MySQL Queries Sheet

1. Select details of all employees

Ans. **Select** * from employee;

```
+----------+------+---------+-----------+------------+------------------------+------+--------+----------
+------+
| Fname    | Minit | Lname  | Ssn       | Bdate      | Address                | Sex  | salary | super_ssn
| Dno  |
+----------+------+---------+-----------+------------+------------------------+------+--------+----------
+------+
| Franklin | T    | Wong    | 333445555 | 1955-12-08 | 638 Voss Houston TX    | M    |  40000 | 888665555
|    5 |
| Alicia   | J    | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle Spring TX  | F    |  25000 | 987654321
|    4 |
| Ramesh   | K    | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak Humble TX | M    |  38000 | 333445555
|    5 |
| Joyce    | A    | English | 453453453 | 1972-07-31 | 5631 Rice Houston TX   | F    |  25000 | 333445555
|    5 |
| Ahmad    | V    | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas Houstan TX  | M    |  25000 | 987654321
|    4 |
| James    | E    | borg    | 888665555 | 1937-11-10 | 450 Stone Houstan TX   | M    |  55000 |      NULL
|    1 |
```

2. List the ssn of all supervisiors

Ans. Select **distinct** super_ssn from employee;

```
+-----------+
| super_ssn |
+-----------+
| 888665555 |
| 987654321 |
| 333445555 |
|      NULL |
+-----------+
```

3. List details of all employees where salary is more than 30000

Ans. Select Fname,salary from employee **where** salary > 30000;

```
+----------+--------+
| Fname    | salary |
+----------+--------+
| Franklin |  40000 |
| Ramesh   |  38000 |
| James    |  55000 |
| Jennifer |  43000 |
+----------+--------+
```

4. Select employee Fname,Dno of employees who work in Department no 1 or 5

Ans.Select Fname,Dno from employee where Dno = 1 **or** Dno=5;

```
+----------+------+
| Fname    | Dno  |
+----------+------+
| James    |    1 |
| John     |    5 |
| Franklin |    5 |
| Joyce    |    5 |
| Ramesh   |    5 |
+----------+------+
```

5. Select First name,Salary,Dno of employees with salary equal to 25000 and who also work in department no 4

Ans. Select Fname,salary,Dno from employee where salary = 25000 **and** Dno=4;

```
+--------+--------+------+
| Fname  | salary | Dno  |
+--------+--------+------+
| Ahmad  |  25000 |    4 |
| Alicia |  25000 |    4 |
+--------+--------+------+
```

6.Select details of employees where salary is not less than 30000

Ans. Select * from employee where **NOT** salary < 30000;

```
+----------+-------+---------+-----------+------------+----------------------+------+--------+-----------+------+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address              | Sex  | Salary | Super_ssn | Dno  |
+----------+-------+---------+-----------+------------+----------------------+------+--------+-----------+------+
| John     | B     | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    |  30000 | 333445555 |    5 |
| Franklin | T     | Wong    | 333445555 | 1955-12-08 | 638 Voss Houston TX    | M    |  40000 | 888665555 |    5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak Humble TX | M    |  38000 | 333445555 |    5 |
| James    | E     | borg    | 888665555 | 1937-11-10 | 450 Stone Houstan TX   | M    |  55000 |      NULL |    1 |
| Jennifer | S     | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX | F    |  43000 | 888665555 |    4 |
+----------+-------+---------+-----------+------------+----------------------+------+--------+-----------+------+
```

7. Select employee details for all employees whose salary is in the range 20000-45000

Ans.Select * from employee where salary **between** 20000 and 45000;

```
+----------+-------+---------+-----------+------------+----------------------+------+-----
---+-----------+------+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address              | Sex  |
Salary | Super_ssn | Dno   |
+----------+-------+---------+-----------+------------+----------------------+------+-----
---+-----------+------+
| John     | B     | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    |
30000 | 333445555 |    5 |
| Franklin | T     | Wong    | 333445555 | 1955-12-08 | 638 Voss Houston TX    | M    |
40000 | 888665555 |    5 |
| Joyce    | A     | English | 453453453 | 1972-07-31 | 5631 Rice Houston TX   | F    |
25000 | 333445555 |    5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak Humble TX | M    |
38000 | 333445555 |    5 |
| Jennifer | S     | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX  | F    |
43000 | 888665555 |    4 |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas Houstan TX  | M    |
25000 | 987654321 |    4 |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle Spring TX  | F    |
25000 | 987654321 |    4 |
+----------+-------+---------+-----------+------------+----------------------+------+-----
---+-----------+------+
```

8. Select employee Fname,Dno of employees who work in Department no 1 or 5 without using OR keyword

Ans. Select Fname,Dno from employee where Dno **IN(1,5)**;

```
+----------+------+
| Fname    | Dno  |
+----------+------+
| James    |    1 |
| John     |    5 |
| Franklin |    5 |
| Joyce    |    5 |
| Ramesh   |    5 |
+----------+------+
```

9. Select employee details in the order of their department number

Ans. Select * from employee **order by Dno**;

```
+----------+-------+---------+-----------+------------+----------------------+------+-----
---+-----------+------+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address              | Sex  |
Salary | Super_ssn | Dno   |
+----------+-------+---------+-----------+------------+----------------------+------+-----
---+-----------+------+
```

```
| James    | E     | borg    | 888665555 | 1937-11-10  | 450 Stone Houstan TX   | M    |
55000 |     NULL |    1 |
| Jennifer | S     | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX  | F    |
43000 | 888665555 |    4 |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29  | 980 Dallas Houstan TX  | M    |
25000 | 987654321 |    4 |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19  | 3321 Castle Spring TX  | F    |
25000 | 987654321 |    4 |
| John     | B     | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    |
30000 | 333445555 |    5 |
| Franklin | T     | Wong    | 333445555 | 1955-12-08  | 638 Voss Houston TX    | M    |
40000 | 888665555 |    5 |
| Joyce    | A     | English | 453453453 | 1972-07-31  | 5631 Rice Houston TX   | F    |
25000 | 333445555 |    5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15  | 975 Fire Oak Humble TX | M    |
38000 | 333445555 |    5 |
+----------+-------+---------+-----------+-------------+------------------------+------+-----
---+-----------+------+
```

10. Select the details of the employees with no supervisor

Ans. Select * from employee where super_ssn **IS NULL**;

```
+-------+-------+-------+-----------+------------+----------------------+------+--------+----
-------+------+
| Fname | Minit | Lname | Ssn       | Bdate      | Address              | Sex  | Salary |
Super_ssn | Dno  |
+-------+-------+-------+-----------+------------+----------------------+------+--------+----
-------+------+
| James | E     | borg  | 888665555 | 1937-11-10 | 450 Stone Houstan TX | M    | 55000  |
NULL  |    1 |
+-------+-------+-------+-----------+------------+----------------------+------+--------+----
-------+------+
```

11. Use of insert keyword

Ans. Insert into employee (Fname,Minit,Lname,Ssn,Bdate,Address,Sex,salary,super_ssn,Dno) values
("John","B","Smith",123456789,"1965-01-09","731 Fondren, Houston,
TX","M",30000,333445555,5),("Jennifer","S","Wallace",987654321,"1941-06-20","291 Berry, Bellaire, TX","F",43000,888665555,4);

```
Inserts the given values
Query OK, 2 rows affected (0.01 sec)
```

12. Select the details of the employees whose supervisor exist

Ans. Select * from employee where super_ssn **IS NOT NULL**;

```
+----------+-------+---------+-----------+-------------+------------------------+------+-----
---+-----------+------+
```

```
| Fname    | Minit | Lname   | Ssn       | Bdate       | Address                | Sex  | Salary | Super_ssn | Dno  |
+----------+-------+---------+-----------+-------------+------------------------+------+--------+-----------+------+
| John     | B     | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    | 30000  | 333445555 |    5 |
| Franklin | T     | Wong    | 333445555 | 1955-12-08  | 638 Voss Houston TX    | M    | 40000  | 888665555 |    5 |
| Joyce    | A     | English | 453453453 | 1972-07-31  | 5631 Rice Houston TX   | F    | 25000  | 333445555 |    5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15  | 975 Fire Oak Humble TX | M    | 38000  | 333445555 |    5 |
| Jennifer | S     | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX  | F    | 43000  | 888665555 |    4 |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29  | 980 Dallas Houstan TX  | M    | 25000  | 987654321 |    4 |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19  | 3321 Castle Spring TX  | F    | 25000  | 987654321 |    4 |
+----------+-------+---------+-----------+-------------+------------------------+------+--------+-----------+------+
```

13. Return only any 4 employee records

Ans. Select * from employee **LIMIT 4**;

```
+----------+-------+---------+-----------+-------------+------------------------+------+--------+-----------+------+
| Fname    | Minit | Lname   | Ssn       | Bdate       | Address                | Sex  | Salary | Super_ssn | Dno  |
+----------+-------+---------+-----------+-------------+------------------------+------+--------+-----------+------+
| John     | B     | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    | 30000  | 333445555 |    5 |
| Franklin | T     | Wong    | 333445555 | 1955-12-08  | 638 Voss Houston TX    | M    | 40000  | 888665555 |    5 |
| Joyce    | A     | English | 453453453 | 1972-07-31  | 5631 Rice Houston TX   | F    | 25000  | 333445555 |    5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15  | 975 Fire Oak Humble TX | M    | 38000  | 333445555 |    5 |
+----------+-------+---------+-----------+-------------+------------------------+------+--------+-----------+------+
```

14. Show the minimum salary that is given to the employees

Ans. Select **min(salary)** MinSalary from employee;
```
+-----------+
| MinSalary |
+-----------+
|     25000 |
+-----------+
```

15. Retrieve first name,salary and department number of employees whose first name contains 'a'

Ans. Select Fname,Salary,Dno from employee where **Fname like "%a%"**;

```
+----------+--------+------+
| Fname    | Salary | Dno  |
+----------+--------+------+
| Franklin |  40000 |    5 |
| Ramesh   |  38000 |    5 |
| James    |  55000 |    1 |
| Ahmad    |  25000 |    4 |
| Alicia   |  25000 |    4 |
+----------+--------+------+
```

16. Making the Output more understandable with the use of Aliasing

 Ans. Select Fname **AS** FirstName, salary **AS** Income, Dno **AS** DepartmentNumber from employee;

```
+-----------+--------+------------------+
| FirstName | Income | DepartmentNumber |
+-----------+--------+------------------+
| John      |  30000 |                5 |
| Franklin  |  40000 |                5 |
| Joyce     |  25000 |                5 |
| Ramesh    |  38000 |                5 |
| James     |  55000 |                1 |
| Jennifer  |  43000 |                4 |
| Ahmad     |  25000 |                4 |
| Alicia    |  25000 |                4 |
+-----------+--------+------------------+
```

17. Show the number of workers in each department

Ans. Select Dno,count(Dno) AS NoOfWorkers from employee **group by Dno** order by Dno;

```
+------+-------------+
| Dno  | NoOfWorkers |
+------+-------------+
|    1 |           1 |
|    4 |           3 |
|    5 |           4 |
+------+-------------+
```

18. Select employee details in the descending order of their department number (use of desc keyword)

Ans. Select * from employee **order by** Dno **DESC**;

```
+----------+-------+---------+----------+------------+----------------------+------+-----
---+-----------+------+
```

```
| Fname    | Minit | Lname   | Ssn       | Bdate       | Address                | Sex |
Salary | Super_ssn | Dno   |
+----------+-------+---------+-----------+-------------+------------------------+------+-----
---+-----------+------+
| John     | B     | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    |
30000 | 333445555 |    5 |
| Franklin | T     | Wong    | 333445555 | 1955-12-08  | 638 Voss Houston TX    | M    |
40000 | 888665555 |    5 |
| Joyce    | A     | English | 453453453 | 1972-07-31  | 5631 Rice Houston TX   | F    |
25000 | 333445555 |    5 |
| Ramesh   | K     | Narayan | 666884444 | 1962-09-15  | 975 Fire Oak Humble TX | M    |
38000 | 333445555 |    5 |
| Jennifer | S     | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX  | F    |
43000 | 888665555 |    4 |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29  | 980 Dallas Houstan TX  | M    |
25000 | 987654321 |    4 |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19  | 3321 Castle Spring TX  | F    |
25000 | 987654321 |    4 |
| James    | E     | borg    | 888665555 | 1937-11-10  | 450 Stone Houstan TX   | M    |
55000 |      NULL |    1 |
+----------+-------+---------+-----------+-------------+------------------------+------+-----
---+-----------+------+
```

19. Show number of workers in departments other than department 1 (Use of having keyword)

Ans. Select Dno,count(Dno) AS NoOfWorkers from employee **group by Dno having Dno > 1** order by Dno;

```
+------+-------------+
| Dno  | NoOfWorkers |
+------+-------------+
|    4 |           3 |
|    5 |           4 |
+------+-------------+
```

20. Retrieve the First Name, Salary, Dno of employees along with the names of the department they are working in

Ans. Select E.Fname,E.Salary,E.Dno,D.Dname from employee as E **INNER JOIN** department as D ON E.Dno=D.Dnumber;

```
+----------+--------+------+----------------+
| Fname    | Salary | Dno  | Dname          |
+----------+--------+------+----------------+
| James    |  55000 |    1 | Headquaters    |
| Jennifer |  43000 |    4 | Administration |
| Ahmad    |  25000 |    4 | Administration |
| Alicia   |  25000 |    4 | Administration |
| John     |  30000 |    5 | Research       |
| Franklin |  40000 |    5 | Research       |
| Joyce    |  25000 |    5 | Research       |
| Ramesh   |  38000 |    5 | Research       |
+----------+--------+------+----------------+
```

21. Use of Left Join. When you have keep all the data of the left table in the relation

Ans. Select D.*,E.* from department as D **LEFT JOIN** employee as E ON D.mgr_ssn=E.ssn;

Dname	Dnumber	Mgr_ssn	Mgr_start_date	Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
Headquaters	1	888665555	1981-06-19	James	E	borg	888665555	1937-11-10	450 Stone Houstan TX	M	55000	NULL	1
Administration	4	987654321	1995-01-01	Jennifer	S	Wallace	987654321	11941-06-20	291 Berry Bellaire TX	F	43000	888665555	4
Research	5	333445555	1988-05-22	Franklin	T	Wong	333445555	1955-12-08	638 Voss Houston TX	M	40000	888665555	5

22. Use of right Join. When you have keep all the data of the right table in the relation

Ans. Select D.*,E.* from department as D **RIGHT JOIN** employee as E ON D.mgr_ssn=E.ssn;

Dname	Dnumber	Mgr_ssn	Mgr_start_date	Fname	Minit	Lname	Ssn	Bdate	Address	Sex	Salary	Super_ssn	Dno
NULL	NULL	NULL	NULL	John	B	Smith	123456789	1965-01-09	731 Fondren Housten Tx	M	30000	333445555	5
Research	5	333445555	1988-05-22	Franklin	T	Wong	333445555	1955-12-08	638 Voss Houston TX	M	40000	888665555	5
NULL	NULL	NULL	NULL	Joyce	A	English	453453453	1972-07-31	5631 Rice Houston TX	F	25000	333445555	5
NULL	NULL	NULL	NULL	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak Humble TX	M	38000	333445555	5
Headquaters	1	888665555	1981-06-19	James	E	borg	888665555	1937-11-10	450 Stone Houstan TX	M	55000	NULL	1
Administration	4	987654321	1995-01-01	Jennifer	S	Wallace	987654321	11941-06-20	291 Berry Bellaire TX	F	43000	888665555	4
NULL	NULL	NULL	NULL	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas Houstan TX	M	25000	987654321	4
NULL	NULL	NULL	NULL	Alicia	J	Zelaya	999887777	1968-01-19	3321 Castle Spring TX	F	25000	987654321	4

23. Use of Complete join using left join, right join and union

Ans. Select D.*,E.* from department as D **LEFT JOIN** employee as E ON D.Dnumber=E.Dno where super_ssn is not null **UNION** Select D.*,E.* from department as D **RIGHT JOIN** employee as E ON D.Dnumber=E.Dno where super_ssn is not null;

```
+---------------+---------+-----------+----------------+----------+-------+---------+-------
----+------------+----------------------+------+--------+-----------+------+
| Dname         | Dnumber | Mgr_ssn   | Mgr_start_date | Fname    | Minit | Lname   | Ssn
| Bdate         | Address              | Sex  | Salary | Super_ssn | Dno  |
+---------------+---------+-----------+----------------+----------+-------+---------+-------
----+------------+----------------------+------+--------+-----------+------+
| Administration |      4 | 987654321 | 1995-01-01     | Jennifer | S     | Wallace |
987654321 | 11941-06-20 | 291 Berry Bellaire TX   | F    |  43000 | 888665555 |    4 |
| Administration |      4 | 987654321 | 1995-01-01     | Ahmad    | V     | Jabbar  |
987987987 | 1969-03-29  | 980 Dallas Houstan TX  | M    |  25000 | 987654321 |    4 |
| Administration |      4 | 987654321 | 1995-01-01     | Alicia   | J     | Zelaya  |
999887777 | 1968-01-19  | 3321 Castle Spring TX  | F    |  25000 | 987654321 |    4 |
| Research       |      5 | 333445555 | 1988-05-22     | John     | B     | Smith   |
123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    |  30000 | 333445555 |    5 |
| Research       |      5 | 333445555 | 1988-05-22     | Franklin | T     | Wong    |
333445555 | 1955-12-08  | 638 Voss Houston TX    | M    |  40000 | 888665555 |    5 |
| Research       |      5 | 333445555 | 1988-05-22     | Joyce    | A     | English |
453453453 | 1972-07-31  | 5631 Rice Houston TX   | F    |  25000 | 333445555 |    5 |
| Research       |      5 | 333445555 | 1988-05-22     | Ramesh   | K     | Narayan |
666884444 | 1962-09-15  | 975 Fire Oak Humble TX | M    |  38000 | 333445555 |    5 |
+---------------+---------+-----------+----------------+----------+-------+---------+-------
----+------------+----------------------+------+--------+-----------+------+
```

24. Select the details of the employee and their respective supervisors

Ans. Select e.Fname EmployeeName,e.super_ssn EmployeeSuperSSN,s.Fname SupervisiorName,s.ssn SupervisiorSSN from **employee as e, employee as s** where **e.super_ssn=s.ssn**;

```
+--------------+------------------+-----------------+----------------+
| EmployeeName | EmployeeSuperSSN | SupervisiorName | SupervisiorSSN |
+--------------+------------------+-----------------+----------------+
| John         |        333445555 | Franklin        |      333445555 |
| Franklin     |        888665555 | James           |      888665555 |
| Joyce        |        333445555 | Franklin        |      333445555 |
| Ramesh       |        333445555 | Franklin        |      333445555 |
| Jennifer     |        888665555 | James           |      888665555 |
| Ahmad        |        987654321 | Jennifer        |      987654321 |
| Alicia       |        987654321 | Jennifer        |      987654321 |
+--------------+------------------+-----------------+----------------+
```

25. Use of Cross product using Cross join

Ans. Select e.Fname,e.Dno,d.Dname,d.Dnumber from employee as e **CROSS JOIN** department as d;

```
| Fname    | Dno  | Dname          | Dnumber |
+----------+------+----------------+---------+
| John     |    5 | Research       |       5 |
| John     |    5 | Administration |       4 |
| John     |    5 | Headquaters    |       1 |
| Franklin |    5 | Research       |       5 |
| Franklin |    5 | Administration |       4 |
| Franklin |    5 | Headquaters    |       1 |
| Joyce    |    5 | Research       |       5 |
| Joyce    |    5 | Administration |       4 |
| Joyce    |    5 | Headquaters    |       1 |
| Ramesh   |    5 | Research       |       5 |
| Ramesh   |    5 | Administration |       4 |
| Ramesh   |    5 | Headquaters    |       1 |
| James    |    1 | Research       |       5 |
| James    |    1 | Administration |       4 |
| James    |    1 | Headquaters    |       1 |
| Jennifer |    4 | Research       |       5 |
| Jennifer |    4 | Administration |       4 |
| Jennifer |    4 | Headquaters    |       1 |
| Ahmad    |    4 | Research       |       5 |
| Ahmad    |    4 | Administration |       4 |
| Ahmad    |    4 | Headquaters    |       1 |
| Alicia   |    4 | Research       |       5 |
| Alicia   |    4 | Administration |       4 |
| Alicia   |    4 | Headquaters    |       1 |
+----------+------+----------------+---------+
```

26.Use of **ALL** keyword

Ans. Select D.*,E.* from department as D **LEFT JOIN** employee as E ON D.Dnumber=E.Dno where super_ssn is not null **UNION ALL** Select D.*,E.* from department as D **RIGHT JOIN** employee as E ON D.Dnumber=E.Dno where super_ssn is not null;

```
+----------------+---------+-----------+----------------+----------+-------+---------+-----------+------------+---------------------+------+--------+-----------+------+
| Dname          | Dnumber | Mgr_ssn   | Mgr_start_date | Fname    | Minit | Lname   | Ssn       | Bdate      | Address             | Sex  | Salary | Super_ssn | Dno  |
+----------------+---------+-----------+----------------+----------+-------+---------+-----------+------------+---------------------+------+--------+-----------+------+
| Administration |       4 | 987654321 | 1995-01-01     | Jennifer | S     | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX | F    | 43000  | 888665555 |    4 |
| Administration |       4 | 987654321 | 1995-01-01     | Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas Houstan TX | M    | 25000  | 987654321 |    4 |
| Administration |       4 | 987654321 | 1995-01-01     | Alicia   | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle Spring TX | F    | 25000  | 987654321 |    4 |
| Research       |       5 | 333445555 | 1988-05-22     | John     | B     | Smith   | 123456789 | 1965-01-09 | 731 Fondren Housten Tx | M    | 30000  | 333445555 |    5 |
| Research       |       5 | 333445555 | 1988-05-22     | Franklin | T     | Wong    | 333445555 | 1955-12-08 | 638 Voss Houston TX  | M    | 40000  | 888665555 |    5 |
```

```
| Research        |       5 | 333445555 | 1988-05-22       | Joyce    | A       | English |
453453453 | 1972-07-31 | 5631 Rice Houston TX   | F   |    25000 | 333445555 |     5 |
| Research        |       5 | 333445555 | 1988-05-22       | Ramesh   | K       | Narayan |
666884444 | 1962-09-15 | 975 Fire Oak Humble TX | M   |    38000 | 333445555 |     5 |
| Research        |       5 | 333445555 | 1988-05-22       | John     | B       | Smith   |
123456789 |  1965-01-09 | 731 Fondren Housten Tx | M   |    30000 | 333445555 |     5 |
| Research        |       5 | 333445555 | 1988-05-22       | Franklin | T       | Wong    |
333445555 | 1955-12-08 | 638 Voss Houston TX    | M   |    40000 | 888665555 |     5 |
| Research        |       5 | 333445555 | 1988-05-22       | Joyce    | A       | English |
453453453 | 1972-07-31 | 5631 Rice Houston TX   | F   |    25000 | 333445555 |     5 |
| Research        |       5 | 333445555 | 1988-05-22       | Ramesh   | K       | Narayan |
666884444 | 1962-09-15 | 975 Fire Oak Humble TX | M   |    38000 | 333445555 |     5 |
| Administration  |       4 | 987654321 | 1995-01-01       | Jennifer | S       | Wallace |
987654321 | 11941-06-20 | 291 Berry Bellaire TX  | F   |    43000 | 888665555 |     4 |
| Administration  |       4 | 987654321 | 1995-01-01       | Ahmad    | V       | Jabbar  |
987987987 | 1969-03-29 | 980 Dallas Houstan TX  | M   |    25000 | 987654321 |     4 |
| Administration  |       4 | 987654321 | 1995-01-01       | Alicia   | J       | Zelaya  |
999887777 | 1968-01-19 | 3321 Castle Spring TX  | F   |    25000 | 987654321 |     4 |
+----------------+---------+-----------+----------------+----------+-------+---------+-------
---
```

*27.Retrieve the Roles of the workers as 'Employee' or 'Manager' based on their position

Ans. Select 'Employee' as Role,e.Fname,e.ssn,e.salary from employee as e where e.Fname **NOT IN**(select e.Fname from department as d, employee as e where d.Mgr_ssn=e.ssn) **UNION select 'Manager'** , e.Fname,d.Mgr_ssn as ssn,e.salary from department as d, employee as e where d.Mgr_ssn=e.ssn;

```
+----------+----------+-----------+--------+
| Role     | Fname    | ssn       | salary |
+----------+----------+-----------+--------+
| Employee | John     | 123456789 |  30000 |
| Employee | Joyce    | 453453453 |  25000 |
| Employee | Ramesh   | 666884444 |  38000 |
| Employee | Ahmad    | 987987987 |  25000 |
| Employee | Alicia   | 999887777 |  25000 |
| Manager  | James    | 888665555 |  55000 |
| Manager  | Jennifer | 987654321 |  43000 |
| Manager  | Franklin | 333445555 |  40000 |
+----------+----------+-----------+--------+
```

28. Use of Exists. Outer query runs when the inner query returns at least one record

Ans. Select Fname,Lname,ssn from employee where **EXISTS** (select * from employee where super_ssn is not NULL);

```
+----------+---------+-----------+
| Fname    | Lname   | ssn       |
+----------+---------+-----------+
| John     | Smith   | 123456789 |
| Franklin | Wong    | 333445555 |
| Joyce    | English | 453453453 |
```

```
| Ramesh   | Narayan | 666884444 |
| James    | borg    | 888665555 |
| Jennifer | Wallace | 987654321 |
| Ahmad    | Jabbar  | 987987987 |
| Alicia   | Zelaya  | 999887777 |
+----------+---------+-----------+
```

29. Use of Exists. Outer query runs when the inner query returns no records (NULL)

Ans. Select Fname,Lname,ssn from employee where **NOT EXISTS** (select * from employee where super_ssn is not NULL);

```
Empty set (0.00 sec)
```

30. Retrieve the First name, Salary of employees with salaries more than any of the salaries in the organization

Ans. Select Fname,salary from employee where **salary > ANY** (select salary from employee);

```
+----------+--------+
| Fname    | salary |
+----------+--------+
| John     |  30000 |
| Franklin |  40000 |
| Ramesh   |  38000 |
| James    |  55000 |
| Jennifer |  43000 |
+----------+--------+
```

31. Retrieve the First name, Salary of employees with salaries more than all of the salaries in the organization

Ans. Select Fname,salary from employee where salary >= ALL (select salary from employee);

```
+-------+--------+
| Fname | salary |
+-------+--------+
| James |  55000 |
+-------+--------+
```

**32. Retrieve the details of the employees who are working on Project number 1 and 2 both

Ans. Select Fname,Lname,'1,2' as Works_on_Pno,ssn from employee **INNER JOIN** works_ON w ON w.Essn=ssn and w.Pno=1 **INNER JOIN** works_ON as f ON f.Essn=w.Essn and f.Pno=2; (**INTERSECTION**)
```
+-------+---------+--------------+-----------+
| Fname | Lname   | Works_on_Pno | ssn       |
+-------+---------+--------------+-----------+
| John  | Smith   | 1,2          | 123456789 |
| Joyce | English | 1,2          | 453453453 |
+-------+---------+--------------+-----------+
```

33. Insert into backup table with the same records/data as in the table employee

Ans. Insert into backup select * from employee;

```
Query OK, 8 rows affected (0.01 sec)
+----------+------+---------+-----------+------------+-------------------------+------+-----
--+-----------+-------+
| col1     | col2 | col3    | col4      | col5       | col6                    | col7 | col8
| col9      | col10 |
+----------+------+---------+-----------+------------+-------------------------+------+-----
--+-----------+-------+
| Franklin | T    | Wong    | 333445555 | 1955-12-08 | 638 Voss Houston TX     | M    |
40000 | 888665555 | 5     |
| Alicia   | J    | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle Spring TX   | F    |
25000 | 987654321 | 4     |
| Ramesh   | K    | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak Humble TX  | M    |
38000 | 333445555 | 5     |
| Joyce    | A    | English | 453453453 | 1972-07-31 | 5631 Rice Houston TX    | F    |
25000 | 333445555 | 5     |
| Ahmad    | V    | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas Houstan TX   | M    |
25000 | 987654321 | 4     |
| James    | E    | borg    | 888665555 | 1937-11-10 | 450 Stone Houstan TX    | M    |
55000 | NULL      | 1     |
| John     | B    | Smith   | 123456789 | 1965-01-09 | 731 Fondren, Houston, TX | M   |
30000 | 333445555 | 5     |
| Jennifer | S    | Wallace | 987654321 | 1941-06-20 | 291 Berry, Bellaire, TX | F    |
43000 | 888665555 | 4     |
+----------+------+---------+-----------+------------+-------------------------+------+-----
--+-----------+-------+
```

*34. Retrieve employee Name and salary and add a column that specify if the salary is Highest or Least

Ans .Select Fname,salary, **case when** salary = 55000 then 'Highest salary' when salary = 25000 then 'Least salary' **END AS** SalaryText from employee;

```
+----------+--------+---------------+
| Fname    | salary | SalaryText    |
+----------+--------+---------------+
| John     |  30000 | NULL          |
| Franklin |  40000 | NULL          |
| Joyce    |  25000 | Least salary  |
| Ramesh   |  38000 | NULL          |
| James    |  55000 | Highest salary |
| Jennifer |  43000 | NULL          |
| Ahmad    |  25000 | Least salary  |
| Alicia   |  25000 | Least salary  |
+----------+--------+---------------+
```

*35. Show the first name and mention the ssn of the supervisor of that employee if not null otherwise display 'Not Applicable' in case supervisior doesn't exist

Ans. Select Fname,**IFNULL(super_ssn,'Not Applicable') as Supervisior_ssn** from employee;

```
+----------+----------------+
| Fname    | Supervisior_ssn |
+----------+----------------+
| John     | 333445555      |
| Franklin | 888665555      |
| Joyce    | 333445555      |
| Ramesh   | 333445555      |
| James    | Not Applicable |
| Jennifer | 888665555      |
| Ahmad    | 987654321      |
| Alicia   | 987654321      |
+----------+----------------+
```

36. Show the First name, salary of employee whose salary is less than at least 1 or more salaries

Ans. Select Fname,salary from employee where **salary < SOME** (select salary from employee);

```
+----------+--------+
| Fname    | salary |
+----------+--------+
| John     |  30000 |
| Franklin |  40000 |
| Joyce    |  25000 |
| Ramesh   |  38000 |
| Jennifer |  43000 |
| Ahmad    |  25000 |
| Alicia   |  25000 |
+----------+--------+
```

37. Retrieve the First name of employees whose salary is more than the average salary

Ans. Select Fname,salary from employee **where salary >** (select **avg(salary)** from employee);

```
+----------+--------+
| Fname    | salary |
+----------+--------+
| Franklin |  40000 |
| Ramesh   |  38000 |
| James    |  55000 |
| Jennifer |  43000 |
+----------+--------+
```

38. Retrieve the Highest salary from the employees whose name contains 'n'

Ans. Select max(salary) from (select * from employee where Fname like '%n%')AS max;

```
+-------------+
| max(salary) |
+-------------+
|       43000 |
+-------------+
```

*39. Show the details of the employee with the 3rd highest salary among all the employees

Ans. select * from employee m **where 3 = (select count(salary) from employee e where e.salary>=m.salary)**; [nth highest   salary] [works best when all the salaries are distinct or when we have a separate table of distinct salaries only]

```
+----------+-------+-------+-----------+------------+---------------------+------+--------+--
---------+------+
| Fname    | Minit | Lname | Ssn       | Bdate      | Address             | Sex  | Salary |
Super_ssn | Dno   |
+----------+-------+-------+-----------+------------+---------------------+------+--------+--
---------+------+
| Franklin | T     | Wong  | 333445555 | 1955-12-08 | 638 Voss Houston TX | M    |  40000 |
888665555 |    5 |
+----------+-------+-------+-----------+------------+---------------------+------+--------+--
---------+------+
```

40. Store some specific important columns in a view so that we can retrieve the most important information without any unnecessary information involved

Ans. Create view impinfo as Select Fname,Lname,ssn,Dno from employee;
        Select * from impinfo;

```
+----------+---------+-----------+------+
| Fname    | Lname   | ssn       | Dno  |
+----------+---------+-----------+------+
| John     | Smith   | 123456789 |    5 |
| Franklin | Wong    | 333445555 |    5 |
| Joyce    | English | 453453453 |    5 |
| Ramesh   | Narayan | 666884444 |    5 |
| James    | borg    | 888665555 |    1 |
| Jennifer | Wallace | 987654321 |    4 |
| Ahmad    | Jabbar  | 987987987 |    4 |
| Alicia   | Zelaya  | 999887777 |    4 |
+----------+---------+-----------+------+
```

41. Add 'sex' in the above view. Command to alter an existing view

Ans. **Alter view** impinfo as Select Fname,Lname,ssn,sex,Dno from employee;
      Select * from impinfo;

```
+----------+---------+-----------+------+------+
| Fname    | Lname   | ssn       | sex  | Dno  |
+----------+---------+-----------+------+------+
| John     | Smith   | 123456789 | M    |    5 |
| Franklin | Wong    | 333445555 | M    |    5 |
| Joyce    | English | 453453453 | F    |    5 |
| Ramesh   | Narayan | 666884444 | M    |    5 |
| James    | borg    | 888665555 | M    |    1 |
| Jennifer | Wallace | 987654321 | F    |    4 |
| Ahmad    | Jabbar  | 987987987 | M    |    4 |
| Alicia   | Zelaya  | 999887777 | F    |    4 |
+----------+---------+-----------+------+------+
```

42. Display the number of workers on each project

Ans. select Essn,Count(pno) as working_project from works_ON group by Essn;

```
+-----------+-----------------+
| Essn      | working_project |
+-----------+-----------------+
| 123456789 |               2 |
| 666884444 |               1 |
| 453453453 |               2 |
| 333445555 |               4 |
| 999887777 |               2 |
| 987987987 |               2 |
| 987654321 |               2 |
| 888665555 |               1 |
+-----------+-----------------+
```

43. Retrieve the details of the employees in the ascending order of department and descending order of salary in each   department

Ans. Select * from employee order by Dno,Salary;

```
+----------+-------+---------+-----------+------------+-----------------------+------+-----
---+-----------+------+
| Fname    | Minit | Lname   | ssn       | Bdate      | Address               | Sex  |
Salary | Super_ssn | Dno  |
+----------+-------+---------+-----------+------------+-----------------------+------+-----
---+-----------+------+
| James    | E     | borg    | 888665555 | 1937-11-10 | 450 Stone Houstan TX  | M    |
55000 |      NULL |    1 |
| Ahmad    | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas Houstan TX | M    |
25000 | 987654321 |    4 |
| Alicia   | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle Spring TX | F    |
25000 | 987654321 |    4 |
```

```
| Jennifer | S      | Wallace | 987654321 | 11941-06-20 | 291 Berry Bellaire TX  | F    |
43000 | 888665555 |    4 |
| Joyce    | A      | English | 453453453 | 1972-07-31  | 5631 Rice Houston TX   | F    |
25000 | 333445555 |    5 |
| John     | B      | Smith   | 123456789 |  1965-01-09 | 731 Fondren Housten Tx | M    |
30000 | 333445555 |    5 |
| Ramesh   | K      | Narayan | 666884444 | 1962-09-15  | 975 Fire Oak Humble TX | M    |
38000 | 333445555 |    5 |
| Franklin | T      | Wong    | 333445555 | 1955-12-08  | 638 Voss Houston TX    | M    |
40000 | 888665555 |    5 |
+----------+-------+---------+-----------+-------------+----------------------+------+-----
---+-----------+------+
```

44. Show the total number of employees working in the company

Ans. Select **count(*) TotalRecords as Total_employees** from employee;

```
+------------------+
| Total_employees  |
+------------------+
|         8        |
+------------------+
```

45. Retrieve the total amount of money spent on salaries annaully

Ans. Select **sum(salary) SumofSalary** from employee;

```
+-------------+
| SumofSalary |
+-------------+
|      281000 |
+-------------+
```

46. Show the average salary of the employees

Ans.Select **avg(salary) AvgSalary** from employee;

```
+------------+
| AvgSalary  |
+------------+
| 35125.0000 |
+------------+
```

47. Retrieve the variance of the salaries

Ans. SELECT **VARIANCE(salary)** AS var_salary,**VAR_POP(salary)** AS pop_salary,**VAR_SAMP(salary)** AS samp_salary
    FROM   employee;

```
+------------+------------+-------------------+
| var_salary | pop_salary | samp_salary       |
+------------+------------+-------------------+
```

```
|    102859375 |    102859375 | 117553571.42857143 |
+------------+------------+-------------------+
```

48. Retrieve the standard deviation of the salaries

Ans. SELECT **STDDEV(salary)** AS stddev_salary, **STDDEV_POP(salary)** AS pop_salary, **STDDEV_SAMP(salary)** AS samp_salary FROM   employee;

```
+-------------------+-------------------+-------------------+
| stddev_salary     | pop_salary        | samp_salary       |
+-------------------+-------------------+-------------------+
| 10141.961102272086 | 10141.961102272086 | 10842.212478482952 |
+-------------------+-------------------+-------------------+
```

49. Replace all the values of the employee ssn with their respective super_ssn

Ans. Update employee **set ssn=super_ssn**;

```
+----------+-------+---------+-----------+------------+------------------------+------+----
----+-----------+------+
| Fname    | Minit | Lname   | Ssn       | Bdate      | Address                | Sex |
salary | super_ssn | Dno  |
+----------+-------+---------+-----------+------------+------------------------+------+----
----+-----------+------+
| Franklin | T     | Wong    | 888665555 | 1955-12-08 | 638 Voss Houston TX    | M    |
40000 | 888665555 |    5 |
| Alicia   | J     | Zelaya  | 987654321 | 1968-01-19 | 3321 Castle Spring TX  | F    |
25000 | 987654321 |    4 |
| Ramesh   | K     | Narayan | 333445555 | 1962-09-15 | 975 Fire Oak Humble TX | M    |
38000 | 333445555 |    5 |
| Joyce    | A     | English | 333445555 | 1972-07-31 | 5631 Rice Houston TX   | F    |
25000 | 333445555 |    5 |
| Ahmad    | V     | Jabbar  | 987654321 | 1969-03-29 | 980 Dallas Houstan TX  | M    |
25000 | 987654321 |    4 |
| James    | E     | borg    |      NULL | 1937-11-10 | 450 Stone Houstan TX   | M    |
55000 |      NULL |    1 |
| John     | B     | Smith   | 333445555 | 1965-01-09 | 731 Fondren, Houston, TX | M  |
30000 | 333445555 |    5 |
| Jennifer | S     | Wallace | 888665555 | 1941-06-20 | 291 Berry, Bellaire, TX | F   |
43000 | 888665555 |    4 |
+----------+-------+---------+-----------+------------+------------------------+------+----
----+-----------+------+
```

50. Show the details of the employees born after 1959 and before 1970

Ans . select * from employee where **Bdate between '1960-01-01' and '1969-12-31'**;

```
+--------+-------+---------+-----------+------------+------------------------+------+-------
+-----------+------+
```

```
| Fname   | Minit | Lname   | Ssn       | Bdate      | Address                | Sex  | Salary
| Super_ssn | Dno  |
+--------+-------+---------+-----------+-----------+------------------------+------+--------
+-----------+------+
| Ramesh | K     | Narayan | 666884444 | 1962-09-15 | 975 Fire Oak Humble TX | M    | 38000
| 333445555 |    5 |
| Ahmad  | V     | Jabbar  | 987987987 | 1969-03-29 | 980 Dallas Houstan TX  | M    | 25000
| 987654321 |    4 |
| Alicia | J     | Zelaya  | 999887777 | 1968-01-19 | 3321 Castle Spring TX  | F    | 25000
| 987654321 |    4 |
+--------+-------+---------+-----------+-----------+------------------------+------+--------
+-----------+------+
```

51. Command to create a new table in database

Ans. Create table Backup(Fname varchar(20),ssn int(10));

```
Query OK, 0 rows affected, 1 warning (0.03 sec)
```

52. Drop the backup table created earlier. Command to drop a table.

Ans. Drop table Backup;

```
Query OK, 0 rows affected (0.01 sec)
```

53. Given a URL as string, retrieve the part of URL without its domain

Ans. SELECT **SUBSTRING_INDEX**("www.bytescout.com", ".", 2);

```
+---------------------------------------------+
| SUBSTRING_INDEX("www.bytescout.com", ".", 2) |
+---------------------------------------------+
| www.bytescout                               |
+---------------------------------------------+
```

*54. Show the First name, salary, Dno of employees along with their department wise ranks based on their salaries in ascending order of department no

Ans. SELECT Fname, Dno, salary, **DENSE_RANK() OVER (PARTITION BY Dno ORDER BY salary desc)** AS ranking FROM employee;

```
+----------+------+--------+---------+
| Fname    | Dno  | salary | ranking |
+----------+------+--------+---------+
| James    |    1 | 55000  |       1 |
| Jennifer |    4 | 43000  |       1 |
| Ahmad    |    4 | 25000  |       2 |
| Alicia   |    4 | 25000  |       2 |
| Franklin |    5 | 40000  |       1 |
| Ramesh   |    5 | 38000  |       2 |
```

```
| John     |     5 |  30000 |        3 |
| Joyce    |     5 |  25000 |        4 |
+----------+------+--------+---------+
```

55. Retrieve the Fname,salary,Dno of each employee and add an avg salary column in front of all of them

Ans. SELECT Fname, dno, salary, AVG(salary) **OVER ()** AS avg_sal FROM employee order by Dno;

```
+----------+------+--------+------------+
| Fname    | dno  | salary | avg_sal    |
+----------+------+--------+------------+
| James    |    1 |  55000 | 35125.0000 |
| Jennifer |    4 |  43000 | 35125.0000 |
| Ahmad    |    4 |  25000 | 35125.0000 |
| Alicia   |    4 |  25000 | 35125.0000 |
| John     |    5 |  30000 | 35125.0000 |
| Franklin |    5 |  40000 | 35125.0000 |
| Joyce    |    5 |  25000 | 35125.0000 |
| Ramesh   |    5 |  38000 | 35125.0000 |
+----------+------+--------+------------+
```

*56. Show the employee details and also show the department wise previous employee's salary

Ans. SELECT Fname,Dno,Salary,**LAG(Salary, 1, 0)** OVER (PARTITION BY Dno ORDER BY Salary) AS salary_prev FROM employee;

```
+----------+------+--------+-------------+
| Fname    | Dno  | Salary | salary_prev |
+----------+------+--------+-------------+
| James    |    1 |  55000 |           0 |
| Ahmad    |    4 |  25000 |           0 |
| Alicia   |    4 |  25000 |       25000 |
| Jennifer |    4 |  43000 |       25000 |
| Joyce    |    5 |  25000 |           0 |
| John     |    5 |  30000 |       25000 |
| Ramesh   |    5 |  38000 |       30000 |
| Franklin |    5 |  40000 |       38000 |
+----------+------+--------+-------------+
```

*57. Retrieve First name, salary of employee with next employee's salary and show the difference between the two salaries

Ans. SELECT Fname,Salary,**LEAD(Salary, 1, 0)** OVER (ORDER BY Salary) AS salary_next,LEAD(Salary, 1, 0) OVER (ORDER BY Salary) - Salary AS salary_diff FROM   employee;

```
+----------+--------+-------------+-------------+
| Fname    | Salary | salary_next | salary_diff |
+----------+--------+-------------+-------------+
| Joyce    |  25000 |       25000 |           0 |
```

```
| Ahmad    | 25000 |     25000 |        0 |
| Alicia   | 25000 |     30000 |     5000 |
| John     | 30000 |     38000 |     8000 |
| Ramesh   | 38000 |     40000 |     2000 |
| Franklin | 40000 |     43000 |     3000 |
| Jennifer | 43000 |     55000 |    12000 |
| James    | 55000 |         0 |   -55000 |
+----------+-------+------------+------------+
```

58. Show the First name, Salary, Dno of each employee along with the lowest salary in their respective departments

Ans. SELECT Fname, Dno,salary, **FIRST_VALUE(salary)** OVER (PARTITION BY dno ORDER BY salary) AS lowest_salary_in_dept FROM employee; (**adds a col. For lowest salary in dept**)

```
+----------+------+--------+-----------------------+
| Fname    | Dno  | salary | lowest_salary_in_dept |
+----------+------+--------+-----------------------+
| James    |    1 |  55000 |                 55000 |
| Ahmad    |    4 |  25000 |                 25000 |
| Alicia   |    4 |  25000 |                 25000 |
| Jennifer |    4 |  43000 |                 25000 |
| Joyce    |    5 |  25000 |                 25000 |
| John     |    5 |  30000 |                 25000 |
| Ramesh   |    5 |  38000 |                 25000 |
| Franklin |    5 |  40000 |                 25000 |
+----------+------+--------+-----------------------+
```

59. Show the First name, Salary, Dno of each employee along with the lowest salary in their respective departments

Ans. SELECT Fname,Dno,Salary, **FIRST_VALUE(Salary)** OVER (PARTITION BY Dno ORDER BY **Salary desc**) AS Highest_salary_in_dept FROM employee; (**adds a col. For highest salary in dept**)

```
+----------+------+--------+------------------------+
| Fname    | Dno  | Salary | Highest_salary_in_dept |
+----------+------+--------+------------------------+
| James    |    1 |  55000 |                  55000 |
| Jennifer |    4 |  43000 |                  43000 |
| Ahmad    |    4 |  25000 |                  43000 |
| Alicia   |    4 |  25000 |                  43000 |
| Franklin |    5 |  40000 |                  40000 |
| Ramesh   |    5 |  38000 |                  40000 |
| John     |    5 |  30000 |                  40000 |
| Joyce    |    5 |  25000 |                  40000 |
+----------+------+--------+------------------------+
```

60. Retrieve the total number of Male and Female employees and show gender wise average salary

Ans. SELECT sex as Gender, COUNT(*) AS count, **ROUND(AVG(salary))** AS average_salary FROM employee GROUP BY sex ORDER BY sex;

```
+--------+-------+-----------------+
| Gender | count | average_salary  |
+--------+-------+-----------------+
| F      |     3 |           31000 |
| M      |     5 |           37600 |
+--------+-------+-----------------+
```

61. Use of Cos function

Ans. SELECT Fname,salary,**COS(salary)** "COS of Salaries" FROM employee;

```
+----------+--------+---------------------+
| Fname    | salary | COS of Salaries     |
+----------+--------+---------------------+
| John     |  30000 | -0.5964295335006922 |
| Franklin |  40000 |  0.3225874736128876 |
| Joyce    |  25000 |  0.7007577127771922 |
| Ramesh   |  38000 |  0.7617814257078562 |
| James    |  55000 | -0.9905735976381728 |
| Jennifer |  43000 | -0.5222148589387411 |
| Ahmad    |  25000 |  0.7007577127771922 |
| Alicia   |  25000 |  0.7007577127771922 |
+----------+--------+---------------------+
```

62. Retrieve the First name, Last name of the employee whose Last name sounds like 'English'

Ans. SELECT Fname,Lname FROM employee WHERE **SOUNDEX(Lname) = SOUNDEX('English')**;

```
+-------+---------+
| Fname | Lname   |
+-------+---------+
| Joyce | English |
+-------+---------+
```

63. Show the First name,Last name, salary, newsalary of the employees working in department no 5 giving them 10% salary hike

Ans. Select distinct Fname,Lname,Salary,**Salary+(Salary * 10/100) as newsalary** from employee,PROJECT,department where Dno=Dnumber and Dnumber=Dnum and Dnum=5;

```
+----------+---------+--------+------------+
| Fname    | Lname   | Salary | newsalary  |
+----------+---------+--------+------------+
| John     | Smith   |  30000 | 33000.0000 |
| Franklin | Wong    |  40000 | 44000.0000 |
| Joyce    | English |  25000 | 27500.0000 |
| Ramesh   | Narayan |  38000 | 41800.0000 |
```

```
+----------+---------+--------+------------+
```

64. Show the First name, Last name of the employees along with the names,ssn of their respective department managers under whom they work

Ans. Select e.Fname,e.Lname,m.Fname WorkingUnderManager,m.ssn ManagerSSN from employee as e,department,employee as m where m.ssn=department.mgr_ssn and e.Dno=Dnumber;

```
+----------+---------+--------------------+------------+
| Fname    | Lname   | WorkingUnderManager | ManagerSSN |
+----------+---------+--------------------+------------+
| James    | borg    | James              |  888665555 |
| Jennifer | Wallace | Jennifer           |  987654321 |
| Ahmad    | Jabbar  | Jennifer           |  987654321 |
| Alicia   | Zelaya  | Jennifer           |  987654321 |
| John     | Smith   | Franklin           |  333445555 |
| Franklin | Wong    | Franklin           |  333445555 |
| Joyce    | English | Franklin           |  333445555 |
| Ramesh   | Narayan | Franklin           |  333445555 |
+----------+---------+--------------------+------------+
```

65. Show the nth smallest salary in the employee table

Ans .select * from employee m **where n = (select count(salary) from employee e where e.salary<=m.salary)**; [nth smallest salary] [**works best when all the salaries are distinct**]

66. Use of WITH keyword

Ans. **WITH** employee AS (SELECT Fname, Lname,super_ssn FROM employee WHERE super_ssn is NULL   UNION ALL   SELECT e.Fname, e.Lname, e.super_ssn FROM employee e INNER JOIN employee r ON e.super_ssn = r.super_ssn) SELECT * FROM employee;

```
+----------+---------+-----------+
| Fname    | Lname   | super_ssn |
+----------+---------+-----------+
| James    | borg    |      NULL |
| Ramesh   | Narayan | 333445555 |
| Joyce    | English | 333445555 |
| John     | Smith   | 333445555 |
| Jennifer | Wallace | 888665555 |
| Franklin | Wong    | 888665555 |
| Ramesh   | Narayan | 333445555 |
| Joyce    | English | 333445555 |
| John     | Smith   | 333445555 |
| Ramesh   | Narayan | 333445555 |
| Joyce    | English | 333445555 |
| John     | Smith   | 333445555 |
| Jennifer | Wallace | 888665555 |
| Franklin | Wong    | 888665555 |
```

```
| Alicia    | Zelaya  | 987654321 |
| Ahmad     | Jabbar  | 987654321 |
| Alicia    | Zelaya  | 987654321 |
| Ahmad     | Jabbar  | 987654321 |
+----------+---------+-----------+
```

67. Use of Sin function

Ans. SELECT **SIN(Dno)** "SIN of Dno" FROM employee;

```
+--------------------+
| SIN of Dno         |
+--------------------+
|   0.8414709848078965 |
| -0.7568024953079283 |
| -0.7568024953079283 |
| -0.7568024953079283 |
| -0.9589242746631385 |
| -0.9589242746631385 |
| -0.9589242746631385 |
| -0.9589242746631385 |
+--------------------+
```

68.Add ssn as the primary key for employee table

Ans. Alter table employee add constraint **primary key** pk(ssn);

```
Query OK, 0 rows affected (0.03 sec)
```

69. Add Dno of employee as the foriegn key that references Dnumber of department table

Ans. Alter table employee add constraint **foreign key** emp_fk(Dno) references department(Dnumber);

```
Query OK, 8 rows affected (0.02 sec)
```

70. Delete the primary key of employee table

Ans. Alter table employee **drop constraint pk**;

```
Query OK, 0 rows affected (0.02 sec)
```

71. Delete the foreign key from employee table

Ans. Alter table employee **drop constraint emp_fk**;

```
Query OK, 0 rows affected (0.02 sec)
```