

# **DBMS MINI-PROJECT**

## **TITLE**

**“University Database Management  
SYSTEM”**

## **Team Members**

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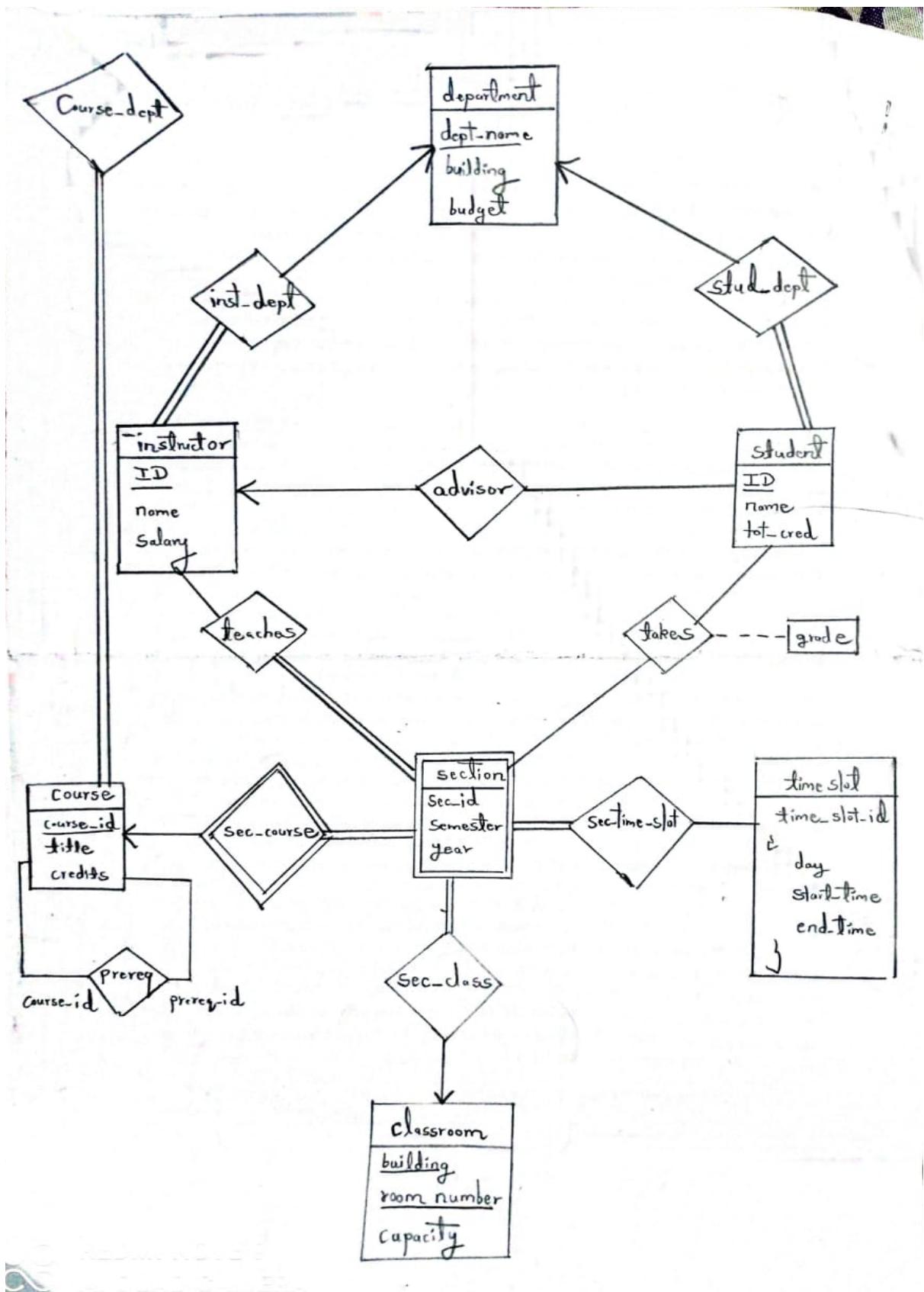
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## **ABSTRACT**

University Database Management System provides a simple interface for maintenance of student, teacher, course ,department, classroom information. It can be used by educational institutes or colleges to maintain the records of students, teacher, course ,department, classroom easily. The creation and management of accurate, up-to-date information regarding a students', teacher, course ,department, classroom academic career is critically important in the university as well as colleges. Student, teacher, course ,department, classroom information system deals with all kind of student details, academic related reports, college details, course details, curriculum, batch details, placement details and other resource related details too. It will also have faculty details, batch execution details, students' details in all aspects, the various academic notifications to the staff and students updated by the college administration. It also facilitate us explore all the activities happening in the college, Different reports and Queries can be generated based on vast options related to students, batch, course, faculty, exams, semesters, certification and even for the entire college. The placement officer is responsible for updating the placement related information like eligible criteria for a particular company, arriving date for the company which is coming for recruitment, the list of students who are eligible for attending the recruitment process.

# **INTRODUCTION**

The design and implementation of a comprehensive University Database Management System and user interface is to replace the current paper records. College Staff are able to directly access all aspects of a student's academic progress through a secure, online interface embedded in the college's website. The system utilizes user authentication, displaying only information necessary for an individual's duties. Additionally, each sub-system has authentication allowing authorized users to create or update information in that subsystem. All data is thoroughly reviewed and validated on the server before actual record alteration occurs. In addition to a staff user interface, the system plans for student user interface, allowing users to access information and submit requests online thus reducing processing time. All data is stored securely on SQL servers managed by the college administrator and ensures highest possible level of security. The system features a complex logging system to track all users' access and ensure conformity to data access guidelines and is expected to increase the efficiency of the college's record management thereby decreasing the work hours needed to access and deliver student records to users.



## TABLE DETAILS

### Classroom

```
SQL> desc classroom;
Name                           Null?    Type
----- -----
ROOMNUMBER                      NUMBER
BUILDING                         VARCHAR2(30)
STRENGTH                         NUMBER
```

### Student

```
SQL> desc student;
Name Null? Type
-----
ID NUMBER(38)
STUDENT_NAME VARCHAR2(30)
DEPARTMENT VARCHAR2(10)
TOTAL_CREDITS NUMBER(38)
```

## Teacher

```
SQL> desc Teacher;
Name Null? Type
-----
ID NUMBER(38)
TEACHER_NAME VARCHAR2(30)
SUBJECT_NAME VARCHAR2(50)
DEPARTMENT VARCHAR2(10)
SALARY NUMBER
```

## Section

```
SQL> desc Section;
Name Null? Type
-----
COURSEID NUMBER(38)
SECID NUMBER(38)
SEMESTER VARCHAR2(255)
YEAR VARCHAR2(255)
```

## Department

```
SQL> desc department;
Name Null? Type
-----
ID NOT NULL NUMBER(38)
DEPT_NAME VARCHAR2(20)
BUILDING VARCHAR2(20)
BUDGET NUMBER(38)

SQL>
```

## Course

```
SQL> desc course;
Name          Null?    Type
-----          -----
COURSEID      NOT NULL CHAR(10)
TITLE         VARCHAR2(30)
DEPTNAME     VARCHAR2(20)
CREDITS       NUMBER
```

## DDL

### Code:

```
create table Emp(id int,teacher_name varchar(30),subject_name varchar(50),department varchar(10), salary number);
```

```
Rename Emp to Teacher;
```

```
desc Teacher;
```

```
alter table Teacher add(joining number);
```

```
desc Teacher;
```

```
alter table Teacher Modify(joining date);
```

```
desc Teacher;
```

```
alter table Teacher Drop column joining;
```

```
desc Teacher;
```

```
insert into Teacher (id,teacher_name,subject_name,department,salary) values ('1','agni','data science','CSE', '5000');
```

```
insert into Teacher (id,teacher_name,subject_name,department,salary) values ('2','lala','ground net','CIVIL', '7000');
```

```
truncate table Teacher;
```

```
select * from Teacher;
```

### Output:

```

SQL> create table Emp(id int,teacher_name varchar(30),subject_name varchar(50),department varchar(10), salary number);

Table created.

SQL> Rename Emp to Teacher;

Table renamed.

SQL> desc Teacher;
Name          Null?    Type
----          ----     --
ID           NUMBER(38)
TEACHER_NAME VARCHAR2(30)
SUBJECT_NAME VARCHAR2(50)
DEPARTMENT   VARCHAR2(10)
SALARY       NUMBER

SQL> alter table Teacher add(joining number);

Table altered.

SQL> desc Teacher;
Name          Null?    Type
----          ----     --
ID           NUMBER(38)
TEACHER_NAME VARCHAR2(30)
SUBJECT_NAME VARCHAR2(50)
DEPARTMENT   VARCHAR2(10)
SALARY       NUMBER
JOINING     NUMBER

SQL> alter table Teacher Modify(joining date);

Table altered.

SQL> desc Teacher;
Name          Null?    Type
----          ----     --
ID           NUMBER(38)
TEACHER_NAME VARCHAR2(30)
SUBJECT_NAME VARCHAR2(50)
DEPARTMENT   VARCHAR2(10)
SALARY       NUMBER
JOINING     DATE

SQL> alter table Teacher Drop column joining;

Table altered.

SQL> desc Teacher;
Name          Null?    Type
----          ----     --
ID           NUMBER(38)
TEACHER_NAME VARCHAR2(30)
SUBJECT_NAME VARCHAR2(50)
DEPARTMENT   VARCHAR2(10)
SALARY       NUMBER

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('1','agni','data science','CSE', '5000');

1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('2','lala','ground net.', 'CIVIL', '7000');

1 row created.

SQL> truncate table Teacher;

Table truncated.

SQL> select * from Teacher;

no rows selected

SQL>

```

# DML Commands

## Code:

```
create table Teacher(id int,teacher_name varchar(30),subject_name varchar(50),department varchar(10), salary number);

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('1','agni','data science','CSE', '5000');

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('2','lala','ground net.','CIVIL', '7000');

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('1','agni','data science','CSE', '');

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('2','lala', 'ground net.', 'CIVIL', '7000');

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('3','Sardar','machine learning','SWE', '4500');

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('4','faizal','ADE','ECE', '8000');

select * from Teacher;

update Teacher set department = 'CVL' where id='2';

select * from Teacher where subject_name like '%learning';

insert into Teacher (id,teacher_name,subject_name,department,salary) values ('5','definate','computer communication','SWE', '5000');

select * from Teacher;

delete from Teacher where id='5';

select * from Teacher order by department;

select teacher_name from Teacher where salary<'5000' group by teacher_name;

select * from Teacher where salary>'5000' AND salary<'10000' ;
```

```
select distinct subject_name from Teacher;
```

```
select count(id),subject_name from Teacher group by subject_name having count(id)>1
```

**Output:**

```

Table created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('1','agni','data science','CSE', '5000');
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('2','lala','ground net. ','CIVIL', '7000');
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('1','agni','data science','CSE', '');
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('2','lala', 'ground net. ','CIVIL', '7000');
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('3','Sardar','machine learning','SWE', '4500');
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('4','faizal','ADE','ECE', '8000');
1 row created.

SQL> select * from Teacher;
      ID TEACHER_NAME
----- SUBJECT_NAME          DEPARTMENT    SALARY
----- 1 agni           CSE        5000
      2 lala           CIVIL       7000
      1 agni           CSE
      ID TEACHER_NAME
----- SUBJECT_NAME          DEPARTMENT    SALARY
----- 2 lala           CIVIL       7000
      3 Sardar         SWE        4500
      4 faizal         ECE        8000

5 rows selected.

SQL> update Teacher set department = 'CVL' where id='2';
2 rows updated.

SQL> select * from Teacher where subject_name like '%learning';
      ID TEACHER_NAME
----- SUBJECT_NAME          DEPARTMENT    SALARY
----- 3 Sardar         SWE        4500

SQL> insert into Teacher (id,teacher_name,subject_name,department) values ('5','definate','computer communication','SWE', '5000');
Insert into Teacher (id,teacher_name,subject_name,department) values ('5','definate','computer communication','SWE', '5000')
*
ERROR at line 1:
ORA-00913: too many values

SQL> insert into Teacher (id,teacher_name,subject_name,department,salary) values ('5','definate','computer communication','SWE', '5000');

1 row created.

SQL> select * from Teacher;
      ID TEACHER_NAME
----- SUBJECT_NAME          DEPARTMENT    SALARY
----- 1 agni           CSE        5000
      2 lala           CVL        7000
      1 agni           CSE

```

```

ID TEACHER_NAME
SUBJECT_NAME
----- -----
2 lala
ground net.
3 Sardar
machine learning
4 faizal
ADE

ID TEACHER_NAME
SUBJECT_NAME
----- -----
5 definite
computer communication

7 rows selected.

SQL> delete from Teacher where id='5';
1 row deleted.

SQL> select * from Teacher order by department;
ID TEACHER_NAME
SUBJECT_NAME
----- -----
1 agni
data science
1 agni
data science
2 lala
ground net.

ID TEACHER_NAME
SUBJECT_NAME
----- -----
2 lala
ground net.
4 faizal
ADE

3 Sardar
machine learning

6 rows selected.

SQL> select teacher_name from Teacher where salary<'5000' group by teacher_name;
TEACHER_NAME
-----
Sardar

SQL> select * from Teacher where salary>'5000' AND salary<'10000' ;

ID TEACHER_NAME
SUBJECT_NAME
----- -----
2 lala
ground net.
CVL 7000
2 lala
ground net.
CVL 7000
4 faizal
ADE ECE 8000

SQL> select distinct subject_name from Teacher;
SUBJECT_NAME
-----
ADE
data science
ground net.
ground net.
machine learning

SQL> select count(id),subject_name from Teacher group by subject_name having count(id)>1
2 -

```

# Constraints

## Code:

```
create table Emp(id int not null,teacher_name varchar(30),subject_name varchar(50),department varchar(10), salary number);
```

```
desc Emp;
```

```
alter table Emp add(unique(teacher_name));
```

```
insert into Emp (id,teacher_name,subject_name,department) values ('1','agni','data science','CSE');
```

```
insert into Emp (id,teacher_name,salary) values ('2','lala','10000');
```

```
select * from Emp;
```

```
insert into Emp (id,teacher_name,subject_name,department,salary) values ('3','agni','cloud_computing','CSE','25000');
```

```
insert into Emp (teacher_name,subject_name,department,salary) values ('john','cloud_computing','CSE','5000');
```

```
alter table Emp add(primary key (id));
```

```
alter table Emp add(check (salary >'1000'));
```

```
insert into Emp (id,teacher_name,subject_name,department,salary) values ('4','lorance', 'ground net.', 'CIVIL', '500');
```

```
create table Dep_data(id int not null,teacher_name varchar(20),teacher_id int references Emp(id));
```

```
desc Dep_data;
```

```
insert into Dep_data (id,teacher_name,teacher_id) values ('1','agni','1');
```

```
desc Dep_data;
```

```
select * from Dep_data;
```

```
delete from Emp where id='1'  
delete from Dep_data where id='1';  
delete from Emp where id='1';
```

### **Output:**

```

SQL> create table Emp(id int not null,teacher_name varchar(30),subject_name varchar(50),department varchar(10), salary number);
Table created.

SQL> desc Emp;
Name          Null?    Type
-----        -----    -----
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(50)
DEPARTMENT          VARCHAR2(10)
SALARY            NUMBER

SQL> alter table Emp add(unique(teacher_name));
Table altered.

SQL> insert into Emp (id,teacher_name,subject_name,department) values ('1','agni','data science','CSE');
1 row created.

SQL> insert into Emp (id,teacher_name,salary) values ('2','lala','10000');
1 row created.

SQL> select * from Emp;
      ID TEACHER_NAME
SUBJECT_NAME          DEPARTMENT      SALARY
-----        -----
1 agni
data science          CSE
2 lala                10000

SQL> insert into Emp (id,teacher_name,subject_name,department,salary) values ('3','agni','cloud_computing','CSE','25000');
insert into Emp (id,teacher_name,subject_name,department,salary) values ('3','agni','cloud_computing','CSE','25000')
*
ERROR at line 1:
ORA-00001: unique constraint (SYSTEM.SYS_C007309) violated

SQL> insert into Emp (teacher_name,subject_name,department,salary) values ('john','cloud_computing','CSE','5000');
insert into Emp (teacher_name,subject_name,department,salary) values ('john','cloud_computing','CSE','5000')
*
ERROR at line 1:
ORA-01400: cannot insert NULL into ("SYSTEM"."EMP"."ID")

SQL> alter table Emp add(primary key (id));
Table altered.

SQL> alter table Emp add(check (salary >'1000'));
Table altered.

SQL> insert into Emp (id,teacher_name,subject_name,department,salary) values ('4','lorance', 'ground net. ','CIVIL', '500');
insert into Emp (id,teacher_name,subject_name,department,salary) values ('4','lorance', 'ground net. ','CIVIL', '500')
*
ERROR at line 1:
ORA-02290: check constraint (SYSTEM.SYS_C007311) violated

SQL> create table Dep_data(id int not null,teacher_name varchar(20),teacher_id int references Emp(id));
Table created.

SQL> desc Dep_data;
Name          Null?    Type
-----        -----    -----
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(20)
TEACHER_ID            NUMBER(38)

SQL> insert into Dep_data (id,teacher_name,teacher_id) values ('1','agni','1');
1 row created.

SQL> desc Dep_data;
Name          Null?    Type
-----        -----    -----
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(20)
TEACHER_ID            NUMBER(38)

SQL> select * from Dep_data;
      ID TEACHER_NAME      TEACHER_ID
-----        -----
1 agni                      1

SQL> delete from Emp where id='1';
delete from Emp where id='1'
*
ERROR at line 1:

```

```
ORA-02292: integrity constraint (SYSTEM.SYS_C007313) violated - child record  
found
```

```
SQL> delete from Dep_data where id='1';
```

```
1 row deleted.
```

```
SQL> delete from Emp where id='1';
```

```
1 row deleted.
```

# Inbuilt and Aggregate Function

## Code:

```
create table EMP(id int primary key,teacher_name varchar(30),subject_name  
varchar(30),department varchar(50),salary number);  
  
desc EMP;  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('1','agni','data  
science','CSE',2000);  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('2','lala','ground  
net','CIVIL',3000);  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('3','sardar','Machine  
learning','SWE',1000);  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('4','faizal','ADE','ECE',2000);  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('5','definate','Computer  
Communication','SWE',4000);  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('6','Ramadhir','electronics','ECE',35000);  
  
insert into EMP (id,teacher_name,subject_name ,department,salary) values ('7','Shamshad','Artificial  
Intelligence','CSE',300);  
  
  
select * from EMP;  
  
select subject_name ,avg(salary) from EMP group by subject_name ;  
  
  
select department,count(*) from EMP group by department;  
  
  
select * from EMP where department='ECE' or department='SWE' ;  
  
  
select * from EMP where department='CSE' and salary>1000 ;  
  
  
select * from EMP where subject_name <> 'data science';  
  
  
exec savepoint save1;
```

```
insert into EMP (id,teacher_name,subject_name ,department,salary) values  
('8','perpendicular','CCC','AAA',200);
```

```
select * from EMP;
```

```
rollback to savepoint save1;
```

```
select * from EMP;
```

```
delete from EMP where id>'5';
```

```
exec savepoint save2;
```

```
commit;
```

```
rollback to savepoint save2;
```

```
rollback to savepoint save1;
```

## **Output:**

```

SQL> create table EMP(id int primary key,teacher_name varchar(30),subject_name varchar(30),department varchar(50),salary number);
Table created.

SQL> desc EMP;
Name          Null?    Type
----          ----    --
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(30)
DEPARTMENT          VARCHAR2(50)
SALARY            NUMBER

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('1','agni','data science','CSE',2000);
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('2','lala','ground net. ','CIVIL',3000);
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('3','sardar','Machine learning','SWE',1000);
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('4','faizal','ADE','ECE',2000);
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('5','definate','Computer Communication','SWE',4000);
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('6','Ramadhir','electronics','ECE',35000);
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('7','Shamshad','Artificial Intelligence','CSE',300);
1 row created.

SQL> select * from EMP;
ID TEACHER_NAME      SUBJECT_NAME
-----      -----
DEPARTMENT          SALARY
-----      -----
    1 agni             data science
    CSE                2000

```

```

2 lala           ground net.      3000
CIVIL

3 sardar        Machine learning 1000
SWE

ID TEACHER_NAME SUBJECT_NAME
----- -----
DEPARTMENT          SALARY
----- -----
4 faizal           ADE            2000
ECE

5 definate        Computer Communication 4000
SWE

6 Ramadhir        electronics      35000
ECE

ID TEACHER_NAME SUBJECT_NAME
----- -----
DEPARTMENT          SALARY
----- -----
7 Shamshad         Artificial Intelligence 300
CSE

7 rows selected.

SQL> select subject_name ,avg(salary) from EMP group by subject_name ;

SUBJECT_NAME          AVG(SALARY)
----- -----
Machine learning       1000
ADE                  2000
data science          2000
ground net.           3000
Computer Communication 4000
Artificial Intelligence 300
electronics          35000

7 rows selected.

SQL> select department,count(*) from EMP group by department;

DEPARTMENT          COUNT(*)
----- -----
CSE                  2

```

```

7 rows selected.

SQL> select subject_name ,avg(salary) from EMP group by subject_name ;

SUBJECT_NAME          AVG(SALARY)
-----
Machine learning      1000
ADE                  2000
data science          2000
ground net.           3000
Computer Communication 4000
Artificial Intelligence 300
electronics           35000

7 rows selected.

SQL> select department,count(*) from EMP group by department;

DEPARTMENT          COUNT(*)
-----
CSE                  2
SWE                  2
ECE                  2
CIVIL                1

SQL> select * from EMP where department='ECE' or department='SWE' ;

ID TEACHER_NAME          SUBJECT_NAME          SALARY
-----                    -----
DEPARTMENT
-----          SALARY
-----          -----
SWE          3 sardar        Machine learning    1000
SWE          4 faizal         ADE                 2000
ECE          5 definate       Computer Communication 4000
SWE

ID TEACHER_NAME          SUBJECT_NAME          SALARY
-----                    -----
DEPARTMENT
-----          SALARY
-----          -----
ECE          6 Ramadhir       electronics        35000

```

```

SQL> select * from EMP where department='CSE' and salary>1000 ;
      ID TEACHER_NAME           SUBJECT_NAME
DEPARTMENT                               SALARY
-----                                     -----
CSE          1 agni             data science    2000

SQL> select * from EMP where subject_name <> 'data science';
      ID TEACHER_NAME           SUBJECT_NAME
DEPARTMENT                               SALARY
-----                                     -----
CIVIL         2 lala            ground net.   3000
SWE          3 sardar          Machine learning 1000
ECE          4 faizal           ADE            2000

      ID TEACHER_NAME           SUBJECT_NAME
DEPARTMENT                               SALARY
-----                                     -----
SWE          5 definate        Computer Communication 4000
ECE          6 Ramadhir        electronics       35000
CSE          7 Shamshad        Artificial Intelligence 300

5 rows selected.

SQL> exec savepoint save1;
PL/SQL procedure successfully completed.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary) values ('8','perpendicular','CCC','AAA',200);
1 row created.

```

```

SQL> select * from EMP;

        ID TEACHER_NAME           SUBJECT_NAME
DEPARTMENT                               SALARY
-----  -----
CSE          1 agni             data science      2000
CIVIL        2 lala              ground net.     3000
SWE          3 sardar            Machine learning 1000

        ID TEACHER_NAME           SUBJECT_NAME
DEPARTMENT                               SALARY
-----  -----
ECE          4 faizal             ADE             2000
SWE          5 definate            Computer Communication 4000
ECE          6 Ramadhir            electronics      35000

        ID TEACHER_NAME           SUBJECT_NAME
DEPARTMENT                               SALARY
-----  -----
CSE          7 Shamshad            Artificial Intelligence 300
AAA          8 perpendicular        CCC             200

3 rows selected.

SQL> rollback to savepoint save1;
Rollback complete.

SQL> select * from EMP;

```

	ID	TEACHER_NAME	SUBJECT_NAME	
DEPARTMENT				SALARY
CSE	1	agni	data science	2000
CIVIL	2	lala	ground net.	3000
SWE	3	sardar	Machine learning	1000
	ID	TEACHER_NAME	SUBJECT_NAME	
DEPARTMENT				SALARY
ECE	4	faizal	ADE	2000
SWE	5	definate	Computer Communication	4000
ECE	6	Ramadhir	electronics	35000
	ID	TEACHER_NAME	SUBJECT_NAME	
DEPARTMENT				SALARY
CSE	7	Shamshad	Artificial Intelligence	300

7 rows selected.

```
SQL> delete from EMP where id>'5';
2 rows deleted.

SQL> exec savepoint save2;
PL/SQL procedure successfully completed.

SQL> commit;
Commit complete.
```

```
SQL> rollback to savepoint save2;
rollback to savepoint save2
*
ERROR at line 1:
ORA-01086: savepoint 'SAVE2' never established in this session or is invalid

SQL> rollback to savepoint save1;
rollback to savepoint save1
*
ERROR at line 1:
ORA-01086: savepoint 'SAVE1' never established in this session or is invalid
```

## Date functions

### Code:

```
select months_between('02-Mar-2012','02-Jan-2002') from dual;
```

```
select sysdate from dual;
```

```
select add_months(sysdate,5) from dual;
```

```
select last_day(add_months(sysdate,5)) from dual;
```

```
select last_day(sysdate) from dual;
```

```
select ceil(months_between('02-Mar-2012','02-Jan-2002')) from dual;
```

```
select floor(months_between('02-Mar-2012','02-Jan-2002')) from dual;
```

```
select next_day(sysdate,'TUESDAY') from dual;
```

### Output:

```
SQL> select months_between('02-Mar-2012','02-Jan-2002') from dual;
MONTHS_BETWEEN('02-MAR-2012','02-JAN-2002')
-----
122

SQL> select sysdate from dual;
SYSDATE
-----
02-MAY-21

SQL> select add_months(sysdate,5) from dual;
ADD_MONTH
-----
02-OCT-21

SQL> select last_day(add_months(sysdate,5)) from dual;
LAST_DAY(
-----
31-OCT-21

SQL> select last_day(sysdate) from dual;
LAST_DAY(
-----
31-MAY-21

SQL>
SQL> select ceil(months_between('02-Mar-2012','02-Jan-2002')) from dual;
CEIL(MONTHS_BETWEEN('02-MAR-2012','02-JAN-2002'))
-----
122

SQL>
SQL> select floor(months_between('02-Mar-2012','02-Jan-2002')) from dual;
FLOOR(MONTHS_BETWEEN('02-MAR-2012','02-JAN-2002'))
-----
122

SQL> select next_day(sysdate,'TUESDAY') from dual;
NEXT_DAY(
-----
04-MAY-21
```

## **character functions -**

### **Code:**

```
CREATE TABLE EMP1(id int,teacher_name varchar(50));  
DESC EMP1;  
insert into EMP1 (id,teacher_name) values('1','agni');  
insert into EMP1 (id,teacher_name) values('2','lala');  
select * from EMP1;  
select upper(teacher_name) from EMP1 where id='1';  
select lower(teacher_name) from EMP1 where id='1';  
update EMP1 set teacher_name='EMP1Stop' where id='1';  
select * from EMP1;  
select length(teacher_name) from EMP1 where id='1';  
select substr(teacher_name,2,4) from EMP1 where id='1';  
select ltrim(teacher_name) from EMP1 where id='1';
```

### **Output:**

```

SQL> CREATE TABLE EMP1(id int,teacher_name varchar(50));

Table created.

SQL> DESC EMP1;
      Name          Null?    Type
-----  -----
ID           NUMBER(38)
TEACHER_NAME VARCHAR2(50)

SQL> insert into EMP1 (id,teacher_name) values('1','agni');

1 row created.

SQL> insert into EMP1 (id,teacher_name) values('2','lala');

1 row created.

SQL> select * from EMP1;

      ID TEACHER_NAME
-----  -----
        1 agni
        2 lala

SQL> select upper(teacher_name) from EMP1 where id='1';

UPPER(TEACHER_NAME)
-----
AGNI

SQL> select lower(teacher_name) from EMP1 where id='1';

LOWER(TEACHER_NAME)
-----
agni

SQL> update EMP1 set teacher_name='EMP1Stop' where id='1';

1 row updated.

SQL> select * from EMP1;

      ID TEACHER_NAME
-----  -----
        1 EMP1Stop
        2 lala

```

```
SQL> select length(teacher_name) from EMP1 where id='1';
LENGTH(TEACHER_NAME)
-----
8

SQL> select substr(teacher_name,2,4) from EMP1 where id='1';
SUBSTR(TEACHER_N
-----
MP1S

SQL> select ltrim(teacher_name) from EMP1 where id='1';
LTRIM(TEACHER_NAME)
-----
EMP1Stop
```

## Group functions

### Code:

```
create table EMP(id int primary key,teacher_name varchar(30),subject_name  
varchar(30),department varchar(50),salary number,start_date DATE);  
  
desc EMP;  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(1,'agni','data science','CSE',2000,DATE '1990-02-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(2,'lala','ground net','CIVIL',3000,DATE '1995-05-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(3,'sardar','Machine learning','SWE',1000,DATE '1998-08-21');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(4,'faizal','ADE','ECE',2000,DATE '1990-02-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(5,'definate','Computer Communication','SWE',4000,DATE '1995-05-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(6,'Ramadhir','electronics','ECE',35000,DATE '2000-08-21');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
(7,'Shamshad','Artificial Intelligence','CSE',300,DATE '2000-08-21');  
  
select * from EMP;  
  
SELECT AVG(salary) from EMP;  
  
SELECT SUM(salary) from EMP;  
  
SELECT SUM(salary) from EMP where department='CSE';  
  
SELECT COUNT(teacher_name) from EMP where department='CSE';  
  
SELECT COUNT(teacher_name) from EMP where salary>3000;  
  
SELECT DISTINCT department from EMP;  
  
SELECT MAX(salary) FROM EMP;  
  
SELECT MIN(salary) FROM EMP;  
  
SELECT AVG(salary) from EMP where department='CSE';  
  
SELECT department,COUNT(*) FROM EMP GROUP BY department;  
  
SELECT department,MAX(salary) FROM EMP GROUP BY department;  
  
SELECT department,AVG(salary) FROM EMP GROUP BY department;  
  
SELECT department,COUNT(*) FROM EMP GROUP BY department;
```

```
SELECT department,MAX(salary) FROM EMP GROUP BY department;  
SELECT department,AVG(salary) FROM EMP GROUP BY department;  
SELECT department,COUNT(*),AVG(salary) FROM EMP GROUP BY department;  
SELECT department,COUNT(*),AVG(salary) FROM EMP WHERE salary>=2500 GROUP BY department;  
SELECT department,AVG(salary) FROM EMP WHERE salary>=2500 GROUP BY department;  
SELECT MAX(salary)-MIN(salary) DIFFERENCE FROM EMP;  
SELECT department,COUNT(*) FROM EMP GROUP BY department HAVING COUNT(*)>=2;  
SELECT department,COUNT(*),MAX(salary) FROM EMP GROUP BY department HAVING  
COUNT(*)>=2;  
select * from EMP where start_date between '05-Feb-1990' and '05-May-1995';  
select start_date,count(*) from EMP group by start_date;
```

### **Output:**

```

SQL> SELECT department,COUNT(*),AVG(salary) FROM EMP WHERE salary>=2500 GROUP BY department;
DEPARTMENT          COUNT(*) AVG(SALARY)
-----              -----
SWE                  1      4000
ECE                  1      35000
CIVIL                1      3000

SQL> SELECT department,Avg(salary) FROM EMP WHERE salary>=2500 GROUP BY department;
DEPARTMENT          AVG(SALARY)
-----              -----
SWE                  4000
ECE                  35000
CIVIL                3000

SQL> SELECT MAX(salary)-MIN(salary) DIFFERENCE FROM EMP;
DIFFERENCE
-----
34700

SQL> SELECT department,COUNT(*) FROM EMP GROUP BY department HAVING COUNT(*)>=2;
DEPARTMENT          COUNT(*)
-----              -----
CSE                  2
SWE                  2
ECE                  2

SQL> SELECT department,COUNT(*),MAX(salary) FROM EMP GROUP BY department HAVING COUNT(*)>=2;
DEPARTMENT          COUNT(*) MAX(SALARY)
-----              -----
CSE                  2      2000
SWE                  2      4000
ECE                  2      35000

SQL> select * from EMP where start_date between '05-Feb-1990' and '05-May-1995';
ID TEACHER_NAME          SUBJECT_NAME
-----                         -----
DEPARTMENT          SALARY START_DATE
-----              -----
1 agni               data science
CSE                 2000 05-FEB-90
2 lala               ground net.
CIVIL                3000 05-MAY-95

```

SQL> SELECT department,Avg(salary) FROM EMP GROUP BY department;

DEPARTMENT	Avg(SALARY)
CSE	1150
SWE	2500
ECE	18500
CIVIL	3000

SQL> SELECT department,COUNT(\*) FROM EMP GROUP BY department;

DEPARTMENT	COUNT(*)
CSE	2
SWE	2
ECE	2
CIVIL	1

SQL> SELECT department,MAX(salary) FROM EMP GROUP BY department;

DEPARTMENT	MAX(SALARY)
CSE	2000
SWE	4000
ECE	35000
CIVIL	3000

SQL> SELECT department,Avg(salary) FROM EMP GROUP BY department;

DEPARTMENT	Avg(SALARY)
CSE	1150
SWE	2500
ECE	18500
CIVIL	3000

SQL> SELECT department,COUNT(\*),AVG(salary) FROM EMP GROUP BY department;

DEPARTMENT	COUNT(*)	AVG(SALARY)
CSE	2	1150
SWE	2	2500
ECE	2	18500
CIVIL	1	3000

SQL> SELECT department,COUNT(\*),AVG(salary) FROM EMP WHERE salary>=2500 GROUP BY department;

DEPARTMENT	COUNT(*)	AVG(SALARY)
------------	----------	-------------

```

SQL> SELECT DISTINCT department from EMP;
DEPARTMENT
-----
CSE
SWE
ECE
CIVIL

SQL> SELECT MAX(salary) FROM EMP;
MAX(SALARY)
-----
35000

SQL> SELECT MIN(salary) FROM EMP;
MIN(SALARY)
-----
300

SQL> SELECT AVG(salary) from EMP where department='CSE';
AVG(SALARY)
-----
1150

SQL> SELECT department,COUNT(*) FROM EMP GROUP BY department;
DEPARTMENT          COUNT(*)
-----
CSE                  2
SWE                  2
ECE                  2
CIVIL                1

SQL> SELECT department,MAX(salary) FROM EMP GROUP BY department;
DEPARTMENT          MAX(SALARY)
-----
CSE                  2000
SWE                  4000
ECE                  35000
CIVIL                3000

SQL> SELECT department,Avg(salary) FROM EMP GROUP BY department;
DEPARTMENT          AVG(SALARY)
-----
ECE                  2000 05-FEB-90
SWE                  4000 05-MAY-95
ECE                  35000 21-AUG-00

ID TEACHER_NAME          SUBJECT_NAME
----- SALARY START_DATE
DEPARTMENT
-----
7 Shamshad            Artificial Intelligence
CSE                  300 21-AUG-00

7 rows selected.

SQL> SELECT AVG(salary) from EMP;
AVG(SALARY)
-----
6757.14286

SQL> SELECT SUM(salary) from EMP;
SUM(SALARY)
-----
47300

SQL> SELECT SUM(salary) from EMP where department='CSE';
SUM(SALARY)
-----
2300

SQL> SELECT COUNT(teacher_name) from EMP where department='CSE';
COUNT(TEACHER_NAME)
-----
2

SQL> SELECT COUNT(teacher_name) from EMP where salary>3000;
COUNT(TEACHER_NAME)
-----
2

SQL> SELECT DISTINCT department from EMP;

```

```

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('1','agni','data science','CSE',2000,DATE '1990-02-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('2','lala','ground net.','CIVIL',3000,DATE '1995-05-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('3','sardar','Machine learning','SWE',1000,DATE '1998-08-21');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('4','faizal','ADE','ECE',2000,DATE '1990-02-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('5','definate','Computer Communication','SWE',4000,DATE '1995-05-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('6','Ramadhir','electronics','ECE',35000,DATE '2000-08-21');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('7','Shamshad','Artificial Intelligence','CSE',300,DATE '2000-08-21');
1 row created.

SQL> select * from EMP;
-----+
ID TEACHER_NAME          SUBJECT_NAME
-----+
DEPARTMENT          SALARY START_DATE
-----+
      1 agni           data science        2000 05-FEB-90
      2 lala            ground net.       3000 05-MAY-95
      3 sardar          Machine learning   1000 21-AUG-98
-----+
      4 faizal          ADE
-----+
# SQL Plus

SQL*Plus: Release 18.0.0.0.0 - Production on Tue Mar 9 14:11:03 2021
Version 18.4.0.0.0

Copyright (c) 1982, 2018, Oracle. All rights reserved.

Enter user-name: RA1811003010342/RA1811003010342@f1msabirami.ctp92bms3a8y.ap-south-1.rds.amazonaws.com:1521/F1
Last Successful login time: Tue Mar 09 2021 14:09:32 +05:30

Connected to:
Oracle Database 19c Enterprise Edition Release 19.0.0.0.0 - Production
Version 19.9.0.0.0

SQL> desc table;
ERROR:
ORA-00931: missing identifier

SQL> desc EMP;
-----+
Name          Null?    Type
-----+
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(30)
DEPARTMENT          VARCHAR2(50)
SALARY           NUMBER
-----+
SQL> drop table EMP;
Table dropped.

SQL> desc EMP;
ERROR:
ORA-04043: object EMP does not exist

SQL> create table EMP(id int primary key,teacher_name varchar(30),subject_name varchar(30),department varchar(50),salary number,start_date DATE);
Table created.

SQL> desc EMP;
-----+
Name          Null?    Type
-----+
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(30)
DEPARTMENT          VARCHAR2(50)
SALARY           NUMBER
START_DATE        DATE
-----+

```

```
SQL*Plus
SQL> select * from EMP where start_date between '05-Feb-1990' and '05-May-1995';
      ID TEACHER_NAME          SUBJECT_NAME
DEPARTMENT                               SALARY START_DATE
-----  -----
CSE           1 agni            data science
                         2000 05-FEB-90
CIVIL          2 lala             ground net,
                         3000 05-MAY-95
ECE           4 faizal            ADE
                         2000 05-FEB-90

      ID TEACHER_NAME          SUBJECT_NAME
DEPARTMENT                               SALARY START_DATE
-----  -----
SWE           5 definate        Computer Communication
                         4000 05-MAY-95

SQL> select start_date,count(*) from EMP group by start_date;
      START_DATE   COUNT(*)
-----  -----
21-AUG-98          1
05-MAY-95          2
05-FEB-90          2
21-AUG-00          2

SQL>
```

# Join Operations

## Code:

```
create table EMP(id int primary key,teacher_name varchar(30),subject_name  
varchar(30),department varchar(50),salary number,start_date DATE);  
  
desc EMP;  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('1','agni','data science','CSE',2000,DATE '1990-02-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('2','lala','ground net.','CIVIL',3000,DATE '1995-05-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('3','sardar','Machine learning','SWE',1000,DATE '1998-08-21');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('4','faizal','ADE','ECE',2000,DATE '1990-02-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('5','definate','Computer Communication','SWE',4000,DATE '1995-05-05');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('6','Ramadhir','electronics','ECE',35000,DATE '2000-08-21');  
  
insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values  
('7','Shamshad','Artificial Intelligence','CSE',300,DATE '2000-08-21');  
  
create table tec_company(id int primary key,name varchar(30),tech_id int references EMP(id));  
  
insert into tec_company (id,name,tech_id) values ('1','agni','1');  
  
insert into tec_company (id,name,tech_id) values ('2','lala','3');  
  
insert into tec_company (id,name,tech_id) values ('3','sardar','6');  
  
insert into tec_company (id,name,tech_id) values ('4','faizal','2');  
  
select p.id,p.teacher_name,c.id,c.name from EMP p,tec_company c;  
  
select p.id,p.teacher_name,p.subject_name,c.tech_id from EMP p,tec_company c where  
p.id=c.tech_id;  
  
select * from tec_company left join EMP on EMP.id= tec_company.tech_id;  
  
select * from tec_company right join EMP on tec_company.tech_id=EMP.id;  
  
select tec_company.id,tec_company.name,EMP.subject_name from tec_company inner join EMP on  
EMP.id=tec_company.tech_id;
```

## Output:

```

SQL> create table EMP(id int primary key,teacher_name varchar(30),subject_name varchar(30),department varchar(50),salary number,start_date DATE);
Table created.

SQL> desc EMP;
Name          Null?    Type
----          ----    --
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(30)
DEPARTMENT          VARCHAR2(50)
SALARY            NUMBER
START_DATE        DATE

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('1','agni','data science','CSE',2000,DATE '1990-02-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('2','lala','ground net','CIVIL',3000,DATE '1995-05-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('3','sardar','Machine learning','SWE',1000,DATE '1998-08-21');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('4','faizal','ADE','ECE',2000,DATE '1990-02-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('5','definata','Computer Communication','SWE',4000,DATE '1995-05-05');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('6','Ramadhir','electronics','ECE',35000,DATE '2000-08-21');
1 row created.

SQL> insert into EMP (id,teacher_name,subject_name ,department,salary,start_date) values ('7','Shamshad','Artificial Intelligence','CSE',300,DATE '2000-08-21');
1 row created.

SQL> create table tec_company(id int primary key,name varchar(30),tech_id int references EMP(id));
Table created.

SQL> insert into tec_company (id,name,tech_id) values ('1','agni','1');
1 row created.

```

```

SQL> insert into tec_company (id,name,tech_id) values ('2', 'lala','3');
1 row created.

SQL> insert into tec_company (id,name,tech_id) values ('3','sardar','6');
1 row created.

SQL> insert into tec_company (id,name,tech_id) values ('4','faizal','2');
1 row created.

SQL> select p.id,p.teacher_name,c.id,c.name from EMP p,tec_company c;
      ID TEACHER_NAME          ID
----- -----
NAME
----- -----
agni      1 agni                  1
agni      2 lala                  1
agni      3 sardar                1
agni      4 faizal                1
agni      5 definate              1
agni      6 Ramadhir              1
agni      7 Shamshad              1
agni      8 agni                  2

```

	2 lala	2
ala		
	ID TEACHER_NAME	ID
-----	-----	-----
AME		
-----	-----	-----
ala	3 sardar	2
ala	4 faizal	2
ala	5 definate	2
	ID TEACHER_NAME	ID
-----	-----	-----
AME		
-----	-----	-----
ala	6 Ramadhir	2
ala	7 Shamshad	2
ardar	1 agni	3
	ID TEACHER_NAME	ID
-----	-----	-----
AME		
-----	-----	-----
ardar	2 lala	3
ardar	3 sardar	3
ardar	4 faizal	3
	ID TEACHER_NAME	ID
-----	-----	-----
AME		

```

      5 definate          3
sardar

      6 Ramadhir          3
sardar

      7 Shamshad          3
sardar

ID TEACHER_NAME          ID
NAME
-----
1 agni                  4
faizal

2 lala                  4
faizal

3 sardar                4
faizal

ID TEACHER_NAME          ID
NAME
-----
4 faizal                4
faizal

5 definate              4
faizal

6 Ramadhir              4
faizal

ID TEACHER_NAME          ID
NAME
-----
7 Shamshad              4
faizal

28 rows selected.

SQL> select p.id,p.teacher_name,p.subject_name,c.tech_id from EMP p,tec_company c where p.id=c.tech_id;

```

```

SQL> select p.id,p.teacher_name,p.subject_name,c.tech_id from EMP p,tec_company c where p.id=c.tech_id;
      ID TEACHER_NAME          SUBJECT_NAME
-----+
      TECH_ID
-----+
      1 agni                  data science
      1
      2 lala                  ground net.
      2
      3 sardar                Machine learning
      3

      ID TEACHER_NAME          SUBJECT_NAME
-----+
      TECH_ID
-----+
      6 Ramadhir              electronics
      6

SQL> select * from tec_company left join EMP on EMP.id= tec_company.tech_id;
      ID NAME           TECH_ID      ID
-----+
TEACHER_NAME          SUBJECT_NAME
-----+
DEPARTMENT            SALARY START_DATE
-----+
      1 agni          data science      1       1
agni                  CSE             2000 05-FEB-90
      4 faizal        ground net.      2       2
lala                  CIVIL            3000 05-MAY-95
      ID NAME           TECH_ID      ID
-----+
TEACHER_NAME          SUBJECT_NAME
-----+
DEPARTMENT            SALARY START_DATE
-----+
      2 lala          Machine learning 3       3
sardar                SWE             1000 21-AUG-98

```

```

      3 sardar          6          6
Ramadhir           electronics

      ID NAME          TECH_ID        ID
-----
TEACHER_NAME       SUBJECT_NAME

DEPARTMENT          SALARY START_DAT
-----
ECE                35000 21-AUG-00

SQL> select * from tec_company right join EMP on tec_company.tech_id=EMP.id;

      ID NAME          TECH_ID        ID
-----
TEACHER_NAME       SUBJECT_NAME

DEPARTMENT          SALARY START_DAT
-----
      1 agni          1            1
agni               data science   2000 05-FEB-90
CSE

      2 lala          3            3
sardar             Machine learning 1000 21-AUG-98
SWE

      ID NAME          TECH_ID        ID
-----
TEACHER_NAME       SUBJECT_NAME

DEPARTMENT          SALARY START_DAT
-----
      3 sardar          6            6
Ramadhir           electronics   35000 21-AUG-00
ECE

      4 faizal         2            2
lala               ground net.

      ID NAME          TECH_ID        ID
-----
TEACHER_NAME       SUBJECT_NAME

DEPARTMENT          SALARY START_DAT
-----
CIVIL              3000 05-MAY-95

```

```

nashad           Artificial Intelligence      300 21-AUG-00
CSE

        4

ID NAME          TECH_ID      ID
-----  -----
TEACHER_NAME     SUBJECT_NAME
-----  -----
DEPARTMENT       SALARY START_DATE
-----  -----
faizal          ADE          2000 05-FEB-90
ECE
definate        Computer Communication    4000 05-MAY-95
SWE

5

7 rows selected.

SQL> select tec_company.id,tec_company.name,EMP.subject_name from tec_company inner join EMP on EMP.id=tec_company.tech_id;
ID NAME          SUBJECT_NAME
-----  -----
1 agni          data science
4 faizal        ground net.
2 lala          Machine learning
3 sardar        electronics

```

## Sub-queries

### Code:

```
create table Teacher(id int primary key,Teacher_name varchar(30),Subject_name  
varchar(20),Department varchar(50),salary number,joinYear int);
```

```
desc Teacher;
```

```
insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values  
('1','agni','data science','CSE',2000,2002);
```

```
insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values  
('2','lala','ground net','CIVIL',3000,2002);
```

```
insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values  
('3','sardaar','machine learning','SWE',1000,1990);
```

```
insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values  
('4','faizal','ADE','ECE',2000,2004);
```

```
insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values  
('5','definate','computer comm','SWE',4000,2004);
```

```
select * from Teacher;
```

```
select Department from Teacher where salary > (select salary from Teacher where id=1);
```

```
select Department from Teacher where salary = (select min(salary) from Teacher);
```

```
select Subject_name, min(salary) from Teacher group by Subject_name having min(salary) < (select  
min(salary) from Teacher where Subject_name='data science');
```

```
select id, Department, Subject_name from Teacher where Subject_name <> 'computer comm' and  
salary < (select max(salary ) from Teacher where Subject_name = 'computer comm');
```

```
select p1.Department from Teacher p1 inner join Teacher p2 on p1.id = p2.id and p1.salary =  
p2.salary ;
```

```
select Department from Teacher where salary = (select max(salary ) from Teacher);
```

```
select joinYear from Teacher group by joinYear having count(id) = (select max(count(id)) from Teacher group by joinYear);
```

```
select id, Department from Teacher where salary in (select distinct(salary) from Teacher where Department = 'SWE' or Department = 'CSE');
```

```
select * from Teacher where salary > (select max(avg(salary)) from Teacher group by Department );
```

```
Drop table Teacher ;
```

### **Output:**

```

SQL> create table Teacher(id int primary key,Teacher_name varchar(30),Subject_name varchar(20),Department varchar(50),salary number,joinYear int);
Table created.

SQL> desc Teacher;
Name          Null?    Type
----          ----    --
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(20)
DEPARTMENT          VARCHAR2(50)
SALARY            NUMBER
JOINYEAR          NUMBER(38)

SQL> insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('1','agni','data science','CSE',2000,2002);
1 row created.

SQL> insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('2','lala','ground net','CIVIL',3000,2002);
1 row created.

SQL> insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('3','sardaar','machine learning','SWE',1000,1990);
1 row created.

SQL> insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('4','faizal','ADE','ECE',2000,2004);
1 row created.

SQL> insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('5','definate','computer communications','SWE',4000,2004);
insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('5','definate','computer communications','SWE',4000,2004)
*
ERROR at line 1:
ORA-12899: value too large for column "SYSTEM"."TEACHER"."SUBJECT_NAME"
(actual: 23, maximum: 20)

SQL> insert into Teacher (id,Teacher_name,Subject_name,Department,salary,joinYear) values ('5','definate','computer comm','SWE',4000,2004);
1 row created.

SQL> select * from Teacher;
      ID TEACHER_NAME          SUBJECT_NAME
-----          DEPARTMENT          SALARY   JOINYEAR
CSE
      2 lala          ground net.      3000    2002
CIVIL
      3 sardaar        machine learning    1000    1990
SWE
      4 faizal          ADE          2000    2004
      5 definate        computer comm    4000    2004

      ID TEACHER_NAME          SUBJECT_NAME
-----          DEPARTMENT          SALARY   JOINYEAR
ECE
      4 faizal          ADE          2000    2004
SWE
      5 definate        computer comm    4000    2004

SQL> select Department from Teacher where salary > (select salary from Teacher where id=1);
DEPARTMENT
-----
CIVIL
SWE

SQL> select Department from Teacher where salary = (select min(salary) from Teacher);
DEPARTMENT
-----
SWE

SQL> select Subject_name, min(salary) from Teacher group by Subject_name having min(salary) < (select min(salary) from Teacher where Subject_name='data science');
SUBJECT_NAME      MIN(SALARY)
-----          machine learning      1000

SQL> select id, Department, Subject_name from Teacher where Subject_name <> 'computer comm' and salary < (select max(salary) from Teacher where Subject_name = 'computer comm');
      ID DEPARTMENT          SUBJECT_NAME
-----          CSE
      1 CSE          data science
      2 CIVIL        ground net.

```

```

SQL> select * from Teacher ;
      3 SWE
      machine learning

      ID DEPARTMENT
      -----
SUBJECT_NAME
      -----
          4 ECE
          ANDE

SQL> select p1.Department from Teacher p1 inner join Teacher p2 on p1.id = p2.id and p1.salary = p2.salary ;

DEPARTMENT
-----
CSE
CIVIL
SWE
ECE
SWE

SQL> select Department from Teacher where salary  = (select max(salary ) from Teacher);

DEPARTMENT
-----
SWE

SQL> select joinYear from Teacher group by joinYear having count(id) = (select max(count(id)) from Teacher group by joinYear);

JOINYEAR
-----
2002
2004

SQL> select id, Department from Teacher where salary  in (select distinct(salary) from Teacher where Department = 'SWE' or Department  = 'CSE');

ID DEPARTMENT
-----
1 CSE
4 ECE
3 SWE
5 SWE

SQL> select * from Teacher where salary  > (select max(avg(salary)) from Teacher group by Department );

      ID TEACHER_NAME           SUBJECT_NAME
      -----
DEPARTMENT          SALARY   JOINYEAR
      -----
SWE                  4000        2004

```

SQL> Drop table Teacher ;

Table dropped.

# PL SQL

## Code:

```
DECLARE
A NUMBER;
B NUMBER;
C NUMBER;
BEGIN
A:=&A;
B:=&B;
C:=A +B;
DBMS_OUTPUT.PUT_LINE('SUM OF '| |A|| and '| |B|| is '| |C);
END;
/
```

```
Declare
a number;
b number;
begin
a:=&a;
b:=&b;
dbms_output.put_line( a + b);
dbms_output.put_line( a - b);
dbms_output.put_line( a * b);
dbms_output.put_line( a / b);
dbms_output.put_line( a **b);
end;
/
```

```

Declare
a number;
b number;
c number;
BEGIN
a:=&a;
b:=&b;
c:=&c;
if a>b AND a>c THEN
dbms_output.put_line('a is greatest');
else if b>a AND b>c THEN
dbms_output.put_line('b is greatest');
else
dbms_output.put_line('c is greatest');
end if;
end if;
end;
/

```

```

declare
i number;
s number;
begin
s:=0;
for i in 1..20 loop
s:=s+i;
end loop;

```

```

dbms_output.put_line('Sum = '||s);
end;
/

DECLARE
num number;
factorial number;
FUNCTION fact(X number)
RETURN number
IS
F number;
BEGIN
IF x=0 THEN
f:=1;
ELSE
f:=x*fact(x-1);
END IF;
RETURN f;
END;
BEGIN
num:=&num;
factorial:=fact(num);
DBMS_OUTPUT.PUT_LINE(' Factorial '|| num || ' is '||factorial);
END;
/

```

declare

```

n number;

begin
  n:=&n;
  if mod(n,2)=0
    then
      dbms_output.put_line('number is even');
    else
      dbms_output.put_line('number is odd');
    end if;
  end;
/

```

```

declare
  a number(3):=1;
  b number(3):=1;
  c number(3);
  n number(3):=15;
begin
  Dbms_output.put_line('the fibinocci series is:');
  while a<=n
    loop
      dbms_output.put_line(a);
      c:=a+b;
      a:=b;
      b:=c;
    end loop;

```

```

end;
/
declare
n number;
a number;
s number;
begin
n:=&n;
for i in 1..n loop
a:=i**i;
s:=i/a;
s:=s+1;
end loop;
dbms_output.put_line('sum of series is '||s);
end;
/

```

```
create table Teacher(id int primary key,teacher_name varchar(30),subject_name
varchar(20),Department varchar(50),salary number,joinYear int);
```

```
desc Teacher;
```

```
insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values
('1','nike_shoe','shoes','clouttail_ltd',2000,2002);
```

```
insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values
('2','puma_shoe','shoes','airsells',3000,2002);
```

```
insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values
('3','wildcraft_tshirt','clothing','hukuma_clothings',1000,1990);
```

```
insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values
('4','lee_chinos','clothing','clouttail_ltd',2000,2004);
```

```
insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('5','fan','electronics','airsells',4000,2004);
```

```
select * from Teacher where id=5;
```

```
begin  
update Teacher set salary=salary+salary*0.15 where id=&id;  
if sql%found then  
dbms_output.put_line('salary of the specified providers product updated');  
else  
dbms_output.put_line('provider with given id does not exists');  
end if;  
end;  
/  
  
declare
```

```
cursor c_teacher is select id,Department,salary from Teacher  
order by salary desc;  
teacherid Teacher.id%type;  
teachernname Teacher.teacher_name%type;  
teachersalary Teacher.salary%type;  
begin  
open c_teacher;  
dbms_output.put_line(' id      teachernname      teacher salary');
```

```
loop
fetch c_teacher into teacherid,teachername,teachersalary;
exit when c_teacher%rowcount=3 or c_teacher%notfound;
dbms_output.put_line(' ||teacherid||      ||teachername||      ||teachersalary);
end loop;
close c_teacher;
end;
/
```

**Output:**

```

Table dropped.

SQL>
SQL> DECLARE

SQL> DECLARE
  2  A NUMBER;
  3  B NUMBER;
  4  C NUMBER;
  5  BEGIN
  6  A:=&A;
  7  B:=&B;
  8  C:=A +B;
  9  DBMS_OUTPUT.PUT_LINE('sum of'||A||' and '||B||' is '||C);
10 END;
11 /
Enter value for a: 3
old   6: A:=&A;
new   6: A:=3;
Enter value for b: 2
old   7: B:=&B;
new   7: B:=2;

PL/SQL procedure successfully completed.

SQL> Declare
  2  a number;
  3  b number;
  4  begin
  5  a:=&a;
  6  b:=&b;
  7  dbms_output.put_line( a + b);
  8  dbms_output.put_line( a - b);
  9  dbms_output.put_line( a * b);
10  dbms_output.put_line( a / b);
11  dbms_output.put_line( a **b);
12 end;
13 /
Enter value for a: 1
old   5: a:=&a;
new   5: a:=1;
Enter value for b: 2
old   6: b:=&b;
new   6: b:=2;

PL/SQL procedure successfully completed.

```

```
SQL> Declare
  2  a number;
  3  b number;
  4  c number;
  5  BEGIN
  6  a:=&a;
  7  b:=&b;
  8  c:=&c;
  9  if a>b AND a>c THEN
10  dbms_output.put_line('a is greatest');
11  else if b>a AND b>c THEN
12  dbms_output.put_line('b is greatest');
13  else
14  dbms_output.put_line('c is greatest');
15  end if;
16  end if;
17  end;
18 /
```

Enter value for a: 1

old 6: a:=&a;

new 6: a:=1;

Enter value for b: 2

old 7: b:=&b;

new 7: b:=2;

Enter value for c: 3

old 8: c:=&c;

new 8: c:=3;

PL/SQL procedure successfully completed.

```
SQL> declare
  2  i number;
  3  s number;
  4  begin
  5  s:=0;
  6  for i in 1..20 loop
  7  s:=s+i;
  8  end loop;
  9  dbms_output.put_line('Sum = '||s);
10  end;
11 /
```

PL/SQL procedure successfully completed.

```

SQL> DECLARE
  2  num number;
  3  factorial number;
  4  FUNCTION fact(X number)
  5  RETURN number
  6  IS
  7  F number;
  8  BEGIN
  9  IF x=0 THEN
10  f:=1;
11  ELSE
12  f:=x*fact(x-1);
13  END IF;
14  RETURN f;
15  END;
16  BEGIN
17  num:=&num;
18  factorial:=fact(num);
19  DBMS_OUTPUT.PUT_LINE(' Factorial '|| num || ' is '||factorial);
20  END;
21 /
Enter value for num: 5
old 17: num:=&num;
new 17: num:=5;

PL/SQL procedure successfully completed.

SQL> declare
  2  n number;
  3
  4  begin
  5  n:=&n;
  6  if mod(n,2)=0
  7  then
  8  dbms_output.put_line('number is even');
  9  else
10  dbms_output.put_line('number is odd');
11  end if;
12  end;
13 /
Enter value for n: 5
old 5: n:=&n;
new 5: n:=5;

PL/SQL procedure successfully completed.

```

```
SQL> declare
  2  a number(3):=1;
  3  b number(3):=1;
  4  c number(3);
  5  n number(3):=15;
  6  begin
  7  Dbms_output.put_line('the fibinocci series is:');
  8  while a<=n
  9  loop
10  dbms_output.put_line(a);
11  c:=a+b;
12  a:=b;
13  b:=c;
14  end loop;
15  end;
16  /
```

PL/SQL procedure successfully completed.

```
SQL> declare
  2  n number;
  3  a number;
  4  s number;
  5  begin
  6  n:=&n;
  7  for i in 1..n loop
  8  a:=i**i;
  9  s:=i/a;
10  s:=s+1;
11  end loop;
12  dbms_output.put_line('sum of series is'||s);
13  end;
14  /
Enter value for n: 5
old   6: n:=&n;
new   6: n:=5;
```

PL/SQL procedure successfully completed.

```

SQL> create table Teacher(id int primary key,teacher_name varchar(30),subject_name varchar(20),Department varchar(50),salary number,joinYear int);
Table created.

SQL> desc Teacher;
Name          Null?    Type
----          ----    --
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(20)
DEPARTMENT          VARCHAR2(50)
SALARY            NUMBER
JOINYEAR          NUMBER(38)

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('1','nike_shoe','shoes','cloudtail_ltd',2000,2002);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('2','puma_shoe','shoes','airsells',3000,2002);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('3','wildcraft_tshirt','clothing','hukuma_clothings',1000,1990);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('4','lee_chinos','clothing','cloudtail_ltd',2000,2004);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('5','fan','electronics','airsells',4000,2004);
1 row created.

SQL> select * from Teacher where id=5;
      ID TEACHER_NAME          SUBJECT_NAME
DEPARTMENT          SALARY   JOINYEAR
-----          -----
      5 fan                  electronics        4000       2004
airsells

SQL> begin
 2 update Teacher set salary=salary+salary*0.15 where id=&id;
 3 if sql%found then
 4 dbms_output.put_line('salary of the specified providers product updated');
 5 else
 6 dbms_output.put_line('provider with given id does not exists');
 7 end if;
 8 end;
 9 /
Enter value for id: 1
old   2: update Teacher set salary=salary+salary*0.15 where id=&id;
new   2: update Teacher set salary=salary+salary*0.15 where id=1;

PL/SQL procedure successfully completed.

SQL>
SQL> declare
 2 cursor c_teacher is select id,Department,salary from Teacher
 3 order by salary desc;
 4 teacherid Teacher.id%type;
 5 teachernname Teacher.teacher_name%type;
 6 teachersalary Teacher.salary%type;
 7 begin
 8 open c_teacher;
 9 dbms_output.put_line('    id          teachernname          teacher salary');
10 loop
11 fetch c_teacher into teacherid,teachernname,teachersalary;
12 exit when c_teacher%rowcount=3 or c_teacher%notfound;
13 dbms_output.put_line('    '||teacherid||'          '||teachernname||'
14 end loop;
15 close c_teacher;
16 end;
17 /
PL/SQL procedure successfully completed.

```

# Trigger and Cursor

## Code:

```
DECLARE
total_rows number(2);

BEGIN
UPDATE Teacher SET salary= salary + 500 where salary> 1000;
IF sql%notfound THEN
dbms_output.put_line('no teachers selected');
ELSIF sql%found THEN
total_rows := sql%rowcount;
dbms_output.put_line( total_rows || ' teachers selected');
END IF;
END;
/
```

```
DECLARE
p_no Teacher.id%type;
pd_name Teacher.teacher_name%type;
pr_name Teacher.subject_name%type;
p_price Teacher.salary%type;
CURSOR p_teacher is
SELECT id,teacher_name,subject_name,salary FROM Teacher where salary > 1000;
BEGIN
```

```
OPEN p_teacher;
LOOP
  FETCH p_teacher into p_no, pd_name, pr_name,p_price;
  EXIT WHEN p_teacher%notfound;
  dbms_output.put_line(p_no || '    ' || pd_name || '    ' || pr_name || '    ' || p_price);
END LOOP;
CLOSE p_teacher ;
END;
/
```

```
create table Teacher(id int,teacher_name varchar(30),subject_name varchar(50),salary number);
desc Teacher;
```

```
insert into Teacher (id,teacher_name,subject_name,salary) values ('1','agni','data science',2000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('2','lala','ground net.',3000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('3','sardaar','machine learning',1000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('4','faizal','ADE',2000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('5','fan','airsells',4000);
select * from Teacher;
```

```
CREATE OR REPLACE TRIGGER display_salary_changes
AFTER DELETE OR INSERT OR UPDATE ON Teacher
FOR EACH ROW
WHEN (NEW.id > 0)
DECLARE
price_diff number;
oldprice number;
BEGIN
oldprice:=4000;
price_diff := :NEW.salary - oldprice;
dbms_output.put_line('Old Salary ' || oldprice);
dbms_output.put_line('New Salary ' || :NEW.salary);
dbms_output.put_line(' Salary difference: ' || price_diff);
END;
```

```
insert into Teacher (id,teacher_name,subject_name,salary) values ('5','definate','computer  
comm',2000);
```

### **Output:**

```

SQL> DECLARE
  2  total_rows number(2);
  3  BEGIN
  4    UPDATE Teacher SET salary= salary + 500 where salary > 1000;
  5    IF sql%notfound THEN
  6      dbms_output.put_line('no teachers selected');
  7    ELSIF sql%found THEN
  8      total_rows := sql%rowcount;
  9      dbms_output.put_line( total_rows || ' teachers selected');
 10   END IF;
 11 END;
 12 /
PL/SQL procedure successfully completed.

SQL> DECLARE
  2  p_no Teacher.id%type;
  3  pd_name Teacher.teacher_name%type;
  4  pr_name Teacher.subject_name%type;
  5  p_price Teacher.salary%type;
  6  CURSOR p_teacher is
 7    SELECT id,teacher_name,subject_name,salary FROM Teacher where salary > 1000;
 8  BEGIN
 9    OPEN p_teacher;
10  LOOP
11    FETCH p_teacher into p_no, pd_name, pr_name,p_price;
12    EXIT WHEN p_teacher%notfound;
13    dbms_output.put_line(p_no || ' ' || pd_name || ' ' || pr_name || ' ' || p_price);
14  END LOOP;
15  CLOSE p_teacher ;
16 END;
17 /
PL/SQL procedure successfully completed.
SQL> create table Teacher(id int,teacher_name varchar(30),subject_name varchar(50),salary number);
Table created.

SQL> desc Teacher;
Name          Null?    Type
-----          -----
ID           NUMBER(38)
TEACHER_NAME VARCHAR2(30)
SUBJECT_NAME VARCHAR2(50)
SALARY        NUMBER

SQL>
SQL> insert into Teacher (id,teacher_name,subject_name,salary) values ('1','agni','data science',2000);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,salary) values ('2','lala','ground net.',3000);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,salary) values ('3','sardaar','machine learning',1000);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,salary) values ('4','faizal','ADE',2000);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,salary) values ('5','fan','airsells',4000);
1 row created.

SQL> select * from Teacher;
      ID TEACHER_NAME
-----          -----
SUBJECT_NAME          SALARY
-----          -----
      1 agni
data science          2000
      2 lala
ground net.          3000
      3 sardaar
machine learning      1000

```

```

ID TEACHER_NAME
----- -----
SUBJECT_NAME          SALARY
----- -----
        4 faizal
ADE                2000
      5 fan
air sells           4000

SQL> CREATE OR REPLACE TRIGGER display_salary_changes
  2  AFTER DELETE OR INSERT OR UPDATE ON Teacher
  3  FOR EACH ROW
  4  WHEN (NEW.id > 0)
  5  DECLARE
  6  price_diff number;
  7  oldprice number;
  8  BEGIN
  9  oldprice:=4000;
10  price_diff := :NEW.salary - oldprice;
11  dbms_output.put_line('Old Salary ' || oldprice);
12  dbms_output.put_line('New Salary ' || :NEW.salary);
13  dbms_output.put_line(' Salary difference: ' || price_diff);
14  END;
15
16  /
Trigger created.

SQL> insert into Teacher (id,teacher_name,subject_name,salary) values ('5','definate','computer comm',2000);

1 row created.

```

# View

## Code:

```
create table Teacher(id int,teacher_name varchar(30),subject_name varchar(50),salary number);
desc Teacher;
insert into Teacher (id,teacher_name,subject_name,salary) values ('1','agni','data science',2000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('2','lala','ground net.',3000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('3','sardaar','machine learning',1000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('4','faizal','ADE',2000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('5','fan','airsells',4000);
select * from Teacher;
create view teacherview as select id,teacher_name,salary from Teacher;
select * from teacherview ;
insert into teacherview values(6,'ola',50000);
insert into teacherview values(7,'uber',100000);
select * from teacherview ;
delete teacherview where id=6;
select * from teacherview ;
update teacherview set salary=200000 where id=5;
select * from teacherview ;
select * from teacherview where salary>2000;
drop view teacherview ;
```

## Output:

```

SQL> create table Teacher(id int primary key,teacher_name varchar(30),subject_name varchar(20),Department varchar(50),salary number,joinYear int);
Table created.

SQL> desc Teacher;
Name          Null?    Type
-----  -----
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(20)
DEPARTMENT          VARCHAR2(50)
SALARY            NUMBER
JOINYEAR          NUMBER(38)

SQL>
SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('1','nike_shoe','shoes','cloudtail_ltd',2000,2002);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('2','puma_shoe','shoes','airsells',3000,2002);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('3','wildcraft_tshirt','clothing','hukuma_clothings',1000,1999);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('4','lee_chinos','clothing','cloudtail_ltd',2000,2004);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('5','fan','electronics','airsells',4000,2004);
1 row created.

SQL> select * from Teacher;

        ID TEACHER_NAME
-----  -----
SUBJECT_NAME          SALARY
-----  -----
1 agni
data science          2000

2 lala
ground net.          3000

3 sardaar
machine learning      1000

        ID TEACHER_NAME
-----  -----
SUBJECT_NAME          SALARY
-----  -----
4 faizal
ADE                  2000

5 fan
airsells             200000

```

```

SQL> create view teacherview as select id,teacher_name,salary from Teacher;
View created.

SQL> select * from teacherview ;

        ID TEACHER_NAME          SALARY
-----  -----
      1 agni                  2000
      2 lala                  3000
      3 sardaar                1000
      4 faizal                 2000
      5 fan                   4000
      5 definate                2000

6 rows selected.

SQL> insert into teacherview values(6,'ola',50000);

1 row created.

SQL> insert into teacherview values(7,'uber',100000);

1 row created.

SQL> select * from teacherview ;

        ID TEACHER_NAME          SALARY
-----  -----
      1 agni                  2000
      2 lala                  3000
      3 sardaar                1000
      4 faizal                 2000
      5 fan                   4000
      5 definate                2000
      6 ola                   50000
      7 uber                  100000

8 rows selected.

SQL> delete teacherview where id=6;

1 row deleted.

```

```
SQL> select * from teacherview ;
```

ID	TEACHER_NAME	SALARY
1	agni	2000
2	lala	3000
3	sardaar	1000
4	faizal	2000
5	fan	4000
5	definate	2000
7	uber	100000

```
7 rows selected.
```

```
SQL> update teacherview set salary=200000 where id=5;
```

```
2 rows updated.
```

```
SQL> select * from teacherview ;
```

ID	TEACHER_NAME	SALARY
1	agni	2000
2	lala	3000
3	sardaar	1000
4	faizal	2000
5	fan	200000
5	definate	200000
7	uber	100000

```
7 rows selected.
```

```
SQL> select * from teacherview where salary>2000;
```

ID	TEACHER_NAME	SALARY
2	lala	3000
5	fan	200000
5	definate	200000
7	uber	100000

```
SQL> drop view teacherview ;
```

```
View dropped.
```

# Exceptional Handling

## Code:

```
create table Teacher(id int,teacher_name varchar(30),subject_name varchar(50),salary number);
desc Teacher;
insert into Teacher (id,teacher_name,subject_name,salary) values ('1','agni','data science',2000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('2','lala','ground net.',3000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('3','sardaar','machine learning',1000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('4','faizal','ADE',2000);
insert into Teacher (id,teacher_name,subject_name,salary) values ('5','fan','airsells',4000);
select * from Teacher;
```

Declare

n1 number;

n2 number;

Begin

n2 := &n2;

Select salary into n1 from Teacher where id=4;

n1 := n1/n2;

dbms\_output.put\_line(n1);

Exception

when zero\_divide then

dbms\_output.put\_line('Zero Divide Error !');

when no\_data\_found then

dbms\_output.put\_line('No such Row in provider table');

when others then

dbms\_output.put\_line('Unknown exception');

end;

```

declare
n1 number;
n2 number;
begin
n1 :=&n1;
select Salary into n2 from Teacher where id=n1;
dbms_output.put_line(n2);
exception
when no_data_found then
dbms_output.put_line('Please insert a valid provider id');
when others then
dbms_output.put_line('unknown error occured check your input');
end;

```

#### **Raise application error example 1-**

```

DECLARE
    excp EXCEPTION;
    n NUMBER :=5;

BEGIN
    FOR i IN 1..n LOOP
        dbms_output.put_line(i+i);
        IF i+i=10 THEN
            RAISE excp;
        END IF;
    END LOOP;

```

```
EXCEPTION
```

```
    WHEN excp THEN  
        RAISE_APPLICATION_ERROR(-20015, 'sum reached 10');
```

```
END;
```

### Raise app error example 2

```
DECLARE
```

```
    excp EXCEPTION;  
    n NUMBER;
```

```
BEGIN
```

```
    n:=&n;
```

```
    dbms_output.put_line(n);
```

```
    IF n<=10 THEN  
        RAISE excp;  
    END IF;
```

```
EXCEPTION
```

```
    WHEN excp THEN  
        RAISE_APPLICATION_ERROR(-20015, 'Give input above 10');
```

```
END;
```

### Output:

```

SQL> create table Teacher(id int primary key,teacher_name varchar(30),subject_name varchar(20),Department varchar(50),salary number,joinYear int);
Table created.

SQL> desc Teacher;
Name          Null?    Type
-----  -----
ID           NOT NULL NUMBER(38)
TEACHER_NAME          VARCHAR2(30)
SUBJECT_NAME          VARCHAR2(20)
DEPARTMENT          VARCHAR2(50)
SALARY            NUMBER
JOINYEAR          NUMBER(38)

SQL>
SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('1','nike_shoe','shoes','cloudtail_ltd',2000,2002);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('2','puma_shoe','shoes','airsells',3000,2002);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('3','wildcraft_tshirt','clothing','hukuma_clothings',1000,1999);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('4','lee_chinos','clothing','cloudtail_ltd',2000,2004);
1 row created.

SQL> insert into Teacher (id,teacher_name,subject_name,Department,salary,joinYear) values ('5','fan','electronics','airsells',4000,2004);
1 row created.

SQL> select * from Teacher;

        ID TEACHER_NAME
-----  -----
SUBJECT_NAME          SALARY
-----  -----
1 agni
data science          2000

2 lala
ground net.          3000

3 sardaar
machine learning      1000

        ID TEACHER_NAME
-----  -----
SUBJECT_NAME          SALARY
-----  -----
4 faizal
ADE                  2000

5 fan
airsells             200000

```

```
SQL> Declare
  2  n1 number;
  3  n2 number;
  4  Begin
  5  n2 := &n2;
  6  Select salary into n1 from Teacher where id=4;
  7  n1 := n1/n2;
  8  dbms_output.put_line(n1);
  9  Exception
10  when zero_divide then
11    dbms_output.put_line('Zero Divide Error !');
12  when no_data_found then
13    dbms_output.put_line('No such Row in provider table');
14  when others then
15    dbms_output.put_line('Unknown exception');
16  end;
17 /
Enter value for n2: 1
old   5: n2 := &n2;
new   5: n2 := 1;
```

PL/SQL procedure successfully completed.

```
SQL> declare
  2  n1 number;
  3  n2 number;
  4  begin
  5  n1 :=&n1;
  6  select salary into n2 from Teacher where id=n1;
  7  dbms_output.put_line(n2);
  8  exception
  9  when no_data_found then
10    dbms_output.put_line('Please insert a valid provider id');
11  when others then
12    dbms_output.put_line('unknown error occured check your input');
13  end;
14 /
Enter value for n1: 1
old   5: n1 :=&n1;
new   5: n1 :=1;
```

PL/SQL procedure successfully completed.

```

SQL> DECLARE
 2  excp EXCEPTION;
 3  n NUMBER :=5;
 4
 5  BEGIN
 6    FOR i IN 1..n LOOP
 7      dbms_output.put_line(i+i);
 8    IF i+i=10 THEN
 9      RAISE excp;
10    END IF;
11  END LOOP;
12
13  EXCEPTION
14    WHEN excp THEN
15      RAISE_APPLICATION_ERROR(-20015, 'sum reached 10');
16
17  END;
18 /
DECLARE
*
ERROR at line 1:
ORA-20015: sum reached 10
ORA-06512: at line 15

SQL> DECLARE
 2  excp EXCEPTION;
 3  n NUMBER;
 4
 5  BEGIN
 6    n:=&n;
 7
 8    dbms_output.put_line(n);
 9    IF n<=10 THEN
10      RAISE excp;
11    END IF;
12
13
14  EXCEPTION
15    WHEN excp THEN
16      RAISE_APPLICATION_ERROR(-20015,'Give input above 10');
17
18  END;
19
20 /
Enter value for n: 11
old   6: n:=&n;
new   6: n:=11;
PL/SQL procedure successfully completed.

```

X-----

**THE END**