# CLASSROOM LOG - 6


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# SQL Introduction

Standard language for querying and manipulating data

**S**tructured **Q**uery **L**anguage

# SQL

- Data Definition Language (DDL)
  - Create/alter/delete tables and their attributes
- Data Manipulation Language (DML)
  - Insert/delete/modify tuples in tables

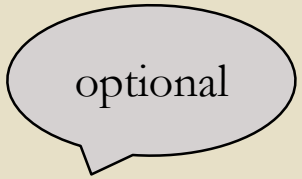
# Schema & Catalog Concepts

- Schema:
  - Identified by schema name
  - Includes an authorisation identifier

  Eg: CREATE SCHEMA COMPANY AUTHORISATION JOHN;
- Catalog:
  - Collection of schemas
  - Referential integrity can be defined only if they exist in schemas within the same catalog

# CREATE TABLE command

- specifies a new relation by giving it a name and specifying its attributes and initial constraints
- Syntax:




CREATE TABLE [schema] table_name

# Data Types

- Numeric – int, float, decimal, double
- Formatted – decimal(i, j)

  i: total number of decimal digits  j: number of digits after the decimal point
- char(n): fixed length

  varchar(n): varying length

  n: maximum number of characters
- Date, Time

# Specifying Constraints

- not NULL
- Default
- Unique candidate key
- Primary key(Pk)
- Foreign key(references)

# Schema Change Statements

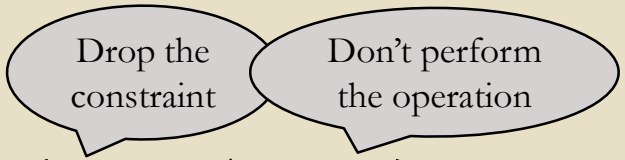
## The ALTER command-

- Add a new column:

Syntax: ALTER TABLE table_name ADD COLUMN column_name datatype constraints

- Delete a column:

(may violate referential integrity constraint)



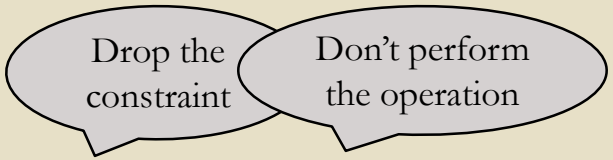

Syntax: ALTER TABLE table_name DROP column_name {cascade/ restrict}

# Schema Change Statements

## The DROP command-

- Delete a table

(may violate referential integrity constraint)




Syntax: DROP TABLE table_name {cascade/ restrict}

# Basic Queries

- Select-

select <attribute list>

from <table list>

where <condition>

- Project-

select <attribute list> (or) select distinct <attribute list>

from <table list>

# Basic Queries

- Cartesian Join-

select *

from <table list>

- Theta Join-

select <attribute list>

from <table list>

where <condition>

# Example:

## Create a table:

Let us create a CUSTOMERS table-

```
CREATE TABLE CUSTOMERS(
   ID   INT  NOT NULL,
   NAME VARCHAR (30)   NOT NULL,
   AGE  INT   NOT NULL   DEFAULT 18,
   ADDRESS  CHAR (40),
   SALARY   DECIMAL (15, 2),
   PRIMARY KEY (ID)
);
```

# Example:

Table with the entries:

Customers

| ID | Name | Age | Address | Salary |
|---|---|---|---|---|
| 1 | Agnes | 20 | New York | 2000.00 |
| 2 | Tweety | 35 | Washington | 4000.50 |
| 3 | Winnie | 30 | London | 8000.00 |
| 4 | Tom | 50 | India | 10000.40 |

# Example:

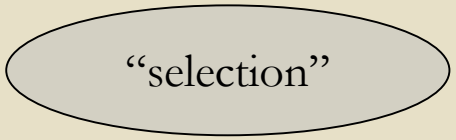
*details of customers whose Salary is more than 5000*

Customers

| ID | Name | Age | Address | Salary |
|---|---|---|---|---|
| 1 | Agnes | 20 | New York | 2000.00 |
| 2 | Tweety | 35 | Washington | 4000.50 |
| 3 | Winnie | 30 | London | 8000.00 |
| 4 | Tom | 50 | India | 10000.40 |

```
SELECT   *
FROM     Customers
WHERE    salary>5000.00
```

| ID | Name | Age | Address | Salary |
|---|---|---|---|---|
| 3 | Winnie | 30 | London | 8000.00 |
| 4 | Tom | 50 | India | 10000.40 |



# Example:

*Name, Address of customers whose Salary is more than 5000*

Customers

| ID | Name | Age | Address | Salary |
|---|---|---|---|---|
| 1 | Agnes | 20 | New York | 2000.00 |
| 2 | Tweety | 35 | Washington | 4000.50 |
| 3 | Winnie | 30 | London | 8000.00 |
| 4 | Tom | 50 | India | 10000.40 |

```
SELECT   Name, Address
FROM     Customers
WHERE    salary>5000.00
```

| Name | Address |
|---|---|
| Winnie | London |
| Tom | India |

"selection" and "projection"

# Example: *name of the customer whose OID is 100*

Customers

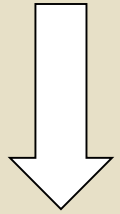
| ID | Name | Age | Address | Salary |
|---|---|---|---|---|
| 1 | Agnes | 20 | New York | 2000.00 |
| 2 | Tweety | 35 | Washington | 4000.50 |
| 3 | Winnie | 30 | London | 8000.00 |
| 4 | Tom | 50 | India | 10000.40 |

Orders

| OID | Customer ID | Amount |
|---|---|---|
| 102 | 3 | 3000 |
| 100 | 2 | 1500 |
| 101 | 4 | 1000 |

```
SELECT   Name
FROM     Customers, Orders
WHERE    Customers.ID=Orders.Customer ID
                AND OID=100
```

"Join"



| Name |
|---|
| Winnie |

# THANK YOU☺