WORKING WITH CONSTRAINTS

Constraints are rules for a database that limit the acceptable data values for a table. They are the optional schema objects that depend on a table. The existence of a table without any constraint is possible, but the existence of a constraint without any table is not possible. Constraints enforce the business rules in a database. Constraints can be created along with the table in the CREATE TABLE statement. Addition and deletion of constraints can be done in the ALTER TABLE statement.

The following types of constraints are available in Oracle Database:

NOT NULL

It enforces that a column, declared as not null, cannot have any NULL values.

For example, if an employee's hire date is not known, then that employee may not be considered as a valid employee. If a protected column does not possess any value, then the INSERT and UPDATE statements on those columns will fail.

UNIQUE

It ensures that columns protected by this constraint cannot have duplicate values.

PRIMARY KEY

It is responsible for uniquely identifying a row in a table. A table can have only one PRIMARY KEY constraint. A PRIMARY KEY constraint completely includes both the NOT NULL and UNIQUE constraints. It is enforced with an index on all columns.

FOREIGN KEY

It is also known as referential integrity constraint. It enforces that values referenced in one table are defined in another table. It establishes a parent-child or reference-dependentrelationship between the two tables.

CHECK

It enforces that columns must meet a specific condition that is evaluated to a Boolean value. If the value evaluates to false, then the database will raise an exception, and not allow the INSERT and UPDATE statements to operate on columns.

Creating table with constraints

1. Not null constraint

a) Creating Table with not null constraint

Syntax:

Create table<table name> (<col1><data type>(<size>) not null,<col2><data

type>(<size>));

Ex:

Create table empl (empnonumber(4), ename char(10) not null,city char(10) not

null);

2. Unique constraint

a) Creating Table with unique constraint at column level

Syntax:

Create table<table name> (<col1><data type>(<size>) unique,<col2><data

type>(<size>));

Ex:

Create table empl (empnonumber(4), ename char(10) unique,city char(10));

b) Creating Table with unique constraint at table level

Syntax:

Create table<table name> (<col1><data type>(<size>),<col2><data

type>(<size>), unique(<col1>,<col2>);

Ex:

Create table empl (empnonumber(4), ename char(10), city char(10),

unique(ename,city));

3. Primary Key Constraints

a) Creating Table with primary key constraint at column level

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Syntax:

Create table<table name>(<col1><data type>(<size>) primary key);

Ex:

Create table empl (empnonumber(4) primary key, ename char(10), city char(10));

b) Creating Table with primary key constraint at table level

Syntax:

Create table<table name> (<col1><data type>(<size>),<col2><data

type>(<size>), primary key(<col1>,<col2>);

Ex:

Create table prod (mfridchar(4), prodid char(4), pname char(10), price number,

primary key(mfrid,prodid));

4. Foreign Key Constraints

a) Creating Table with foreign key constraint at column level

Syntax:

Create table<table name>(<col1><data type>(<size>) references

<tablename>[<col>]);

Ex:

Create table mgr (mgrno number, deptno number references dept(deptno));

b) Creating Table with foreign key constraint at table level

Syntax:

Create table<table name> (<col1><data type>(<size>),<col2><data

type>(<size>), foreign key(<col>[,<col>])references <table

name>[(<col>,<col>)]);

Ex:

Create table orders (odrid number, mfridchar(4), prodid char(4), amount number,

foreign key(mfrid,prodid) references prod(mfrid,prodid));

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5. Check Constraints

a) Creating Table with check constraint at column level

Syntax:

Create table<table name>(<col1><data type>(<size>) check(<logical

expression>);

Ex:

Create table mgr (mgrno number, deptno number, age number check(age between

1 and 100));

b) Creating Table with check constraint at table level

Syntax:

Create table<table name> (<col1><data type>(<size>),<col2><data

type>(<size>), check(<logical expression>));

Ex:

Create table orders (odrid number, mfridchar(4), prodid char(4), amount number,

check(ordered>0 and amount>2000));