***AIM*:** To understand how to relate and access data from multiple tables.
***Consider the schema given in exercise 2, and execute the following queries.

APPARATUS: SqlPLus and PC

SQL Query and Output:

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

Query:

```
SQL> SELECT
 2
employee_BCE0211.fname,employee_BCE0211.lname,project_BCE0211.deptno,project_BCE0211.proje
ctname FROM
 3  employee_BCE0211
 4  JOIN project_BCE0211 ON project_BCE0211.deptno=employee_BCE0211.deptnumber
 5  WHERE employee_BCE0211.fname IN (SELECT employee_BCE0211.fname FROM employee_BCE0211
 6  JOIN works_on_BCE0211 ON employee_BCE0211.ssnnumber=works_on_BCE0211.employeessn
 7  WHERE works_on_BCE0211.hours>10 AND employee_BCE0211.deptnumber=5)
 8  AND project_BCE0211.projectname='ProjectX';
```

```
SQL> SELECT
  2  employee_BCE0211.fname,employee_BCE0211.lname,project_BCE0211.deptno,project_BCE0211.projectname FROM
  3  employee_BCE0211
  4  JOIN project_BCE0211 ON project_BCE0211.deptno=employee_BCE0211.deptnumber
  5  WHERE employee_BCE0211.fname IN (SELECT employee_BCE0211.fname FROM employee_BCE0211
  6  JOIN works_on_BCE0211 ON employee_BCE0211.ssnnumber=works_on_BCE0211.employeessn
  7  WHERE works_on_BCE0211.hours>10 AND employee_BCE0211.deptnumber=5)
  8  AND project_BCE0211.projectname='ProjectX';

no rows selected
```

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

Query:

```
SQL> select fname,ssnnumber,dependent_BCE0211.dependentname
 2  FROM employee_BCE0211,dependent_BCE0211
 3  where employee_BCE0211.fname=dependent_BCE0211.dependentname;
```

```
SQL> select fname,ssnnumber,dependent_BCE0211.dependentname
  2  FROM employee_BCE0211,dependent_BCE0211
  3  where employee_BCE0211.fname=dependent_BCE0211.dependentname;

no rows selected

SQL>
```

3. Find the names of all the employees who are directly supervised by ‘Franklin Wong’.

Query:

```
select employee_BCE0211.fname,employee_BCE0211.lname from employee_BCE0211
 2  where supervisorssn  = (select ssnnumber from employee_BCE0211 where
 3  fname='Frankin' and lname = 'Wong');
```

```
SQL> select employee_BCE0211.fname,employee_BCE0211.lname from employee_BCE0211
  2  where supervisorssn  = (select ssnnumber from employee_BCE0211 where
  3  fname='Frankin' and lname = 'Wong');

FNAME           LNAME
--------------- ---------------
Frankin         Wong

SQL>
```

4. Retrieve the names of all who do not work on any project.

Query:

```
SQL> select fname from employee_BCE0211 where ssnnumber not in (select
 2  distinct(employee_BCE0211.ssnnumber) from employee_BCE0211 join
 3  works_on_BCE0211 on employee_BCE0211.ssnnumber =
works_on_BCE0211.employeessn where
 4  employee_BCE0211.ssnnumber in (select distinct(employeessn) from
works_on_BCE0211));
```

```
SQL> select fname from employee_BCE0211 where ssnnumber not in (select
  2  distinct(employee_BCE0211.ssnnumber) from employee_BCE0211 join
  3  works_on_BCE0211 on employee_BCE0211.ssnnumber = works_on_BCE0211.employeessn where
  4  employee_BCE0211.ssnnumber in (select distinct(employeessn) from works_on_BCE0211));

FNAME
---------------
Jennifer

SQL>
```

5. Find the names and addresses of all employees who work on atleast one project located in Houston but whose department has no location in Houston.

Query: SQL> SELECT e.fname, e.lname, e. Address
2 FROM employee_BCE0211 e
3 JOIN Works_On_BCE0211 w ON e. SSNNUMBER = W. EMPLOYEESSN
4 JOIN Project_BCE0211 p ON w. projectnum = p.projectnum
5 JOIN department_BCE0211 d ON e. deptnumber = d.deptnumber
6 JOIN dept_location_BCE0211 dl ON d. deptnumber = dl.deptnumber
7 WHERE p. projectloc = 'Houston'
8 AND dl. DeptLoc <> 'Houston';

```
SQL> SELECT e.fname, e.lname, e. Address
  2  FROM employee_BCE0211 e
  3  JOIN Works_On_BCE0211 w ON e. SSNNUMBER = W. EMPLOYEESSN
  4  JOIN Project_BCE0211 p ON w. projectnum = p.projectnum
  5  JOIN department_BCE0211 d ON e. deptnumber = d.deptnumber
  6  JOIN dept_location_BCE0211 dl ON d. deptnumber = dl.deptnumber
  7  WHERE p. projectloc  = 'Houston'
  8  AND dl. DeptLoc <> 'Houston';

no rows selected

SQL>
```

6. List the names of all managers who have no dependents.

Query:

select fname, lname,ssnnumber from employee_BCE0211 where ssnnumber in (select mgrssn from department_BCE0211 where mgrssn not in (select distinct(department_BCE0211.mgrssn) from department_bce0211 join dependent_BCE0211 on department_BCE0211.mgrssn=dependent_BCE0211.deptname));

```
SQL>
SQL> select fname, lname,ssn from employee where ssn in
  2  (select managerssn from dept where managerssn not in (select distinct(dept.managerssn)
  3  from dept join dependents on dept.managerssn=dependents.departmentname));

FNAME           LNAME           SSN
--------------- --------------- ---------
James           Borg            888665555
Jennifer        Wallace         987654321
Frankin         Wong            333445555
Joyce           PAN             543216789
Doug            Gilbert         554433221

SQL>
```

7. List the employee's names and the department names if they happen to manage a department.

QUERY:

```
SQL> select employee_BCE0211.fname, employee_BCE0211.lname
,department_BCE0211.deptname
  2  from employee_BCE0211 join department_BCE0211 on
department_BCE0211.mgrssn=employee_BCE0211.ssnnumber;
```

```
SQL> select employee_BCE0211.fname, employee_BCE0211.lname ,department_BCE0211.deptname
  2  from employee_BCE0211 join department_BCE0211 on department_BCE0211.mgrssn=employee_BCE0211.ssnnumber;

FNAME           LNAME           DEPTNAME
--------------- --------------- ---------------
Doug            Gilbert         Research

SQL>
```

8. For each project retrieve the project number, project name and the number of employees who work on that project.

Query:

```
SQL> SELECT CNT,PN,PROJECT_BCE0211.projectname FROM (SELECT
COUNT(EMPLOYEESSN)
  2  CNT, projectnum PN FROM WORKS_ON_BCE0211 WHERE projectnum IN
  3  (SELECT DISTINCT(projectnum) FROM WORKS_ON_bce0211) GROUP BY
  4  projectnum) JOIN PROJECT_bce0211 ON PN=PROJECT_bce0211.projectnum;
```

```
SQL> SELECT CNT,PN,PROJECT_BCE0211.projectname FROM (SELECT COUNT(EMPLOYEESSN)
  2  CNT, projectnum PN FROM WORKS_ON_BCE0211 WHERE projectnum IN
  3  (SELECT DISTINCT(projectnum) FROM WORKS_ON_bce0211) GROUP BY
  4  projectnum) JOIN PROJECT_bce0211 ON PN=PROJECT_bce0211.projectnum;

       CNT         PN PROJECTNAME
---------- ---------- ---------------
         2       1945 Beta
         2         22 Rocket
         1          1 Alpha
         1         77 Gamma
         2       3388 NighStar
         1         12 King

6 rows selected.

SQL>
```

9. For each project, list the project name and the total hours per week (by all employees) spent on that project.

Query:

```
SQL> select sum_hours, project_BCE0211.projectnum, project_BCE0211.projectname
  2  from (select sum(hours) as sum_hours, projectnum
  3  FROM works_on_BCE0211 group by projectnum) subquery
  4  join project_BCE0211 on subquery.projectnum = project_BCE0211.projectnum;
```

```
SQL> select sum_hours, project_BCE0211.projectnum, project_BCE0211.projectname
  2  from (select sum(hours) as sum_hours, projectnum
  3  FROM works_on_BCE0211 group by projectnum) subquery
  4  join project_BCE0211 on subquery.projectnum = project_BCE0211.projectnum;

 SUM_HOURS PROJECTNUM PROJECTNAME
---------- ---------- --------------
        29       1945 Beta
        37         22 Rocket
      11.5          1 Alpha
        20         77 Gamma
      72.5       3388 NighStar
        13         12 King

6 rows selected.

SQL>
```

10. Retrieve the names of the employees who have 2 or more dependents.

Query:

```
select ssnnumber,count_dependent_BCE0211,employee_BCE0211.fname from
(select count(employeessn) count_dependent_BCE0211,employeessn
from dependent_BCE0211 group by employeessn)
join employee_BCE0211 on employeessn=employee_BCE0211.ssnnumber where
count_dependent_BCE0211>=2;
```

```
SQL> select ssn,count_dependent,employee.fname from
  2  (select count(employeessn) count_dependent,employeessn from dependentts group by employeessn)
  3  join employee on employeessn=employee.ssn where count_dependent>=2;

SSN       COUNT_DEPENDENT FNAME
--------- --------------- ---------------
333445555               3 Frankin
123456789               2 John

SQL>
```

****