Prachi Balodia

20BDS0177

PDBMS LAB DA1

Exercise 1:

1. Insert the data given above in both employee, department and project tables.

```
mysql> insert into employee values('Joyce','','PAN',124,'1973-02-07','Vellore','F',70000,' ',1);
Query OK, 1 row affected (0.02 sec)

mysql> insert into employee values('Frankin','T','Wong',125,'1972-12-08','Delhi','M',40000,'123',2);
Query OK, 1 row affected (0.02 sec)

mysql> insert into employee values('Jennifer','S','Wallace',564,'1983-06-20','Chennai','F',43000,'123',2);
Query OK, 1 row affected (0.02 sec)

mysql> insert into employee values('John','B','Smith',678,'1987-01-09','Madurai','M',30000,'124',1);
Query OK, 1 row affected (0.02 sec)

mysql> insert into employee values('Ramesh','K','Narayan',234,'1985-09-15','Banglore','M',38000,'124',3);
Query OK, 1 row affected (0.02 sec)
```

2. Display all the employees information.

```
mysql> select * from employee;
+-----------+---------+----------+-----------+------------+----------+------+--------+--------------+------------------+
| FirstName | MidName | LastName | SSNNumber | Birthday   | Address  | Sex  | Salary | SupervisorSSN | DepartmentNumber |
+-----------+---------+----------+-----------+------------+----------+------+--------+--------------+------------------+
| Doug      | E       | Gilbert  | 123       | 1968-06-09 | Chennai  | M    |  80000 |               |                1 |
| Joyce     |         | PAN      | 124       | 1973-02-07 | Vellore  | F    |  70000 |               |                1 |
| Frankin   | T       | Wong     | 125       | 1972-12-08 | Delhi    | M    |  40000 | 123           |                2 |
| Jennifer  | S       | Wallace  | 564       | 1983-06-20 | Chennai  | F    |  43000 | 123           |                2 |
| John      | B       | Smith    | 678       | 1987-01-09 | Madurai  | M    |  30000 | 124           |                1 |
| Ramesh    | K       | Narayan  | 234       | 1985-09-15 | Banglore | M    |  38000 | 124           |                3 |
+-----------+---------+----------+-----------+------------+----------+------+--------+--------------+------------------+
6 rows in set (0.00 sec)
```

3. Display Employee name along with his SSN and Supervisor SSN.

```
mysql> SELECT FIRSTNAME,SSNNUMBER,SUPERVISORSSN  FROM Employee;
+-----------+-----------+---------------+
| FIRSTNAME | SSNNUMBER | SUPERVISORSSN |
+-----------+-----------+---------------+
| Doug      | 123       |               |
| Joyce     | 124       |               |
| Frankin   | 125       | 123           |
| Jennifer  | 564       | 123           |
| John      | 678       | 124           |
| Ramesh    | 234       | 124           |
+-----------+-----------+---------------+
6 rows in set (0.01 sec)
```

4. Display the employee names whose bdate is ’20-JUN-1983’

```
mysql> select firstname, midname,lastname from employee where birthday="1983-06-20";
+-----------+---------+----------+
| firstname | midname | lastname |
+-----------+---------+----------+
| Jennifer  | S       | Wallace  |
+-----------+---------+----------+
1 row in set (0.00 sec)
```

5. Display salary of the employees without duplications.

```
mysql> select distinct salary from employee;
+--------+
| salary |
+--------+
|  80000 |
|  70000 |
|  40000 |
|  43000 |
|  30000 |
|  38000 |
+--------+
6 rows in set (0.00 sec)
```

6. Display the MgrSSN, MgrStartDate of the manager of ‘Finance’ department.

```
mysql> select managerssn, managerstartdate from department where departmentname="finance";
+------------+------------------+
| managerssn | managerstartdate |
+------------+------------------+
| 234        | 2013-05-18       |
+------------+------------------+
1 row in set (0.01 sec)
```

7. Modify the department number of an employee having fname as ‘Joyce’ to 2

```
mysql> update employee set departmentnumber=2 where firstname="joyce";
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

8. Alter Table department add column DepartmentPhoneNum of NUMBER data type and insert values into this column only.

```
mysql> alter table department add DepartmentPhoneNum int(9);
Query OK, 0 rows affected, 1 warning (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 1
```

```
mysql> update department set phno='99876543' where departmentnumber=2;
Query OK, 1 row affected (0.02 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from department;
+----------------+------------------+------------+------------------+----------+
| DepartmentName | DepartmentNumber | ManagerSSN | ManagerStartDate | phno     |
+----------------+------------------+------------+------------------+----------+
| Administration |                2 | 564        | 2012-01-03       | 99876543 |
| Headquater     |                1 | 678        | 2014-12-16       |     NULL |
| Finance        |                3 | 234        | 2013-05-18       |     NULL |
| IT             |                4 | 123        | 2015-06-12       |     NULL |
+----------------+------------------+------------+------------------+----------+
4 rows in set (0.00 sec)
```

9. Alter table department to modify the size of DepartmentPhoneNum.

```
mysql> alter table department modify departmentphonenum int(10);
Query OK, 0 rows affected, 1 warning (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 1
```

10. Modify the field name DepartmentPhoneNum of departments table to PhNo.

```
mysql> alter table department rename column departmentphonenum to phno;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

11. Rename Table Department as DEPT.

```
mysql> rename table department to dept;
Query OK, 0 rows affected (0.05 sec)

mysql> select * from dept;
+----------------+------------------+------------+------------------+----------+
| DepartmentName | DepartmentNumber | ManagerSSN | ManagerStartDate | phno     |
+----------------+------------------+------------+------------------+----------+
| Administration |                2 | 564        | 2012-01-03       | 99876543 |
| Headquater     |                1 | 678        | 2014-12-16       |     NULL |
| Finance        |                3 | 234        | 2013-05-18       |     NULL |
| IT             |                4 | 123        | 2015-06-12       |     NULL |
+----------------+------------------+------------+------------------+----------+
4 rows in set (0.01 sec)
```

12. Alter Table department remove column PhNo.

```
mysql> alter table dept drop phno;
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from dept;
+----------------+------------------+------------+------------------+
| DepartmentName | DepartmentNumber | ManagerSSN | ManagerStartDate |
+----------------+------------------+------------+------------------+
| Administration |                2 | 564        | 2012-01-03       |
| Headquater     |                1 | 678        | 2014-12-16       |
| Finance        |                3 | 234        | 2013-05-18       |
| IT             |                4 | 123        | 2015-06-12       |
+----------------+------------------+------------+------------------+
4 rows in set (0.00 sec)
```

13. Create a table COPYOFDEPT as a copy of the table DEPT.

```
mysql> CREATE TABLE COPYOFDEPT AS SELECT* FROM DEPT;
Query OK, 4 rows affected (0.06 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> select * from copyofdept;
+----------------+------------------+------------+------------------+
| DepartmentName | DepartmentNumber | ManagerSSN | ManagerStartDate |
+----------------+------------------+------------+------------------+
| Administration |                2 | 564        | 2012-01-03       |
| Headquater     |                1 | 678        | 2014-12-16       |
| Finance        |                3 | 234        | 2013-05-18       |
| IT             |                4 | 123        | 2015-06-12       |
+----------------+------------------+------------+------------------+
4 rows in set (0.00 sec)
```

14. Delete all the rows from COPYOF DEPT table.

```
mysql> delete from copyofdept;
Query OK, 4 rows affected (0.01 sec)

mysql> select * from copyofdept;
Empty set (0.01 sec)
```

15. Remove COPYOF DEPT table.

```
mysql> drop table copyofdept;
Query OK, 0 rows affected (0.06 sec)
```

Exercise 2:

I. Add the above mentioned constraints to employee, project and department tables using alter table statement.

```
mysql> alter table employee change firstname firstname varchar(15) not null;
Query OK, 0 rows affected (0.13 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table employee change lastname lastname varchar(15) not null;
Query OK, 0 rows affected (0.08 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table employee change ssnnumber ssnnumber char(9) primary key;
Query OK, 0 rows affected (0.13 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table employee change ssnnumber ssnnumber char(9) default '800';
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table employee change sex sex char(1) check(sex in ('M','F','m','f'));
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table employee add foreign key (departmentnumber) references dept(department
number) on delete cascade;
Query OK, 6 rows affected (0.13 sec)
Records: 6  Duplicates: 0  Warnings: 0
```

```
mysql> alter table dept add constraint dp_dno_pk1 primary key(departmentnumber);
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table dept modify departmentname varchar(15) not null;
Query OK, 0 rows affected (0.09 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table dept add constraint dp_ms_fk foreign key(managerssn) references employee(ss
nnumber) on delete set null;
Query OK, 4 rows affected (0.16 sec)
Records: 4  Duplicates: 0  Warnings: 0

mysql> alter table project modify projectname varchar(15) not null;
Query OK, 0 rows affected (0.12 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table project add constraint p_pn_pk1 primary key(projectnumber);
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table project add constraint p_dn_fk foreign key(departmentnumber) references dept (departmentnumber) on delete set null;
Query OK, 5 rows affected (0.14 sec)
Records: 5  Duplicates: 0  Warnings: 0
```

```
mysql> desc employee;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| firstname        | varchar(15) | NO   |     | NULL    |       |
| MidName          | char(2)     | YES  |     | NULL    |       |
| lastname         | varchar(15) | NO   |     | NULL    |       |
| ssnnumber        | char(9)     | NO   | PRI | 800     |       |
| Birthday         | date        | YES  |     | NULL    |       |
| Address          | varchar(50) | YES  |     | NULL    |       |
| sex              | char(1)     | NO   |     | NULL    |       |
| Salary           | int         | YES  |     | NULL    |       |
| SupervisorSSN    | char(9)     | YES  |     | NULL    |       |
| DepartmentNumber | int         | YES  | MUL | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
10 rows in set (0.02 sec)

mysql> desc dept;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| departmentname   | varchar(15) | NO   |     | NULL    |       |
| DepartmentNumber | int         | NO   | PRI | NULL    |       |
| ManagerSSN       | char(9)     | YES  | MUL | NULL    |       |
| ManagerStartDate | date        | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
4 rows in set (0.03 sec)

mysql> desc project;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| projectname      | varchar(15) | NO   | UNI | NULL    |       |
| ProjectNumber    | int         | NO   | PRI | NULL    |       |
| ProjectLocation  | varchar(15) | YES  |     | NULL    |       |
| DepartmentNumber | int         | YES  | MUL | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
4 rows in set (0.02 sec)
```

II. Execute the following Query on the Db to display and discuss the integrity

constraints violated by any of the following operations

1. Insert ('Robert', 'F', 'Scott', '235', '21-JUN-1990', 'Bangalore', M, 58000, '100', 1) into

EMPLOYEE.

```
mysql> insert into employee values('Robert', 'F', 'Scott', '235', '21-JUN-1990', 'Bangalore',
M, 58000, '100', 1 );
ERROR 1054 (42S22): Unknown column 'M' in 'field list'
mysql> insert into employee values('Robert', 'F', 'Scott', '235', '21-JUN-1990', 'Bangalore',
'M', 58000, '100', 1 );
ERROR 1292 (22007): Incorrect date value: '21-JUN-1990' for column 'Birthday' at row 1
mysql> insert into employee values('Robert', 'F', 'Scott', '235', '1990-06-21', 'Bangalore', '
M', 58000, '100', 1 );
Query OK, 1 row affected (0.01 sec)
```

Syntax error as the date is not written in the correct form- YYYY-MM-DD, M is not under quotations.

2. Insert ('ProjectF', null, 'Chennai', 3) into Project.

```
mysql> insert into project values('ProjectF', null, 'Chennai',3);
ERROR 1048 (23000): Column 'ProjectNumber' cannot be null
mysql>
```

As ProjectNumber is a primary key, it cannot be null.

3. Insert ('ProjectF', 1234, 'Chennai', 4) into Project.

```
mysql> insert into project values('ProjectF', 1234, 'Chennai',4);
Query OK, 1 row affected (0.05 sec)
```

III. Alter the tables to

1.Drop Foreign key defined on ManagerSSN and add it using Alter table command.

```
mysql> alter table dept drop foreign key dp_ms_fk;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table dept add constraint dp_md_fk foreign key(managerssn) references employee(ss
nnumber) on delete set null;
Query OK, 4 rows affected (0.15 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

2. Make name of Project as Unique and sex of employee as not null.

```
mysql> alter table project add constraint p_pn_uq unique(projectname);
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table employee modify sex char(1) not null;
Query OK, 0 rows affected (0.11 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

3. In the copy table add the columns door no, street, city, State, Continent.

```
mysql> create table copyemployee as select * from employee;
Query OK, 7 rows affected (0.05 sec)
Records: 7  Duplicates: 0  Warnings: 0

mysql> alter table copyemployee add DoorNum int(3);
Query OK, 0 rows affected, 1 warning (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 1

mysql> alter table copyemployee add Continent varchar(15);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table copyemployee add State varchar(15);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table copyemployee add City varchar(15);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table copyemployee add Street varchar(15);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc copyemployee;
+------------------+-------------+------+-----+---------+-------+
| Field            | Type        | Null | Key | Default | Extra |
+------------------+-------------+------+-----+---------+-------+
| firstname        | varchar(15) | NO   |     | NULL    |       |
| MidName          | char(2)     | YES  |     | NULL    |       |
| lastname         | varchar(15) | NO   |     | NULL    |       |
| ssnnumber        | char(9)     | NO   |     | 800     |       |
| Birthday         | date        | YES  |     | NULL    |       |
| Address          | varchar(50) | YES  |     | NULL    |       |
| sex              | char(1)     | NO   |     | NULL    |       |
| Salary           | int         | YES  |     | NULL    |       |
| SupervisorSSN    | char(9)     | YES  |     | NULL    |       |
| DepartmentNumber | int         | YES  |     | NULL    |       |
| DoorNum          | int         | YES  |     | NULL    |       |
| Continent        | varchar(15) | YES  |     | NULL    |       |
| State            | varchar(15) | YES  |     | NULL    |       |
| City             | varchar(15) | YES  |     | NULL    |       |
| Street           | varchar(15) | YES  |     | NULL    |       |
+------------------+-------------+------+-----+---------+-------+
15 rows in set (0.04 sec)
```

4. Make salary of employee to accept real values.

```
mysql> alter table employee add constraint em_sa_ck check(salary is not null);
Query OK, 7 rows affected (0.13 sec)
Records: 7  Duplicates: 0  Warnings: 0
```

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20BDS0177

PDBMS

Digital Assignment-II

EXERCISE: 3

1. Find the employee names whose salary lies in the range between 30000 and 70000.

```
mysql> select firstname from employee where salary between 30000 and 70000;
+-----------+
| firstname |
+-----------+
| Joyce     |
| Frankin   |
| Ramesh    |
| Robert    |
| Jennifer  |
| John      |
+-----------+
6 rows in set (0.00 sec)
```

2. Find the employees who have no supervisor.

```
mysql> select firstname from employee where supervisorssn= '';
+-----------+
| firstname |
+-----------+
| Doug      |
| Joyce     |
+-----------+
2 rows in set (0.01 sec)
```

3. Display the bdate of all employees in the format 'DDthMonthYYYY'.

```
mysql> select date_format(birthday,'%d-%m-%y') from employee;
+----------------------------------+
| date_format(birthday,'%d-%m-%y') |
+----------------------------------+
| 09-06-68                         |
| 07-02-73                         |
| 08-12-72                         |
| 15-09-85                         |
| 21-06-90                         |
| 20-06-83                         |
| 09-01-87                         |
+----------------------------------+
7 rows in set (0.00 sec)
```

4. Display the employee names whose bdate is on or before 1978.

```
mysql> select firstname from employee where birthday <= '1978-01-01';
+-----------+
| firstname |
+-----------+
| Doug      |
| Joyce     |
| Frankin   |
+-----------+
3 rows in set (0.01 sec)
```

5. Display the department name that starts with ’M’.

```
mysql> select departmentname from dept where departmentname like 'm%';
Empty set (0.00 sec)
```

6. Display the department names’ that ends with ‘E’.

```
mysql> select departmentname from dept where departmentname like '%e';
+----------------+
| departmentname |
+----------------+
| Finance        |
+----------------+
1 row in set (0.00 sec)
```

7. Display the names of all the employees having supervisor with any of the following SSN 123, 124.

```
mysql> select firstname from employee where supervisorssn in('123','124');
+-----------+
| firstname |
+-----------+
| Frankin   |
| Ramesh    |
| Jennifer  |
| John      |
+-----------+
4 rows in set (0.04 sec)
```

8. Display all the department names in upper case and lower case.

```
mysql> select upper(departmentname), lower(departmentname) from dept;
+------------------------+------------------------+
| upper(departmentname) | lower(departmentname) |
+------------------------+------------------------+
| HEADQUATER             | headquater             |
| ADMINISTRATION         | administration         |
| FINANCE                | finance                |
| IT                     | it                     |
+------------------------+------------------------+
4 rows in set (0.01 sec)
```

9. Display the first four characters and last four of the department names using substring function.

```
mysql> select substr(departmentname, 1,4),substr(departmentname,-4) from dept;
+-----------------------------+---------------------------+
| substr(departmentname, 1,4) | substr(departmentname,-4) |
+-----------------------------+---------------------------+
| Head                        | ater                      |
| Admi                        | tion                      |
| Fina                        | ance                      |
| IT                          |                           |
+-----------------------------+---------------------------+
4 rows in set (0.00 sec)
```

10. Display the substring of the Address (starting from 5th position to 11 th position) of all employees.

```
mysql> select substr(address,5,11) from employee;
+----------------------+
| substr(address,5,11) |
+----------------------+
| nai                  |
| ore                  |
| i                    |
| lore                 |
| alore                |
| nai                  |
| rai                  |
+----------------------+
7 rows in set (0.00 sec)
```

11. Display the Mgrstartdate on adding three months to it.\

```
SQL> select add_months(mgrstartdate,3) from dept;

ADD_MONTH
---------
03-APR-12
16-MAR-15
18-AUG-13
12-SEP-15
```

12. Display the age of all the employees rounded to two digits.

```
SQL> select round((months_between(sysdate,bir_date)/12),2) from employee;

ROUND((MONTHS_BETWEEN(SYSDATE,BIR_DATE)/12),2)
----------------------------------------------
                                         53.3
                                        48.64
                                         48.8
                                        38.27
                                        34.71
                                        36.03
                                        31.26

7 rows selected.
```

13. Find the last day and next day of the month in which each manager has joined.

```
SQL> select last_day(mgrstartdate),last_day(mgrstartdate)+1,mgrstartdate,mgrstartdate+1 from dept;

LAST_DAY( LAST_DAY( MGRSTARTD MGRSTARTD
--------- --------- --------- ---------
31-JAN-12 01-FEB-12 03-JAN-12 04-JAN-12
31-DEC-14 01-JAN-15 16-DEC-14 17-DEC-14
31-MAY-13 01-JUN-13 18-MAY-13 19-MAY-13
30-JUN-15 01-JUL-15 12-JUN-15 13-JUN-15
```

14. Print a substring from the string ‘Harini’.

```
mysql>  select substr('HARINI',1,4) from dual;
+----------------------+
| substr('HARINI',1,4) |
+----------------------+
| HARI                 |
+----------------------+
1 row in set (0.00 sec)
```

15. Replace the string ‘ni’ from ‘Harini’ by ‘sh’.

```
mysql>  select replace('HARINI','NI','SH') from dual;
+-----------------------------+
| replace('HARINI','NI','SH') |
+-----------------------------+
| HARISH                      |
+-----------------------------+
1 row in set (0.00 sec)
```

16. Print the length of all the department names.

```
mysql> select length(departmentname) from dept;
+------------------------+
| length(departmentname) |
+------------------------+
|                     10 |
|                     14 |
|                      7 |
|                      2 |
+------------------------+
4 rows in set (0.02 sec)
```

17. Display the date after 10 months from current date.

```
SQL> select add_months(sysdate,10) from dual;

ADD_MONTH
---------
26-JUL-22
```

18. Display the next occurrence of Friday in this month.

```
SQL> select next_day(sysdate,'Friday') from dual;

NEXT_DAY(
---------
01-OCT-21
```

19. Display the project location padded with **** on left side.

```
mysql>  select lpad(projectlocation,length(projectlocation)+3,'*') from project;
+-----------------------------------------------------+
| lpad(projectlocation,length(projectlocation)+3,'*') |
+-----------------------------------------------------+
| ***Chennai                                          |
| ***Hyderabad                                        |
| ***Chennai                                          |
| ***Delhi                                            |
| ***Chennai                                          |
| ***Bangalore                                        |
+-----------------------------------------------------+
6 rows in set (0.00 sec)
```

EXERCISE: 4

1. How many different departments are there in the ‘employee’ table.

```
mysql> select count(distinct departmentnumber) from Employee;
+-----------------------------------+
| count(distinct departmentnumber) |
+-----------------------------------+
|                                 3 |
+-----------------------------------+
1 row in set (0.02 sec)
```

2. For each department display the minimum and maximum employee salaries.

```
mysql> select min(salary),max(salary) from employee;
+-------------+-------------+
| min(salary) | max(salary) |
+-------------+-------------+
|       30000 |       80000 |
+-------------+-------------+
1 row in set (0.01 sec)
```

3. Print the average annual salary.

```
mysql> select avg(salary) from employee;
+-------------+
| avg(salary) |
+-------------+
|  51285.7143 |
+-------------+
1 row in set (0.00 sec)
```

4. Count the number of employees over 30 age.

```
SQL> select count(ssn_no) from employee where (abs(extract(year from sysdate)-(extract(year from bir_date)))>30);

COUNT(SSN_NO)
-------------
            7
```

5. Print the Department number and average salary of each department.

```
mysql> select departmentname, avg(salary) from dept join employee using (departmentnumber) group by departmentname;
+----------------+-------------+
| departmentname | avg(salary) |
+----------------+-------------+
| Headquater     |  56000.0000 |
| Administration |  51000.0000 |
| Finance        |  38000.0000 |
+----------------+-------------+
3 rows in set (0.01 sec)
```

6. List out all the department ids with their individual employee strength.

```
mysql> select departmentnumber, count(ssnnumber) from employee group by departmentnumber;
+------------------+------------------+
| departmentnumber | count(ssnnumber) |
+------------------+------------------+
|                1 |                3 |
|                2 |                3 |
|                3 |                1 |
+------------------+------------------+
3 rows in set (0.01 sec)
```

7. Display the department number which contains more than 2 employees.

```
mysql> select departmentnumber from employee group by departmentnumber having count(ssnnumber)>2;
+------------------+
| departmentnumber |
+------------------+
|                1 |
|                2 |
+------------------+
2 rows in set (0.00 sec)
```

8. Calculate the average salary of employees by department and age.

```
SQL> select distinct dept_no, months_between(sysdate,bir_date)/12,avg(salary) from employee group by dept_no,months_between(sysdate,bir_date)/12;

   DEPT_NO MONTHS_BETWEEN(SYSDATE,BIR_DATE)/12 AVG(SALARY)
---------- ---------------------------------- -----------
         1                          48.6358849       70000
         2                          38.2676053       43000
         2                          48.7998634       40000
         3                          36.0310462       38000
         1                          31.2649172       58000
         1                          53.2971752        8000
         1                          34.7138419       30000

7 rows selected.
```

9. List out the employees based on their seniority.

```
SQL> select f_name,last_name,months_between(sysdate,bir_date)/12 from employee order by months_between(sysdate,bir_date)/12 desc;

F_NAME          LAST_NAME       MONTHS_BETWEEN(SYSDATE,BIR_DATE)/12
--------------- --------------- ----------------------------------
Doug            Gilbert                                53.2971796
Frankin         Wong                                   48.7998678
Joyce           Pan                                    48.6358893
Jennifer        Wallace                                38.2676097
Ramesh          Narayan                                36.0310506
John            Smith                                  34.7138463
Robert          Scott                                  31.2649216

7 rows selected.
```

Prachi Balodia

20BDS0177

```
SQL> conn prachi/prachi;
Connected.
SQL> -- 20BDS0177 PRACHI BALODIA
SQL> -- Email: prachi.balodia2020@vitstudent.ac.in
SQL> -- Exercise V and VI
SQL> -- Digital Assignment 3
SQL> -- Ex- 5: Sub Query and View
SQL> -- Ex- 6: Joins
SQL> -- Submitted to: Geetha Mary Mam
SQL>
```

Ex 5 and 6

Exercise: V

Sub Query and View

Aim: to understand the concept of Sub queries and logical tables in oracle

1. Find the employee who is getting highest salary in the department head quarter.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q1
SQL> select fname, mname, lname from employee where salary in (select max(salary) from employee where deptno in (select
d.deptno from dept d where d.deptname='Headquarter'));

FNAME           MN LNAME
--------------- -- ---------------
Doug            E  Gilbert

SQL>
```

2. Find the employees who earn the same salary as the minimum salary for each Department.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q2
SQL> select deptno, min(salary) from employee group by deptno;

    DEPTNO MIN(SALARY)
---------- -----------
         1       30000
         2       40000
         3       38000

SQL>
```

3. Find the employee whose salary is greater than average salary of department 2

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q3
SQL> select fname, mname, lname from employee where salary > (select avg(salary) from employee where deptno=2);

FNAME           MN LNAME
--------------- -- ---------------
Doug            E  Gilbert
Joyce              PAN
Jennifer        S  Wallace

SQL>
```

4. Find out the department having highest employee strength

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q4
SQL> select dept.deptno, deptname, count(*) as strength from employee, dept where employee.deptno= dept.deptno group by
dept.deptno, deptname having count(*)>= all(select count(*) from employee group by deptno);

    DEPTNO DEPTNAME          STRENGTH
---------- --------------- ----------
         1 Headquarter              3

SQL>
```

5. List out all the departments and average salary drawn by their employees.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q5
SQL> select e.deptno, deptname, avg(salary) from employee e, dept d where d.deptno= e.deptno group by e.deptno, deptname
;

    DEPTNO DEPTNAME        AVG(SALARY)
---------- --------------- -----------
         3 Finance               38000
         1 Headquarter           60000
         2 Administration        41500

SQL>
```

6. Create a view to display the employee details who is working in Administration department.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q6
SQL> create view empA as select fname, mname, lname, salary, e.deptno, ssnnumber from employee e, dept d where e.deptno=
d.deptno and d.deptname='Administration';

View created.

SQL>
```

7. Create a logical table to store employee details who is getting salary more than 10000.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-V
SQL> --Q7
SQL> create table empsal as select fname,mname,lname,salary,ssnnumber, deptno from employee where salary>10000;

Table created.

SQL> select * from empsal;

FNAME           MN LNAME              SALARY SSNNUMBER     DEPTNO
--------------- -- --------------- ---------- --------- ----------
Doug            E  Gilbert              80000 123                1
Joyce              PAN                  70000 124                1
Frankin         T  Wong                 40000 125                2
Jennifer        S  Wallace              43000 564                2
John            B  Smith                30000 678                1
Ramesh          K  Narayan              38000 234                3

6 rows selected.

SQL>
```

Exercise: VI

Joins

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

1. Find the names of all the employees who are directly supervised by ‘Joyce’.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-VI
SQL> --Q1
SQL> select fname, mname, lname from employee where supervisorssn='123';

FNAME           MN LNAME
--------------- -- ---------------
Frankin         T  Wong
Jennifer        S  Wallace

SQL>
```

2. Find the names of all the employees who are working in department ‘Headquarter’

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-VI
SQL> --Q2
SQL> select fname,mname,lname from employee e JOIN dept d ON d.deptno=e.deptno where d.deptname='Headquarter';

FNAME           MN LNAME
--------------- -- ---------------
Doug            E  Gilbert
Joyce              PAN
John            B  Smith

SQL>
```

3. List the department names and if has a manager then display the manager name too.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-VI
SQL> --Q3
SQL> select deptname,fname,mname,lname,d.mgrssn from dept d LEFT OUTER JOIN employee e ON d.mgrssn=e.ssnnumber;

DEPTNAME        FNAME           MN LNAME           MGRSSN
--------------- --------------- -- --------------- ---------
IT              Doug            E  Gilbert         123
Administration  Jennifer        S  Wallace         564
Headquarter     John            B  Smith           678
Finance         Ramesh          K  Narayan         234

SQL>
```

4. Retrieve the names of the departments which have more than 2 employees.

```
SQL> conn prachi/prachi;
Connected.
SQL> --20BDS0177 PRACHI BALODIA
SQL> --Exercise-VI
SQL> --Q4
SQL> SELECT deptname FROM employee e INNER JOIN dept d ON e.deptno=d.deptno GROUP BY d.deptname HAVING COUNT(*) > 2;

DEPTNAME
--------------
Headquarter

SQL>
```