

# CS23401 Database Management Systems

## Course Instructor: V P Jayachitra

### Week 5 Assignment

1. Insert the provided employee, department, project, works\_on, and dependent records. (refer Company database.pdf)

**Note:** Add one record with YOUR name and register number in the EMPLOYEE table.

#### **INSERT Operations**

1. A new employee "Priya Sharma" (SSN: 111223344) joins the Research department on 2024-01-15. She is female, born on 1995-03-20, lives at "123 Park Avenue, Houston TX", has a salary of 32000, and reports to Franklin Wong.

Test Case

```
SELECT Fname, Lname, Ssn, Sex, Salary, Super_ssn, Dno FROM  
EMPLOYEE WHERE Ssn = '111223344';
```

Output:

```
FNAME LNAME SSN      SEX SALARY SUPER_SSN DNO  
Priya    Sharma 111223344 F   32000 333445555 5
```

2. The company starts a new project called "AI Initiative" (Project number: 40) located in "Houston" and controlled by the Research department. Insert this project.

Test Case

```
SELECT Pname, Pnumber, Plocation, Dnum FROM PROJECT WHERE  
Pnumber = 40;
```

Output:

```
PNAME      PNUMBER PLOCATION DNUM  
AI Initiative      40      Houston      5
```

3. Employee Ahmad Jabbar (987987987) starts working on the new AI Initiative project for 15 hours per week. Add this work assignment.

Test Case

```
SELECT Essn, Pno, Hours FROM WORKS_ON WHERE Essn = '987987987'  
AND Pno = 40;
```

Output:

```
ESSN      PNO HOURS  
987987987 40 15.0
```

4. Jennifer Wallace's spouse "Robert Wallace" (Male, born 1940-05-15) needs to be added as a dependent. Insert this record.

Test Case

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```
SELECT Essn, Dependent_name, Sex, Bdate, Relationship FROM DEPENDENT WHERE Essn = '987654321' AND Dependent_name = 'Robert Wallace';
```

Output:

```
ESSN    DEPENDENT_NAME  SEX   BDATE   RELATIONSHIP  
987654321 Robert Wallace M 15-MAY-40 Spouse
```

5. Insert a new department called "Data Analytics" (Department number: 6) managed by Ramesh Narayan starting from 2024-01-01.

Test Case

```
SELECT Dname, Dnumber, Mgr_ssn, Mgr_start_date FROM DEPARTMENT WHERE Dnumber = 6;
```

Output:

```
DNAME      DNUMBER MGR_SSN  MGR_START_DATE  
Data Analytics 6       666884444 01-JAN-24
```

### UPDATE Operations

1. All employees in department 5 receive a 12% salary increase due to excellent project performance. Update their salaries.

Test Case

```
SELECT Fname, Lname, Salary, Dno FROM EMPLOYEE WHERE Dno = 5 ORDER BY Ssn;
```

Output:

```
FNAME  LNAME  SALARY  DNO  
John    Smith   33600  5  
Franklin Wong  44800  5  
Ramesh  Narayan 42560  5  
Joyce   English  28000  5  
Priya   Sharma   35840  5
```

2. Franklin Wong (333445555) gets promoted and his new supervisor is now James Borg. Update his supervisor information.

Test Case

```
SELECT Fname, Lname, Ssn, Super_ssn FROM EMPLOYEE WHERE Ssn = '333445555';
```

Output:

```
FNAME  LNAME  SSN     SUPER_SSN  
Franklin Wong 333445555 888665555
```

3. The company policy changes: All employees without a middle initial should have their Minit set to 'X'. Update these records.

Hint: Use IS NULL in the WHERE clause

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Test Case:

```
SELECT Fname, Lname, Minit FROM EMPLOYEE WHERE Minit = 'X';
```

Output:

```
FNAME LNAME MINIT
```

```
Priya Sharma X
```

4. Female employees who earn less than 30000 and work in department 4 receive a special increment of 3500. Update their salaries.

Hint: multiple conditions with AND operator

Test Case:

```
SELECT Fname, Lname, Minit FROM EMPLOYEE WHERE Minit = 'X';
```

Output:

```
FNAME LNAME MINIT
```

```
Priya Sharma X
```

5. The ProductY project (Pnumber = 2) is relocated from "Sugarland" to "Dallas". Update the project location.

Test Case

```
SELECT Fname, Lname, Sex, Salary, Dno FROM EMPLOYEE WHERE Sex = 'F' AND Dno = 4;
```

Output:

```
FNAME LNAME SEX SALARY DNO
```

```
Alicia Zelaya F 28500 4
```

```
Jennifer Wallace F 43000 4
```

6. Update all employees' salaries using CASE WHEN:

Managers (who appear in DEPARTMENT.Mgr\_ssn) get 20% raise

Other employees in department 5 get 15% raise

All others get 10% raise

### DELETE Operations

1. Remove all work assignments where employees are working less than 10 hours per week on any project.

Test case

```
SELECT MIN(Hours) AS Min_Hours, COUNT(*) AS Total_Assignments FROM WORKS_ON;
```

Output:

```
MIN_HOURS TOTAL_ASSIGNMENTS
```

```
10.0 14
```

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- Employee Joyce English (453453453) is leaving the company.

Hint: Before deleting her record, you must first remove her work assignments.

Delete her entries from WORKS\_ON table.

Test case

```
SELECT COUNT(*) AS Joyce_Assignments FROM WORKS_ON WHERE  
Essn = '453453453';
```

Output:

```
JOYCE_ASSIGNMENTS
```

```
0
```

- Delete all dependents who are spouses (Relationship = 'Spouse') and were born before 1950.

Test case

```
SELECT Essn, Dependent_name, Bdate, Relationship FROM DEPENDENT  
WHERE Relationship = 'Spouse' AND Bdate < DATE '1950-01-01';
```

Output:

```
No rows selected
```

- Remove the project "Reorganization" from the PROJECT table.

Test case

```
SELECT COUNT(*) AS Project_Exists FROM PROJECT WHERE Pnumber =  
20;
```

Output:

```
PROJECT_EXISTS
```

```
0
```

- Delete all employees who don't have any supervisor assigned AND have a salary less than 50000.

Test case

```
SELECT Fname, Lname, Super_ssn, Salary FROM EMPLOYEE WHERE  
Super_ssn IS NULL AND Salary < 50000;
```

Output:

```
No rows selected
```

### SELECT with WHERE clause

- Display the names (first and last) and addresses of all employees who live in Houston.

Hint: use like operator for pattern matching for the address

Test case

Output:

```
FNAME  LNAME  ADDRESS
```

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James Borg 450 Stone, Houston TX  
Joyce English 5631 Rice, Houston TX  
Ahmad Jabbar 980 Dallas, Houston TX  
John Smith 731 Fondren, Houston TX  
Franklin Wong 638 Voss, Houston TX

- Find all employees whose salary is between 25000 and 35000 (inclusive).

Test case

Output:

FNAME LNAME SALARY  
Joyce English **28000**  
Alicia Zelaya **28500**  
John Smith **33600**

- List all female employees who work in department 5.

Test case

Output:

FNAME LNAME SEX DNO  
Joyce English F 5  
Priya Sharma F 5

- Show the names of all employees who do NOT have a supervisor.

Test case

Output:

FNAME LNAME SUPER\_SSN  
James Borg

- Find all projects that are located in either "Houston" or "Stafford".

Test case

Output:

PNAME PLOCATION  
AI Initiative Houston  
ProductZ Houston  
Computerization Stafford  
Newbenefits Stafford

- Display employees whose first name starts with 'J' and have a salary greater than 30000.

Test case

Output:

FNAME LNAME SALARY  
James Borg 55000  
Jennifer Wallace 43000  
John Smith 33600

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7. Show all projects that are NOT controlled by department 5.

Test case

Output:

PNAME	PNUMBER	DNUM
Computerization	10	4
Newbenefits	30	4

8. Display all employees who have a middle initial AND earn more than the average salary of 30000.

Test case

Output:

FNAME	LNAME	MINIT	SALARY
James	Borg	E	55000
Jennifer	Wallace	S	43000
Franklin	Wong	T	44800
Ramesh	Narayan	K	42560
John	Smith	B	33600

Note: You details in the employee table too listed accordingly to the query