Advanced Database Management Systems
Experiment-5
Use of different SQL clauses and join

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Batch- 2

```sql
CREATE DATABASE LabExperiment5;

use LabExperiment5;

CREATE TABLE DEPARTMENT ( DEPTNO INTEGER NOT NULL,
DNAME VARCHAR(15) NOT NULL, LOC VARCHAR(30), PRIMARY
KEY (DEPTNO) );


CREATE TABLE EMPLOYEE ( EMPNO INTEGER NOT NULL, ENAME
VARCHAR(30) NOT NULL, JOB VARCHAR(20) NOT NULL, MGR
INTEGER, HIREDATE DATE, SAL INTEGER, COMM INTEGER,
DEPTNO INTEGER PRIMARY KEY (EMPNO), FOREIGN KEY (DEPTNO)
REFERENCES DEPARTMENT(DEPTNO) );


insert into DEPARTMENT values(10, 'ACCOUNTING','NEW YORK');
insert into DEPARTMENT values(20, 'RESEARCH','DALLAS');
insert into DEPARTMENT values( 30, 'SALES','CHICAGO');
insert into DEPARTMENT values(40, 'OPERATIONS','BOSTON');


insert into EMPLOYEE values(7369,'SMITH','CLERK', 7902 , '17-DEC-
80',500,800,20);
insert into EMPLOYEE values(7499, 'ALLEN','SALESMAN', 7698,'20-FEB-
81',1600,300,30);
insert into EMPLOYEE values(7521, 'WARD', 'SALESMAN',7698, '22-FEB-
81', 1250,500,30);
insert into EMPLOYEE values(7566, 'JONES','MANAGER', 7839,'02-APR-
81',2975,0,20);
insert into EMPLOYEE values(7654, 'MARTIN', 'SALESMAN',7698, '28-SEP-
81',1250,1400,30);
insert into EMPLOYEE values(7698, 'BLAKE', 'MANAGER',7839,'01-MAY-
81',2850,0,30);
```

```sql
insert into EMPLOYEE values(7782, 'CLARK', 'MANAGER',7839,'09-JUN-81',2450,0,10);
insert into EMPLOYEE values(7788, 'SCOTT', 'ANALYST',7566,'09-DEC-82',3000,0,20);
insert into EMPLOYEE values(7839, 'KING', 'PRESIDENT',7599,'17-NOV-81',5000,0,10);
insert into EMPLOYEE values(7844,'TURNER', 'SALESMAN', 7698,'08-SEP-81',1500,0,30);
insert into EMPLOYEE values(7876,'ADAMS', 'CLERK', 7788,'12-JAN-83',1100,0,20);
insert into EMPLOYEE values(7900,'JAMES', 'CLERK',7698,'03-DEC-81',950,0,30);
insert into EMPLOYEE values(7902,'FORD', 'ANALYST',7566,'03-DEC-81',3000,0,20);
insert into EMPLOYEE values(7934,'MILLER', 'CLERK',7782,'23-JAN-82',1300,0,10);

select * from EMPLOYEE;

select * from DEPARTMENT;


-----Experimen 5
--1. List the Deptno where there are no emps.
select deptno, count(*) from employee group by deptno having count(*)=0;
```

Output:

deptno	(No column name)

```sql
--2. List the No.of emp's and Avg salary within each department for each job.
select count(*),avg(sal),deptno,job from employee group by deptno,job;
```

Output:

	(No column name)	(No column name)	deptno	job
1	2	3000	20	ANALYST
2	1	1300	10	CLERK
3	2	800	20	CLERK
4	1	950	30	CLERK
5	1	2450	10	MANAGER
6	1	2975	20	MANAGER
7	1	2850	30	MANAGER
8	1	5000	10	PRESIDENT
9	4	1400	30	SALESMAN

--3. Find the maximum average salary drawn for each job except for 'President'.
select avg(SAL),job from EMPLOYEE where JOB!= 'PRESIDENT' group by JOB;

Output:

	(No column name)	job
1	3000	ANALYST
2	962	CLERK
3	2758	MANAGER
4	1400	SALESMAN

--4. List the department details where at least two emps are working.
select deptno ,count(*) from EMPLOYEE group by deptno having count(*)>=2

Output:

	deptno	(No column name)
1	10	3
2	20	5
3	30	6

--5. List the no. of emps in each department where the no. is more than 3.
select deptno,count(*) from EMPLOYEE group by deptno having count(*)>3;

Output:

	deptno	(No column name)
1	20	5
2	30	6

--6. List the names of the emps who are getting the highest sal dept wise.
select E.ename,E.deptno, E.SAL from EMPLOYEE E where E.sal in (select max(sal)from EMPLOYEE group by deptno);

Output:

	ename	deptno	SAL
1	BLAKE	30	2850
2	SCOTT	20	3000
3	KING	10	5000
4	FORD	20	3000

--7. List the Deptno and their average salaries for dept with the average salary less than the averages for all departments.
select deptno,avg(sal) from EMPLOYEE group by deptno having avg(sal)<(select avg(Sal) from EMPLOYEE);

Output:

	deptno	(No column name)
1	30	1566

---JOIN OPERATIONS
---Equi join
SELECT EMPLOYEE.EMPNO, EMPLOYEE.ENAME, EMPLOYEE.DEPTNO, DEPARTMENT.DEPTNO, DEPARTMENT.LOC FROM EMPLOYEE, DEPARTMENT WHERE EMPLOYEE.DEPTNO = DEPARTMENT.DEPTNO;

Output:

	EMPNO	ENAME	DEPTNO	DEPTNO	LOC
1	7369	SMITH	20	20	DALLAS
2	7499	ALLEN	30	30	CHICAGO
3	7521	WARD	30	30	CHICAGO
4	7566	JONES	20	20	DALLAS
5	7654	MARTIN	30	30	CHICAGO
6	7698	BLAKE	30	30	CHICAGO
7	7782	CLARK	10	10	NEW YORK
8	7788	SCOTT	20	20	DALLAS
9	7839	KING	10	10	NEW YORK
10	7844	TURNER	30	30	CHICAGO
11	7876	ADAMS	20	20	DALLAS
12	7900	JAMES	30	30	CHICAGO
13	7902	FORD	20	20	DALLAS
14	7934	MILLER	10	10	NEW YORK

----Outer Joins
SELECT e.ENAME, e.DEPTNO, d.DNAME FROM EMPLOYEE e, DEPARTMENT d WHERE e.DEPTNO = d.DEPTNO;

Output:

	ENAME	DEPTNO	DNAME
1	SMITH	20	RESEARCH
2	ALLEN	30	SALES
3	WARD	30	SALES
4	JONES	20	RESEARCH
5	MARTIN	30	SALES
6	BLAKE	30	SALES
7	CLARK	10	ACCOUNTING
8	SCOTT	20	RESEARCH
9	KING	10	ACCOUNTING
10	TURNER	30	SALES
11	ADAMS	20	RESEARCH
12	JAMES	30	SALES
13	FORD	20	RESEARCH
14	MILLER	10	ACCOUNTING

SELECT e.ename, d.DEPTNO, d.dname FROM EMPLOYEE e, DEPARTMENT d WHERE e.deptno =d.deptno ORDER BY e.deptno;

Output:

	ename	DEPTNO	dname
1	CLARK	10	ACCOUNTING
2	KING	10	ACCOUNTING
3	MILLER	10	ACCOUNTING
4	FORD	20	RESEARCH
5	ADAMS	20	RESEARCH
6	SCOTT	20	RESEARCH
7	SMITH	20	RESEARCH
8	JONES	20	RESEARCH
9	MARTIN	30	SALES
10	BLAKE	30	SALES
11	ALLEN	30	SALES
12	WARD	30	SALES
13	TURNER	30	SALES
14	JAMES	30	SALES

SELECT e.ename, d.DEPTNO, d.dname FROM EMPLOYEE e INNER JOIN DEPARTMENT AS d ON e.deptno =d.deptno ORDER BY e.deptno;

Output:

	ename	DEPTNO	dname
1	CLARK	10	ACCOUNTING
2	KING	10	ACCOUNTING
3	MILLER	10	ACCOUNTING
4	FORD	20	RESEARCH
5	ADAMS	20	RESEARCH
6	SCOTT	20	RESEARCH
7	SMITH	20	RESEARCH
8	JONES	20	RESEARCH
9	MARTIN	30	SALES
10	BLAKE	30	SALES
11	ALLEN	30	SALES
12	WARD	30	SALES
13	TURNER	30	SALES
14	JAMES	30	SALES

SELECT e.ename, e.EMPNO, e.SAL, d.deptno, d.dname FROM EMPLOYEE e INNER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	ename	EMPNO	SAL	deptno	dname
1	SMITH	7369	500	20	RESEARCH
2	ALLEN	7499	1600	30	SALES
3	WARD	7521	1250	30	SALES
4	JONES	7566	2975	20	RESEARCH
5	MARTIN	7654	1250	30	SALES
6	BLAKE	7698	2850	30	SALES
7	CLARK	7782	2450	10	ACCOUNTING
8	SCOTT	7788	3000	20	RESEARCH
9	KING	7839	5000	10	ACCOUNTING
10	TURNER	7844	1500	30	SALES
11	ADAMS	7876	1100	20	RESEARCH
12	JAMES	7900	950	30	SALES
13	FORD	7902	3000	20	RESEARCH
14	MILLER	7934	1300	10	ACCOUNTING

SELECT e.ename, e.EMPNO, e.SAL, d.deptno, d.dname FROM EMPLOYEE e LEFT OUTER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	ename	EMPNO	SAL	deptno	dname
1	SMITH	7369	500	20	RESEARCH
2	ALLEN	7499	1600	30	SALES
3	WARD	7521	1250	30	SALES
4	JONES	7566	2975	20	RESEARCH
5	MARTIN	7654	1250	30	SALES
6	BLAKE	7698	2850	30	SALES
7	CLARK	7782	2450	10	ACCOUNTING
8	SCOTT	7788	3000	20	RESEARCH
9	KING	7839	5000	10	ACCOUNTING
10	TURNER	7844	1500	30	SALES
11	ADAMS	7876	1100	20	RESEARCH
12	JAMES	7900	950	30	SALES
13	FORD	7902	3000	20	RESEARCH
14	MILLER	7934	1300	10	ACCOUNTING

SELECT e.ename, e.EMPNO, e.SAL, d.deptno, d.dname FROM EMPLOYEE e RIGHT OUTER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	ename	EMPNO	SAL	deptno	dname
1	CLARK	7782	2450	10	ACCOUNTING
2	KING	7839	5000	10	ACCOUNTING
3	MILLER	7934	1300	10	ACCOUNTING
4	SMITH	7369	500	20	RESEARCH
5	JONES	7566	2975	20	RESEARCH
6	SCOTT	7788	3000	20	RESEARCH
7	ADAMS	7876	1100	20	RESEARCH
8	FORD	7902	3000	20	RESEARCH
9	ALLEN	7499	1600	30	SALES
10	WARD	7521	1250	30	SALES
11	MARTIN	7654	1250	30	SALES
12	BLAKE	7698	2850	30	SALES
13	TURNER	7844	1500	30	SALES
14	JAMES	7900	950	30	SALES
15	NULL	NULL	NULL	40	OPERATIONS

SELECT e.ename, e.EMPNO, e.SAL, d.deptno, d.dname FROM EMPLOYEE e FULL OUTER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	ename	EMPNO	SAL	deptno	dname
1	SMITH	7369	500	20	RESEARCH
2	ALLEN	7499	1600	30	SALES
3	WARD	7521	1250	30	SALES
4	JONES	7566	2975	20	RESEARCH
5	MARTIN	7654	1250	30	SALES
6	BLAKE	7698	2850	30	SALES
7	CLARK	7782	2450	10	ACCOUNTING
8	SCOTT	7788	3000	20	RESEARCH
9	KING	7839	5000	10	ACCOUNTING
10	TURNER	7844	1500	30	SALES
11	ADAMS	7876	1100	20	RESEARCH
12	JAMES	7900	950	30	SALES
13	FORD	7902	3000	20	RESEARCH
14	MILLER	7934	1300	10	ACCOUNTING
15	NULL	NULL	NULL	40	OPERATIONS

SELECT * FROM EMPLOYEE e FULL OUTER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;
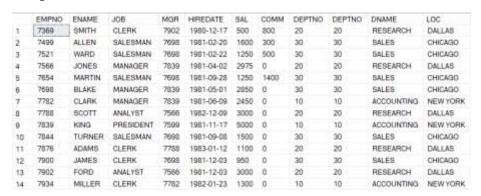
Output:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO	DNAME	LOC
1	7369	SMITH	CLERK	7902	1980-12-17	500	800	20	20	RESEARCH	DALLAS
2	7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30	30	SALES	CHICAGO
3	7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30	30	SALES	CHICAGO
4	7566	JONES	MANAGER	7839	1981-04-02	2975	0	20	20	RESEARCH	DALLAS
5	7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	30	SALES	CHICAGO
6	7698	BLAKE	MANAGER	7839	1981-05-01	2850	0	30	30	SALES	CHICAGO
7	7782	CLARK	MANAGER	7839	1981-06-09	2450	0	10	10	ACCOUNTING	NEW YORK
8	7788	SCOTT	ANALYST	7566	1982-12-09	3000	0	20	20	RESEARCH	DALLAS
9	7839	KING	PRESIDENT	7599	1981-11-17	5000	0	10	10	ACCOUNTING	NEW YORK
10	7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30	30	SALES	CHICAGO
11	7876	ADAMS	CLERK	7788	1983-01-12	1100	0	20	20	RESEARCH	DALLAS
12	7900	JAMES	CLERK	7698	1981-12-03	950	0	30	30	SALES	CHICAGO
13	7902	FORD	ANALYST	7566	1981-12-03	3000	0	20	20	RESEARCH	DALLAS
14	7934	MILLER	CLERK	7782	1982-01-23	1300	0	10	10	ACCOUNTING	NEW YORK
15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	40	OPERATIONS	BOSTON

SELECT * FROM EMPLOYEE e RIGHT OUTER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO	DNAME	LOC
1	7782	CLARK	MANAGER	7839	1981-06-09	2450	0	10	10	ACCOUNTING	NEW YORK
2	7839	KING	PRESIDENT	7599	1981-11-17	5000	0	10	10	ACCOUNTING	NEW YORK
3	7934	MILLER	CLERK	7782	1982-01-23	1300	0	10	10	ACCOUNTING	NEW YORK
4	7369	SMITH	CLERK	7902	1980-12-17	500	800	20	20	RESEARCH	DALLAS
5	7566	JONES	MANAGER	7839	1981-04-02	2975	0	20	20	RESEARCH	DALLAS
6	7788	SCOTT	ANALYST	7566	1982-12-09	3000	0	20	20	RESEARCH	DALLAS
7	7876	ADAMS	CLERK	7788	1983-01-12	1100	0	20	20	RESEARCH	DALLAS
8	7902	FORD	ANALYST	7566	1981-12-03	3000	0	20	20	RESEARCH	DALLAS
9	7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30	30	SALES	CHICAGO
10	7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30	30	SALES	CHICAGO
11	7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	30	SALES	CHICAGO
12	7698	BLAKE	MANAGER	7839	1981-05-01	2850	0	30	30	SALES	CHICAGO
13	7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30	30	SALES	CHICAGO
14	7900	JAMES	CLERK	7698	1981-12-03	950	0	30	30	SALES	CHICAGO
15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	40	OPERATIONS	BOSTON

SELECT * FROM EMPLOYEE e LEFT OUTER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO	DNAME	LOC
1	7369	SMITH	CLERK	7902	1980-12-17	500	800	20	20	RESEARCH	DALLAS
2	7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30	30	SALES	CHICAGO
3	7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30	30	SALES	CHICAGO
4	7566	JONES	MANAGER	7839	1981-04-02	2975	0	20	20	RESEARCH	DALLAS
5	7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	30	SALES	CHICAGO
6	7698	BLAKE	MANAGER	7839	1981-05-01	2850	0	30	30	SALES	CHICAGO
7	7782	CLARK	MANAGER	7839	1981-06-09	2450	0	10	10	ACCOUNTING	NEW YORK
8	7788	SCOTT	ANALYST	7566	1982-12-09	3000	0	20	20	RESEARCH	DALLAS
9	7839	KING	PRESIDENT	7599	1981-11-17	5000	0	10	10	ACCOUNTING	NEW YORK
10	7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30	30	SALES	CHICAGO
11	7876	ADAMS	CLERK	7788	1983-01-12	1100	0	20	20	RESEARCH	DALLAS
12	7900	JAMES	CLERK	7698	1981-12-03	950	0	30	30	SALES	CHICAGO
13	7902	FORD	ANALYST	7566	1981-12-03	3000	0	20	20	RESEARCH	DALLAS
14	7934	MILLER	CLERK	7782	1982-01-23	1300	0	10	10	ACCOUNTING	NEW YORK

SELECT * FROM EMPLOYEE e INNER JOIN DEPARTMENT AS d ON e.deptno =d.deptno;

Output:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO	DEPTNO	DNAME	LOC
1	7369	SMITH	CLERK	7902	1980-12-17	500	800	20	20	RESEARCH	DALLAS
2	7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30	30	SALES	CHICAGO
3	7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30	30	SALES	CHICAGO
4	7566	JONES	MANAGER	7839	1981-04-02	2975	0	20	20	RESEARCH	DALLAS
5	7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	30	SALES	CHICAGO
6	7698	BLAKE	MANAGER	7839	1981-05-01	2850	0	30	30	SALES	CHICAGO
7	7782	CLARK	MANAGER	7839	1981-06-09	2450	0	10	10	ACCOUNTING	NEW YORK
8	7788	SCOTT	ANALYST	7566	1982-12-09	3000	0	20	20	RESEARCH	DALLAS
9	7839	KING	PRESIDENT	7599	1981-11-17	5000	0	10	10	ACCOUNTING	NEW YORK
10	7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30	30	SALES	CHICAGO
11	7876	ADAMS	CLERK	7788	1983-01-12	1100	0	20	20	RESEARCH	DALLAS
12	7900	JAMES	CLERK	7698	1981-12-03	950	0	30	30	SALES	CHICAGO
13	7902	FORD	ANALYST	7566	1981-12-03	3000	0	20	20	RESEARCH	DALLAS
14	7934	MILLER	CLERK	7782	1982-01-23	1300	0	10	10	ACCOUNTING	NEW YORK