

# Database Systems

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# DDL Statements

- DDL stands for Data Definition Language.
- Data Definition Language (DDL) is a standard for commands that define the different structures in a database.
- DDL statements create, modify, and remove database objects such as tables, indexes, and users.
- Common DDL statements are CREATE, ALTER, and DROP.

# Create Table Command

- Create table command is used to:
  - Create a table
  - Define attributes of the table with data types
  - Define different constraints on attributes, like primary and foreign keys, check constraint, not null, default value etc.

# Format of Create Table

- CREATE TABLE *table\_name* (  
    *column1 datatype,*  
    *column2 datatype,*  
    *column3 datatype,*  
    ....  
);
- The column parameters specify the names of the columns of the table.
- The datatype parameter specifies the type of data the column can hold (e.g. varchar, integer, date, etc.).

# Create Table Command

- CREATE TABLE Program (  
    prName char(4),  
    totSem tinyint,  
    prCredits smallint)

# Create Table Command

- CREATE TABLE Student  
    (stId char(5),  
    stName char(25),  
    stFName char(25),  
    stAdres text,  
    stPhone char(10),  
    prName char(4)  
    curSem smallint,  
    cgpa real)

# Create Table Command

- ```
CREATE TABLE Persons (  
    PersonID int,  
    LastName varchar(255),  
    FirstName varchar(255),  
    Address varchar(255),  
    City varchar(255)  
);
```

# Create Table with Constraint

- CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    PRIMARY KEY (ID)



# Create Table with Constraint

- To allow naming of a PRIMARY KEY constraint, and for defining a PRIMARY KEY constraint on multiple columns, use the following SQL syntax:
- ```
CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    CONSTRAINT PK_Person PRIMARY KEY (ID,LastName)  
);
```

# Create Table with Constraint

- ```
CREATE TABLE Orders (  
    OrderID int NOT NULL,  
    OrderNumber int NOT NULL,  
    PersonID int,  
    PRIMARY KEY (OrderID),  
    FOREIGN KEY (PersonID) REFERENCES Persons(PersonID)  
);
```

# Create Table with Constraint

- To allow naming of a FOREIGN KEY constraint, and for defining a FOREIGN KEY constraint on multiple columns, use the following SQL syntax:
- ```
CREATE TABLE Orders (  
    OrderID int NOT NULL,  
    OrderNumber int NOT NULL,  
    PersonID int,  
    PRIMARY KEY (OrderID),  
    CONSTRAINT FK_PersonOrder FOREIGN KEY (PersonID)  
    REFERENCES Persons(PersonID)
```

# Alter Table Statement

- The ALTER TABLE statement is used to make changes in the definition of a table already created through Create statement.
- The ALTER TABLE statement is used to add, delete, or modify columns in an existing table.
- The ALTER TABLE statement is also used to add and drop various constraints on an existing table.

# ALTER TABLE - ADD Column

- To add a column in a table, use the following syntax:
  - ALTER TABLE *table\_name*  
ADD *column\_name datatype*;
- The following SQL adds an "Email" column to the "Customers" table:
- Example:
  - ALTER TABLE Customers  
ADD Email varchar(255);

# ALTER TABLE - DROP COLUMN

- To delete a column in a table, use the following syntax (notice that some database systems don't allow deleting a column):
  - ALTER TABLE *table\_name*  
DROP COLUMN *column\_name*;
- The following SQL deletes the "Email" column from the "Customers" table:
  - ALTER TABLE Customers  
DROP COLUMN Email;

# ALTER TABLE - ALTER/MODIFY COLUMN

- To change the data type of a column in a table, use the following syntax:
- ALTER TABLE *table\_name*  
ALTER COLUMN *column\_name* *datatype*;
- Suppose we want to change the data type of the column named "DateOfBirth" in the "Persons" table.
- ALTER TABLE Persons  
ALTER COLUMN DateOfBirth year;
- The "DateOfBirth" column is now of type year and is going to hold a year in a two- or four-digit format.

# DROP TABLE Statement

- The DROP TABLE statement is used to drop an existing table in a database.
- Syntax:
  - DROP TABLE *table\_name*;
- The following SQL statement drops the existing table "Shippers":
  - DROP TABLE Shippers;



# TRUNCATE TABLE Statement

- The TRUNCATE TABLE statement is used to delete the data inside a table, but not the table itself.
  - TRUNCATE TABLE *table\_name*;
- Delete can also be used, the DELETE statement is used to delete existing records in a table.
  - DELETE FROM *table\_name* WHERE *condition*;

# Data Manipulation Language

- Common DML commands are:
  - Insert
  - Select
  - Update

End of Slides