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A. Creation of Tables:

Creation of DEPT table:

Query:
CREATE TABLE DEPT(
DEPTNO INT NOT NULL,
DNAME VARCHAR(100) NOT NULL,
LOC VARCHAR(100) NOT NULL,
PRIMARY KEY(DEPTNO)
);

```
mysql> DESC DEPT;
+--------+--------------+------+-----+---------+-------+
| Field  | Type         | Null | Key | Default | Extra |
+--------+--------------+------+-----+---------+-------+
| DEPTNO | int(11)      | NO   | PRI | NULL    |       |
| DNAME  | varchar(100) | NO   |     | NULL    |       |
| LOC    | varchar(100) | NO   |     | NULL    |       |
+--------+--------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

Creation of EMP table:

Query:
CREATE TABLE EMP(
EMPNO INT NOT NULL,
ENAME VARCHAR(100) NOT NULL,
JOB CHAR(9) NOT NULL,
MGR INT,
HIREDATE DATE NOT NULL,
SAL INT NOT NULL,
COMM INT,
DEPTNO INT NOT NULL,
PRIMARY KEY(EMPNO),
FOREIGN KEY(MGR) REFERENCES EMP(EMPNO),
FOREIGN KEY(DEPTNO) REFERENCES DEPT(DEPTNO)
);

```
mysql>
mysql> DESC EMP;
+----------+--------------+------+-----+---------+-------+
| Field    | Type         | Null | Key | Default | Extra |
+----------+--------------+------+-----+---------+-------+
| EMPNO    | int(11)      | NO   | PRI | NULL    |       |
| ENAME    | varchar(100) | NO   |     | NULL    |       |
| JOB      | char(9)      | NO   |     | NULL    |       |
| MGR      | int(11)      | YES  | MUL | NULL    |       |
| HIREDATE | date         | NO   |     | NULL    |       |
| SAL      | int(11)      | NO   |     | NULL    |       |
| COMM     | int(11)      | YES  |     | NULL    |       |
| DEPTNO   | int(11)      | NO   | MUL | NULL    |       |
+----------+--------------+------+-----+---------+-------+
8 rows in set (0.00 sec)

mysql> _
```

B. Queries and their Solutions:

a) List the names of analyst and salesman

Query & Output:

```
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE JOB='Analyst' OR JOB='Salesman'
    -> ;
+---------+
| ENAME   |
+---------+
| Allen   |
| Ward    |
| Martin  |
| Scott   |
| Turner  |
| Ford    |
+---------+
6 rows in set (0.00 sec)

mysql>
```

b) List details of employees who have joined before 30 Sep 81.

Query & Output:

```
mysql>
mysql> SELECT *
    -> FROM EMP
    -> WHERE HIREDATE<'1981-09-30';
+-------+--------+----------+------+------------+------+------+--------+
| EMPNO | ENAME  | JOB      | MGR  | HIREDATE   | SAL  | COMM | DEPTNO |
+-------+--------+----------+------+------------+------+------+--------+
|  7369 | Smith  | Clerk    | 7902 | 1980-12-17 |  800 | NULL |     20 |
|  7499 | Allen  | Salesman | 7698 | 1981-02-20 | 1600 |  300 |     30 |
|  7521 | Ward   | Salesman | 7698 | 1981-02-22 | 1250 |  500 |     30 |
|  7566 | Jones  | Manager  | 7839 | 1981-04-02 | 2975 | NULL |     20 |
|  7654 | Martin | Salesman | 7698 | 1981-09-28 | 1250 | 1400 |     30 |
|  7698 | Blake  | Manager  | 7839 | 1981-05-01 | 2850 | NULL |     30 |
|  7782 | Clark  | Manager  | 7839 | 1981-06-09 | 2450 | NULL |     10 |
|  7844 | Turner | Salesman | 7698 | 1981-09-08 | 1500 |    0 |     30 |
+-------+--------+----------+------+------------+------+------+--------+
8 rows in set (0.00 sec)

mysql>
```

c) List names of employees who are not managers.

Query & Output:

```
mysql>
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE NOT JOB = 'Manager';
+--------+
| ENAME  |
+--------+
| Smith  |
| Allen  |
| Ward   |
| Martin |
| Scott  |
| King   |
| Turner |
| Adams  |
| James  |
| Ford   |
| Miller |
+--------+
11 rows in set (0.00 sec)

mysql>
```

d) List the names of employees whose employee numbers are 7369, 7521, 7839, 7934, 7788.

Query & Output:

```
mysql>
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE EMPNO = 7369
    -> OR EMPNO = 7521
    -> OR EMPNO = 7839
    -> OR EMPNO = 7934
    -> OR EMPNO = 7788;
+--------+
| ENAME  |
+--------+
| Smith  |
| Ward   |
| Scott  |
| King   |
| Miller |
+--------+
5 rows in set (0.00 sec)

mysql>
```

e) List employees not belonging to department 30, 40 or 10.

Query & Output:

```
mysql>
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE DEPTNO NOT IN (30,40,10);
+-------+
| ENAME |
+-------+
| Smith |
| Jones |
| Scott |
| Adams |
| Ford  |
+-------+
5 rows in set (0.00 sec)

mysql>
```

f) List employee names for those who have joined between 30 June and 31 Dec. '81.

Query & Output:

```
mysql>
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE HIREDATE>='1981-06-30'
    -> AND HIREDATE<='1981-12-31';
+--------+
| ENAME  |
+--------+
| Martin |
| King   |
| Turner |
| James  |
| Ford   |
+--------+
5 rows in set (0.00 sec)

mysql>
```

g) List the different designations in the company.

Query & Output:

```
mysql>
mysql> SELECT DISTINCT JOB
    -> FROM EMP;
+-----------+
| JOB       |
+-----------+
| Clerk     |
| Salesman  |
| Manager   |
| Analyst   |
| President |
+-----------+
5 rows in set (0.00 sec)

mysql>
```

h) List the names of employees who are not eligible for commission.

Query & Output:

```
mysql>
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE COMM IS NULL;
+--------+
| ENAME  |
+--------+
| Smith  |
| Jones  |
| Blake  |
| Clark  |
| Scott  |
| King   |
| Adams  |
| James  |
| Ford   |
| Miller |
+--------+
10 rows in set (0.00 sec)

mysql>
```

i) List the name and designation of the employee who does not report to anybody.

Query & Output:

```
mysql>
mysql> SELECT ENAME,JOB
    -> FROM EMP
    -> WHERE MGR IS NULL;
+-------+-----------+
| ENAME | JOB       |
+-------+-----------+
| King  | President |
+-------+-----------+
1 row in set (0.00 sec)

mysql>
```

j) List the employees not assigned to any department.

Query & Output:

```
mysql>
mysql> SELECT *
    -> FROM EMP
    -> WHERE DEPTNO IS NULL;
Empty set (0.00 sec)

mysql>
```

k) List the employees who are eligible for commission.

Query & Output:

```
mysql>
mysql> SELECT *
    -> FROM EMP
    -> WHERE COMM IS NOT NULL;
+-------+--------+----------+------+------------+------+------+--------+
| EMPNO | ENAME  | JOB      | MGR  | HIREDATE   | SAL  | COMM | DEPTNO |
+-------+--------+----------+------+------------+------+------+--------+
|  7499 | Allen  | Salesman | 7698 | 1981-02-20 | 1600 |  300 |     30 |
|  7521 | Ward   | Salesman | 7698 | 1981-02-22 | 1250 |  500 |     30 |
|  7654 | Martin | Salesman | 7698 | 1981-09-28 | 1250 | 1400 |     30 |
|  7844 | Turner | Salesman | 7698 | 1981-09-08 | 1500 |    0 |     30 |
+-------+--------+----------+------+------------+------+------+--------+
4 rows in set (0.00 sec)

mysql>
```

l) List employees whose names either start or end with "S".

Query & Output:

```
mysql>
mysql> SELECT *
    -> FROM EMP
    -> WHERE ENAME LIKE 'S%';
+-------+-------+---------+------+------------+------+------+--------+
| EMPNO | ENAME | JOB     | MGR  | HIREDATE   | SAL  | COMM | DEPTNO |
+-------+-------+---------+------+------------+------+------+--------+
|  7369 | Smith | Clerk   | 7902 | 1980-12-17 |  800 | NULL |     20 |
|  7788 | Scott | Analyst | 7566 | 1982-12-09 | 3000 | NULL |     20 |
+-------+-------+---------+------+------------+------+------+--------+
2 rows in set (0.00 sec)

mysql>
```

m) List names of employees whose names have "i" as the second character.

Query & Output:

```
mysql>
mysql> SELECT ENAME
    -> FROM EMP
    -> WHERE ENAME LIKE '_i%';
+--------+
| ENAME  |
+--------+
| King   |
| Miller |
+--------+
2 rows in set (0.00 sec)

mysql>
```

n) List the number of employees working with the company.

Query & Output:

```
mysql>
mysql> SELECT COUNT(EMPNO)
    -> FROM EMP;
+--------------+
| COUNT(EMPNO) |
+--------------+
|           14 |
+--------------+
1 row in set (0.00 sec)

mysql> _
```

o) List the number of designations available in the EMP table.

Query & Output:

```
mysql>
mysql> SELECT COUNT(DISTINCT JOB)
    -> FROM EMP;
+---------------------+
| COUNT(DISTINCT JOB) |
+---------------------+
|                   5 |
+---------------------+
1 row in set (0.00 sec)

mysql>
```

p) List the total salaries paid to the employees.

Query & Output:

```
mysql> SELECT SUM(SAL)
    -> FROM EMP;
+----------+
| SUM(SAL) |
+----------+
|    29025 |
+----------+
1 row in set (0.00 sec)

mysql>
```

q) List the maximum, minimum and average salary in the company.

Query & Output:

```
mysql> SELECT MAX(SAL), MIN(SAL), AVG(SAL)
    -> FROM EMP;
+----------+----------+-----------+
| MAX(SAL) | MIN(SAL) | AVG(SAL)  |
+----------+----------+-----------+
|     5000 |      800 | 2073.2143 |
+----------+----------+-----------+
1 row in set (0.00 sec)

mysql>
```

r) List the maximum salary paid to a salesman.

Query & Output:

```
mysql>
mysql> SELECT MAX(SAL)
    -> FROM EMP
    -> WHERE JOB = 'Salesman';
+----------+
| MAX(SAL) |
+----------+
|     1600 |
+----------+
1 row in set (0.00 sec)

mysql>
```