

Advanced Database Management Systems

Experiment-4

Use of built-in functions and relational algebra operations.

Aryan Mohan

500092142

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```
-- Create the database
CREATE DATABASE Experiment4;

-- Create EMP table
CREATE TABLE EMP (
    EMPNO INT NOT NULL,
    ENAME VARCHAR(20) NOT NULL,
    JOB VARCHAR(20) NOT NULL,
    MGR INT,
    HIREDATE DATE NOT NULL,
    SAL DECIMAL(10, 2),
    COMM DECIMAL(10, 2),
    DEPTNO INT NOT NULL,
    PRIMARY KEY (EMPNO)
);

INSERT INTO EMP
VALUES
    (7369, 'Smith', 'CLERK', 7902, '17-Dec-80', 500, 800, 20),
    (7499, 'Allen', 'SALESMAN', 7698, '20-Feb-81', 1600, 300, 30),
    (7521, 'Ward', 'SALESMAN', 7698, '22-Feb-81', 1250, 500, 30),
    (7566, 'Jones', 'MANAGER', 7839, '2-Apr-81', 2975, NULL, 20),
    (7654, 'Martin', 'SALESMAN', 7698, '28-Sep-81', 1250, 1400, 30),
    (7698, 'Blake', 'MANAGER', 7839, '1-May-81', 2850, NULL, 30),
    (7782, 'Clark', 'MANAGER', 7839, '9-June-81', 2450, NULL, 10),
    (7788, 'Scott', 'ANALYST', 7566, '9-Dec-82', 3000, NULL, 20),
    (7839, 'King', 'PRESIDENT', NULL, '17-Nov-81', 5000, NULL, 10),
    (7844, 'Turner', 'SALESMAN', 7698, '8-Sep-81', 1500, 0, 30),
    (7876, 'Adams', 'CLERK', 7788, '12-Jan-83', 1100, NULL, 20),
    (7900, 'James', 'CLERK', 7698, '3-Dec-81', 950, NULL, 30),
    (7902, 'Ford', 'ANALYST', 7566, '3-Dec-81', 3000, NULL, 20),
    (7934, 'Miller', 'CLERK', 7782, '23-Jan-82', 1300, NULL, 10);

SELECT * from EMP;

-- Create DEPT table
CREATE TABLE DEPT (
    DEPTNO INT,
    DNAME VARCHAR(20),
    LOC VARCHAR(30),
```

```

        PRIMARY KEY (DEPTNO)
    );

-- Insert values into this table
INSERT INTO DEPT
VALUES
    (10, 'ACCOUNTING', 'NEW YORK'),
    (20, 'RESEARCH', 'DALLAS'),
    (30, 'SALES', 'CHICAGO'),
    (40, 'OPERATIONS', 'BOSTON');

-- Link both the tables
ALTER TABLE EMP
ADD CONSTRAINT fk_deptno
FOREIGN KEY (DEPTNO)
REFERENCES DEPT (DEPTNO);

SELECT * from DEPT;

-- Queries
-- 1. List the details of the emps whose salaries is more than employee
Blake.

SELECT * from EMP
WHERE
SAL > (SELECT SAL from EMP where ENAME='Blake');

-- 2. List the emps whose jobs are the same as Allen.
SELECT * from EMP
WHERE
JOB = (SELECT JOB from EMP where ENAME='Allen');

-- 3. List the emps whose salaries is the same as Ford or Smith in
descending order of names.
SELECT * from EMP
WHERE SAL = (SELECT SAL from EMP where ENAME='Ford') OR
SAL = (SELECT SAL from EMP where ENAME='Smith')
ORDER BY ENAME DESC;

-- 4. List the emps whose jobs are the same as Miller or salary is more than
Allen.
SELECT * FROM EMP
WHERE JOB = (SELECT JOB FROM EMP WHERE ENAME='Miller') OR
SAL > (SELECT SAL FROM EMP WHERE ENAME='Allen');

-- 5. Find the highest paid employee in the Sales dept.
SELECT *
FROM EMP
WHERE DEPTNO = 30 AND SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 30);
-- 6. List the employees who are senior to most recently higher employee
working under King.
SELECT * FROM EMP
WHERE HIREDATE < (SELECT MAX(HIREDATE)
FROM EMP

```

```
WHERE MGR = (SELECT EMPNO FROM EMP WHERE ENAME='King');
```

-- 7. List the names of employees who are getting the highest salary departmentwise.

```
SELECT E.ENAME, D.DNAME, E.SAL
FROM EMP E
JOIN DEPT D ON E.DEPTNO = D.DEPTNO
WHERE E.SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = E.DEPTNO)
GROUP BY E.ENAME, D.DNAME, E.SAL
ORDER BY D.DNAME;
```

-- Alternate solution

```
SELECT ENAME, SAL, JOB
FROM EMP
WHERE DEPTNO = 10 AND SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 10) OR
      DEPTNO = 20 AND SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 20) OR
      DEPTNO = 30 AND SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 30)
OR
      DEPTNO = 40 AND SAL = (SELECT MAX(SAL) FROM EMP WHERE DEPTNO = 40);
```

-- 8. List all the employees whose sal is equal to the average of max and minimum.

```
SELECT * FROM EMP
WHERE SAL = (SELECT SAL = (MAX(SAL) + MIN(SAL))/2 FROM EMP);
```

-- 9. List the emps who joined in the company on the same date.

```
SELECT ENAME, HIREDATE
FROM EMP
GROUP BY HIREDATE, ENAME
HAVING COUNT(*) > 1;
```

-- Alternate solution

```
SELECT ENAME, HIREDATE
FROM EMP
WHERE HIREDATE in (SELECT HIREDATE FROM EMP WHERE EMPNO <> EMPNO);
```

-- 10. List the employees who joined the company before their managers.

```
SELECT * FROM EMP E
WHERE HIREDATE < (SELECT HIREDATE FROM EMP WHERE EMPNO = E.MGR);
```

OUTPUT

Query 1:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7566	Jones	MANAGER	7839	1981-04-02	2975.00	NULL	20
2	7788	Scott	ANALYST	7566	1982-12-09	3000.00	NULL	20
3	7839	King	PRESIDENT	NULL	1981-11-17	5000.00	NULL	10
4	7902	Ford	ANALYST	7566	1981-12-03	3000.00	NULL	20

Query 2:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7499	Allen	SALESMAN	7698	1981-02-20	1600.00	300.00	30
2	7521	Ward	SALESMAN	7698	1981-02-22	1250.00	500.00	30
3	7654	Martin	SALESMAN	7698	1981-09-28	1250.00	1400.00	30
4	7844	Tuner	SALESMAN	7698	1981-09-08	1500.00	0.00	30

Query 3:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	Smith	CLERK	7902	1980-12-17	500.00	800.00	20
2	7788	Scott	ANALYST	7566	1982-12-09	3000.00	NULL	20
3	7902	Ford	ANALYST	7566	1981-12-03	3000.00	NULL	20

Query 4:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	Smith	CLERK	7902	1980-12-17	500.00	800.00	20
2	7566	Jones	MANAGER	7839	1981-04-02	2975.00	NULL	20
3	7698	Blake	MANAGER	7839	1981-05-01	2850.00	NULL	30
4	7782	Clark	MANAGER	7839	1981-06-09	2450.00	NULL	10
5	7788	Scott	ANALYST	7566	1982-12-09	3000.00	NULL	20
6	7839	King	PRESIDENT	NULL	1981-11-17	5000.00	NULL	10
7	7876	Adams	CLERK	7788	1983-01-12	1100.00	NULL	20
8	7900	James	CLERK	7698	1981-12-03	950.00	NULL	30
9	7902	Ford	ANALYST	7566	1981-12-03	3000.00	NULL	20
10	7934	Miller	CLERK	7782	1982-01-23	1300.00	NULL	10

Query 5:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7698	Blake	MANAGER	7839	1981-05-01	2850.00	NULL	30

Query
6:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	Smith	CLERK	7902	1980-12-17	500.00	800.00	20
2	7499	Allen	SALESMAN	7698	1981-02-20	1600.00	300.00	30
3	7521	Ward	SALESMAN	7698	1981-02-22	1250.00	500.00	30
4	7566	Jones	MANAGER	7839	1981-04-02	2975.00	NULL	20
5	7698	Blake	MANAGER	7839	1981-05-01	2850.00	NULL	30

Query 7:

	ENAME	DNAME	SAL
1	King	ACCOUNTING	5000.00
2	Ford	RESEARCH	3000.00
3	Scott	RESEARCH	3000.00
4	Blake	SALES	2850.00

Query 8:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
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Query 9:

Query

10:

		ENAME	HIREDATE					
	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	Smith	CLERK	7902	1980-12-17	500.00	800.00	20
2	7499	Allen	SALESMAN	7698	1981-02-20	1600.00	300.00	30
3	7521	Ward	SALESMAN	7698	1981-02-22	1250.00	500.00	30
4	7566	Jones	MANAGER	7839	1981-04-02	2975.00	NULL	20
5	7698	Blake	MANAGER	7839	1981-05-01	2850.00	NULL	30
6	7782	Clark	MANAGER	7839	1981-06-09	2450.00	NULL	10