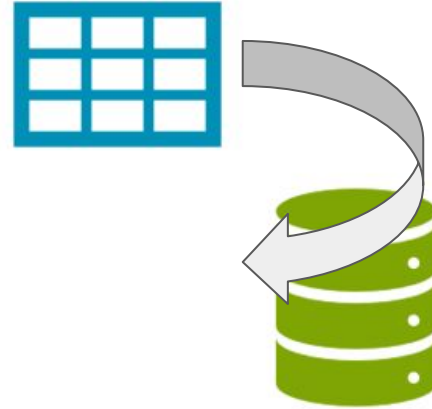


# SQL Session 5





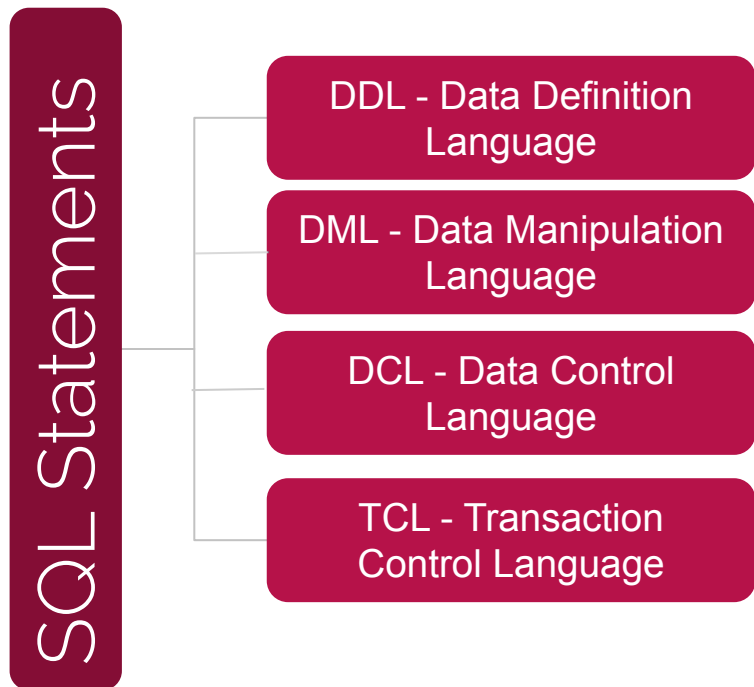
# DDL Commands

# Table of Contents



- ▶ Introduction
- ▶ Data Types
- ▶ DDL and DML

# Introduction





# ▶ Data Definition Language

- DDL specifies the database schema.
- Some statements used in DDL are **CREATE, ALTER, DROP.**
- DDL statements are typically used to set up and configure a new database before we insert data.



# ▶ Data Manipulation Language

- Data Manipulation Language (DML) enables users to access or manipulate data.
- **INSERT, UPDATE, DELETE, SELECT\*** are the statements used in DML.

\* In some sources, SELECT statement is grouped into a different category called DQL (Data Query Language).



# ▶ Data Control Language

- Data Control Language (DCL) is used to grant or revoke access control.
- Its statements are **REVOKE** and **GRANT**.



# Transaction Control Language

- Transaction Control Language (TCL) controls the transactions of DML and DDL commands.
- Some statements in TCL are **COMMIT, ROLLBACK, SAVEPOINT**.





2

# Data Types

# ▶ Data Types



The data type of a column defines what value the column can hold: integer, character, date and time, binary, and so on.

# ▶ Data Types



String

Numeric

Date and Time



# String Data Types



The string data types are:

- CHAR
- VARCHAR
- BINARY
- VARBINARY
- BLOB
- TEXT



# ▶ Date and Time Data Types

The date and time data types are:

- DATE
- DATETIME
- YEAR



# Numeric Data Types



## Integer Types (Exact Value)

- INTEGER or INT
- SMALLINT
- TINYINT
- MEDIUMINT
- BIGINT

## Floating-Point Types (Approximate Value)

- FLOAT
- DECIMAL
- NUMERIC
- REAL

# ▶ Data Types



Data types might have different names in different database. And even if the name is the same, the size and other details may be different! Always check the documentation!



3

# CREATE TABLE





# CREATE TABLE



When creating a table, we use **CREATE TABLE** statement.

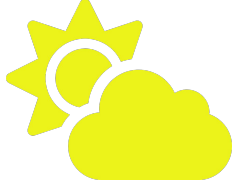
## Syntax of a Basic Create Table Statement

```
CREATE TABLE table_name  
    (column_name1 data_type,  
     column_name2 data_type);
```



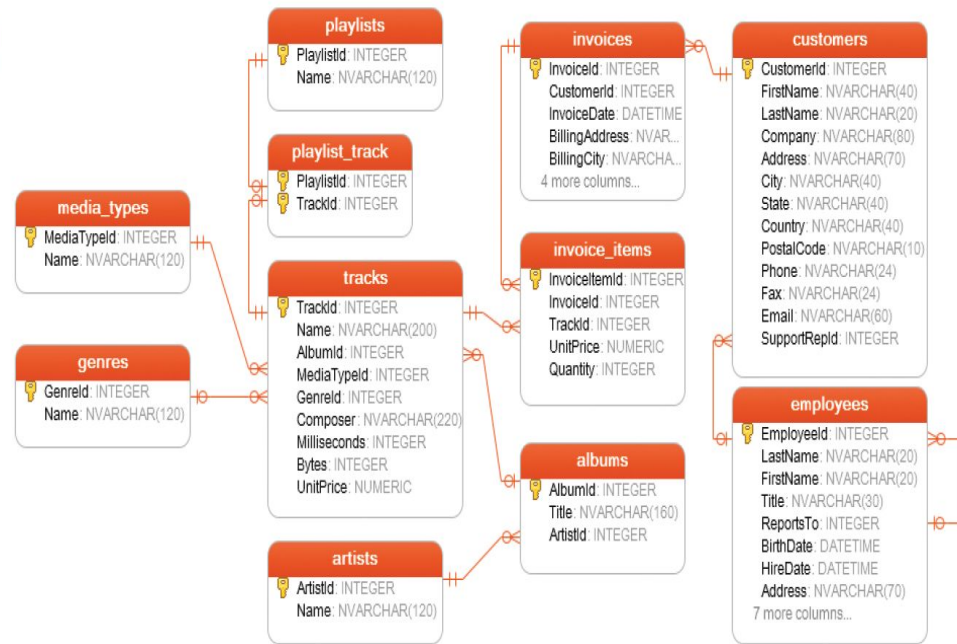
# ▶ CREATE TABLE-Example

```
CREATE TABLE employee
    (first_name VARCHAR(15),
     last_name  VARCHAR(20),
     age        INT,
     hire_date  DATE);
```



Please add a table to your existing sql\_course database:  
The table name will be **vacation\_plan** of the employees for this summer.  
Column names:

- place\_id
- country
- hotel\_name
- employee\_id
- vacation\_length
- budget



# ► DROP TABLE



The DROP TABLE statement is used to drop an existing table in a database.

## **Syntax:**

```
DROP TABLE table_name;
```

```
TRUNCATE TABLE table_name;
```



# INSERT INTO

INSERT DATA to our vacation\_plan table

Syntax:

```
INSERT INTO table_name (column1, column2 ,...)  
VALUES( value1, value2 ,...);
```

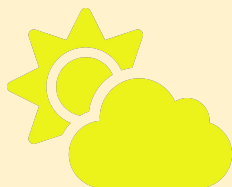
```
INSERT INTO table1 (column1,column2 ,...)  
VALUES
```

```
(value1,value2 ,...),
```

```
(value1,value2 ,...),
```

```
...
```

```
(value1,value2 ,...);
```



# Constraints



Constraints are the rules specified for data in a table. We can limit the type of data that will go into a table with the constraints. We can define the constraints with the **CREATE TABLE** statement or **ALTER TABLE** statement.



# Constraints

## Constraints

Constraint Name	Definition
NOT NULL	Ensures that a column cannot have a NULL value
DEFAULT	Sets a default value for a column when no value is specified
UNIQUE	Ensures that all values in a column are different
PRIMARY KEY	Uniquely identifies each row in a table
FOREIGN KEY	Uniquely identifies a row/record in another table

# Primary Key



The primary key is a column in our table that makes each row (aka, record) unique.

## Syntax

```
1 CREATE TABLE table_name(  
2     column_1 INT PRIMARY KEY,  
3     column_2 TEXT,  
4     ...  
5 );  
6 |
```



# Primary Key



## Syntax (Alternative)

```
1 CREATE TABLE table_name(  
2     column_1 INT,  
3     column_2 TEXT,  
4     ...  
5     PRIMARY KEY (column_1)  
6 );|
```

# ► Foreign Key



Foreign key is a column in a table that uniquely identifies each row of another table. That column refers to a primary key of another table. This creates a kind of link between the tables.

# Foreign Key



## customers

```
1 CREATE TABLE customers (customer_id INT PRIMARY KEY,  
2 first_name TEXT,  
3 second_name TEXT);  
4 |
```

## orders

```
1 CREATE TABLE orders (  
2     order_id INT PRIMARY KEY,  
3     order_number INT,  
4     customer_id INT,  
5     FOREIGN KEY (customer_id)  
6     | REFERENCES customers (customer_id)  
7 );  
8 |
```



# ▶ Not Null

A column can include NULL values. A NULL value is a special value that means the value is unknown or does not exist.

All columns (except primary key's column) in a table can hold NULL values unless we explicitly specify **NOT NULL** constraints.



# Not Null



## Syntax

```
1 CREATE TABLE table_name (  
2     column_name type_name NOT NULL,  
3     ...);  
4 |
```



Please drop the table as you've just created writing

```
DROP TABLE vacation_plan;
```

Then, recreate the vacation\_plan table adding constraints as below:

Column names:

- place\_id -> PRIMARY KEY
- country
- hotel\_name -> NOT NULL
- employee\_id -> FOREIGN KEY
- vacation\_length
- budget



# 4 ALTER TABLE

# ▶ ALTER TABLE



The **ALTER TABLE** statement is used to add, delete, or modify columns in an existing table. It is also used to add and drop various constraints on an existing table.

**To add a column in a table, use the following syntax:**

```
ALTER TABLE table_name  
ADD column_name data_type;
```





Add a column to your vacation\_plan table named “city”.

```
ALTER TABLE table_name  
ADD column_name data_type;
```

# ▶ ALTER TABLE



**To delete a column in a table, use the following syntax:**

```
ALTER TABLE table_name  
DROP column_name;
```

**To change the data type of a column in a table, use the following syntax:**

```
ALTER TABLE table_name  
MODIFY COLUMN column_name data_type;
```



Drop the city column from vacation\_plan table.

```
ALTER TABLE table_name  
DROP column_name;
```

# THANKS!

