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# CSE2004

# Database Management System

**Slot: L15+L16**

**Week -II**

**Venue: AB1-605B**

**DDL with Constraints**

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# Course Contents:

- CREATE
- DROP
- ALTER
- RENAME
- TRUNCATE



# CREATE - Syntax

```
CREATE TABLE table_name (  
  column_1 data_type [column_constraint],  
  column_2 data_type [column_constraint],  
  ...  
  [table_constraint] );
```



# CREATE- Example

```
CREATE TABLE persons(  
  person_id NUMBER GENERATED BY DEFAULT AS IDENTITY,  
  first_name VARCHAR2(50) NOT NULL,  
  last_name VARCHAR2(50) NOT NULL,  
  PRIMARY KEY(person_id) );
```



# ALTER – Why?

The ALTER TABLE statement allows you to:

- Add one or more columns
- Modify column definition
- Drop one or more columns
- Rename columns
- Rename table



# ALTER - Syntax

ALTER TABLE table\_name

- **ADD** column\_name type constraint;
- **MODIFY** column\_name type constraint;
- **DROP COLUMN** column\_name;
- **RENAME COLUMN** column\_name TO new\_name;



# ALTER - Example

- ALTER TABLE persons ADD birthdate DATE NOT NULL;
- Syntax: ADD Multiple Columns

```
ALTER TABLE table_name ADD (  
    column_name type constraint,  
    column_name type constraint ...)
```

```
Example : ALTER TABLE persons ADD (  
    phone VARCHAR(20),  
    email VARCHAR(100) );
```



# ALTER - Example

**Syntax** : ALTER TABLE table\_name MODIFY (  
column\_1 type constraint,  
column\_2 type constraint, .... );

**Example** :

```
ALTER TABLE persons MODIFY birthdate DATE NULL;
```

```
ALTER TABLE persons MODIFY(  
phone VARCHAR2(20) NOT NULL,  
email VARCHAR2(255) NOT NULL );
```





# ALTER - Example

## Syntax :

```
ALTER TABLE table_name DROP COLUMN column_name;  
ALTER TABLE table_name DROP (column_1,column_2,...);
```

## Example :

```
ALTER TABLE persons DROP COLUMN birthdate;
```

```
ALTER TABLE persons DROP ( email, phone );
```



# ALTER - Example

**Syntax** : ALTER TABLE table\_name RENAME TO new\_table\_name;

**Example** :

```
ALTER TABLE persons RENAME TO people;
```



# DROP and RENAME - Syntax

**Syntax :** DROP TABLE table\_name;

RENAME TABLE table\_name-1 TO table\_name2;

**Example :**

RENAME TABLE persons TO people;

DROP TABLE people;



# TRUNCATE - Syntax

TRUNCATE operation is used to delete all table records.

Logically it's the same as DELETE command.

Differences between DELETE and TRUNCATE commands are:

- TRUNCATE is really faster
- TRUNCATE cannot be rolled back
- TRUNCATE command does not invoke ON DELETE triggers
- 
- 

Syntax : TRUNCATE TABLE table\_name;

Example : TRUNCATE TABLE people;



# SQL - Constraints

- PRIMARY KEY
- FOREIGN KEY (will discuss later)
- UNIQUE
- CHECK
- NOT NULL



# Primary Key -

- A primary key is a column or a combination of columns in a table that uniquely identifies a row in the table.
- The following are rules that make a column a primary key:
  - A primary key column cannot contain a NULL value or an empty string.
  - A primary key value must be unique within the entire table.
  - A primary key value should not be changed over time.



# Create Table Syntax

```
CREATE TABLE purchase_orders (  
  po_nr NUMBER PRIMARY KEY,  
  vendor_id NUMBER NOT NULL,  
  po_status NUMBER(1,0) NOT NULL,  
  created_at TIMESTAMP WITH TIME ZONE NOT NULL );
```

```
CREATE TABLE purchase_orders (  
  po_nr NUMBER,  
  vendor_id NUMBER NOT NULL,  
  po_status NUMBER(1,0) NOT NULL,  
  created_at TIMESTAMP WITH TIME ZONE NOT NULL,  
  CONSTRAINT pk_purchase_orders PRIMARY KEY(po_nr)  
);
```



# Create Table Syntax

```
CREATE TABLE purchase_order_items (  
    po_nr NUMBER NOT NULL,  
    item_nr NUMBER NOT NULL,  
    product_id NUMBER NOT NULL,  
    quantity NUMBER NOT NULL,  
    purchase_unit NUMBER NOT NULL,  
    buy_price NUMBER (9,2) NOT NULL,  
    delivery_date DATE,  
    PRIMARY KEY (po_nr, item_nr)  
);
```





# ALTER - Constraints

**Syntax** : ALTER TABLE table\_name ADD CONSTRAINT constraint\_name PRIMARY KEY (column1, column2, ...);

```
CREATE TABLE vendors (  
  vendor_id NUMBER, vendor_name VARCHAR2(255) NOT NULL,  
  address VARCHAR2(255) NOT NULL );
```

**Example** : ALTER TABLE vendors  
ADD CONSTRAINT pk\_vendors PRIMARY KEY (vendor\_id);

Note : Other constraints can be used with ALTER Command.



# ALTER - Constraints

**Syntax** : ALTER TABLE table\_name DROP CONSTRAINT  
primary\_key\_constraint\_name;  
ALTER TABLE table\_name DROP PRIMARY KEY;

**Example** : ALTER TABLE vendors DROP CONSTRAINT pk\_vendors;  
ALTER TABLE vendors DROP PRIMARY KEY;

**Enable/Disable** :

ALTER TABLE purchase\_orders DISABLE PRIMARY KEY;  
ALTER TABLE purchase\_orders DISABLE CONSTRAINT  
pk\_purchase\_orders;



# UNIQUE Constraint

## Syntax :

```
CREATE TABLE table_name (  
    ...,  
    UNIQUE(column_name)  
);
```

```
CREATE TABLE table_name (  
    ...  
    column_name data_type CONSTRAINT unique_constraint_name UNIQUE  
    ...  
);
```



# Check - Constraints

## Syntax :

```
CREATE TABLE table_name (  
    ...  
    column_name data_type CHECK (expression),  
    ...  
);
```

```
CREATE TABLE table_name (  
    ...,  
    CONSTRAINT check_constraint_name CHECK (expresssion)  
);
```



# Check - Example

## Example :

```
CREATE TABLE parts (  
  part_id NUMBER GENERATED BY DEFAULT AS IDENTITY,  
  part_name VARCHAR2(255) NOT NULL,  
  buy_price NUMBER(9,2) CHECK(buy_price > 0),  
  PRIMARY KEY(part_id)  
);
```

```
INSERT INTO parts(part_name, buy_price) VALUES('HDD',0);
```

SQL Error: ORA-02290: check constraint (**OT.SYS\_C0010681**) violated



# Check - Example

## Example :

```
CREATE TABLE parts (  
  part_id NUMBER GENERATED BY DEFAULT AS IDENTITY,  
  part_name VARCHAR2(255) NOT NULL,  
  buy_price NUMBER(9,2) CONSTRAINT check_positive_buy_price  
  CHECK(buy_price > 0),  
  PRIMARY KEY(part_id)  
);
```

```
INSERT INTO parts(part_name, buy_price) VALUES('Screen',-100);
```

*SQL Error: ORA-02290: check constraint (OT.CHECK\_POSITIVE\_BUY\_PRICE) violated*





**Thank You!**