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Oracle Version 12c

Oracle Database constraints

Enabling Objectives

After completing this chapter, in the next 60 minutes you will be able to :

- Create at least two tables with constraints using Data Definition Language(DDL) statements on oracle database platform

Key Topics

- Types of Constraints
- Applying constraints at table and column level

Constraints

- Constraints are rules enforced
  - At the table and column level
- Enforce rules on the data in a table
  - Whenever a row is inserted, updated or deleted from table
- Prevents deletion of a table
  - If there are dependencies from other tables

Defining Constraints

- Every constraint is associated with a name
  - User specified name or Oracle Server generated (Name in the format SYS_Cn)
- Defined at the time of table creation or modification
- Constraints can be defined at table or column level

Constraints Types

Constraints	Description
Primary Key	Uniquely identifies each row of the table
Foreign Key	Establishes and enforces a referential integrity constraint between the column and a column of referenced table
Check	Specifies a condition that must be true
Unique	Specifies a column whose values must be unique
Not null	Specifies that the column cannot contain a null value

Not Null constraint

Ensures null values are not permitted in a column

```
CREATE TABLE Employee (
e_name          varchar2(20) not null,
Salary          number(7,2),
hire_date       date  constraint nn_jdate not null
);
```

System Generated name

User defined name

Unique Constraint

- Ensures every value entered is unique at table level
- Allows single null value at table level

```
CREATE TABLE Employee (
e_name          varchar2(20) not null,
salary          number(7,2),
e_mail          varchar2(10),
hire_date       date constraint nn_jdate not null,
                constraint uq_email unique(e_mail)
);
```

Table level constraint

Primary Key Constraint

- Uniquely identifies each row in the table (ENTITY INTEGRITY)
- One per table
- Can be a single column or a combination of columns
- Enforces uniqueness and not null

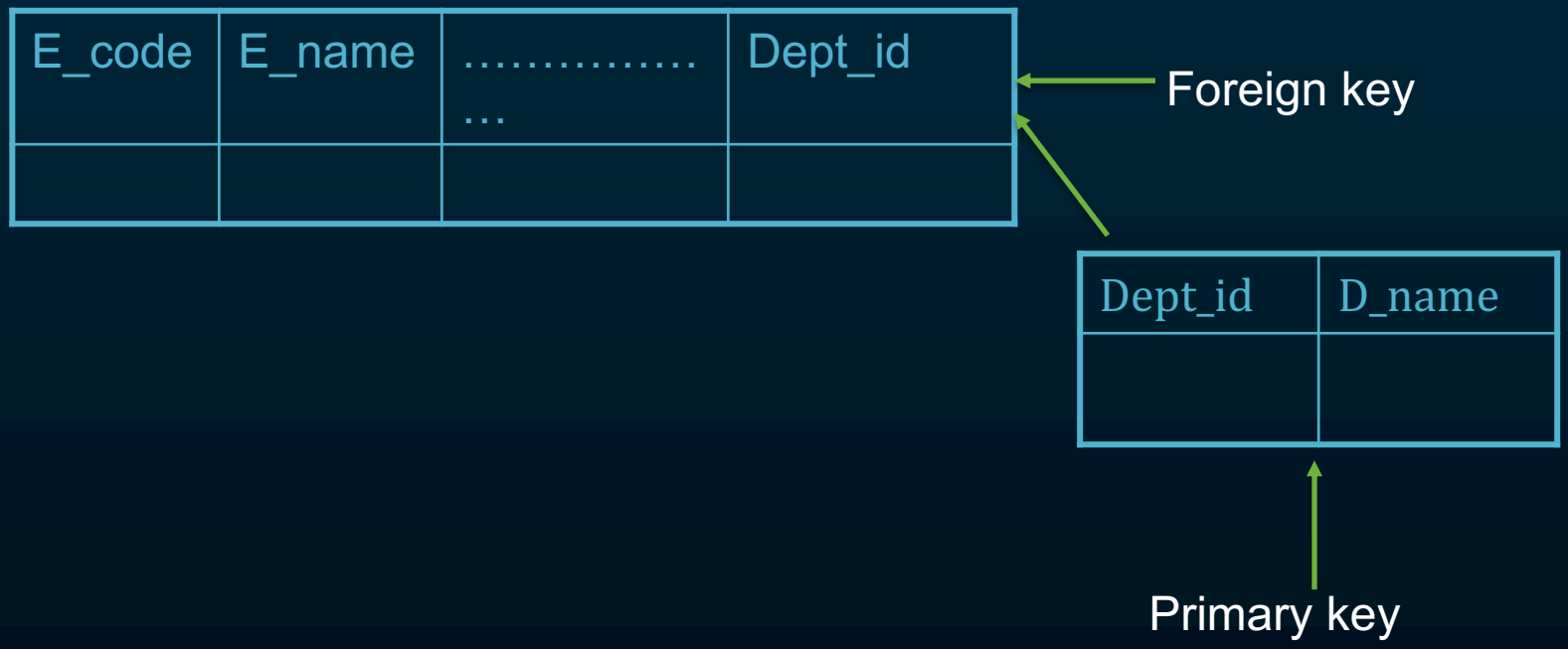
Primary Key Constraint

A unique index is automatically created on primary key column

```
CREATE TABLE Employee(
e_code          number(2) constraint pk_ecode primary key,
e_name          varchar2(20) not null,
e_mail          varchar2(10),
hire_date       date constraint nn_jdate not null,
                constraint uq_email unique(e_mail)
);
```

Foreign Key Constraint

- Designates a column as foreign key
- Establishes a relationship between a primary key in the same table or a different table .



Foreign Key Constraint

```
CREATE TABLE Department(
dept_id          number(4),
dept_name        varchar(20),
                 constraint pk_dcode primary key
);


CREATE TABLE Employee(
…….. ,
dept_id           number(4) constraint fk_code
references   department (dept_id) initially deferred deferrable
);
```

Foreign Key Constraint

- Foreign Key columns reference a Primary Key or Unique
  - column from the same or different table
- By default the referenced column in the parent table cannot be updated or deleted
- ON DELETE CASCADE option
  - indicates when the row in the parent table is deleted, the dependent rows in the child table will also be deleted.

Foreign Key Constraint

- ON DELETE SET NULL
  - converts foreign key values to null when the parent value is removed.

```
CREATE TABLE Employee(
..... ,
dept_id          number(4) constraint fk_deptid
                 references department(dept_id)
                 on delete cascade/ no delete set null
);
```

Default : on delete restrict

Check Constraint

- Checked when ever data is inserted or updated
- Multiple check constraints can be defined on a single column

```
CREATE TABLE Employee(
e_code          number(2) constraint pk_ecode primary key,
e_name          varchar2(20) not null,
e_mail          varchar2(10),
e_salary        number(7,2),
hire_date       date constraint nn_jdate not null,
                constraint uq_email unique(e_mail) ,
                constraint chk_sal check (e_salary > 0)
);
```

CREATE TABLE syntax

```
CREATE TABLE table-Name
 {
    ( {column-definition | Table-level constraint}
    [ , {column-definition | Table-level constraint} ] * )
 |
    [ ( column-name [ , column-name ] * ) ]
    AS query-expression
    WITH NO DATA
 }
```

Lend a hand

Refer Oracle-DDL Hands-Demo.pdf document file

Practice Check

Refer Oracle-Create-table-with-constraint-practice.pdf document file

RECAP

In this chapter we have learnt how to:

- Create table with constraints using Data Definition Language(DDL) statement.

You have successfully completed -

Using DDL Statements to Create and Manage Tables