

Infosys Internship 6.0

SQL Tasks

1. Basics: Creating, Selecting, Filtering

Create database and table

```
CREATE DATABASE Company; USE Company; CREATE TABLE Employees ( EmpID INT  
PRIMARY KEY, Name VARCHAR(100), Department VARCHAR(50), Salary  
DECIMAL(10,2) );
```

Insert records into table

```
INSERT INTO Employees (EmpID, Name, Department, Salary) VALUES (1,  
'Alice', 'HR', 50000), (2, 'Bob', 'IT', 60000), (3, 'Charlie', 'Finance',  
55000);
```

Select all records

```
SELECT * FROM Employees;
```

Filter with WHERE

```
SELECT * FROM Employees WHERE Department = 'IT';
```

Sort results

```
SELECT Name, Salary FROM Employees ORDER BY Salary DESC;
```

2. Intermediate: Aggregation, Grouping, Filtering

Count total employees

```
SELECT COUNT(*) AS TotalEmployees FROM Employees;
```

Average salary

```
SELECT AVG(Salary) AS AverageSalary FROM Employees;
```

Max and Min salary

```
SELECT MAX(Salary) AS MaxSalary, MIN(Salary) AS MinSalary FROM Employees;
```

Group by department

```
SELECT Department, COUNT(*) AS DeptCount, AVG(Salary) AS AvgSalary FROM  
Employees GROUP BY Department;
```

HAVING with GROUP BY

```
SELECT Department, AVG(Salary) AS AvgSal FROM Employees GROUP BY  
Department HAVING AVG(Salary) > 55000;
```

3. Advanced: Joins, Subqueries, Window Functions

Inner Join example

```
CREATE TABLE Departments ( DeptID INT PRIMARY KEY, DeptName VARCHAR(50) );  
SELECT e.Name, d.DeptName FROM Employees e JOIN Departments d ON  
e.Department = d.DeptName;
```

Subquery example

```
SELECT Name FROM Employees WHERE Salary > (SELECT AVG(Salary) FROM  
Employees);
```

Window function: ranking

```
SELECT Name, Department, Salary, RANK() OVER (PARTITION BY Department  
ORDER BY Salary DESC) AS SalaryRank FROM Employees;
```

Common Table Expression (CTE)

```
WITH DeptAvg AS ( SELECT Department, AVG(Salary) AS AvgSalary FROM  
Employees GROUP BY Department ) SELECT e.Name, e.Salary FROM Employees e  
JOIN DeptAvg d ON e.Department = d.Department WHERE e.Salary >  
d.AvgSalary;
```

Update and Delete

```
UPDATE Employees SET Salary = Salary + 5000 WHERE Department = 'IT';  
DELETE FROM Employees WHERE EmpID = 3;
```

4. Miscellaneous Useful Commands

Show databases and tables

```
SHOW DATABASES; SHOW TABLES;
```

Describe table structure

```
DESCRIBE Employees;
```

Current database and date/time

```
SELECT DATABASE(); SELECT NOW();
```

Alter table

```
ALTER TABLE Employees ADD JoiningDate DATE; ALTER TABLE Employees DROP  
COLUMN Department;
```

Indexes and constraints

```
CREATE INDEX idx_salary ON Employees(Salary); ALTER TABLE Employees ADD  
CONSTRAINT chk_salary CHECK (Salary > 0);
```