

Practical DBMS

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Course: Bsc (P) Physical Science with Computer Science

SQL Code:

```
create database company;
use company;
```

create table of department and employee

```
create table dept (
    deptno integer,
    dname varchar(200),
    loc varchar(200),
    primary key(deptno)
);
create table emp(
    empno integer,
    ename varchar(200),
    job varchar(200),
    mgr varchar(200),
    hiredate date,
    sal decimal,
    comm decimal,
    deptno integer,
    primary key(empno),
    foreign key(deptno) references dept(deptno)
);
```

department table

```
insert into dept(deptno, dname, loc) values
(10, 'ACCOUNTING', 'NEW YORK'),
(20, 'RESEARCH', 'DALLAS'),
(30, 'SALES', 'CHICAGO'),
(40, 'OPERATIONS', 'BOSTON');
```

employee table

```
insert into emp(empno, ename, job, mgr, hiredate, sal, comm, deptno) values
(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),
(7788, 'SCOTT', 'ANALYST', 7566, '1982-12-09', 3000, NULL, 20),
(7839, 'KING', 'PRESIDENT', NULL, '1981-11-17', 5000, NULL, 10),
(7844, 'TURNER', 'SALESMAN', 7698, '1981-09-08', 1500, 0, 30),
```

(7876, 'ADAMS', 'CLERK', 7788, '1983-01-12', 1100, NULL, 20),
 (7900, 'JAMES', 'CLERK', 7698, '1981-12-03', 950, NULL, 30),
 (7902, 'FORD', 'ANALYST', 7566, '1981-12-04', 3000, NULL, 20),
 (7934, 'MILLER', 'CLERK', 7782, '1982-01-23', 1300, NULL, 10);

select*from dept;

deptno	dname	loc
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON
NULL	NULL	NULL

select*from emp;

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
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10
7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30
7876	ADAMS	CLERK	7788	1983-01-12	1100	NULL	20
7900	JAMES	CLERK	7698	1981-12-03	950	NULL	30
7902	FORD	ANALYST	7566	1981-12-04	3000	NULL	20
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

select * from emp, dept where emp.deptno = dept.deptno;

empno	ename	job	mgr	hiredate	sal	comm	deptno	deptno	dname	loc
7369	SMITH	CLERK	7902	1980-12-17	800	NULL	20	20	RESEARCH	DALLAS
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30	30	SALES	CHICAGO
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30	30	SALES	CHICAGO
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20	20	RESEARCH	DALLAS
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	30	SALES	CHICAGO
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30	30	SALES	CHICAGO
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10	10	ACCOUNTING	NEW YORK
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20	20	RESEARCH	DALLAS
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10	10	ACCOUNTING	NEW YORK
7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30	30	SALES	CHICAGO
7876	ADAMS	CLERK	7788	1983-01-12	1100	NULL	20	20	RESEARCH	DALLAS
7900	JAMES	CLERK	7698	1981-12-03	950	NULL	30	30	SALES	CHICAGO
7902	FORD	ANALYST	7566	1981-12-04	3000	NULL	20	20	RESEARCH	DALLAS
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10	10	ACCOUNTING	NEW YORK

select ename from emp;

ename	
SMITH	
ALLEN	
WARD	
JONES	
MARTIN	
BLAKE	
CLARK	
SCOTT	
KING	
TURNER	
ADAMS	
JAMES	
FORD	
MILLER	

select deptno, empno, mgr from emp;

deptno	empno	mgr	
20	7369	7902	
30	7499	7698	
30	7521	7698	
20	7566	7839	
30	7654	7698	
30	7698	7839	
10	7782	7839	
20	7788	7566	
10	7839	NULL	
30	7844	7698	
20	7876	7788	
30	7900	7698	
20	7902	7566	
10	7934	7782	
NULL	NULL	NULL	

select dname, loc from dept;

dname	loc	
ACCOUNTING	NEW YORK	
RESEARCH	DALLAS	
SALES	CHICAGO	
OPERATIONS	BOSTON	

select ename, sal from emp;

ename	sal	
SMITH	800	
ALLEN	1600	
WARD	1250	
JONES	2975	
MARTIN	1250	
BLAKE	2850	
CLARK	2450	
SCOTT	3000	
KING	5000	
TURNER	1500	
ADAMS	1100	
JAMES	950	
FORD	3000	
MILLER	1300	

select ename, sal, sal*0.1 from emp;

ename	sal	sal*0.1	
SMITH	800	80.0	
ALLEN	1600	160.0	
WARD	1250	125.0	
JONES	2975	297.5	
MARTIN	1250	125.0	
BLAKE	2850	285.0	
CLARK	2450	245.0	
SCOTT	3000	300.0	
KING	5000	500.0	
TURNER	1500	150.0	
ADAMS	1100	110.0	
JAMES	950	95.0	
FORD	3000	300.0	
MILLER	1300	130.0	

select ename, sal, sal*0.1 as "PF" from emp;

ename	sal	PF	
SMITH	800	80.0	
ALLEN	1600	160.0	
WARD	1250	125.0	
JONES	2975	297.5	
MARTIN	1250	125.0	
BLAKE	2850	285.0	
CLARK	2450	245.0	
SCOTT	3000	300.0	
KING	5000	500.0	
TURNER	1500	150.0	
ADAMS	1100	110.0	
JAMES	950	95.0	
FORD	3000	300.0	
MILLER	1300	130.0	

```
select empno, sal, comm, sal+comm "Total Salary" from emp;
```

	empno	sal	comm	Total Salary	
	7369	800	NULL	NULL	
	7499	1600	300	1900	
	7521	1250	500	1750	
	7566	2975	NULL	NULL	
	7654	1250	1400	2650	
	7698	2850	NULL	NULL	
	7782	2450	NULL	NULL	
	7788	3000	NULL	NULL	
	7839	5000	NULL	NULL	
	7844	1500	0	1500	
	7876	1100	NULL	NULL	
	7900	950	NULL	NULL	
	7902	3000	NULL	NULL	
	7934	1300	NULL	NULL	

```
select empno, sal, comm, ifnull(comm,0)+sal as "Total Salary" from emp;
```

	empno	sal	comm	Total Salary
	7369	800	NULL	800
	7499	1600	300	1900
	7521	1250	500	1750
	7566	2975	NULL	2975
	7654	1250	1400	2650
	7698	2850	NULL	2850
	7782	2450	NULL	2450
	7788	3000	NULL	3000
	7839	5000	NULL	5000
	7844	1500	0	1500
	7876	1100	NULL	1100
	7900	950	NULL	950
	7902	3000	NULL	3000
	7934	1300	NULL	1300

-- operator used

```
select * from emp where deptno=20;
```

select ename, sal from emp where sal>1000;

ename	sal
ALLEN	1600
WARD	1250
JONES	2975
MARTIN	1250
BLAKE	2850
CLARK	2450
SCOTT	3000
KING	5000
TURNER	1500
ADAMS	1100
FORD	3000
MILLER	1300

select ename, job from emp where job='clerk' and deptno=30;

ename	job
JAMES	CLERK

select ename, job from emp where job='salesman' or job='analyst';

ename	job
ALLEN	SALESMAN
WARD	SALESMAN
MARTIN	SALESMAN
SCOTT	ANALYST
TURNER	SALESMAN
FORD	ANALYST

select empno, ename from emp where job!='manager';

empno	ename
7369	SMITH
7499	ALLEN
7521	WARD
7654	MARTIN
7788	SCOTT
7839	KING
7844	TURNER
7876	ADAMS
7900	JAMES
7902	FORD
7934	MILLER
NULL	NULL

```
select ename, empno from emp where empno=7369 or empno=7521 or empno=7839 or empno=7934;
```

	ename	empno
	SMITH	7369
	WARD	7521
	KING	7839
	MILLER	7934
	NULL	NULL

```
select ename, empno from emp where empno in(7369,7521,7839,7934);
```

ename	empno
SMITH	7369
WARD	7521
KING	7839
MILLER	7934
NULL	NULL

```
select * from emp where deptno not in (10,30,40);
```

empno	ename	job	mgr	hiredate	sal	comm	deptno
7369	SMITH	CLERK	7902	1980-12-17	800	NULL	20
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20
7876	ADAMS	CLERK	7788	1983-01-12	1100	NULL	20
7902	FORD	ANALYST	7566	1981-12-04	3000	NULL	20
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

```
select * from emp where sal>=1000 and sal<=2000;
```

```
select * from emp where sal between 1000 and 2000;
```

select ename from emp where ename like 's%';

ename
SMITH
SCOTT

```
select ename from emp where ename like '_i%';
```

ename
KING
MILLER

```
select * from emp where ename like '      ';
```

select job from emp;

job
CLERK
SALESMAN
SALESMAN
MANAGER
SALESMAN
MANAGER
MANAGER
ANALYST
PRESIDENT
SALESMAN
CLERK
CLERK
ANALYST
CLERK

```
select distinct job from emp;
```

job
CLERK
SALESMAN
MANAGER
ANALYST
PRESIDENT

```
select * from emp where mgr is NULL;
```

select * from emp order by ename;

empno	ename	job	mgr	hiredate	sal	comm	deptno	
7876	ADAMS	CLERK	7788	1983-01-12	1100	NULL	20	
7499	ALLEN	SALESMAN	7698	1981-02-20	1600	300	30	
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30	
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10	
7902	FORD	ANALYST	7566	1981-12-04	3000	NULL	20	
7900	JAMES	CLERK	7698	1981-12-03	950	NULL	30	
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20	
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10	
7654	MARTIN	SALESMAN	7698	1981-09-28	1250	1400	30	
7934	MILLER	CLERK	7782	1982-01-23	1300	NULL	10	
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20	
7369	SMITH	CLERK	7902	1980-12-17	800	NULL	20	
7844	TURNER	SALESMAN	7698	1981-09-08	1500	0	30	
7521	WARD	SALESMAN	7698	1981-02-22	1250	500	30	
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	

select * from emp where sal>2000 order by job, ename;

empno	ename	job	mgr	hiredate	sal	comm	deptno	
7902	FORD	ANALYST	7566	1981-12-04	3000	NULL	20	
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20	
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30	
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10	
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20	
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10	
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	

select * from emp where sal>2000 order by job, sal desc, ename;

empno	ename	job	mgr	hiredate	sal	comm	deptno	
7902	FORD	ANALYST	7566	1981-12-04	3000	NULL	20	
7788	SCOTT	ANALYST	7566	1982-12-09	3000	NULL	20	
7566	JONES	MANAGER	7839	1981-04-02	2975	NULL	20	
7698	BLAKE	MANAGER	7839	1981-05-01	2850	NULL	30	
7782	CLARK	MANAGER	7839	1981-06-09	2450	NULL	10	
7839	KING	PRESIDENT	NULL	1981-11-17	5000	NULL	10	
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	

-- aggregate function

select count(*) from emp;

count(*)
14

select count(comm) from emp;

count(comm)
4

```
select sum(sal) from emp where job='manager';
```

sum(sal)
8275

```
select min(sal) from emp where job="salesman";
```

min(sal)
1250

```
select ename, sal from emp where sal=(select min(sal) from emp where job="salesman");
```

ename	sal
WARD	1250
MARTIN	1250

```
select deptno, count(*) from emp group by deptno;
```

deptno	count(*)
10	3
20	5
30	6

```
select job, avg(sal) from emp where job!= 'clerk' group by job order by job desc;
```

job	avg(sal)
SALESMAN	1400.0000
PRESIDENT	5000.0000
MANAGER	2758.3333
ANALYST	3000.0000

```
select deptno, avg(sal) from emp group by deptno having count(*)>5;
```

deptno	avg(sal)
30	1566.6667

```
select job, sum(sal), max(sal) from emp where deptno=20 group by job having sum(sal)>5000 order by sum(sal);
```

job	sum(sal)	max(sal)
ANALYST	6000	3000