

## **EXPERIMENT-7**

**Title:** Use of Inbuilt functions and relational algebra operation

**Objective:** To understand the use of inbuilt function and relational algebra with sql query.

Write and execute the following queries using the Relational Algebra on the COMPANY database schema.

```
mysql> SHOW TABLES;
+-----+
| Tables_in_company1 |
+-----+
| department          |
| dependent           |
| dept_locations      |
| employee            |
| project             |
| works_on            |
+-----+
6 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM DEPARTMENT;
+-----+-----+-----+-----+
| Dname          | Dnumber | Mgr_ssn | Mgr_start_date |
+-----+-----+-----+-----+
| Headquarters   | 1       | 888665555 | 1981-06-19      |
| Administration | 4       | 987654321 | 1995-01-01      |
| Research       | 5       | 333445555 | 1988-05-22      |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM DEPENDENT;
```

Essn	Dependent_name	Sex	Bdate	Relationship
123456789	Alice	F	1988-12-30	Daughter
123456789	Elizabeth	F	1967-05-05	Spouse
123456789	Michael	M	1988-01-04	Son
333445555	Alice	F	1986-04-04	Daughter
333445555	Joy	F	1958-05-03	Spouse
333445555	Theodore	M	1983-10-25	Son
987654321	Abner	M	1942-02-28	Spouse

```
7 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM DEPT_LOCATION;
```

ERROR 1146 (42S02): Table 'company1.dept\_location' doesn't exist

```
mysql> SELECT * FROM DEPT_LOCATIONS;
```

Dnumber	Dlocation
1	Houston
4	Stafford
5	Bellaire
5	Houston
5	Sugarland

```
5 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM EMPLOYEE;
```

Fname	Minit	Lname	Ssn	Bdate	Address
Sex	Salary	Super_ssn	Dno		
John	B	Smith	123456789	1965-01-09	731 Fondren, Houston TX
Franklin	T	Wong	333445555	1965-12-08	638 Voss, Houston TX
Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston TX
Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble TX
James	E	Borg	888665555	1937-11-10	450 Stone, Houston TX
Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire TX
Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston TX
Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle, Spring TX

```
8 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM PROJECT;
```

Pname	Pnumber	Plocation	Dnum
ProductX	1	Bellaire	5
ProductY	2	Sugarland	5
ProductZ	3	Houston	5
Computerization	10	Stafford	4
Reorganization	20	Houston	1
Newbenefits	30	Stafford	4

```
6 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM WORKS_ON;
+-----+-----+-----+
| Essn   | Pno  | Hours |
+-----+-----+-----+
| 123456789 | 1    | 32.5  |
| 123456789 | 2    | 7.5   |
| 666884444 | 3    | 40.0  |
| 453453453 | 1    | 20.0  |
| 453453453 | 2    | 20.0  |
| 333445555 | 2    | 10.0  |
| 333445555 | 3    | 10.0  |
| 333445555 | 10   | 10.0  |
| 333445555 | 20   | 10.0  |
| 999887777 | 30   | 30.0  |
| 999887777 | 10   | 10.0  |
| 987987987 | 10   | 35.0  |
| 987987987 | 30   | 5.0   |
| 987654321 | 30   | 20.0  |
| 987654321 | 20   | 15.0  |
+-----+-----+-----+
15 rows in set (0.00 sec)
```

1. Retrieve the names of all employees in department 5 who work more than 10 hours per week on the 'ProductX' project.

```
mysql> SELECT E.Fname, E.Lname
-> FROM Employee E
-> JOIN Works_On W ON E.Ssn = W.Essn
-> JOIN Project P ON W.Pno = P.Pnumber
-> WHERE E.Dno = 5 AND W.Hours > 10 AND P.Pname = 'ProductX';
+-----+-----+
| Fname | Lname  |
+-----+-----+
| John  | Smith  |
| Joyce | English |
+-----+-----+
2 rows in set (0.00 sec)
```

2. Retrieve the names of employees who work on every project.

```
mysql> SELECT E.Fname, E.Lname
-> FROM Employee E
-> JOIN Works_On W ON E.Ssn = W.Essn
-> JOIN Project P ON W.Pno = P.Pnumber
-> WHERE E.Dno = 5 AND W.Hours > 10 AND P.Pname = 'ProductX';
+-----+-----+
| Fname | Lname  |
+-----+-----+
| John  | Smith  |
| Joyce | English|
+-----+-----+
2 rows in set (0.00 sec)
```

3. List the names of all employees who have a dependent with the same first name as themselves.

```
mysql> SELECT E.Fname, E.Lname
-> FROM Employee E
-> JOIN Dependent D ON E.Ssn = D.Essn
-> WHERE E.Fname = D.Dependent_name;
Empty set (0.00 sec)
```

4. Find the names of employees who are directly supervised by 'Franklin Wong'.

```
mysql> SELECT E.Fname, E.Lname
-> FROM Employee E
-> JOIN Employee S ON E.Super_ssn = S.Ssn
-> WHERE S.Fname = 'Franklin' AND S.Lname = 'Wong';
```

Fname	Lname
John	Smith
Joyce	English
Ramesh	Narayan

```
3 rows in set (0.00 sec)
```

- Retrieve the names of employees who do not work on any project.

```
mysql> SELECT E.Fname, E.Lname
-> FROM Employee E
-> LEFT JOIN Works_On W ON E.Ssn = W.Essn
-> WHERE W.Essn IS NULL;
```

Fname	Lname
James	Borg

```
1 row in set (0.00 sec)
```

- Retrieve the names and addresses of all employees who work on at least one project located in Houston but whose department has no location in Houston.

```
mysql> SELECT E.Fname, E.Lname, E.Address
-> FROM Employee E
-> JOIN Works_On W ON E.Ssn = W.Essn
-> JOIN Project P ON W.Pno = P.Pnumber
-> JOIN Dept_Locations DL ON E.Dno = DL.Dnumber
-> WHERE P.Plocation = 'Houston'
-> AND E.Dno NOT IN (
->     SELECT DL2.Dnumber
->     FROM Dept_Locations DL2
->     WHERE DL2.Dlocation = 'Houston'
-> );
```

Fname	Lname	Address
Jennifer	Wallace	291 Berry, Bellaire TX

```
1 row in set (0.00 sec)
```

7. Retrieve the last names of all department managers who have no dependents.

```
mysql> SELECT E.Lname
-> FROM Employee E
-> JOIN Department D ON E.Ssn = D.Mgr_ssn
-> LEFT JOIN Dependent Dep ON E.Ssn = Dep.Essn
-> WHERE Dep.Essn IS NULL;
```

Lname
Borg

```
1 row in set (0.00 sec)
```

