CONSTRAINTS

Constraints are used to specify rules for data in a table.

Constraint can be defined at individual column and it is called inline specification and can be defined at table level and called Out of line specification. NOT NULL constraints must be declared inline. All other constraints can be declared either inline or out of line.

INLINE SPECIFICATION:

```
Create table person
(
pno   number(10) constraint pk_pno PRIMARY KEY,
pname varchar2(20)
);
```

OUTLINE SPECIFICATION:

```
Create table person
(
pno  number(10),
pname varchar2(20),
constraint pk_pno PRIMARY KEY (pno)
);
```

TYPES OF CONSTRAINTS:

- ***** Not null
- * Unique
- * Primary key
- * Foreign key
- * Check
- * Default

NOT Null Constraint

NOT NULL column must have a value.

Example :-

Adding not null constraint during table creation:

```
Create table person1
(
pno   number,
pname varchar2(20) constraint not_null_pname  not null
)
```

(OR)

```
Create table person1
(
pno   number,
pname varchar2(20) not null
);
```

pname column has a not null constraint.

```
SQL> insert into person values(1,null);
insert into person values(1,null)
*
ERROR at line 1:
ORA-01400: cannot insert NULL into ("PERSON"."PNAME")
```

Adding constraint using alter:

While creating the table if the user haven't provide not null constraints then user could add constraint using alter command.

```
ALTER TABLE person  MODIFY pname varchar2(30) NOT NULL;
```

Drop a constraint using alter:

```
ALTER TABLE person  MODIFY pname varchar2(30) NULL;
```

UNIQUE Constraint

UNIQUE Constraint column should have either unique values or null values across the table.

Examples :-

Adding unique constraint during table creation:

```
Create table person
(
pno   number(10),
pname varchar2(20) constraint uq_pname unique
);
```

```
SQL> insert into person values(1,'Bill');
```

1 row created.

```
SQL> insert into person values(2,'Bill');
insert into person values(2,'Bill')
*
ERROR at line 1:
ORA-00001: unique constraint (UQ_PNAME) violated
```

Next, UNIQUE constraint column can accept null values.

```
SQL> insert into person values(2,null);
```

1 row created.

SQL> insert into person values(3,null);

1 row created.

Adding constraint using alter:

While creating the table if the user haven't provide unique constraints then user could add constraint using alter command.

ALTER TABLE person add constraint myunique_name pname varchar2(30) ;

Drop a constraint using alter:

ALTER TABLE person drop constraint myunique_name;

Primary Key Constraint

A primary key constraint combines a NOT NULL constraint and a UNIQUE constraint. A table can have only one PRIMARY KEY and it can be created for composite(Two or more columns) keys also.

Examples :-

Adding primary key constraint during table creation:

```
Create table person
(
pno   number(10) constraint pk_pno PRIMARY KEY,
pname varchar2(20)
);
```

```
Create table person
(
pno   number(10),
cno   number(10),
pname varchar2(20),
constraint pk_pno PRIMARY KEY (pno,cno)
);
```

Adding a primary key using alter:

```
Create table person
(
pno    number(10),
pname  varchar2(20)
);
```

Alter table person add constraint pk_pno PRIMARY KEY (pno);

Adding a composite primary key using alter:

Alter table person add constraint com_pk PRIMARY KEY (pno,pname);

Dropping a primary key:

Alter table person drop constraint pk_pno;

Foreign Key Constraint

Foreign Key Constraint used to relate two or more table and values in one table to match values in another table.

Examples :-

Adding Foriegn key constraint during table creation:

Initially create a table with primary key

```
create table dept
(
deptno   number(10) constraint pk_deptno primary key,
deptname varchar2(20) not null,
location varchar2(20)
);
```

create table foreign key which references the dept table primary key:

```
create table emp
(
empno    number(10) constraint pk_empno primary key,
empname  varchar2(20) not null,
salary   number,
deptno   number(10) constraint fk_deptno references dept(deptno)
);
```

Adding a foreign key using alter:

Alter table emp add constraint fk_deptno foreign key(deptno) references dept(deptno);

Dropping a foreign key:

Alter table emp drop constraint fk_deptno;

CHECK Constraint

CHECK Constraints are enforcing certain types of values in a column.

Adding check constraint during table creation:

```
Create table person
(
pno    number(10),
pname  varchar2(20),
status varchar2(20) constraint ch_status check( status in ('ACTIVE','INACTIVE'))
);
```

Adding a check constraint using alter:

Alter table person add constraint ch_status check(status in (‘ACTIVE’,’INACTIVE’));

Dropping a check constraint

Alter table person drop constraint ch_status;

DEFAULT Constraint

The DEFAULT constraint is used to provide a default value for a column.

The default value will be added to all new records IF no other value is specified.

Adding default constraint during table creation:

```
CREATE TABLE Persons (
    ID int NOT NULL,
    LastName varchar(255) NOT NULL,
    FirstName varchar(255),
    Age int,
    City varchar(255) DEFAULT 'Coimbatore'
);
```

Adding a default constraint using alter:

```
ALTER TABLE Persons
MODIFY City varchar(255)  DEFAULT 'Coimbatore';
```

```
insert into persons(id,lastname,firstname,age) values(1232,'sandy','sam',23);
```

```
select * from persons;
```

Dropping a default constraint

```
ALTER TABLE persons MODIFY city DEFAULT NULL;
```