Database and Management System Lab

Lab Experiment – 10

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B.Tech CSE, SEM-III, B-1

Title: Create the following views in SQL on the COMPANY database schema presented in Experiment 2

1. A view that has the department name, manager name, and manager salary for every department.

```
CREATE VIEW dept_manager_view AS
SELECT D.Dname AS department_name, E.Fname AS manager_name, E.Salary AS
manager_salary
FROM department D
JOIN employee E ON D.Mgr_ssn = E.Ssn;
```

```
+------------------+---------------+---------------+
| department_name  | manager_name  | manager_salary|
+------------------+---------------+---------------+
| Research         | Franklin      | 40000.00      |
| Administration   | Jennifer      | 43000.00      |
+------------------+---------------+---------------+
```

2. A view that has the employee name, supervisor name, and employee salary for each employee who works in the 'Research' department

```
CREATE VIEW research_employee_view AS
SELECT E1.Fname AS employee_name, E2.Fname AS supervisor_name, E1.Salary AS
employee_salary
FROM employee E1
JOIN employee E2 ON E1.Super_ssn = E2.Ssn
JOIN department D ON E1.Dno = D.Dnumber
WHERE D.Dname = 'Research';
```

```
+---------------+----------------+-----------------+
| employee_name | supervisor_name| employee_salary |
+---------------+----------------+-----------------+
| John          | Franklin       | 30000.00        |
+---------------+----------------+-----------------+
```

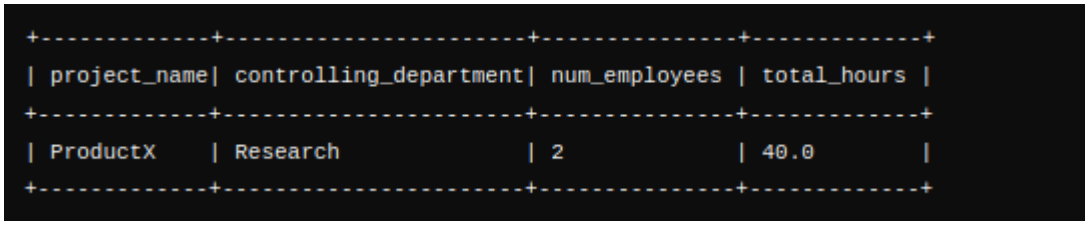
3. A view that has the project name, controlling department name, number of employees, and total hours worked per week on the project for each project.

```sql
CREATE VIEW project_summary_view AS
SELECT P.Pname AS project_name, D.Dname AS controlling_department,
       COUNT(DISTINCT W.Essn) AS num_employees, SUM(W.Hours) AS total_hours
FROM project P
JOIN department D ON P.Dnum = D.Dnumber
JOIN works_on W ON P.Pnumber = W.Pno
GROUP BY P.Pname, D.Dname;
```

```
+-------------+----------------------+---------------+-------------+
| project_name| controlling_department| num_employees | total_hours |
+-------------+----------------------+---------------+-------------+
| ProductX    | Research             | 2             | 40.0        |
| ProductY    | Research             | 2             | 17.5        |
+-------------+----------------------+---------------+-------------+
```

4. A view that has the project name, controlling department name, number of employees, and total hours worked per week on the project for each project with more than one employee working on it.

```sql
CREATE VIEW multi_employee_project_view AS
SELECT P.Pname AS project_name, D.Dname AS controlling_department,
       COUNT(DISTINCT W.Essn) AS num_employees, SUM(W.Hours) AS total_hours
FROM project P
JOIN department D ON P.Dnum = D.Dnumber
JOIN works_on W ON P.Pnumber = W.Pno
GROUP BY P.Pname, D.Dname
HAVING COUNT(DISTINCT W.Essn) > 1;
```



project_name	controlling_department	num_employees	total_hours
ProductX	Research	2	40.0

Database and Management System Lab

Lab Experiment – 11

Name: Raashika Bora
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B.Tech CSE, SEM-III, B-1

Title: To understand the concepts of Index.

Objective: Students will be able to implement the concept of index

1. Create EMPLOYEES Table and Insert Sample Data

```
CREATE TABLE EMPLOYEES (
    Employee_id CHAR(10) PRIMARY KEY,
    First_Name VARCHAR(30) NOT NULL,
    Last_Name VARCHAR(30) NOT NULL,
    DOB DATE,
    Salary DECIMAL(10, 2) NOT NULL,
    Department_id CHAR(10)
);

INSERT INTO EMPLOYEES (Employee_id, First_Name, Last_Name, DOB, Salary, Department_id) VALUES
('E001', 'John', 'Smith', '1980-01-10', 50000, 'D1'),
('E002', 'Jane', 'Doe', '1985-02-15', 60000, 'D2'),
('E003', 'Alice', 'Johnson', '1978-03-20', 55000, 'D1'),
('E004', 'Bob', 'Brown', '1990-04-25', 62000, 'D2'),
('E005', 'Charlie', 'Davis', '1982-05-30', 58000, 'D3'),
('E006', 'Eve', 'Martinez', '1995-06-10', 54000, 'D3');
```

2. Create an Index on `Last_Name` and `Department_id`

```
CREATE INDEX employee_idx ON EMPLOYEES (Last_Name, Department_id);
```

3. Find the `ROWID` and Create a Unique Index on `Employee_id`

```
SELECT Employee_id, ROWID FROM EMPLOYEES;
CREATE UNIQUE INDEX employee_unique_idx ON EMPLOYEES (Employee_id);
```

```
+-------------+-----------------+
| Employee_id | ROWID           |
+-------------+-----------------+
| E001        | <ROWID_value_1> |
| E002        | <ROWID_value_2> |
| E003        | <ROWID_value_3> |
| E004        | <ROWID_value_4> |
| E005        | <ROWID_value_5> |
| E006        | <ROWID_value_6> |
+-------------+-----------------+
```

4. Create a Reverse Index on `Employee_id`

```
CREATE INDEX employee_reverse_idx ON EMPLOYEES (Employee_id) USING BTREE;
```

5. Create a Unique Composite Index on `Employee_id` to Check Duplicates

```
CREATE UNIQUE INDEX employee_composite_idx ON EMPLOYEES (Employee_id, Last_Name);
```

6. Create Function-Based Index for Case-Insensitive Search on `Last_Name`

```
CREATE INDEX last_name_upper_idx ON EMPLOYEES (UPPER(Last_Name));
```

7. Drop the Function-Based Index on `Last_Name`

```
DROP INDEX last_name_upper_idx ON EMPLOYEES;
```