DBS PROJECT REPORT

PROJECT TITLE

Employee Management System

Submitted to:

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Submitted by:

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```sql
CREATE DATABASE EMS1
USE[EMS1]

                ---TABLES CREATION---
-- Table for storing department information
CREATE TABLE Departments1 (
    DepartmentID INT PRIMARY KEY,
    DepartmentName VARCHAR(50)
);
select*from Departments1
-- Table for storing employee information
CREATE TABLE Employees1 (
    EmployeeID INT PRIMARY KEY,
    FirstName VARCHAR(50),
    LastName VARCHAR(50),
    Email VARCHAR(100),
    PhoneNumber VARCHAR(20),
    HireDate DATE,
    DepartmentID INT,
    FOREIGN KEY (DepartmentID) REFERENCES Departments1(DepartmentID)
);

-- Table for storing employee salaries
CREATE TABLE Salaries1 (
    SalaryID INT PRIMARY KEY,
    EmployeeID INT,
    Salary DECIMAL(10, 2),
    EffectiveDate DATE,
    FOREIGN KEY (EmployeeID) REFERENCES Employees1(EmployeeID)
);

-- Table for storing employee addresses
CREATE TABLE Addresses1 (
    AddressID INT PRIMARY KEY,
    EmployeeID INT,
    AddressLine1 VARCHAR(100),
    AddressLine2 VARCHAR(100),
    City VARCHAR(50),
    State VARCHAR(50),
    ZipCode VARCHAR(20),
    FOREIGN KEY (EmployeeID) REFERENCES Employees1(EmployeeID)
);

select* from Addresses1;



-- Table for storing employee roles
CREATE TABLE Roles1 (
    RoleID INT PRIMARY KEY,
    RoleName VARCHAR(50)
);


Select* From Roles1;

-- Table for assigning roles to employees
CREATE TABLE EmployeeRoles1 (
    EmployeeID INT,
    RoleID INT,
    PRIMARY KEY (EmployeeID, RoleID),
    FOREIGN KEY (EmployeeID) REFERENCES Employees1(EmployeeID),
```

```
    FOREIGN KEY (RoleID) REFERENCES Roles1(RoleID)
);

SELECT* FROM EmployeeRoles1

USE [EMS1]

--- INSERTION---
-- Insert data into Departments table
INSERT INTO Departments1 (DepartmentID, DepartmentName)
VALUES
(1, 'Engineering'),
(2, 'Marketing'),
(3, 'Finance'),
(4,'IT');
SELECT* FROM Departments1

-- Insert data into Employees table
INSERT INTO Employees1 (EmployeeID, FirstName, LastName, Email, PhoneNumber,
HireDate, DepartmentID) VALUES
(1, 'Sadia', 'Sher', 'sadia.sher@gmail.com', '555-1234', '2022-01-01', 1),
(2, 'Sobia', 'Sher', 'sobia.sher@gmail.com', '555-5678', '2022-02-01', 2),
(3, 'Rimsha', 'Aamir', 'rimsha.aamir@gmail.com', '555-9012', '2022-03-01', 1),
(4, 'Sania', 'Sher', 'sania.sher@gmail.com', '555-3456', '2022-04-01', 2),
(5, 'Ali', 'Ahmad', 'ali.ahmad@gmail.com', '555-7890', '2022-05-01', 1),
(6, 'Tayyaba', 'Tariq', 'tayyaba.tariq@gmail.com', '555-7891', '2022-06-01', 3),
(7, 'Sadia', 'Anjum', 'sadia.anjum@gmail.com', '555-3457', '2022-07-01', 4);
SELECT* FROM Employees1
-- Insert data into Salaries table
INSERT INTO Salaries1 (SalaryID, EmployeeID, Salary, EffectiveDate)
VALUES
(1, 1, 60000.00, '2022-01-01'),
(2, 2, 55000.00, '2022-02-01'),
(3, 3, 65000.00, '2022-03-01'),
(4, 4, 60000.00, '2022-04-01'),
(5, 5, 70000.00, '2022-05-01'),
(6, 6, 45000.00, '2022-06-01'),
(7, 7, 50000.00, '2022-07-01');
SELECT* FROM Salaries1

-- Insert data into Addresses table
INSERT INTO Addresses1 (AddressID, EmployeeID, EAddress, City, State, ZipCode)
VALUES
(1, 1, 'Johar Town', 'Lahore', 'CA', '12345'),
(2, 2, 'Baheria Town', 'Kasur', 'NY', '67890'),
(3, 3, 'Baheria Town', 'Multan', 'TX', '23456'),
(4, 4, 'M.A.O', 'Karachi', 'FL', '78901'),
(5, 5, 'Central Park', 'Faisalabad', 'WA', '34567'),
(6, 6, 'Hamza Town', 'Bahawalpur', 'AB', '34657'),
(7, 7, 'Walton', 'Faisalabad', 'WA', '34587');
SELECT* FROM Addresses1

-- Insert data into Roles table
INSERT INTO Roles1 (RoleID, RoleName)
VALUES
(1, 'Manager'),
(2, 'Developer'),
(3, 'Marketer');
SELECT* FROM Roles1

-- Insert data into EmployeeRoles table
INSERT INTO EmployeeRoles1 (EmployeeID, RoleID)
```

```
VALUES
(1, 1),(2, 2),(3, 2),
(4, 3),(5, 2),(6,3),
(7,2);
SELECT* FROM EmployeeRoles1


USE [EMS1]

---QUERIES---
--1-TO REMOVE ALL THE DATA FROM EMPLOYEE TABLE
TRUNCATE TABLE Employees1;

--2- TO DELETE TABLE FROM DATABASE
DROP TABLE Employees1;

--3- Delete SPECIFIC Employee:
DELETE FROM Employees1 WHERE EmployeeID = 6;

--4-Update Employee
UPDATE Employees1
SET PhoneNumber = '555-5678', HireDate = '2024-02-01',
DepartmentID = 2
WHERE EmployeeID = 1;

Select*From Employees1
where EmployeeID=1;

--5-Distinct Department Names
SELECT DISTINCT FirstName
FROM Employees1;

--6-- Group By QUERY and give count of employees
SELECT FirstName AS EmployeeName,
COUNT(*) AS EmployeeCount
FROM Employees1
GROUP BY FirstName;

-----JOIN QUERIES---

--7-Retrieve Employee with Department and Salary
SELECT e.*, d.DepartmentName, s.Salary
FROM Employees1 e
LEFT JOIN Departments1 d ON e.DepartmentID = d.DepartmentID
LEFT JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID;

--8 Total Number of Employees in Each Department
---Count Query(Aggregate Function)
SELECT d.DepartmentName, COUNT(e.EmployeeID) AS EmployeeCount
FROM Departments1 d
LEFT JOIN Employees1 e ON d.DepartmentID = e.DepartmentID
GROUP BY d.DepartmentName;

--9 Average Salary of Employees(Aggregate Function)
SELECT AVG(Salary) AS AverageSalary
FROM Salaries1;

--10 Maximum Salary Among Employees (Aggregate Function)
SELECT MAX(Salary) AS MaxSalary
FROM Salaries1;

--11 Maximum Salary Among Employees with employee name (Aggregate Function)
```

```sql
SELECT e.FirstName, e.LastName, s.Salary AS MaxSalary
FROM Employees1 e
JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID
WHERE s.Salary = (SELECT MAX(Salary) FROM Salaries1);

--12 Minimum Salary Among Employees(Aggregate Function)
SELECT MIN(Salary) AS MinSalary
FROM Salaries1;

--13 Total Salary Expenditure by Department (Aggregate Function)
SELECT d.DepartmentName, SUM(s.Salary) AS TotalSalaryExpenditure
FROM Departments1 d
LEFT JOIN Employees1 e ON d.DepartmentID = e.DepartmentID
LEFT JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID
GROUP BY d.DepartmentName;

--14 Count of Employees Holding Each Role (Aggregate Function)
SELECT r.RoleName, COUNT(er.EmployeeID) AS EmployeeCount
FROM Roles1 r
Left JOIN EmployeeRoles1 er ON r.RoleID = er.RoleID
GROUP BY r.RoleName;

--15 To retrieve the employee names grouped by roles (Aggregate Function)
SELECT r.RoleName, e.FirstName++' '++e.LastName AS EmployeeName
FROM EmployeeRoles1 er
JOIN Employees1 e ON er.EmployeeID = e.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID
ORDER BY r.RoleName, e.LastName, e.FirstName;

--16 Retrieve employee details along with their department names
-- Concatination Funtion
SELECT e.EmployeeID, e.FirstName++' '++e.LastName AS Name, e.Email, d.DepartmentName
FROM Employees1 e
INNER JOIN Departments1 d ON e.DepartmentID = d.DepartmentID;

--17 Retrieve employee details along with their salary information.
SELECT e.EmployeeID, e.FirstName, e.LastName, s.Salary, s.EffectiveDate
FROM Employees1 e
INNER JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID;


--18 Retrieve employee details along with their role names
SELECT e.EmployeeID, e.FirstName++' '++e.LastName AS Name, r.RoleName
FROM Employees1 e
INNER JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
INNER JOIN Roles1 r ON er.RoleID = r.RoleID;


----SUB QUERIES----

--19 Retrieve employees with salaries greater than the average salary.
SELECT EmployeeID,FirstName++' '++LastName AS Name,DepartmentID
FROM Employees1
WHERE EmployeeID IN (
    SELECT EmployeeID
    FROM Salaries1
    WHERE Salary > (SELECT AVG(Salary) FROM Salaries1)
);

--20  Retrieve employees who are assigned a specific role
SELECT *
FROM Employees1
```

```sql
WHERE EmployeeID IN (
    SELECT EmployeeID
    FROM EmployeeRoles1
    WHERE RoleID = (SELECT RoleID FROM Roles1 WHERE RoleName = 'Manager')
);


--21 Retrieve departments with more than 5 employees.
SELECT DepartmentID, DepartmentName
FROM Departments1
WHERE DepartmentID IN (
    SELECT DepartmentID
    FROM Employees1
    GROUP BY DepartmentID
    HAVING COUNT(*) >= 2
);

--22 Retrieve Employees with the Highest Salary
SELECT *
FROM Employees1
WHERE EmployeeID IN (
    SELECT EmployeeID
    FROM Salaries1
    WHERE Salary = (
        SELECT MAX(Salary)
        FROM Salaries1
    )
);

--23 Retrieve Employees in a Specific Department
SELECT *
FROM Employees1
WHERE DepartmentID = (
    SELECT DepartmentID
    FROM Departments1
    WHERE DepartmentName = 'Engineering'
);

--24 Retrieve Employees without Addresses
SELECT *
FROM Employees1
WHERE EmployeeID NOT IN (
    SELECT EmployeeID
    FROM Addresses1
);



--25 Top 2 EMPLOYEE HAVE HIGHEST SALARY
SELECT TOP 2 *
FROM Salaries1
ORDER BY Salary DESC;

--26 Rename Column Name
EXEC sp_rename 'Addresses1.Address', 'EAddress', 'COLUMN';
Select* From Addresses1;

--27 Delete Column
ALTER TABLE Addresses1
DROP COLUMN AddressLine2;
Select* From Addresses1;
```

```sql
USE[EMS1]

---VIEWS
--1 View to Display Employee Details with Department Names
CREATE VIEW EmployeeDetailsWithDepartment AS
SELECT e.EmployeeID, e.FirstName, e.LastName, e.Email, e.PhoneNumber, e.HireDate,
       d.DepartmentName
FROM Employees1 e
JOIN Departments1 d ON e.DepartmentID = d.DepartmentID;

SELECT* FROM EmployeeDetailsWithDepartment

--2 View to Display Employee Details with Role Names
CREATE VIEW EmployeeDetailsWithRoles AS
SELECT e.EmployeeID, e.FirstName, e.LastName, e.Email, e.PhoneNumber, e.HireDate,
       r.RoleName
FROM Employees1 e
JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID;
SELECT* FROM EmployeeDetailsWithRoles

--3 View to Display Employees with Salaries
CREATE VIEW EmployeeSalaries AS
SELECT e.EmployeeID, e.FirstName, e.LastName, s.Salary, s.EffectiveDate
FROM Employees1 e
JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID;
SELECT* FROM EmployeeSalaries

--4 View to Display Employees with Department and Role Names
CREATE VIEW EmployeeDetailsWithDepartmentAndRoles AS
SELECT e.EmployeeID, e.FirstName, e.LastName, d.DepartmentName, r.RoleName
FROM Employees1 e
JOIN Departments1 d ON e.DepartmentID = d.DepartmentID
JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID;
SELECT*FROM EmployeeDetailsWithDepartmentAndRoles

--5 View to Display Employees with Salaries and Roles
CREATE VIEW EmployeeDetailsWithSalariesAndRoles AS
SELECT e.EmployeeID, e.FirstName, e.LastName, s.Salary, r.RoleName
FROM Employees1 e
JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID
JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID;
SELECT*FROM EmployeeDetailsWithSalariesAndRoles

--6 View to Display Employees with Department and Address Information
CREATE VIEW EmployeeDetailsWithDepartmentAndAddress AS
SELECT e.EmployeeID, e.FirstName, e.LastName, d.DepartmentName,
       a.EAddress, a.City, a.State, a.ZipCode
FROM Employees1 e
JOIN Departments1 d ON e.DepartmentID = d.DepartmentID
JOIN Addresses1 a ON e.EmployeeID = a.EmployeeID;
SELECT*FROM EmployeeDetailsWithDepartmentAndAddress


-----TRIGGERS---

--1 Insert a default role for each newly inserted employee
CREATE TRIGGER InsertDefaultRole
ON Employees1
AFTER INSERT
```

```
AS
BEGIN
    INSERT INTO EmployeeRoles1 (EmployeeID, RoleID)
    SELECT inserted.EmployeeID,
       (SELECT RoleID FROM Roles1 WHERE RoleName = 'Default') AS RoleID
    FROM inserted
    WHERE NOT EXISTS (
        SELECT 1 FROM EmployeeRoles1 er
        WHERE er.EmployeeID = inserted.EmployeeID
    );
END;

INSERT INTO Employees1 (EmployeeID, FirstName, LastName, Email, PhoneNumber,
HireDate, DepartmentID) VALUES
(8, 'Areeba', 'Anjum', 'areeba.anjum@gmail.com', '555-3057', '2022-08-01', 3);

SELECT* FROM EmployeeRoles1


--2 Delete employee info
 CREATE  TRIGGER Employees1_Delete
ON Employees1
AFTER DELETE
AS
BEGIN
    INSERT INTO DeleteEmpLog (EmployeeID, FirstName,DeletionDate)
    SELECT deleted.EmployeeID,deleted.FirstName, GETDATE()
    FROM deleted;
END;

-- Trigger to log salary changes
CREATE TRIGGER LogSalaryChanges2
ON Salaries1
AFTER UPDATE
AS
BEGIN
    INSERT INTO LogSalaryChanges (SalaryID,employeeID, OldSalary, NewSalary,
ChangeDate)
    SELECT d.SalaryID,i.EmployeeID, d.Salary, i.Salary, GETDATE()
    FROM inserted i
    JOIN deleted d ON i.SalaryID = d.SalaryID;
END;
update Salaries1
set Salary=35000.00
where EmployeeID=1
```

Queries and Outputs:

```
-- Insert data into Departments table
INSERT INTO Departments1 (DepartmentID, DepartmentName)
VALUES
(1, 'Engineering'),
(2, 'Marketing'),
(3, 'Finance'),
(4,'IT');
SELECT* FROM Departments1
```

Results | Messages

	DepartmentID	DepartmentName
1	1	Engineering
2	2	Marketing
3	3	Finance
4	4	IT

```
-- Insert data into Employees table
INSERT INTO Employees1 (EmployeeID, FirstName, LastName, Email, PhoneNumber,
HireDate, DepartmentID) VALUES
(1, 'Sadia', 'Sher', 'sadia.sher@gmail.com', '555-1234', '2022-01-01', 1),
(2, 'Sobia', 'Sher', 'sobia.sher@gmail.com', '555-5678', '2022-02-01', 2),
(3, 'Rimsha', 'Aamir', 'rimsha.aamir@gmail.com', '555-9012', '2022-03-01', 1),
(4, 'Sania', 'Sher', 'sania.sher@gmail.com', '555-3456', '2022-04-01', 2),
(5, 'Ali', 'Ahmad', 'ali.ahmad@gmail.com', '555-7890', '2022-05-01', 1),
(6, 'Tayyaba', 'Tariq', 'tayyaba.tariq@gmail.com', '555-7891', '2022-06-01', 3),
(7, 'Sadia', 'Anjum', 'sadia.anjum@gmail.com', '555-3457', '2022-07-01', 4);
SELECT* FROM Employees1
```

Results | Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID
1	1	Sadia	Sher	sadia.sher@gmail.com	555-1234	2022-01-01	1
2	2	Sobia	Sher	sobia.sher@gmail.com	555-5678	2022-02-01	2
3	3	Rimsha	Aamir	rimsha.aamir@gmail.com	555-9012	2022-03-01	1
4	4	Sania	Sher	sania.sher@gmail.com	555-3456	2022-04-01	2
5	5	Ali	Ahmad	ali.ahmad@gmail.com	555-7890	2022-05-01	1
6	6	Tayyaba	Tariq	tayyaba.tariq@gmail.com	555-7891	2022-06-01	3
7	7	Sadia	Anjum	sadia.anjum@gmail.com	555-3457	2022-07-01	4

```
-- Insert data into Salaries table
INSERT INTO Salaries1 (SalaryID, EmployeeID, Salary, EffectiveDate)
VALUES
(1, 1, 60000.00, '2022-01-01'),
(2, 2, 55000.00, '2022-02-01'),
(3, 3, 65000.00, '2022-03-01'),
(4, 4, 60000.00, '2022-04-01'),
(5, 5, 70000.00, '2022-05-01'),
(6, 6, 45000.00, '2022-06-01'),
(7, 7, 50000.00, '2022-07-01');
SELECT* FROM Salaries1
```

Results | Messages

	SalaryID	EmployeeID	Salary	EffectiveDate
1	1	1	60000.00	2022-01-01
2	2	2	55000.00	2022-02-01
3	3	3	65000.00	2022-03-01
4	4	4	60000.00	2022-04-01
5	5	5	70000.00	2022-05-01
6	6	6	45000.00	2022-06-01
7	7	7	50000.00	2022-07-01

```
-- Insert data into Addresses table
INSERT INTO Addresses1 (AddressID, EmployeeID, EAddress, City, State, ZipCode)
VALUES
(1, 1, 'Johar Town', 'Lahore', 'CA', '12345'),
(2, 2, 'Baheria Town', 'Kasur', 'NY', '67890'),
(3, 3, 'Baheria Town', 'Multan', 'TX', '23456'),
(4, 4, 'M.A.O', 'Karachi', 'FL', '78901'),
(5, 5, 'Central Park', 'Faisalabad', 'WA', '34567'),
(6, 6, 'Hamza Town', 'Bahawalpur', 'AB', '34657'),
(7, 7, 'Walton', 'Faisalabad', 'WA', '34587');
SELECT* FROM Addresses1
```

Results | Messages

	AddressID	EmployeeID	EAddress	City	State	ZipCode
1	1	1	Johar Town	Lahore	CA	12345
2	2	2	Baheria Town	Kasur	NY	67890
3	3	3	Baheria Town	Multan	TX	23456
4	4	4	M.A.O	Karachi	FL	78901
5	5	5	Central Park	Faisalabad	WA	34567
6	6	6	Hamza Town	Bahawalpur	AB	34657
7	7	7	Walton	Faisalabad	WA	34587

```sql
-- Insert data into Roles table
INSERT INTO Roles1 (RoleID, RoleName)
VALUES
(1, 'Manager'),
(2, 'Developer'),
(3, 'Marketer');
SELECT* FROM Roles1
```

Results Messages

	RoleID	RoleName
1	1	Manager
2	2	Developer
3	3	Marketer

```sql
-- Insert data into EmployeeRoles table
INSERT INTO EmployeeRoles1 (EmployeeID, RoleID)
VALUES
(1, 1),(2, 2),(3, 2),
(4, 3),(5, 2),(6,3),
(7,2);
SELECT* FROM EmployeeRoles1
```

Results Messages

	EmployeeID	RoleID
1	1	1
2	2	2
3	3	2
4	4	3
5	5	2
6	6	3
7	7	2

```sql
--1-TO REMOVE ALL THE DATA FROM EMPLOYEE TABLE
TRUNCATE TABLE Employees1;

--2- TO DELETE TABLE FROM DATABASE
DROP TABLE Employees1;

--3- Delete SPECIFIC Employee:
DELETE FROM Employees1 WHERE EmployeeID = 6;



--4-Update Employee
UPDATE Employees1
SET PhoneNumber = '555-5678', HireDate = '2024-02-01',
DepartmentID = 2
WHERE EmployeeID = 1;

Select*From Employees1
where EmployeeID=1;
```

Results | Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID
1	1	Sadia	Sher	sadia.sher@gmail.com	555-5678	2024-02-01	2

```sql
--5-Distinct Department Names
SELECT DISTINCT FirstName
FROM Employees1;
```

Results | Messages

	FirstName
1	Ali
2	Rimsha
3	Sadia
4	Sania
5	Sobia
6	Tayyaba

```sql
--6-- Group By QUERY and give count of employees
SELECT FirstName AS EmployeeName,
COUNT(*) AS EmployeeCount
FROM Employees1
GROUP BY FirstName ;
```

Results Messages

	EmployeeName	EmployeeCount
1	Ali	1
2	Rimsha	1
3	Sadia	2
4	Sania	1
5	Sobia	1
6	Tayyaba	1

```sql
--7-Retrieve Employee with Department and Salary
SELECT e.*, d.DepartmentName, s.Salary
FROM Employees1 e
LEFT JOIN Departments1 d ON e.DepartmentID = d.DepartmentID
LEFT JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID;
```

Results Messages

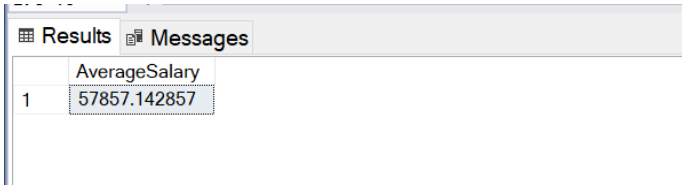
	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID	DepartmentName	Salary
1	1	Sadia	Sher	sadia.sher@gmail.com	555-5678	2024-02-01	2	Marketing	60000.00
2	2	Sobia	Sher	sobia.sher@gmail.com	555-5678	2022-02-01	2	Marketing	55000.00
3	3	Rimsha	Aamir	rimsha.aamir@gmail.com	555-9012	2022-03-01	1	Engineering	65000.00
4	4	Sania	Sher	sania.sher@gmail.com	555-3456	2022-04-01	2	Marketing	60000.00
5	5	Ali	Ahmad	ali.ahmad@gmail.com	555-7890	2022-05-01	1	Engineering	70000.00
6	6	Tayyaba	Tariq	tayyaba.tariq@gmail.com	555-7891	2022-06-01	3	Finance	45000.00
7	7	Sadia	Anjum	sadia.anjum@gmail.com	555-3457	2022-07-01	4	IT	50000.00

```sql
--8 Total Number of Employees in Each Department
---Count Query(Aggregate Function)
SELECT d.DepartmentName, COUNT(e.EmployeeID) AS EmployeeCount
FROM Departments1 d
LEFT JOIN Employees1 e ON d.DepartmentID = e.DepartmentID
GROUP BY d.DepartmentName;
```

Results Messages

	DepartmentName	EmployeeCount
1	Engineering	2
2	Finance	1
3	IT	1
4	Marketing	3

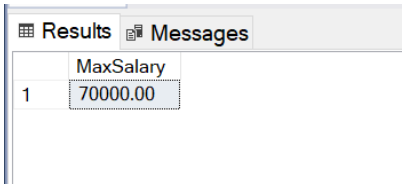
```sql
--9 Average Salary of Employees(Aggregate Function)
SELECT AVG(Salary) AS AverageSalary
FROM Salaries1;
```



Results Messages

	AverageSalary
1	57857.142857

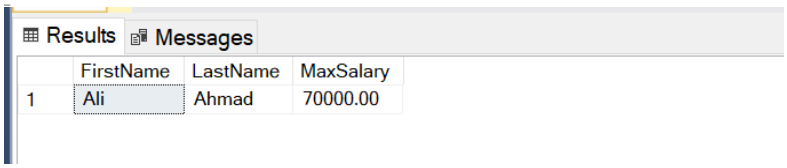
```sql
--10 Maximum Salary Among Employees (Aggregate Function)
SELECT MAX(Salary) AS MaxSalary
FROM Salaries1;
```



Results Messages

	MaxSalary
1	70000.00

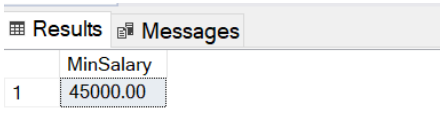
```sql
--11 Maximum Salary Among Employees with employee name (Aggregate
SELECT e.FirstName, e.LastName, s.Salary AS MaxSalary
FROM Employees1 e
JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID
WHERE s.Salary = (SELECT MAX(Salary) FROM Salaries1);
```



Results Messages

	FirstName	LastName	MaxSalary
1	Ali	Ahmad	70000.00

```sql
--12 Minimum Salary Among Employees(Aggregate Function)
SELECT MIN(Salary) AS MinSalary
FROM Salaries1;
```



Results Messages

	MinSalary
1	45000.00

```sql
--13 Total Salary Expenditure by Department (Aggregate Function)
SELECT d.DepartmentName, SUM(s.Salary) AS TotalSalaryExpenditure
FROM Departments1 d
LEFT JOIN Employees1 e ON d.DepartmentID = e.DepartmentID
LEFT JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID
GROUP BY d.DepartmentName;
```

Results | Messages

	DepartmentName	TotalSalaryExpenditure
1	Engineering	135000.00
2	Finance	45000.00
3	IT	50000.00
4	Marketing	175000.00

```sql
--14 Count of Employees Holding Each Role (Aggregate Function)
SELECT r.RoleName, COUNT(er.EmployeeID) AS EmployeeCount
FROM Roles1 r
Left JOIN EmployeeRoles1 er ON r.RoleID = er.RoleID
GROUP BY r.RoleName;
```

Results | Messages

	RoleName	EmployeeCount
1	Developer	4
2	Manager	1
3	Marketer	2

```sql
--15 To retrieve the employee names grouped by roles (Aggregate Function)
SELECT r.RoleName, e.FirstName++' '++e.LastName AS EmployeeName
FROM EmployeeRoles1 er
JOIN Employees1 e ON er.EmployeeID = e.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID
ORDER BY r.RoleName, e.LastName, e.FirstName;
```

Results | Messages

	RoleName	EmployeeName
1	Developer	Rimsha Aamir
2	Developer	Ali Ahmad
3	Developer	Sadia Anjum
4	Developer	Sobia Sher
5	Manager	Sadia Sher
6	Marketer	Sania Sher
7	Marketer	Tayyaba Tariq

```sql
--16 Retrieve employee details along with their department names
 -- Concatination Funtion
SELECT e.EmployeeID, e.FirstName++' '++e.LastName AS Name, e.Email, d.DepartmentName
 FROM Employees1 e
 INNER JOIN Departments1 d ON e.DepartmentID = d.DepartmentID;
```

Results | Messages

	EmployeeID	Name	Email	DepartmentName
1	1	Sadia Sher	sadia.sher@gmail.com	Marketing
2	2	Sobia Sher	sobia.sher@gmail.com	Marketing
3	3	Rimsha Aamir	rimsha.aamir@gmail.com	Engineering
4	4	Sania Sher	sania.sher@gmail.com	Marketing
5	5	Ali Ahmad	ali.ahmad@gmail.com	Engineering
6	6	Tayyaba Tariq	tayyaba.tariq@gmail.com	Finance
7	7	Sadia Anjum	sadia.anjum@gmail.com	IT

```sql
 --17 Retrieve employee details along with their salary information.
SELECT e.EmployeeID, e.FirstName, e.LastName, s.Salary, s.EffectiveDate
 FROM Employees1 e
 INNER JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID;
```

Results | Messages

	EmployeeID	FirstName	LastName	Salary	EffectiveDate
1	1	Sadia	Sher	60000.00	2022-01-01
2	2	Sobia	Sher	55000.00	2022-02-01
3	3	Rimsha	Aamir	65000.00	2022-03-01
4	4	Sania	Sher	60000.00	2022-04-01
5	5	Ali	Ahmad	70000.00	2022-05-01
6	6	Tayyaba	Tariq	45000.00	2022-06-01
7	7	Sadia	Anjum	50000.00	2022-07-01

```sql
 --18 Retrieve employee details along with their role names
SELECT e.EmployeeID, e.FirstName++' '++e.LastName AS Name, r.RoleName
 FROM Employees1 e
 INNER JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
 INNER JOIN Roles1 r ON er.RoleID = r.RoleID;
```

Results | Messages

	EmployeeID	Name	RoleName
1	1	Sadia Sher	Manager
2	2	Sobia Sher	Developer
3	3	Rimsha Aamir	Developer
4	4	Sania Sher	Marketer
5	5	Ali Ahmad	Developer
6	6	Tayyaba Tariq	Marketer
7	7	Sadia Anjum	Developer

```sql
--19 Retrieve employees with salaries greater than the average salary.
SELECT EmployeeID,FirstName++' '++LastName AS Name,DepartmentID
FROM Employees1
WHERE EmployeeID IN (
    SELECT EmployeeID
    FROM Salaries1
    WHERE Salary > (SELECT AVG(Salary) FROM Salaries1)
);
```

Results | Messages

	EmployeeID	Name	DepartmentID
1	1	Sadia Sher	2
2	3	Rimsha Aamir	1
3	4	Sania Sher	2
4	5	Ali Ahmad	1

```sql
--20  Retrieve employees who are assigned a specific role
SELECT *
FROM Employees1
WHERE EmployeeID IN (
    SELECT EmployeeID
    FROM EmployeeRoles1
    WHERE RoleID = (SELECT RoleID FROM Roles1 WHERE RoleName = 'Manager')
);
```

Results | Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID
1	1	Sadia	Sher	sadia.sher@gmail.com	555-5678	2024-02-01	2

```sql
--21 Retrieve departments with more than 5 employees.
SELECT DepartmentID, DepartmentName
FROM Departments1
WHERE DepartmentID IN (
    SELECT DepartmentID
    FROM Employees1
    GROUP BY DepartmentID
    HAVING COUNT(*) >= 2
);
```

Results | Messages

	DepartmentID	DepartmentName
1	1	Engineering
2	2	Marketing

```sql
--22 Retrieve Employees with the Highest Salary
SELECT *
FROM Employees1
WHERE EmployeeID IN (
    SELECT EmployeeID
    FROM Salaries1
    WHERE Salary = (
        SELECT MAX(Salary)
        FROM Salaries1
    )
);
```

Results Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID
1	5	Ali	Ahmad	ali.ahmad@gmail.com	555-7890	2022-05-01	1

```sql
--23 Retrieve Employees in a Specific Department
SELECT *
FROM Employees1
WHERE DepartmentID = (
    SELECT DepartmentID
    FROM Departments1
    WHERE DepartmentName = 'Engineering'
);
```

Results Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID
1	3	Rimsha	Aamir	rimsha.aamir@gmail.com	555-9012	2022-03-01	1
2	5	Ali	Ahmad	ali.ahmad@gmail.com	555-7890	2022-05-01	1

```sql
--24 Retrieve Employees without Addresses
SELECT *
FROM Employees1
WHERE EmployeeID NOT IN (
    SELECT EmployeeID
    FROM Addresses1
);
```

Results | Messages

EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentID

```sql
--25 Top 2 EMPLOYEE HAVE HIGHEST SALARY
SELECT TOP 2 *
FROM Salaries1
ORDER BY Salary DESC;
```

Results | Messages

	SalaryID	EmployeeID	Salary	EffectiveDate
1	5	5	70000.00	2022-05-01
2	3	3	65000.00	2022-03-01

```sql
--26 Rename Column Name
EXEC sp_rename 'Addresses1.Address', 'EAddress', 'COLUMN';
Select* From Addresses1;

--27 Delete Column
ALTER TABLE Addresses1
DROP COLUMN AddressLine2;
Select* From Addresses1;
```

Views:

```
--1 View to Display Employee Details with Department Names
CREATE VIEW EmployeeDetailsWithDepartment AS
SELECT e.EmployeeID, e.FirstName, e.LastName, e.Email, e.PhoneNumber, e.HireDate,
       d.DepartmentName
FROM Employees1 e
JOIN Departments1 d ON e.DepartmentID = d.DepartmentID;

SELECT* FROM EmployeeDetailsWithDepartment
```

Results | Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	DepartmentName
1	1	Sadia	Sher	sadia.sher@gmail.com	555-5678	2024-02-01	Marketing
2	2	Sobia	Sher	sobia.sher@gmail.com	555-5678	2022-02-01	Marketing
3	3	Rimsha	Aamir	rimsha.aamir@gmail.com	555-9012	2022-03-01	Engineering
4	4	Sania	Sher	sania.sher@gmail.com	555-3456	2022-04-01	Marketing
5	5	Ali	Ahmad	ali.ahmad@gmail.com	555-7890	2022-05-01	Engineering
6	6	Tayyaba	Tariq	tayyaba.tariq@gmail.com	555-7891	2022-06-01	Finance
7	7	Sadia	Anjum	sadia.anjum@gmail.com	555-3457	2022-07-01	IT

```
--2 View to Display Employee Details with Role Names
CREATE VIEW EmployeeDetailsWithRoles AS
SELECT e.EmployeeID, e.FirstName, e.LastName, e.Email, e.PhoneNumber, e.HireDate,
       r.RoleName
FROM Employees1 e
JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID;
SELECT* FROM EmployeeDetailsWithRoles
```

Results | Messages

	EmployeeID	FirstName	LastName	Email	PhoneNumber	HireDate	RoleName
1	1	Sadia	Sher	sadia.sher@gmail.com	555-5678	2024-02-01	Manager
2	2	Sobia	Sher	sobia.sher@gmail.com	555-5678	2022-02-01	Developer
3	3	Rimsha	Aamir	rimsha.aamir@gmail.com	555-9012	2022-03-01	Developer
4	4	Sania	Sher	sania.sher@gmail.com	555-3456	2022-04-01	Marketer
5	5	Ali	Ahmad	ali.ahmad@gmail.com	555-7890	2022-05-01	Developer
6	6	Tayyaba	Tariq	tayyaba.tariq@gmail.com	555-7891	2022-06-01	Marketer
7	7	Sadia	Anjum	sadia.anjum@gmail.com	555-3457	2022-07-01	Developer

```
--3 View to Display Employees with Salaries
CREATE VIEW EmployeeSalaries AS
SELECT e.EmployeeID, e.FirstName, e.LastName, s.Salary, s.EffectiveDate
FROM Employees1 e
JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID;
SELECT* FROM EmployeeSalaries
```

Results | Messages

	EmployeeID	FirstName	LastName	Salary	EffectiveDate
1	1	Sadia	Sher	60000.00	2022-01-01
2	2	Sobia	Sher	55000.00	2022-02-01
3	3	Rimsha	Aamir	65000.00	2022-03-01
4	4	Sania	Sher	60000.00	2022-04-01
5	5	Ali	Ahmad	70000.00	2022-05-01
6	6	Tayyaba	Tariq	45000.00	2022-06-01
7	7	Sadia	Anjum	50000.00	2022-07-01

```sql
--4 View to Display Employees with Department and Role Names
CREATE VIEW EmployeeDetailsWithDepartmentAndRoles AS
SELECT e.EmployeeID, e.FirstName, e.LastName, d.DepartmentName, r.RoleName
FROM Employees1 e
JOIN Departments1 d ON e.DepartmentID = d.DepartmentID
JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID;
SELECT*FROM EmployeeDetailsWithDepartmentAndRoles
```

Results | Messages

	EmployeeID	FirstName	LastName	DepartmentName	RoleName
1	1	Sadia	Sher	Marketing	Manager
2	2	Sobia	Sher	Marketing	Developer
3	3	Rimsha	Aamir	Engineering	Developer
4	4	Sania	Sher	Marketing	Marketer
5	5	Ali	Ahmad	Engineering	Developer
6	6	Tayyaba	Tariq	Finance	Marketer
7	7	Sadia	Anjum	IT	Developer

```sql
--5 View to Display Employees with Salaries and Roles
CREATE VIEW EmployeeDetailsWithSalariesAndRoles AS
SELECT e.EmployeeID, e.FirstName, e.LastName, s.Salary, r.RoleName
FROM Employees1 e
JOIN Salaries1 s ON e.EmployeeID = s.EmployeeID
JOIN EmployeeRoles1 er ON e.EmployeeID = er.EmployeeID
JOIN Roles1 r ON er.RoleID = r.RoleID;
SELECT*FROM EmployeeDetailsWithSalariesAndRoles
```

Results | Messages

	EmployeeID	FirstName	LastName	Salary	RoleName
1	1	Sadia	Sher	60000.00	Manager
2	2	Sobia	Sher	55000.00	Developer
3	3	Rimsha	Aamir	65000.00	Developer
4	4	Sania	Sher	60000.00	Marketer
5	5	Ali	Ahmad	70000.00	Developer
6	6	Tayyaba	Tariq	45000.00	Marketer
7	7	Sadia	Anjum	50000.00	Developer

```sql
--6 View to Display Employees with Department and Address Information
CREATE VIEW EmployeeDetailsWithDepartmentAndAddress AS
SELECT e.EmployeeID, e.FirstName, e.LastName, d.DepartmentName,
       a.EAddress, a.City, a.State, a.ZipCode
FROM Employees1 e
JOIN Departments1 d ON e.DepartmentID = d.DepartmentID
JOIN Addresses1 a ON e.EmployeeID = a.EmployeeID;
SELECT*FROM EmployeeDetailsWithDepartmentAndAddress
```

Results | Messages

	EmployeeID	FirstName	LastName	DepartmentName	EAddress	City	State	ZipCode
1	1	Sadia	Sher	Marketing	Johar Town	Lahore	CA	12345
2	2	Sobia	Sher	Marketing	Baheria Town	Kasur	NY	67890
3	3	Rimsha	Aamir	Engineering	Baheria Town	Multan	TX	23456
4	4	Sania	Sher	Marketing	M.A.O	Karachi	FL	78901
5	5	Ali	Ahmad	Engineering	Central Park	Faisalabad	WA	34567
6	6	Tayyaba	Tariq	Finance	Hamza Town	Bahawalpur	AB	34657
7	7	Sadia	Anjum	IT	Walton	Faisalabad	WA	34587

```sql
--1 Insert a default role for each newly inserted employee
CREATE TRIGGER InsertDefaultRole
ON Employees1
AFTER INSERT
AS
BEGIN
    INSERT INTO EmployeeRoles1 (EmployeeID, RoleID)
    SELECT inserted.EmployeeID,
    (SELECT RoleID FROM Roles1 WHERE RoleName = 'Default') AS RoleID
    FROM inserted
    WHERE NOT EXISTS (
        SELECT 1 FROM EmployeeRoles1 er
        WHERE er.EmployeeID = inserted.EmployeeID
    );
END;

INSERT INTO Employees1 (EmployeeID, FirstName, LastName, Email, PhoneNumber,
HireDate, DepartmentID) VALUES
(8, 'Areeba', 'Anjum', 'areeba.anjum@gmail.com', '555-3057', '2022-08-01', 3);

SELECT* FROM EmployeeRoles1
```

Results Messages

	EmployeeID	RoleID
1	1	1
2	2	2
3	3	2
4	4	3
5	5	2
6	6	3
7	7	2
8	8	1