Introduction to Database Systems
Lecture 8

Engr. Madeha Mushtaq
Department of Computer Science
Iqra National University

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