

Ex1

```
C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Tue Jan 11 08:54:38 2022

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Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> Create table emp( empno number(5), ename VarChar(15), job VarChar(10), deptno number(3) ,sal number(5));

Table created.

SQL> Create table customer as select eno,ename,job from emp;
Create table customer as select eno,ename,job from emp
*
ERROR at line 1:
ORA-00904: "ENO": invalid identifier

SQL> Create table customer as select empno,ename,job from emp;

Table created.

SQL> desc emp;
Name          Null?    Type
-----        ----- 
EMPNO         NUMBER(5)
ENAME          VARCHAR2(15)
JOB            VARCHAR2(10)
DEPTNO        NUMBER(3)
SAL            NUMBER(5)

SQL> desc customer;
Name          Null?    Type
-----        ----- 
EMPNO         NUMBER(5)
ENAME          VARCHAR2(15)
JOB            VARCHAR2(10)

SQL> drop table emp;

Table dropped.

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

```
C:\Users\Asus>sqlplus

SQL> truncate table emp;
truncate table emp
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> Create table emp( empno number(5), ename VarChar(15), job VarChar(10), deptno number(3) ,sal number(5));

Table created.

SQL> truncate table emp;
Table truncated.

SQL> desc emp;
Name          Null?    Type
-----        ----- 
EMPNO         NUMBER(5)
ENAME          VARCHAR2(15)
JOB            VARCHAR2(10)
DEPTNO        NUMBER(3)
SAL            NUMBER(5)

SQL> Alter table emp add (phoneno char (20));

Table altered.

SQL> alter table emp add primary key(deptno);

Table altered.

SQL> desc emp;
Name          Null?    Type
-----        ----- 
EMPNO         NUMBER(5)
ENAME          VARCHAR2(15)
JOB            VARCHAR2(10)
DEPTNO        NOT NULL NUMBER(3)
SAL            NUMBER(5)
PHONENO       CHAR(20)

SQL> alter table emp modify(ename not null);

Table altered.

SQL> desc emp;
Name          Null?    Type
-----        ----- 
EMPNO         NUMBER(5)
ENAME          NOT NULL VARCHAR2(15)
JOB            VARCHAR2(10)
```

Ex1

```
Command Prompt - sqlplus
JOB          VARCHAR2(10)
DEPTNO      NUMBER(3)
SAL          NUMBER(5)
PHONEENO    CHAR(20)

SQL> alter table emp modify(ename not null);
Table altered.

SQL> desc emp;
Name          Null?    Type
-----          -----
EMPNO        NUMBER(5)
ENAME         NOT NULL VARCHAR2(15)
JOB          VARCHAR2(10)
DEPTNO      NOT NULL NUMBER(3)
SAL          NUMBER(5)
PHONEENO    CHAR(20)

SQL> --comment symbol
SQL> /* welcome to DBMS
SQL> sql languages */
SQL> select * from emp;

no rows selected

SQL> alter table emp rename column empno to eno;
Table altered.

SQL> desc emp;
Name          Null?    Type
-----          -----
ENO          NUMBER(5)
ENAME         NOT NULL VARCHAR2(15)
JOB          VARCHAR2(10)
DEPTNO      NOT NULL NUMBER(3)
SAL          NUMBER(5)
PHONEENO    CHAR(20)

SQL> rename customer to employee;
Table renamed.

SQL> desc employee;
Name          Null?    Type
-----          -----
EMPNO        NUMBER(5)
ENAME         VARCHAR2(15)
JOB          VARCHAR2(10)

SQL>
```

Ex2

```

Command Prompt - sqlplus
Enter value for firstname: Marshal
Enter value for lastname: Rehman
Enter value for address: HB-88 Meow Road
Enter value for city: Lucknow
old 1: insert into persons values(&pid,'&firstname','&lastname','&address','&city')
new 1: insert into persons values(002,'Marshal','Rehman','HB-88 Meow Road','Lucknow')

1 row created.

SQL> Select *from persons;
      PID FIRSTNAME      LASTNAME      ADDRESS      CITY
----- 1 Ram          Prakash        No21, Nelson Street    Chennai
         2 Gyan         Kumar          BN-12 Houdini Street   California
         3 Ludo          Lassan         GN-29 Andheri Street   Mumbai
         7 James         Bond           30 Wellington Square  Chelsea
         4 Bhuvan        Kumar          Rt-30 Benett Street   Chennai
         2 Marshal       Rehman        HB-88 Meow Road       Lucknow

6 rows selected.

SQL> Select firstname, lastname from persons where pid=2;
      FIRSTNAME      LASTNAME
----- Gyan          Kumar
      Marshal       Rehman

SQL> Select firstname, lastname from persons where pid>2;
      FIRSTNAME      LASTNAME
----- Ludo          Lassan
      James          Bond
      Bhuvan         Kumar

SQL> Select firstname, lastname from persons order by pid;
Select firstname, lastname from persons order by pid
*
ERROR at line 1:
ORA-00933: SQL command not properly ended

SQL> Select firstname, lastname from persons order by pid;
      FIRSTNAME      LASTNAME
----- Ram          Prakash
      Gyan         Kumar
      Marshal       Rehman
      Ludo          Lassan

```

```

Command Prompt - sqlplus
SQL> /
Enter value for pid: 007
Enter value for firstname: James
Enter value for lastname: Bond
Enter value for address: 30 Wellington Square
Enter value for city: Chelsea
old 1: insert into persons values(&pid,'&firstname','&lastname','&address','&city')
new 1: insert into persons values(007,'James','Bond','30 Wellington Square','Chelsea')

1 row created.

SQL> Select *from persons;
      PID FIRSTNAME      LASTNAME      ADDRESS      CITY
----- 1 Ram          Prakash        No21, Nelson Street    Chennai
         2 Gyan         Kumar          BN-12 Houdini Street   California
         3 Ludo          Lassan         GN-29 Andheri Street   Mumbai
         7 James         Bond           30 Wellington Square  Chelsea

SQL> Select pid, firstname from persons;
      PID FIRSTNAME
----- 1 Ram
      2 Gyan
      3 Ludo
      7 James

SQL> insert into persons values(&pid,'&firstname','&lastname','&address','&city');
Enter value for pid: 004
Enter value for firstname: Bhuvan
Enter value for lastname: Kumar
Enter value for address: Rt-30 Benett Street
Enter value for city: Chennai
old 1: insert into persons values(&pid,'&firstname','&lastname','&address','&city')
new 1: insert into persons values(004,'Bhuvan','Kumar','Rt-30 Benett Street','Chennai')

1 row created.

SQL> Select DISTINCT lastname from persons;
      LASTNAME
-----
Prakash
Bond
Kumar
Lassan

SQL> insert into persons values(&pid,'&firstname','&lastname','&address','&city');
Enter value for pid: 002
Enter value for firstname: Marshal

```

Ex2

```
Command Prompt - sqlplus
Microsoft Windows [Version 10.0.22538.1010]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Tue Jan 25 09:05:29 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> Create table persons( pid number(5), firstname VarChar(15), lastname VarChar(15), address VarChar(25), city VarChar(10));

Table created.

SQL> desc persons;
Name          Null?    Type
-----  -----
PID           NUMBER(5)
FIRSTNAME    VARCHAR2(15)
LASTNAME     VARCHAR2(15)
ADDRESS       VARCHAR2(25)
CITY          VARCHAR2(10)

SQL> insert into persons values (001,'Ram','Prakash','No21, Nelson Street','Chennai');

1 row created.

SQL> insert into persons values(&pid, '&firstname', '&lastname', '&address', '&city');
Enter value for pid: 002
Enter value for firstname: Gyan
Enter value for lastname: Kumar
Enter value for address: BN-12 Houdini Street
Enter value for city: California
old  1: insert into persons values(&pid, '&firstname', '&lastname', '&address', '&city')
new  1: insert into persons values(002, 'Gyan', 'Kumar', 'BN-12 Houdini Street', 'California')

1 row created.

SQL> /
Enter value for pid: 003
Enter value for firstname: Ludo
Enter value for lastname: Lassan
Enter value for address: GN-29 Andheri Street
Enter value for city: Mumbai
old  1: insert into persons values(&pid, '&firstname', '&lastname', '&address', '&city')
new  1: insert into persons values(003, 'Ludo', 'Lassan', 'GN-29 Andheri Street', 'Mumbai')

1 row created.
```

```
Command Prompt - sqlplus
1 row created.

SQL> Insert into Regions values(002,'Greece');

1 row created.

SQL> Insert into Regions values(003,'Italy');

1 row created.

SQL> Update Regions set region_name='Florence' where region_name='Italy';

1 row updated.

SQL> rollback;

Rollback complete.

SQL> select *from Regions order by region_id;

no rows selected

SQL> Select *from Regions;

no rows selected

SQL> Update Regions set region_id=4 where region_name='Tanzania';

0 rows updated.

SQL> Update Regions set region_id=2 where region_name='Tanzania';

0 rows updated.

SQL> Update Regions set region_id=5 where region_name='Egypt';

0 rows updated.

SQL> Update Regions set region_id=6 where region_name='Greece';

0 rows updated.

SQL> savepoint Greece;

Savepoint created.

SQL> update Regions set region_id = 20 where region_name='Italy';

0 rows updated.

SQL>
```

Ex2

```
Command Prompt - sqlplus
SQL> rollback;
Rollback complete.

SQL> Select *from Regions;
no rows selected

SQL> select *from Regions order by region_id;
no rows selected

SQL> Create table Regions( region_id Number(5), region_name VarChar(10));
Create Table Regions( region_id Number(5), region_name VarChar(10))
*
ERROR at line 1:
ORA-00955: name is already used by an existing object

SQL> Insert into Regions values(001,'Norway');
1 row created.

SQL> Insert into Regions values(002,'Greece');
1 row created.

SQL> Insert into Regions values(003,'Italy');
1 row created.

SQL> Update Regions set region_name='Florence' where region_name='Italy';
1 row updated.

SQL> rollback;
Rollback complete.

SQL> select *from Regions order by region_id;
no rows selected

SQL> Select *from Regions;
no rows selected

SQL> Update Regions set region_id=4 where region_name='Tanzania';
0 rows updated.

SQL> Update Regions set region_id=2 where region_name='Tanzania';
```

```
Command Prompt - sqlplus
6 rows selected.

SQL> Create table Regions( region_id Number(5), region_name VarChar(10));
Table created.

SQL> desc Regions;
Name Null? Type
-----
REGION_ID NUMBER(5)
REGION_NAME VARCHAR2(10)

SQL> Insert into Regions values(001,'Norway');
1 row created.

SQL> Insert into Regions values(002,'Greece');
1 row created.

SQL> Insert into Regions values(003,'Italy');
1 row created.

SQL> Select *from Regions;
REGION_ID REGION_NAM
-----
1 Norway
2 Greece
3 Italy

SQL> Select * from Regions;
REGION_ID REGION_NAM
-----
1 Norway
2 Greece
3 Italy

SQL> Update Regions set region_name='Florence' where region_name='Italy';
1 row updated.

SQL> Select *from Regions;
REGION_ID REGION_NAM
-----
1 Norway
2 Greece
3 Florence
```

Ex2

```

Command Prompt - sqlplus
Old value for city:
old 1: insert into persons values(&pid,'&firstname','&lastname','&address','&city')
new 1: insert into persons values(008,'Nishant','','','')

1 row created.

SQL> Select * from persons;
      PID FIRSTNAME LASTNAME ADDRESS CITY
----- 1 Ram Prakash No21, Nelson Street Chennai
       2 Gyan Kumar BN-12 Houdini Street California
       3 Ludo Lassan GN-29 Andheri Street Mumbai
       7 James Bond 30 Wellington Square Chelsea
       4 Bhuvan Kumar Rt-30 Bennett Street Chennai
       2 Marshal Rehman HB-88 Meow Road Lucknow
       8 Nishant

7 rows selected.

SQL> Select * from persons where lastname is null;
      PID FIRSTNAME LASTNAME ADDRESS CITY
----- 8 Nishant

SQL> Update persons set pid=4 where firstname='Marshal';
2 Update persons set pid=4 where firstname='Marshal';
Update persons set pid=4 where firstname='Marshal'
*
ERROR at line 2:
ORA-00933: SQL command not properly ended

SQL> Update persons set pid=4 where firstname='Marshal';

1 row updated.

SQL> Delete from persons where pid=8;

1 row deleted.

SQL> Select * from persons;
      PID FIRSTNAME LASTNAME ADDRESS CITY
----- 1 Ram Prakash No21, Nelson Street Chennai
       2 Gyan Kumar BN-12 Houdini Street California
       3 Ludo Lassan GN-29 Andheri Street Mumbai
       7 James Bond 30 Wellington Square Chelsea
       4 Bhuvan Kumar Rt-30 Bennett Street Chennai
       2 Marshal Rehman HB-88 Meow Road Lucknow

```

```

Command Prompt - sqlplus
SQL> Select * from persons where pic in (1,7);
Select * from persons where pic in (1,7)
*
ERROR at line 1:
ORA-00904: "PIC": invalid identifier

SQL> Select * from persons where pid in (1,7);
      PID FIRSTNAME LASTNAME ADDRESS CITY
----- 1 Ram Prakash No21, Nelson Street Chennai
       7 James Bond 30 Wellington Square Chelsea

SQL> Select * from persons where pid between 2 and 5;
      PID FIRSTNAME LASTNAME ADDRESS CITY
----- 2 Gyan Kumar BN-12 Houdini Street California
       3 Ludo Lassan GN-29 Andheri Street Mumbai
       4 Bhuvan Kumar Rt-30 Bennett Street Chelsea
       2 Marshal Rehman HB-88 Meow Road Lucknow

SQL> Select * from persons where lastname like 'La_n%';
no rows selected

SQL> Select * from persons where lastname like 'La_s%';
      PID FIRSTNAME LASTNAME ADDRESS CITY
----- 3 Ludo Lassan GN-29 Andheri Street Mumbai

SQL> Select pid personid from persons;
      PERSONID
-----
       1
       2
       3
       7
       4
       2

6 rows selected.

SQL> insert into persons values(&pid,'&firstname','&lastname','&address','&city');
Enter value for pid: 008
Enter value for firstname: Nishant
Enter value for lastname:
Enter value for address:
Enter value for city:
```

Ex2

```
Command Prompt - sqlplus
Bhuvan      Kumar
James       Bond
6 rows selected.

SQL> Create table persons1 as select * from persons;
Table created.

SQL> Insert into person1( select * from persons);
Insert into person1( select * from persons)
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> Insert into persons1( select * from persons);

6 rows created.

SQL> desc persons1;
Name          Null?    Type
-----  -----
PID           NUMBER(5)
FIRSTNAME     VARCHAR2(15)
LASTNAME      VARCHAR2(15)
ADDRESS        VARCHAR2(25)
CITY          VARCHAR2(10)

SQL> Select * from persons1;
PID FIRSTNAME  LASTNAME   ADDRESS      CITY
-----  -----
1 Ram         Prakash    No21, Nelson Street  Chennai
2 Gyan        Kumar      BN-12 Houdini Street  California
3 Ludo        Lassan     GN-29 Andheri Street  Mumbai
7 James       Bond       30 Wellington Square  Chelsea
4 Bhuvan      Kumar      Rt-30 Bennett Street  Chennai
2 Marshal    Rehman    HB-88 Meow Road    Lucknow
1 Ram         Prakash    No21, Nelson Street  Chennai
2 Gyan        Kumar      BN-12 Houdini Street  California
3 Ludo        Lassan     GN-29 Andheri Street  Mumbai
7 James       Bond       30 Wellington Square  Chelsea
4 Bhuvan      Kumar      Rt-30 Bennett Street  Chennai

PID FIRSTNAME  LASTNAME   ADDRESS      CITY
-----  -----
2 Marshal    Rehman    HB-88 Meow Road    Lucknow

12 rows selected.

SQL> Select * from persons where pid in (1,7);
```

Ex3

```
Command Prompt - sqlplus
SQL> insert into class1 values(9,'shiva');
1 row created.

SQL> commit
2  *
C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Tue Apr 5 21:03:06 2022

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Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> commit;

Commit complete.

SQL> select * from class1;
      ID NAME
----- 
      5 raj
      6 ram
      7 vibhav
      8 sai
      9 shiva

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

SQL> savepoint D;
Savepoint created.

SQL> rollback to D;
Rollback complete.

SQL> insert into class1 values(10,'tom');

1 row created.

SQL> savepoint E;
```

```
Command Prompt - sqlplus
SQL> savepoint C;
Savepoint created.

SQL> select * from class1;
      ID NAME
----- 
      5 raj
      6 ram
      7 vibhav
      8 sai

SQL> rollback to B;
Rollback complete.

SQL> select * from class1;
      ID NAME
----- 
      5 raj
      6 ram
      7 vibhav

SQL> rollback to A;
Rollback complete.

SQL> select * from class1;
      ID NAME
----- 
      5 raj

SQL> insert into class1 values(6,'ram');

1 row created.

SQL> insert into class1 values(7,'vibhav');

1 row created.

SQL> insert into class1 values(8,'sai');

1 row created.

SQL> savepoint D;
Savepoint created.

SQL> insert into class1 values(9,'shiva');
```

Ex3

```
Command Prompt - sqlplus
Microsoft Windows [Version 10.0.22581.100]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Tue Apr 5 20:57:36 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> create table class1(id number(10),name varchar(10));

Table created.

SQL> desc class1;
Name          Null?    Type
-----  -----
ID           NUMBER(10)
NAME         VARCHAR2(10)

SQL> insert into class1 values(5,'rahul');

1 row created.

SQL> update class1 set name='raj' where id=5;

1 row updated.

SQL> savepoint A;

Savepoint created.

SQL> insert into class1 values(6,'ram');

1 row created.

SQL> insert into class1 values(7,'vibhav');

1 row created.

SQL> savepoint B;

Savepoint created.

SQL> insert into class1 values(8,'sai');

1 row created.

SQL> rollback to A;

Rollback complete.

SQL> select * from class1;

       ID NAME
-----  -----
      5 raj
      6 ram
      7 vibhav
      8 sai
      9 shiva
     10 tom

6 rows selected.

SQL> commit;

Commit complete.

SQL> select * from class1;

       ID NAME
-----  -----
      5 raj
      6 ram
      7 vibhav
      8 sai
      9 shiva
     10 tom

6 rows selected.

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

SQL>
```

```
Command Prompt - sqlplus
SQL> savepoint F;
Savepoint created.

SQL> savepoint F;
Savepoint created.

SQL> rollback to E;
Rollback complete.

SQL> select * from class1;

       ID NAME
-----  -----
      5 raj
      6 ram
      7 vibhav
      8 sai
      9 shiva
     10 tom

6 rows selected.

SQL> commit;

Commit complete.

SQL> select * from class1;

       ID NAME
-----  -----
      5 raj
      6 ram
      7 vibhav
      8 sai
      9 shiva
     10 tom

6 rows selected.

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

SQL>
```

Ex4

```
Command Prompt - sqlplus
SQL> select min(mark1) from stu1 where department='CSE';
MIN(MARK1)
-----
75

SQL> select avg(mark1) from stu1;
AVG(MARK1)
-----
86.2

SQL> select avg(mark2) from stu1;
AVG(MARK2)
-----
86.6

SQL> select avg(mark3) from stu1;
AVG(MARK3)
-----
89

SQL> select avg(mark3) from stu1 where department='CSE';
AVG(MARK3)
-----
89.25

SQL> select sum(mark1) from stu1;
SUM(MARK1)
-----
431

SQL> select sum(mark2) from stu1;
SUM(MARK2)
-----
433

SQL> select sum(mark3) from stu1;
SUM(MARK3)
-----
445

SQL> select sum(mark1+mark2) from stu1;
SUM(MARK1+MARK2)
-----
```

```
Command Prompt - sqlplus
SQL> select max(mark2) from stu1;
MAX(MARK2)
-----
89

SQL> select max(mark3) from stu1;
MAX(MARK3)
-----
95

SQL> select max(mark1+mark2) from stu1;
MAX(MARK1+MARK2)
-----
179

SQL> select max(mark2+mark3) from stu1;
MAX(MARK2+MARK3)
-----
184

SQL> select max(mark1+mark3) from stu1;
MAX(MARK1+MARK3)
-----
185

SQL> select max(mark2) from stu1 where department='cse';
MAX(MARK2)
-----

SQL> select min(mark1) from stu1 where department='cse';
MIN(MARK1)
-----

SQL> select max(mark2) from stu1 where department='CSE';
MAX(MARK2)
-----
89

SQL> select min(mark1) from stu1 where department='CSE';
MIN(MARK1)
-----
```

Ex4

```
Command Prompt - sqlplus
SQL> select count(id) from stu1 where department='ECE';
COUNT(ID)
-----
1

SQL> select min(mark1) from stu1;
MIN(MARK1)
-----
75

SQL> select min(mark2) from stu1;
MIN(MARK2)
-----
80

SQL> select min(mark3) from stu1;
MIN(MARK3)
-----
85

SQL> select min(mark1+mark2) from stu1;
MIN(MARK1+MARK2)
-----
155

SQL> select min(mark2+mark3) from stu1;
MIN(MARK2+MARK3)
-----
165

SQL> select min(mark1+mark3) from stu1;
MIN(MARK1+MARK3)
-----
160

SQL> select max(mark1) from stu1;
MAX(MARK1)
-----
90

SQL> select max(mark2) from stu1;
MAX(MARK2)
-----
```

```
Command Prompt - sqlplus
SQL> insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3);
Enter value for id: 104
Enter value for name: Aquaman
Enter value for department: ECE
Enter value for mark1: 88
Enter value for mark2: 87
Enter value for mark3: 88
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(104,'Aquaman','ECE',88,87,88)

1 row created.

SQL> select count(*) from stu1;
COUNT(*)
-----
5

SQL> select count(*) from stu1 where department='ece';
COUNT(*)
-----
0

SQL> select count(*) from stu1 where department='ECE';
COUNT(*)
-----
1

SQL> select count(*) from stu1 where department='CSE';
COUNT(*)
-----
4

SQL> select count(id) from stu1;
COUNT(ID)
-----
5

SQL> select count(id) from stu1 where department='CSE';
COUNT(ID)
-----
4

SQL> select count(id) from stu1 where department='ECE';
COUNT(ID)
-----
```

Ex4

```

Command Prompt - sqlplus
SQL> /
Enter value for id: 103
Enter value for name: Moon Knight
Enter value for department: CSE
Enter value for mark1: 75
Enter value for mark2: 80
Enter value for mark3: 85
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(103,'Moon Knight','CSE',75,80,85)
insert into stu1 values(103,'Moon Knight','CSE',75,80,85)
*
ERROR at line 1:
ORA-12899: value too large for column "SYS"."STU1"."NAME" (actual: 11, maximum:
10)

SQL> /
Enter value for id: 103
Enter value for name: MoonKnight
Enter value for department: CSE
Enter value for mark1: 75
Enter value for mark2: 80
Enter value for mark3: 85
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(103,'MoonKnight','CSE',75,80,85)

1 row created.

SQL> select * from stu1;
      ID NAME      DEPARTMENT MARK1 MARK2 MARK3
----- 100 Batman    CSE        90     89     95
       101 Peacemaker CSE        88     89     90
       102 Spider-Man CSE        90     88     87
       103 MoonKnight CSE        75     80     85

SQL> select count(*) from stu1;
      COUNT(*)
-----
       4

SQL> insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3);
Enter value for id: 104
Enter value for name: Aquaman
Enter value for department: ECE
Enter value for mark1: 88
Enter value for mark2: 87
Enter value for mark3: 88
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(104,'Aquaman','ECE',88,87,88)

```

```

Command Prompt - sqlplus
C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Sat Apr 9 17:19:41 2022

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Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> create table stu1(id number(10),name varchar(18),department varchar(10),mark1 number(10),mark2 number(10),mark3 number(10));
Table created.

SQL> insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3);
Enter value for id: 100
Enter value for name: Batman
Enter value for department: CSE
Enter value for mark1: 90
Enter value for mark2: 89
Enter value for mark3: 95
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(100,'Batman','CSE',90,89,95)

1 row created.

SQL> /
Enter value for id: 101
Enter value for name: Peacemaker
Enter value for department: CSE
Enter value for mark1: 88
Enter value for mark2: 89
Enter value for mark3: 90
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(101,'Peacemaker','CSE',88,89,90)

1 row created.

SQL> /
Enter value for id: 102
Enter value for name: Spider-Man
Enter value for department: CSE
Enter value for mark1: 90
Enter value for mark2: 88
Enter value for mark3: 87
old 1: insert into stu1 values(&id,'&name','&department',&mark1,&mark2,&mark3)
new 1: insert into stu1 values(102,'Spider-Man','CSE',90,88,87)

1 row created.

```

Ex4

```
Command Prompt - sqlplus
SQL> select sum(mark1+mark2) from stu1;
SUM(MARK1+MARK2)
-----
864
SQL> select sum(mark1+mark3) from stu1;
SUM(MARK1+MARK3)
-----
876
SQL> select sum(mark2+mark3) from stu1;
SUM(MARK2+MARK3)
-----
878
SQL> select sum(mark3) from stu1 where department='CSE';
SUM(MARK3)
-----
357
SQL>
```

Ex6

```
Command Prompt - sqlplus
SQL> insert into s values(2,'raj','chennai');
1 row created.

SQL> insert into s values(3,'siva','pune');
1 row created.

SQL> insert into s values(4,'selvam','bangalore');
1 row created.

SQL> select * from s;
      SID SNAME      ADDRESS
----- -----
      1 ram        chennai
      2 raj        chennai
      3 siva       pune
      4 selvam    bangalore

SQL> create table s1(sid number(10),sname varchar(10),marks number(10),age varchar(10));
Table created.

SQL> insert into s1 values(1,'ram',90,20);
1 row created.

SQL> insert into s1 values(2,'raj',90,21);
1 row created.

SQL> insert into s1 values(3,'siva',80,19);
1 row created.

SQL> insert into s1 values(4,'selvam',88,19);
1 row created.

SQL> select * from s1;
      SID SNAME      MARKS AGE
----- -----
      1 ram        90 20
      2 raj        90 21
      3 siva       80 19
      4 selvam    88 19

SQL> create view sv as select sname,address from s where sid<4;
```

```
Command Prompt - sqlplus
SQL> select * from emp where salary<any(select max(salary) from emp);
      ID NAME      AGE ADDRESS      SALARY
----- -----
      10 Retriever 33 Chennai     12500
      20 Terrier   26 Mumbai     150000
      50 Eskimo   29 Pune       162500
      60 Corgi    30 Kochin     21250
      100 Shiba   30 Chennai     6775

SQL> select * from emp where salary=>all(select salary from emp where salary<=20000);
no rows selected

SQL> select * from emp where salary=>all(select salary from emp where salary<=15000);
no rows selected

SQL> select * from emp where salary>all(select salary from emp where salary<=20000);
      ID NAME      AGE ADDRESS      SALARY
----- -----
      60 Corgi    30 Kochin     21250
      20 Terrier  26 Mumbai     150000
      50 Eskimo   29 Pune       162500
      30 Boxer    20 Chennai     200000
      40 Hound    27 Hyderabad  200000

SQL> delete from emp where age in(select age from emp where age>=30);
3 rows deleted.

SQL> select * from emp;
      ID NAME      AGE ADDRESS      SALARY
----- -----
      20 Terrier  26 Mumbai     150000
      30 Boxer    20 Chennai     200000
      40 Hound    27 Hyderabad  200000
      50 Eskimo   29 Pune       162500

SQL> connect
Enter user-name: sys/abc123 as sysdba
Connected.
SQL> create table s(sid number(10),sname varchar(10),address varchar(10));
Table created.

SQL> insert into s values(1,'ram','chennai');
1 row created.
```

Ex6

```

Command Prompt - sqlplus
SQL> select * from emp where id in(select id from emp where salary>=20000);
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      50000
 20 Boxer        20 Chennai      20000
 40 Hound        27 Hyderabad   20000
 50 Eskimo       29 Pune         65000
 60 Corgi        30 Kochin       85000
100 Shiba        30 Chennai      27100

6 rows selected.

SQL> update emp set salary=salary*0.25 where age in(select age from emp where age>=29);

4 rows updated.

SQL> select * from emp;
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      12500
 20 Terrier      26 Mumbai       15000
 30 Boxer        20 Chennai      20000
 40 Hound        27 Hyderabad   20000
 50 Eskimo       29 Pune         16250
 60 Corgi        30 Kochin       21250
100 Shiba        30 Chennai      6775

7 rows selected.

SQL> update emp set salary=salary*10 where age not in(select age from emp where age>=30);

4 rows updated.

SQL> select * from emp;
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      12500
 20 Terrier      26 Mumbai       15000
 30 Boxer        20 Chennai      20000
 40 Hound        27 Hyderabad   20000
 50 Eskimo       29 Pune         16250
 60 Corgi        30 Kochin       21250
100 Shiba        30 Chennai      6775

7 rows selected.

SQL> select * from emp where salary<any(select max(salary) from emp);
ID NAME          AGE ADDRESS      SALARY
----- -----
 20 Terrier      26 Mumbai       15000
 30 Boxer        20 Chennai      20000
 40 Hound        27 Hyderabad   20000

```

```

Command Prompt - sqlplus
SQL> select * from emp where salary<=(select avg(salary) from emp);
ID NAME          AGE ADDRESS      SALARY
----- -----
 20 Terrier      26 Mumbai       15000
 30 Boxer        20 Chennai      20000
 40 Hound        27 Hyderabad   20000

SQL> select * from emp where salary>=(select avg(salary) from emp);
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      50000
 50 Eskimo       29 Pune         65000
 60 Corgi        30 Kochin       85000

SQL> insert into emp values(100,'Shiba',30,'Chennai',27100);

1 row created.

SQL> select * from emp where salary<=(select avg(salary) from emp);
ID NAME          AGE ADDRESS      SALARY
----- -----
 20 Terrier      26 Mumbai       15000
 30 Boxer        20 Chennai      20000
 40 Hound        27 Hyderabad   20000
100 Shiba        30 Chennai      27100

SQL> select * from emp where salary>=(select avg(salary) from emp);
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      50000
 50 Eskimo       29 Pune         65000
 60 Corgi        30 Kochin       85000

SQL> select * from emp where id in(select id from emp where salary>20000);
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      50000
 50 Eskimo       29 Pune         65000
 60 Corgi        30 Kochin       85000
100 Shiba        30 Chennai      27100

SQL> select * from emp where id in(select id from emp where salary>=20000);
ID NAME          AGE ADDRESS      SALARY
----- -----
 10 Retriever    33 Chennai      50000
 20 Boxer        20 Chennai      20000

```

Ex6

```

Command Prompt - sqlplus
SQL> select * from emp;
      ID NAME          AGE ADDRESS        SALARY
----- -- -- -- --
    10 Retriever    33 Chennai       50000
    20 Terrier      26 Mumbai        15000
    30 Boxer        20 Chennai       20000
    40 Hound         27 Hyderabad    20000
    50 Eskimo       29 Pune          65000
    60 Corgi        30 Kochin        85000

6 rows selected.

SQL> select max(salary) from emp;

MAX(SALARY)
-----
85000

SQL> select id,name from emp where salary=65000;

      ID NAME
----- --
    50 Eskimo

SQL> select id,name from emp where salary=(select max(salary) from emp);

      ID NAME
----- --
    60 Corgi

SQL> select * from emp where salary>(select avg(salary) from emp)order by age desc;
      ID NAME          AGE ADDRESS        SALARY
----- -- -- -- --
    10 Retriever    33 Chennai       50000
    60 Corgi        30 Kochin        85000
    50 Eskimo       29 Pune          65000

SQL> select * from emp where salary<=(select avg(salary) from emp)order by age desc;
      ID NAME          AGE ADDRESS        SALARY
----- -- -- -- --
    40 Hound         27 Hyderabad    20000
    20 Terrier      26 Mumbai        15000
    30 Boxer        20 Chennai       20000

SQL> select * from emp where salary<=(select avg(salary) from emp);
      ID NAME          AGE ADDRESS        SALARY
----- -- -- -- --
    20 Terrier      26 Mumbai        15000

```

```

Command Prompt - sqlplus
SQL> /
Enter value for id: 30
Enter value for name: Boxer
Enter value for age: 20
Enter value for address: Chennai
Enter value for salary: 20000
old  1: insert into emp values(&id,'&name',&age,'&address',&salary)
new  1: insert into emp values(30,'Boxer',20,'Chennai',20000)

1 row created.

SQL> /
Enter value for id: 40
Enter value for name: Hound
Enter value for age: 27
Enter value for address: Hyderabad
Enter value for salary: 20000
old  1: insert into emp values(&id,'&name',&age,'&address',&salary)
new  1: insert into emp values(40,'Hound',27,'Hyderabad',20000)

1 row created.

SQL> /
Enter value for id: 50
Enter value for name: Eskimo
Enter value for age: 29
Enter value for address: Pune
Enter value for salary: 65000
old  1: insert into emp values(&id,'&name',&age,'&address',&salary)
new  1: insert into emp values(50,'Eskimo',29,'Pune',65000)

1 row created.

SQL> /
Enter value for id: 60
Enter value for name: Corgi
Enter value for age: 30
Enter value for address: Kochin
Enter value for salary: 85000
old  1: insert into emp values(&id,'&name',&age,'&address',&salary)
new  1: insert into emp values(60,'Corgi',30,'Kochin',85000)

1 row created.

SQL> select * from emp;
      ID NAME          AGE ADDRESS        SALARY
----- -- -- -- --
    10 Retriever    33 Chennai       50000
    20 Terrier      26 Mumbai        15000
    30 Boxer        20 Chennai       20000
    40 Hound         27 Hyderabad    20000
    50 Eskimo       29 Pune          65000
    60 Corgi        30 Kochin        85000

```

Ex6

```
Command Prompt - sqlplus
C:\Users\asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Sat Apr 9 19:22:29 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> create table emp(id number(10), name varchar(10), age number(10), address varchar(10), salary number(10));

Table created.

SQL> desc emp;
Name          Null?    Type
-----  -----
ID           NUMBER(10)
NAME         VARCHAR2(10)
AGE          NUMBER(10)
ADDRESS       VARCHAR2(10)
SALARY        NUMBER(10)

SQL> insert into emp values(&id,'&name',&age,'&address',&salary);
Enter value for id: 10
Enter value for name: Retriever
Enter value for age: 33
Enter value for address: Chennai
Enter value for salary: 50000
old  1: insert into emp values(&id,'&name',&age,'&address',&salary)
new  1: insert into emp values(10,'Retriever',33,'Chennai',50000)

1 row created.

SQL> /
Enter value for id: 20
Enter value for name: Terrier
Enter value for age: 26
Enter value for address: Mumbai
Enter value for salary: 15000
old  1: insert into emp values(&id,'&name',&age,'&address',&salary)
new  1: insert into emp values(20,'Terrier',26,'Mumbai',15000)

1 row created.

SQL> /
Enter value for id: 30
Enter value for name: Boxer
Enter value for age: 20
Enter value for address: Chennai
Enter value for salary: 20000
```

```
Command Prompt - sqlplus
SQL> create view sv as select sname,address from s where sid<4;
View created.

SQL> select * from sv;
SNAME      ADDRESS
-----  -----
ram        chennai
raj        chennai
siva       pune

SQL> create view sv1 as select s.sname,s.address,s1.marks from s,s1 where s.sid=s1.sid;
View created.

SQL> select * from sv1;
SNAME      ADDRESS      MARKS
-----  -----  -----
ram        chennai      90
raj        chennai      90
siva       pune        88
selvam     bangalore    88

SQL> drop view sv1;
View dropped.

SQL> select * from sv1;
select * from sv1
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL>
```

Ex7

```
Command Prompt - sqlplus
SQL> select fac.fid,fcou.cid from fac right join fcou on fcou.fid=fac.fid;
      FID      CID
----- -----
      1        10
      2        10
      3        20
      4        30
      5        20
      6        20
      6 rows selected.

SQL> insert into fcou values(40,7);
1 row created.

SQL> insert into fcou values(40,8);
1 row created.

SQL> select fac.fid,fcou.cid from fac right join fcou on fcou.fid=fac.fid;
      FID      CID
----- -----
      1        10
      2        10
      3        20
      4        30
      5        20
      6        20
      7        40
      40
      8 rows selected.

SQL> select fac.fid,fcou.cid from fac full join fcou on fcou.fid=fac.fid;
      FID      CID
----- -----
      1        10
      2        10
      3        20
      4        30
      5        20
      6        20
      7        40
      40
      8 rows selected.

SQL> select fcou.cid,fac.fname,fac.age from fac inner join fcou on fac.fid=fcou.fid;
      CID  FNAME    AGE
----- -----
  10 Adidev   Chennai  30
  10 Bhairav   Chennai  33
  20 Omkareswar Bangalore 34
  30 Pashupati Kochin  30
  20 Rudra     Hyderabad 32
  20 Yogesh    Hyderabad 29
  33 Sashwat   Chennai  33
  7 rows selected.

SQL> select fcou.cid,fac.fname,fac.age from fac inner join fcou on fac.fid=fcou.fid;
      CID  FNAME    AGE
----- -----
  10 Adidev   30
  10 Bhairav   33
  20 Omkareswar 34
  30 Pashupati 30
  20 Rudra     32
  20 Yogesh    29
  6 rows selected.

SQL> select fac.fname,fcou.cid from fac left join fcou on fcou.fid=fac.fid;
      FNAME      CID
----- -----
Adidev       10
Bhairav      10
Omkareswar  20
Pashupati    30
Rudra        20
Yogesh       20
Sashwat      20
  7 rows selected.

SQL> select fac.fid,fcou.cid from fac left join fcou on fcou.fid=fac.fid;
      FID      CID
----- -----
      1        10
      2        10
      3        20
      4        30
      5        20
      6        20
      7        20
      7
      6 rows selected.
```

```
Command Prompt - sqlplus
SQL> select * from fac;
      FID  FNAME    ADDRESS      AGE
----- -----
  1 Adidev   Chennai  30
  2 Bhairav   Chennai  33
  3 Omkareswar Bangalore 34
  4 Pashupati Kochin  30
  5 Rudra     Hyderabad 32
  6 Yogesh    Hyderabad 29
  7 Sashwat   Chennai  33
  7 rows selected.

SQL> select fcou.cid,fac.fname,fac.age from fac inner join fcou on fac.fid=fcou.fid;
      CID  FNAME    AGE
----- -----
  10 Adidev   Chennai  30
  10 Bhairav   Chennai  33
  20 Omkareswar Bangalore 34
  30 Pashupati Kochin  30
  20 Rudra     Hyderabad 32
  20 Yogesh    Hyderabad 29
  6 rows selected.

SQL> select fcou.cid,fac.fname,fac.age from fac inner join fcou on fac.fid=fcou.fid;
      CID  FNAME    AGE
----- -----
  10 Adidev   30
  10 Bhairav   33
  20 Omkareswar 34
  30 Pashupati 30
  20 Rudra     32
  20 Yogesh    29
  6 rows selected.

SQL> select fac.fname,fcou.cid from fac left join fcou on fcou.fid=fac.fid;
      FNAME      CID
----- -----
Adidev       10
Bhairav      10
Omkareswar  20
Pashupati    30
Rudra        20
Yogesh       20
Sashwat      20
  7 rows selected.

SQL> select fac.fid,fcou.cid from fac left join fcou on fcou.fid=fac.fid;
      FID      CID
----- -----
      1        10
      2        10
      3        20
      4        30
      5        20
      6        20
      7        20
      7
      6 rows selected.
```

Ex7

```
Command Prompt - sqlplus
SQL> select * from fac;
      FID  FNAME    ADDRESS   AGE
-----  ---  -----
 1 Adidev  Chennai      30
 2 Bhairav  Chennai      33
 3 Omkarswan  Bangslore  34
 4 Pashupati  Kochin      38
 5 Rudra   Hyderabad     32
 6 Yogesh  Hyderabad     29
 7 Sashwat  Chennai      33

7 rows selected.

SQL> insert into fcou values(10,1);
1 row created.

SQL> insert into fcou values(10,2);
1 row created.

SQL> insert into fcou values(20,3);
1 row created.

SQL> insert into fcou values(30,4);
1 row created.

SQL> insert into fcou values(20,5);
1 row created.

SQL> insert into fcou values(20,6);
1 row created.

SQL> select * from fcou;
      CID      FID
-----  ---
 10          1
 10          2
 20          3
 30          4
 20          5
 20          6

6 rows selected.

SQL> select * from fac;
```

```
Command Prompt - sqlplus
SQL> /
Enter value for fid: Pashupati
Enter value for fname:
Enter value for address:
Enter value for age:
old 1: insert into fac values(&fid,'&fname','&address',&age)
new 1: insert into fac values(Pashupati,' ',' ')
insert into fac values(Pashupati,' ',' ')

ERROR at line 1:
ORA-00936: missing expression

SQL> /
Enter value for fid: 4
Enter value for fname: Pashupati
Enter value for address: Kochin
Enter value for age: 30
old 1: insert into fac values(&fid,'&fname','&address',&age)
new 1: insert into fac values(4,'Pashupati','Kochin',30)

1 row created.

SQL> /
Enter value for fid: 5
Enter value for fname: Rudra
Enter value for address: Hyderabad
Enter value for age: 32
old 1: insert into fac values(&fid,'&fname','&address',&age)
new 1: insert into fac values(5,'Rudra','Hyderabad',32)

1 row created.

SQL> /
Enter value for fid: 6
Enter value for fname: Yogesh
Enter value for address: Hyderabad
Enter value for age: 29
old 1: insert into fac values(&fid,'&fname','&address',&age)
new 1: insert into fac values(6,'Yogesh','Hyderabad',29)

1 row created.

SQL> /
Enter value for fid: 7
Enter value for fname: Sashwat
Enter value for address: Chennai
Enter value for age: 33
old 1: insert into fac values(&fid,'&fname','&address',&age)
new 1: insert into fac values(7,'Sashwat','Chennai',33)

1 row created.
```

Ex7

```
Command Prompt - sqlplus
C:\Users\asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Sat Apr 9 19:59:50 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> create table fac(fid number(10),fname varchar(10),address varchar(10),age number(10));
Table created.

SQL> create table fcou(cid number(10),fid number(10));
Table created.

SQL> insert into fac values(&fid,'&fname','&address',&age);
Enter value for fid: 1
Enter value for fname: Adidev
Enter value for address: Chennai
Enter value for age: 30
old  1: insert into fac values(&fid,'&fname','&address',&age)
new  1: insert into fac values(1,'Adidev','Chennai',30)

1 row created.

SQL> /
Enter value for fid: 2
Enter value for fname: Bhairav
Enter value for address: Chennai
Enter value for age: 33
old  1: insert into fac values(&fid,'&fname','&address',&age)
new  1: insert into fac values(2,'Bhairav','Chennai',33)

1 row created.

SQL> /
Enter value for fid: 3
Enter value for fname: Omkareswar
Enter value for address: Bangalore
Enter value for age: 34
old  1: insert into fac values(&fid,'&fname','&address',&age)
new  1: insert into fac values(3,'Omkareswar','Bangalore',34)

1 row created.

SQL> /
Enter value for fid: Pashupati
Enter value for fname:
```

```
Command Prompt - sqlplus

SQL> select fcou.fid,fcou.cid from fac full join fcou on fcou.fid=fac.fid;
-----+
   FID      CID
-----+
    1        10
    2        10
    3        20
    4        30
    5        20
    6        20
    7        40
    8        40

8 rows selected.

SQL> select fac.fid,fcou.fid from fac full join fcou on fcou.fid=fac.fid;
-----+
   FID      FID
-----+
    1        1
    2        2
    3        3
    4        4
    5        5
    6        6
    7        7
    8        8

8 rows selected.

SQL> -
```

Ex8

```
Command Prompt - sqlplus
Microsoft Windows [Version 10.0.22581.100]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Sat Apr 9 16:30:29 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> create table z(id number(10),name varchar(10));

Table created.

SQL> insert into z values(1,'a');

1 row created.

SQL> insert into z values(2,'b');

1 row created.

SQL> create table z1(id number(10),name varchar(10));

Table created.

SQL> insert into z1 values(2,'b');

1 row created.

SQL> insert into z1 values(3,'c');

1 row created.

SQL> insert into z1 values(4,'d');

1 row created.

SQL> select * from z;

        ID NAME
----- -----
      1 a
      2 b

SQL> select * from z1;

        ID NAME
----- -----
      2 b
      3 c
      4 d
```

```
Command Prompt - sqlplus
SQL> select * from z1;
        ID NAME
----- -----
      2 b
      3 c
      4 d

SQL> select * from z union select * from z1;
        ID NAME
----- -----
      1 a
      2 b
      3 c
      4 d

SQL> select * from z union all select * from z1;
        ID NAME
----- -----
      1 a
      2 b
      2 b
      3 c
      4 d

SQL> select * from z intersect select * from z1;
        ID NAME
----- -----
      2 b

SQL> select * from z minus select * from z1;
        ID NAME
----- -----
      1 a

SQL> select * from z1 minus select * from z;
        ID NAME
----- -----
      3 c
      4 d

SQL> -
```

Ex9

```
Command Prompt - sqlplus
SQL> declare
  2   a integer:=10;
  3   b integer:=20;
  4   c integer;
  5 begin
  6   c:=a+b;
  7   dbms_output.put_line(c);
  8 end;
 9 /
PL/SQL procedure successfully completed.

SQL> declare
  2   a integer:=30;
  3 begin
  4   if(a<20) then
  5     dbms_output.put_line('a is less than 20');
  6   else
  7     dbms_output.put_line('a is not less than 20');
  8   end if;
  9 end;
10 /
a is not less than 20
PL/SQL procedure successfully completed.

SQL> declare
  2   grade char(1) := 'A';
  3 begin
  4   case grade
  5   when 'A' then dbms_output.put_line('Excellent');
  6   when 'B' then dbms_output.put_line('Very good');
  7   when 'C' then dbms_output.put_line('Good');
  8   when 'D' then dbms_output.put_line('Average');
  9   when 'F' then dbms_output.put_line('Passed with Grace');
10  else dbms_output.put_line('Failed');
11  end case;
12 end;
13 /
Excellent
PL/SQL procedure successfully completed.

SQL> declare
  2   i number:=1;
  3 begin
  4   loop
  5   exit when i>10;
  6   dbms_output.put_line(i);
  7   i:=i+1;
  8 end loop;
```

```
Command Prompt - sqlplus
SQL> declare
  2   a varchar(20):='hello world';
  3 begin
  4   dbms_output.put_line(a);
  5 end;
 6 /
hello world
PL/SQL procedure successfully completed.

SQL> declare
  2   a integer:=10;
  3 begin
  4   dbms_output.put_line('value of a:'||a);
  5 end;
 6 /
value of a:10
PL/SQL procedure successfully completed.

SQL> declare
  2   pi constant number:=3.14;
  3 begin
  4   dbms_output.put_line(pi);
  5 end;
 6 /
dbms_output.put_line(pi);
*
ERROR at line 4:
ORA-06550: line 4, column 22:
PLS-00201: identifier 'PI' must be declared
ORA-06550: line 4, column 1:
PL/SQL: Statement ignored

SQL> declare
  2   pi constant number:=3.14;
  3 begin
  4   dbms_output.put_line(pi);
  5 end;
 6 /
3.14
PL/SQL procedure successfully completed.

SQL> declare
  2   a integer:=10;
  3   b integer:=20;
  4   c integer;
  5 begin
  6   c:=a+b;
  7   dbms_output.put_line(c);
```

Ex9

```
Command Prompt - sqlplus
Microsoft Windows [Version 10.0.22581.100]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Sat Apr 9 16:52:08 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> set serveroutput on
SQL> declare
  2   a integer:=10;
  3   begin
  4     dbms_output.put_line(a);
  5   end;
  6 /
10

PL/SQL procedure successfully completed.

SQL> declare
  2   a varchar:='hello world';
  3   begin
  4     dbms_output.put_line(a);
  5   end;
  6 /
a varchar:='hello world';
*
ERROR at line 2:
ORA-06550: line 2, column 3:
PLS-00215: String length constraints must be in range (1 .. 32767)

SQL> declare
  2   a varchar:='hello';
  3   begin
  4     dbms_output.put_line(a);
  5   end;
  6 /
a varchar:='hello';
*
ERROR at line 2:
ORA-06550: line 2, column 3:
PLS-00215: String length constraints must be in range (1 .. 32767)

SQL> declare
```

```
Command Prompt - sqlplus
SQL> declare
  2   i number:=1;
  3   begin
  4     loop
  5       exit when i>10;
  6       dbms_output.put_line(i);
  7       i:=i+1;
  8     end loop;
  9   end;
10 /
1
2
3
4
5
6
7
8
9
10

PL/SQL procedure successfully completed.

SQL> declare
  2   i integer:=1;
  3   begin
  4     while i<=10 loop
  5       dbms_output.put_line(i);
  6       i:=i+1;
  7     end loop;
  8   end;
  9 /
1
2
3
4
5
6
7
8
9
10

PL/SQL procedure successfully completed.

SQL> declare
  2   var1 number;
  3   begin
  4     var1:=10;
  5     for car2 in 1..10
  6     loop
  7       dbms_output.put_line(var1*car2);
```

Ex10

```
Command Prompt - sqlplus
C:\Users\Asus>sqlplus
SQL*Plus: Release 11.2.0.2.0 Production on Sat Apr 9 17:10:33 2022
Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba
Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production
SQL> create table proc(id number(10),name varchar(10));
Table created.

SQL> create or replace procedure "INSERTUSER"
  2   (id IN NUMBER,
  3    name IN VARCHAR2)
  4  is
  5  begin
  6    insert into proc values(id,name);
  7  end;
  8 /
Procedure created.

SQL> begin
  2   insertuser(101,'Rahul');
  3   dbms_output.put_line('record inserted successfully');
  4 end;
  5 /
PL/SQL procedure successfully completed.

SQL> set serveroutput on
SQL> begin
  2   insertuser(101,'Rahul');
  3   dbms_output.put_line('record inserted successfully');
  4 end;
  5 /
record inserted successfully
PL/SQL procedure successfully completed.

SQL> select * from proc;
      ID NAME
----- 
      101 Rahul
      101 Rahul

-----
```

```
Command Prompt - sqlplus
SQL> select * from proc;
      ID NAME
----- 
      101 Rahul
      101 Rahul

SQL> begin
  2   insertuser(102,'Rohan');
  3   dbms_output.put_line('record inserted successfully');
  4 end;
  5 /
record inserted successfully
PL/SQL procedure successfully completed.

SQL> select * from proc;
      ID NAME
----- 
      101 Rahul
      101 Rahul
      102 Rohan

-----
```

```
Command Prompt - sqlplus
Microsoft Windows [Version 10.0.22581.200]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Wed Apr 13 17:13:18 2022

Copyright (c) 1982, 2014, Oracle. All rights reserved.

Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> create or replace function adder(n1 in number, n2 in number)
  2  return number
  3  is
  4  n3 number(8);
  5  begin
  6  n3:=n1+n2;
  7  return n3;
  8  end;
  9  /

Function created.

SQL> declare
  2  n3 number(2);
  3  begin
  4  n3:=adder(11,22);
  5  dbms_output.put_line('Addition is: ' || n3);
  6  end;
  7  /

PL/SQL procedure successfully completed.

SQL> Set serveroutput on
SQL> declare
  2  n3 number(2);
  3  begin
  4  n3:=adder(11,22);
  5  dbms_output.put_line('Addition is: ' || n3);
  6  end;
  7  /
Addition is: 33

PL/SQL procedure successfully completed.

SQL> declare
  2  a number;
  3  b number;
  4  c number;
```

Command Prompt - sqlplus

```
SQL> declare
  2  a number;
  3  b number;
  4  c number;
  5  function findMax(x in number,y in number)
  6  return number
  7  is
  8  z number;
  9  begin
10  if x>y then
11  z:=x;
12  else
13  Z:=y;
14  end if;
15
16  return z;
17 end;
18 begin
19  a:=23;
20  b:=45;
21
22  c:=findMax(a,b);
23  dbms_output.put_line(' Maximum of (23,45): ' || c);
24 end;
25 /
```

Maximum of (23,45): 45

PL/SQL procedure successfully completed.

```
SQL> select * from emp;
```

ID	NAME	AGE	ADDRESS	SALARY
20	Terrier	26	Mumbai	150000
30	Boxer	20	Chennai	200000
40	Hound	27	Hyderabad	200000
50	Eskimo	29	Pune	162500

```
SQL> create or replace function totalemp
  2  return number is
  3  total number(10):=0;
  4  begin
  5  select count(*) into total from emp;
  6  return total;
  7  end;
  8 /
```

Function created.

```
SQL> declare
  2  c number(20);
  3  begin
```

Command Prompt - sqlplus

```
SQL> declare
  2  c number(20);
  3  begin
  4  c:=totalemp();
  5  dbms_output.put_line(' Total no of emp: ' || c);
  6  end;
  7 /
Total no of emp: 4
```

PL/SQL procedure successfully completed.

```
SQL> declare
  2  num number;
  3  factorial number;
  4
  5  function fact(x number)
  6  return number
  7  is
  8  f number;
  9  begin
10  if x=0 then
11  f:=1;
12  else
13  f:=x*fact(x-1);
14  end if;
15  return f;
16  end;
17
18 begin
19 num:=6;
20 factorial:=fact(num);
21 dbms_output.put_line(' Factorial '|| num ||' is '||factorial);
22 end;
23 /
Factorial 6 is 720
```

PL/SQL procedure successfully completed.

```
SQL>
```

```
Command Prompt - sqlplus
C:\Users\Asus>sqlplus

SQL*Plus: Release 11.2.0.2.0 Production on Wed Apr 13 17:43:25 2022

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Enter user-name: sys/abc123 as sysdba

Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> set serveroutput on
SQL> declare
 2  total_rows number(2);
 3  begin
 4  update emp
 5  set salary=salary+5000;
 6  if sql%notfound then
 7  dbms_output.put_line('no customers updated');
 8  elsif sql%found then
 9  total_rows:=sql%rowcount;
10 dbms_output.put_line(total_rows||' customers updated ');
11 end if;
12 end;
13 /
4 customers updated

PL/SQL procedure successfully completed.

SQL> select * from emp;
-----+
 ID NAME      AGE ADDRESS     SALARY
-----+
 20 Terrier    26 Mumbai      155000
 30 Boxer     20 Chennai     205000
 40 Hound      27 Hyderabad  205000
 50 Eskimo    29 Pune        167500

SQL> declare
 2  c_id emp.id%type;
 3  c_name emp.name%type;
 4  c_addr emp.address%type;
 5  cursor c_emp is
 6  select id, name, address from emp;
 7  begin
 8  open c_emp;
 9  loop
10  fetch c_emp into c_id, c_name, c_addr;
11  exit when c_emp%notfound;
12  dbms_output.put_line(c_id||' '||c_name||' '||c_addr);
13  end loop;
```

Command Prompt - sqlplus

SQL> select * from emp;

ID	NAME	AGE	ADDRESS	SALARY
20	Terrier	26	Mumbai	155000
30	Boxer	20	Chennai	205000
40	Hound	27	Hyderabad	205000
50	Eskimo	29	Pune	167500

```
SQL> declare
 2  c_id emp.id%type;
 3  c_name emp.name%type;
 4  c_addr emp.address%type;
 5  cursor c_emp is
 6  select id, name, address from emp;
 7  begin
 8  open c_emp;
 9  loop
10  fetch c_emp into c_id, c_name, c_addr;
11  exit when c_emp%notfound;
12  dbms_output.put_line(c_id||' '||c_name||' '||c_addr);
13  end loop;
14  close c_emp;
15  end;
16 /
```

20 Terrier Mumbai
30 Boxer Chennai
40 Hound Hyderabad
50 Eskimo Pune

PL/SQL procedure successfully completed.

SQL>

Output 13:

The screenshot shows two sessions of Oracle SQL*Plus running on a Windows operating system. The top session is for creating a package and procedures, while the bottom session is for creating a log error procedure.

```
SQL> CREATE OR REPLACE PROCEDURE plch_do_stuff (
  2   value_in  IN NUMBER)
  3 IS
  4   l_value  NUMBER := value_in * 100;
  5 BEGIN
  6   RAISE VALUE_ERROR;
  7 EXCEPTION
  8   WHEN OTHERS
  9   THEN
 10     plch_pkg.g_save_value := l_value;
 11   RAISE;
 12 END;
 13 /  
Procedure created.  
  
SQL> BEGIN
  2   plch_do_stuff (10);
  3 EXCEPTION
  4   WHEN OTHERS
  5   THEN
  6     plch_log_error ('Value=' || plch_pkg.g_save_value);
  7 END;
 8 /  
PL/SQL procedure successfully completed.  
  
SQL> CREATE OR REPLACE PROCEDURE plch_do_stuff (
  2   value_in  IN NUMBER)
  3 IS
  4   l_value  NUMBER := value_in * 100;
  5 BEGIN
  6   RAISE VALUE_ERROR;
  7 END;
 8 /  
Procedure created.  
  
SQL> BEGIN
  2   plch_do_stuff (10);
  3 EXCEPTION
  4   WHEN OTHERS
  5   THEN
  6     plch_log_error ('Value=?');
  7 END;
 8 /  
PL/SQL procedure successfully completed.  
  
SQL>
```



```
SQL>  
Connected to:  
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production  
With the Partitioning, OLAP and Data Mining options  
  
SQL> CREATE OR REPLACE PACKAGE plch_pkg
  2 IS
  3   g_save_value  NUMBER;
  4 END;
 5 /  
Package created.  
  
SQL> CREATE OR REPLACE PROCEDURE plch_log_error (
  2   data_in  IN VARCHAR2)
  3 IS
  4 BEGIN
  5   DBMS_OUTPUT.put_line (
  6     SQLCODE || '-' || data_in);
  7 END;
 8 /  
Procedure created.  
  
SQL> CREATE OR REPLACE PROCEDURE plch_do_stuff (
  2   value_in  IN NUMBER)
  3 IS
  4   l_value  NUMBER := value_in * 100;
  5 BEGIN
  6   RAISE VALUE_ERROR;
  7 EXCEPTION
  8   WHEN OTHERS
  9   THEN
 10     plch_log_error ('Value=' || l_value);
 11   RAISE;
 12 END;
 13 /  
Procedure created.  
  
SQL> BEGIN
  2   plch_do_stuff (10);
  3 EXCEPTION
  4   WHEN OTHERS THEN NULL;
  5 END;
 6 /  
PL/SQL procedure successfully completed.  
  
SQL>
```

Output 14:

```
SQL> SP2-073A: unknown command beginning "new 1: ins..." - rest of line ignored.
SQL> SQL> insert into itstudent5 values('&name','&username');
Enter value for name: abcd
Enter value for username: ranjani
old   1: insert into itstudent5 values('&name','&username')
new   1: insert into itstudent5 values('abcd','ranjani')

1 row created.

SQL> /
Enter value for name: suji
Enter value for username: priya
old   1: insert into itstudent5 values('&name','&username')
new   1: insert into itstudent5 values('suji','priya')

1 row created.

SQL> select * from itstudent5;
NAME      USERNAME
-----  -----
akbar      ranjani
suji       priya

SQL> select * from itempls;
select * from itempls
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> > create trigger ittrigg before insert or update or delete on itempls for each row
SP2-073A: unknown command beginning "> create t..." - rest of line ignored.
SQL> begin
  2  raise_application_error(-20010,'You cannot do manipulation');
  3  end;
  4  /
begin
*
ERROR at line 1:
ORA-20010: You cannot do manipulation
ORA-0652: at line 2

SQL> create trigger ittrigg before insert or update or delete on itempls for each row
  2  begin
  3    raise_application_error(-20010,'You cannot do manipulation');
  4  end;
  5  /
-----  -----
^ /-----  -----
```



```
File Edit Search Options Help
SQL*Plus: Release 10.2.0.1.0 - Production on Wed Apr 6 20:03:28 2022
Copyright (c) 1982, 2005, Oracle. All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> create table itstudent4(name varchar2(15),username varchar2(15));
create table itstudent4(name varchar2(15),username varchar2(15))
*
ERROR at line 1:
ORA-0955: name is already used by an existing object

SQL> create table itstudent5(name varchar2(15),username varchar2(15));
Table created.

SQL> create or replace trigger itstudent4 before insert on itstudent4 for each row
  2  declare
  3    name varchar2(20);
  4  begin
  5    select user into name from dual;
  6    :new.username:=name;
  7  end;
  8  /
Trigger created.

SQL> insert into itstudent5 values('&name','&username');
Enter value for name: Enter value for username: ranjani
Enter value for username: Enter value for username: ranjani
old   1: insert into itstudent5 values('&name','&username')
new   1: insert into itstudent5 values('Enter value for name: akbar','Enter value for username: ranjani')
insert into itstudent5 values('Enter value for name: akbar','Enter value for username: ranjani')
*
ERROR at line 1:
ORA-12899: value too large for column "SCOTT"."ITSTUDENT5"."NAME" (actual: 27,
maximum: 15)

SQL> old 1: insert into itstudent5 values('&name','&username')
SP2-073A: unknown command beginning "old 1: ins..." - rest of line ignored.
SQL> new 1: insert into itstudent5 values('akbar','ranjani')
SP2-073A: unknown command beginning "new 1: ins..." - rest of line ignored.
SQL>
SQL> insert into itstudent5 values('&name','&username');
Enter value for name: akbar
-----  -----
```

```

Oracle SQL*Plus
File Edit Search Options Help
akbar      ranjani
suji      priya
SQL> create trigger ittrigg before insert or update or delete on itempls for each row
  2 begin
  3   raise_application_error(-20010,'You cannot do manipulation');
  4 end;
  5 /
Trigger created.

SQL> insert into itemplsvalues('aaa',14,34000);
insert into itemplsvalues('aaa',14,34000)
*
ERROR at line 1:
ORA-00928: missing SELECT keyword

SQL> select * from itempls;
ENAME          EID      SALARY
-----  -----
xxx            11      10000
yyy            12      10500
zzz            13      15500
SQL> insert into itemplsvalues('aaa',14,34000);
insert into itemplsvalues('aaa',14,34000)
*
ERROR at line 1:
ORA-00928: missing SELECT keyword

SQL> insert into itempls values('aaa','14','34000');
insert into itempls values('aaa','14','34000')
*
ERROR at line 1:
ORA-00010: You cannot do manipulation
ORA-06512: at "SCOTT.ITTRIGG", line 2
ORA-04008: error during execution of trigger 'SCOTT.ITTRIGG'

SQL> delete from itempls where ename='xxx';
SP2-0734: unknown command beginning "> delete f..." - rest of line ignored.
SQL> drop trigger ittrigg;

Trigger dropped.
SQL> |
<

```

Windows Taskbar icons: Start, File Explorer, Internet Explorer, Google Chrome, Microsoft Edge, File Explorer, Settings, Task View, Start.

System tray icons: ENG IN 21:22 06/04/2022


```

Oracle SQL*Plus
File Edit Search Options Help
SQL*Plus: Release 10.2.0.1.0 - Production on Wed Apr 6 20:59:45 2022
Copyright (c) 1982, 2005, Oracle. All rights reserved.

Connected to:
Oracle Database 10g Enterprise Edition Release 10.2.0.1.0 - Production
With the Partitioning, OLAP and Data Mining options

SQL> create table itempls( ename varchar(15), eid number(10),salary number(20));
Table created.

SQL> insert into itempls('xxx','11','10000');
insert into itempls('xxx','11','10000')
*
ERROR at line 1:
ORA-00928: Missing SELECT keyword

SQL> select * from itempls;
no rows selected

SQL> insert into itempls values('xxx','11','10000');

1 row created.

SQL> insert into itempls values('yyy','12','10500');

1 row created.

SQL> insert into itempls values('zzz','13','15500');

1 row created.

SQL> select * from itempls;
ENAME          EID      SALARY
-----  -----
xxx            11      10000
yyy            12      10500
zzz            13      15500
SQL> select * from itstudent5;
NONE          USERNAME
akbar        ranjani
<

```

Windows Taskbar icons: Start, File Explorer, Internet Explorer, Google Chrome, Microsoft Edge, File Explorer, Settings, Task View, Start.

System tray icons: ENG IN 21:21 06/04/2022