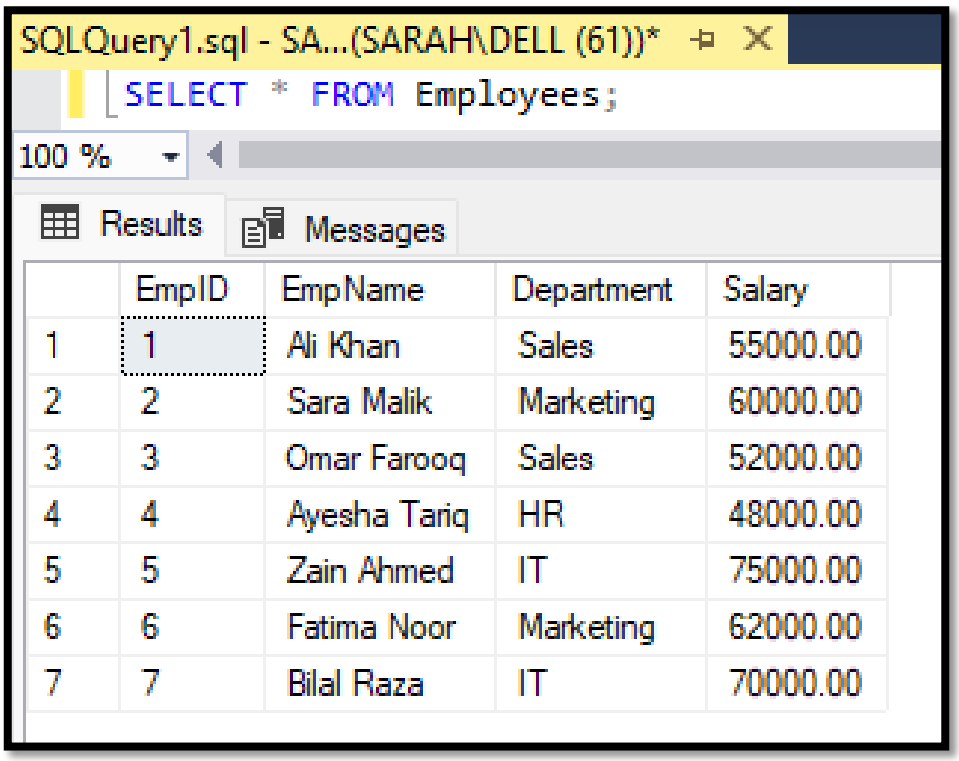
Quiz 3: Indexing and Simple Queries (10 marks)

A table Employees with columns: EmpID (PK), EmpName, Department, Salary

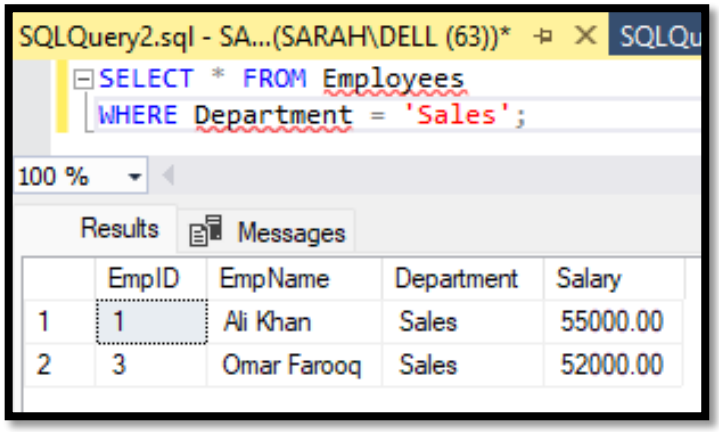
```
-- Create Employees table
CREATE TABLE Employees (
 EmpID INT PRIMARY KEY,
 EmpName VARCHAR(50),
 Department VARCHAR(50),
 Salary DECIMAL(10, 2)
);
-- Insert sample data
INSERT INTO Employees (EmpID, EmpName, Department, Salary) VALUES (1, 'Ali Khan', 'Sales', 55000.00),

(2, 'Sara Malik', 'Marketing', 60000.00),
(3, 'Omar Farooq', 'Sales', 52000.00),
(4, 'Ayesha Tariq', 'HR', 48000.00),
(5, 'Zain Ahmed', 'IT', 75000.00),
(6, 'Fatima Noor', 'Marketing', 62000.00),
(7, 'Bilal Raza', 'IT', 70000.00);
```



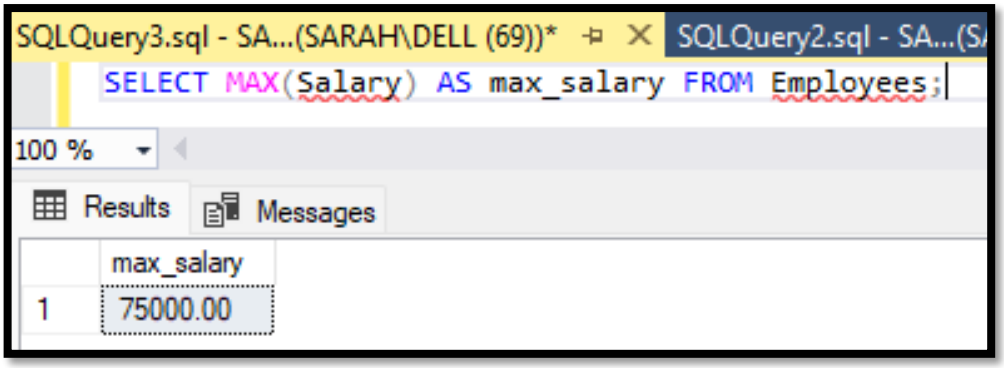


	EmpID	EmpName	Department	Salary
1	1	Ali Khan	Sales	55000.00
2	2	Sara Malik	Marketing	60000.00
3	3	Omar Farooq	Sales	52000.00
4	4	Ayesha Tariq	HR	48000.00
5	5	Zain Ahmed	IT	75000.00
6	6	Fatima Noor	Marketing	62000.00
7	7	Bilal Raza	IT	70000.00

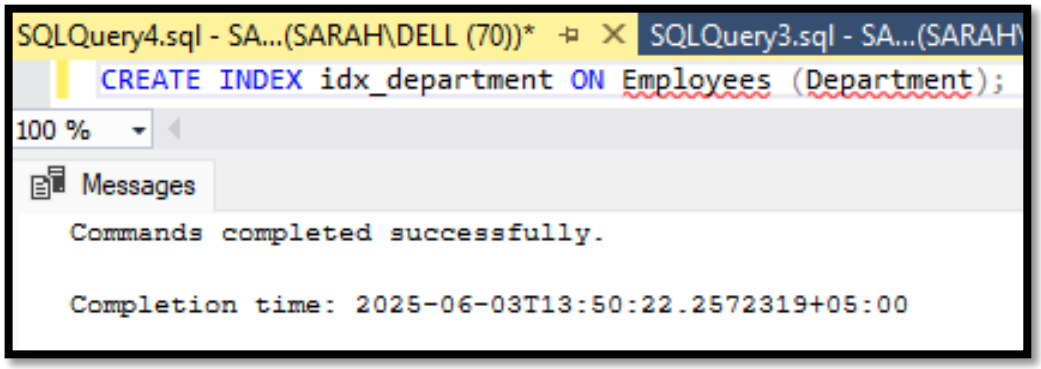
1. Write an SQL query to find all employees in the "Sales" department. (2 marks)



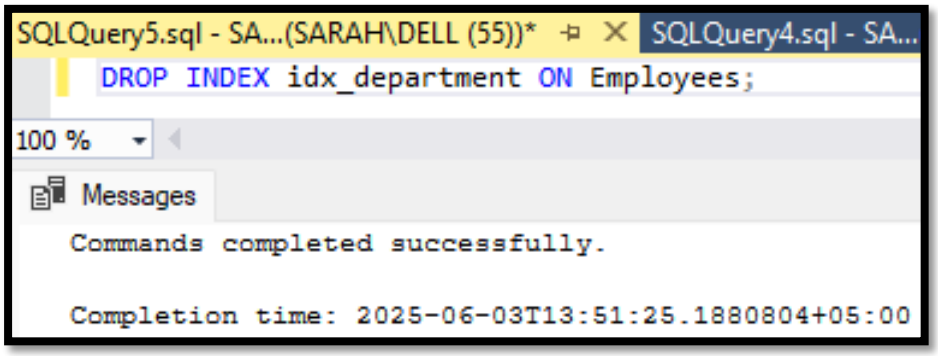
2. Write an SQL query to find the highest salary in the company. (2 marks)



3. Write the SQL statement to create a simple index named idx_department on the Department column. (3 marks)



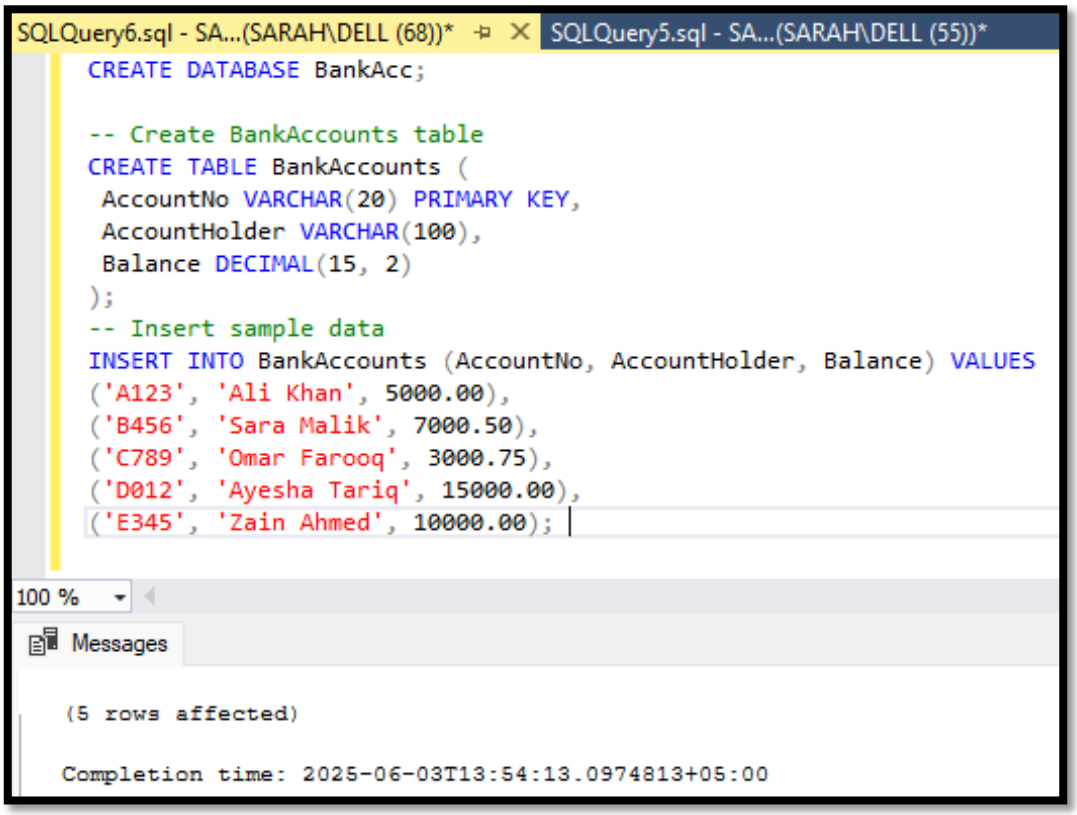
4. Write the SQL statement to drop the index named idx_department from the Employees table. (3 marks)

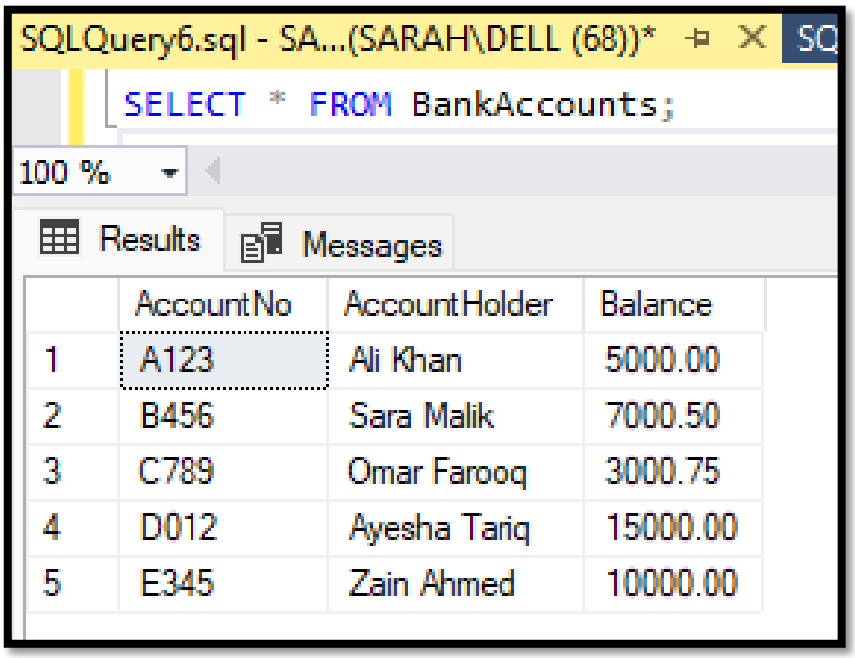


Quiz 4: Transactions, Backup and Recovery (10 marks)

A table BankAccounts with columns: AccountNo (PK), AccountHolder, Balance

```
-- Create BankAccounts table
CREATE TABLE BankAccounts (
 AccountNo VARCHAR(20) PRIMARY KEY,
 AccountHolder VARCHAR(100),
 Balance DECIMAL(15, 2)
);
-- Insert sample data
INSERT INTO BankAccounts (AccountNo, AccountHolder, Balance) VALUES
('A123', 'Ali Khan', 5000.00),
('B456', 'Sara Malik', 7000.50),
('C789', 'Omar Farooq', 3000.75),
('D012', 'Ayesha Tariq', 15000.00),
('E345', 'Zain Ahmed', 10000.00);
```





1. Write a SQL Server transaction to transfer 1000 units from account A123 to account B456. Ensure the transaction is atomic. (5 Marks)

SQLQuery7.sql - SA...(SARAH\DELL (65))* | SQLQuery6.sql - SA...

```
BEGIN TRANSACTION;

--withdraw from A123
UPDATE BankAccounts
SET Balance = Balance - 1000
WHERE AccountNo = 'A123';

--deposit in B456
UPDATE BankAccounts
SET Balance = Balance + 1000
WHERE AccountNo = 'B456';

COMMIT;
```

100 %

Messages

```
(1 row affected)

(1 row affected)

Completion time: 2025-06-03T14:00:04.3954366+05:00
```

SQLQuery8.sql - SA...(SARAH\DELL (78)) | SQ

```
SELECT * FROM BankAccounts;
```

100 %

Results | Messages

	AccountNo	AccountHolder	Balance
1	A123	Ali Khan	4000.00
2	B456	Sara Malik	8000.50
3	C789	Omar Farooq	3000.75
4	D012	Ayesha Tariq	15000.00
5	E345	Zain Ahmed	10000.00

2. Write the SQL command to create a full backup of the database named BankDB to the file path D:\Backups\BankDB.bak. (2.5 Marks)

SQLQuery8.sql - SA...(SARAH\DELL (78))* | SQLQuery7.sql - SA...(SARAH\DELL (65))* | SQLQuery6.sq

```
BACKUP DATABASE BankAcc
TO DISK = 'D:\Backups\BankDB.bak';
```

100 %

Messages

```
Processed 344 pages for database 'BankAcc', file 'BankAcc' on file 1.
Processed 2 pages for database 'BankAcc', file 'BankAcc_log' on file 1.
BACKUP DATABASE successfully processed 346 pages in 0.066 seconds (40.897 MB/sec).

Completion time: 2025-06-03T14:03:57.5876800+05:00
```

3. Write the SQL command to restore the database BankDB from the backup file D:\Backups\BankDB.bak. (2.5 Marks)