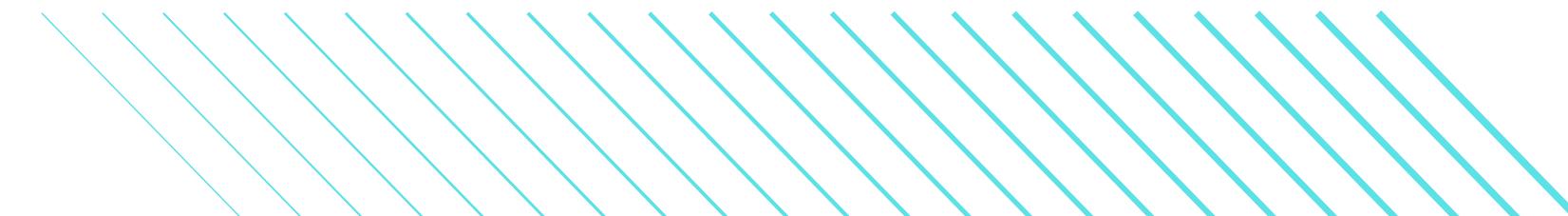
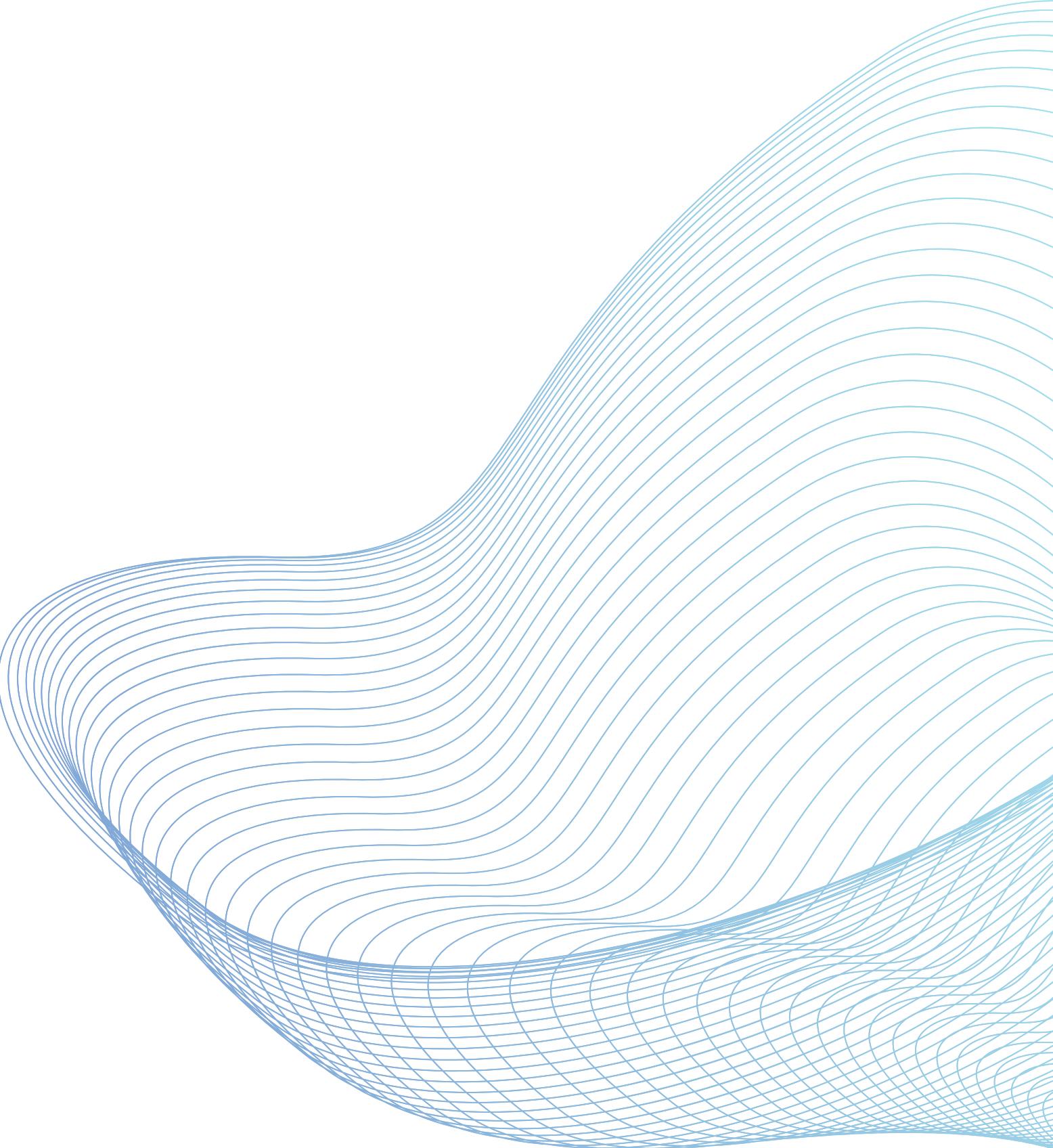


IT SPECIALIST: **DATABASE**

Data Analyst - Group 4E



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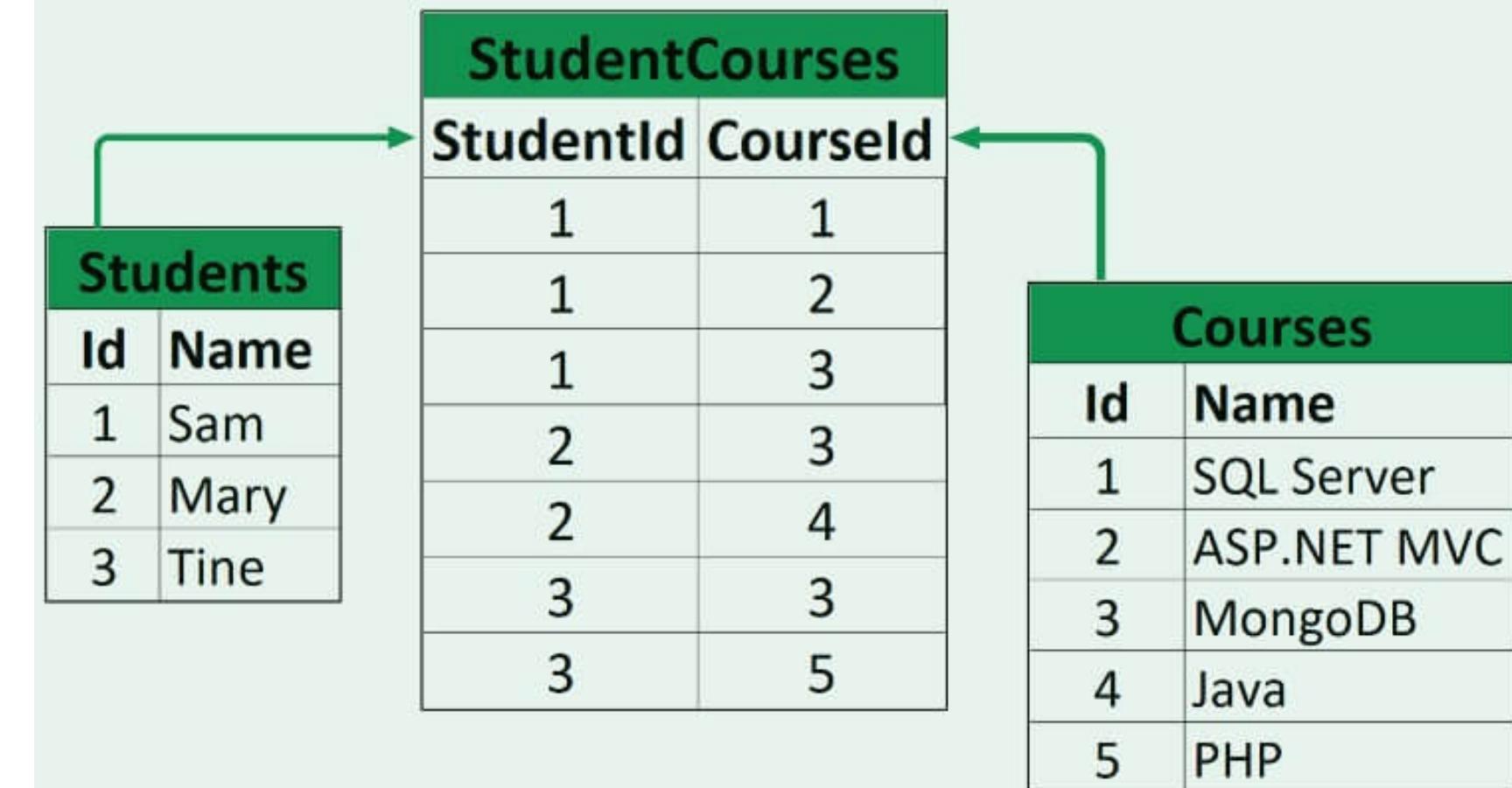
WHAT IS DATABASE?

A database is an environment for a collection of structured data stored in tabular form that can be easily accessed, managed and updated. If the tables in the database are a file, then the database is a folder that stores the various tables in a database



RELATIONAL DATABASE

Relational Database is a type of database system that organizes and stores data in a structured manner using tables with predefined relationships between them.



WHAT IS SQL?

Structured Query Language (SQL) is a programming language for storing and processing information in relational databases. In data processing, SQL has the capability to modify, manipulate, delete and manage data.



MySQL is an open-source **Relational Database Management System (RDBMS)** that enables users to create, manage, and access data through tables connected by relationships or connections.

DBeaver is a SQL client software application and database administration tool, including **MySQL**.

PRIMARY KEY

A unique value within a database that is used to identify a specific row in a table.

FOREIGN KEY

A value in a database that is used to link rows in one table with rows in another table.

Column Name	#	Data Type	Not Null	Auto Increment	Key
payment_id	1	smallint unsigned	[v]	[v]	PRI
customer_id	2	smallint unsigned	[v]	[]	MUL
staff_id	3	tinyint unsigned	[v]	[]	MUL
rental_id	4	int	[]	[]	MUL
amount	5	decimal(5,2)	[v]	[]	
payment_d...	6	datetime	[v]	[]	
last_update	7	timestamp	[]	[]	

payment_id	customer_id	staff_id	rental_id	amount	payment_date	last_update
1	1	1	76	2.99	2005-05-25 11:30:37	2006-02-15 22:12:30
2	1	1	573	0.99	2005-05-28 10:35:23	2006-02-15 22:12:30
3	1	1	1,185	5.99	2005-06-15 00:54:12	2006-02-15 22:12:30
4	1	2	1,422	0.99	2005-06-15 18:02:53	2006-02-15 22:12:30
5	1	2	1,476	9.99	2005-06-15 21:08:46	2006-02-15 22:12:30
6	1	1	1,725	4.99	2005-06-16 15:18:57	2006-02-15 22:12:30
7	1	1	2,308	4.99	2005-06-18 08:41:48	2006-02-15 22:12:30
8	1	2	2,363	0.99	2005-06-18 13:33:59	2006-02-15 22:12:30
9	1	1	3,284	3.99	2005-06-21 06:24:45	2006-02-15 22:12:30

Example:

- payment_id = Primary Key
- staff_id = Foreign Key

DATA TYPE SQL

Structured Query Language (SQL) is a programming language for storing and processing information in relational databases. In data processing, SQL has the capability to modify, manipulate, delete and manage data.

- **Number**

Data in the form of size or numbers.

- **String**

Data in the form of letters or writing.

- **Boolean**

Data in the form of boolean values (True or False).

- **Datetime**

Data used to represent dates and times.

DATA TYPE NUMBER

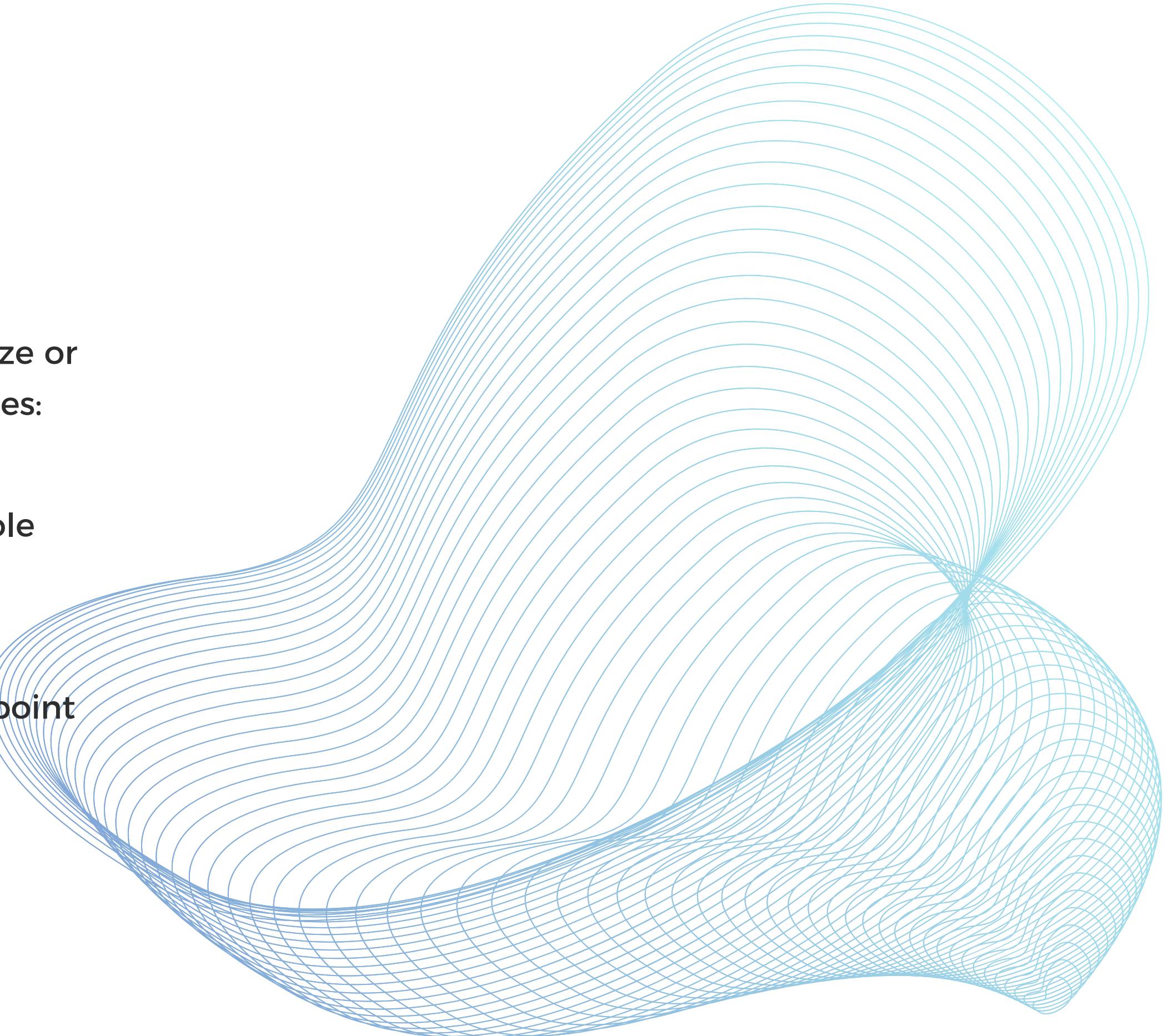
The number data type is data in the form of a size or number. There are two types of number data types:

- **Integer**

Integer is an integral data type used to store whole numbers.

- **Floating**

Float has the ability to store decimal or floating-point numbers.



DATA TYPE STRING

String data type is data stored in the form of letters or a text.

- **Character (Char)**
- **Variable Character (Varchar)**
- **Text**
- **Enumerated (Enum)**

DATA TYPE DATETIME

Data used to represent dates and times.

- **Date**

The date data type is used to store only dates without the time. The default format of a date value is **YYYY-MM-DD**

- **Time**

The Time type is used for values with a date part but no time part
The default format of a date value is **HH:MM:SS**

- **Datetime**

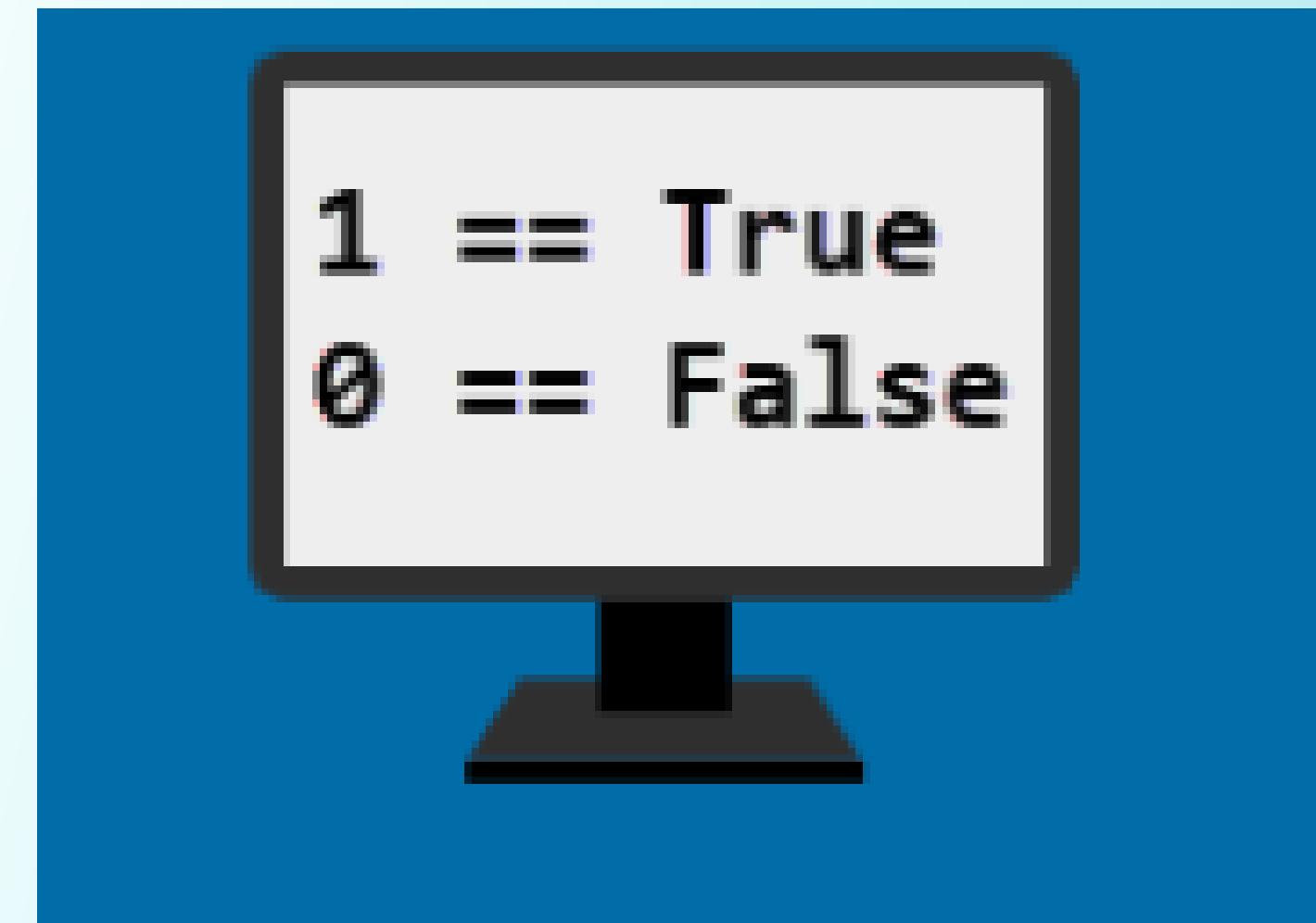
The datetime data type is used to store the date and time value.
YYYY-MM-DD
HH:MM:SS

- **Timestamp**

The timestamp data type is used for values that contain both date and time parts.

DATA TYPE BOOLEAN

A boolean is a data type with two possible values: true (1) or false (0). The purpose of boolean values is to represent binary test conditions and decisions in a program.



TYPE OF SQL QUERY

1

DDL

Used to manage the database structure, such as creating, modifying, and deleting tables, indexes, and other objects. Examples of DDL commands include CREATE, ALTER, and DROP.

2

DML

DQL is used to retrieve data from the database. The primary DQL command is SELECT, which allows to retrieve data from one or more tables, apply conditions, and perform sorting and grouping.

3

DQL

Used to retrieve data from the database. The primary DQL command is SELECT, which allows you to retrieve data from one or more tables, apply conditions, and perform sorting and grouping.

4

DCL

Used to manage access rights and permissions in the database. Examples of DCL commands are GRANT (grant access rights) and REVOKE (revoke access rights).

SQL DDL

Data Definition Language is a collection of MySQL commands used to create, modify, and delete database structures and objects.

1 Create

Create database objects like tables, indexes, and views.

```
create table barang (
    kode int,
    nama varchar(100),
    harga int,
    jumlah int
);
```

2 Alter

Modify existing database objects, such as adding or deleting columns in a table.

```
-- Query Alter Table - ADD
alter table barang
add column deskripsi text;
```

```
-- Query Alter Table - DROP
alter table barang
drop column deskripsi;
```

```
-- Query Alter Table - RENAME
alter table barang
rename column kode to id;
```

```
-- Query Alter Table - MODIFY
alter table barang
modify deskripsi text first;
```

```
alter table barang
modify deskripsi text after nama_barang;
```

3 Drop

Delete database objects like tables, indexes, or views.

```
drop table barang;
```

SQL DML

Data Manipulation Language is a collection of MySQL commands used to manipulate and manage data stored within the database.

1 Insert

Adding new data to the table.

```
insert into barang(id, nama_barang,deskripsi,harga,jumlah)
values(2,'Indomie','Indomie Soto Kari',3000,1),
      (3,'Sarimi','Sarimi Soto Koya',3000,2),
      (4,'Mie Sedaap','Mie Sedaap Goreng',3000,1);
```

2 Update

Searches for patterns in a column.

```
update barang
set deskripsi = 'Mie sedaap goreng'
where id = 4;
```

3 Delete

Remove data from a table.

```
delete
from barang
where id = 5;
```

4 Auto-Increment

Creates a unique number automatically and sequentially for each new record inserted into the database table.

```
create table admin
(
    id int auto_increment,
    first_name text,
    last_name text,
    primary key (id)
);
```

SQL DQL

Data Manipulation Language is a collection of MySQL commands used to manipulate and manage data stored within the database.

1 Select

Retrieve data from one or more tables.

```
-- * untuk mengambil seluruh table  
select *  
from barang;
```

```
-- Mengambil beberapa kolom  
select id, harga  
from barang;
```

2 Order By

Specifies the order in which the retrieved data should be sorted (ASC/DESC)

```
select film_id, title, release_year, rental_rate  
from film  
order by rental_rate desc;
```

```
select film_id, title, release_year, rental_rate  
from film  
order by rental_rate asc;
```

3 Null Operator

Used to check whether a column contains a NULL value or not.

```
select address_id, address, address2  
from address  
where address2 is null;
```

SQL DQL

4

WHERE OPERATOR

1

Equal To (=)

```
select first_name, last_name  
from admin  
where first_name = 'Joko';
```

2

Not Equal To (!= or <>)

```
select first_name, last_name  
from admin  
where first_name != 'Joko';
```

3

Less Than (<)

```
select nama_barang, harga, jumlah  
from barang  
where harga < 3500;
```

4

Greater Than (>)

```
select nama_barang, harga, jumlah  
from barang  
where harga > 3500;
```

5

Less Than or Equal To (<=)

```
select nama_barang, harga, jumlah  
from barang  
where harga <= 3000;
```

6

Greater Than or Equal To (>=)

```
select nama_barang, harga, jumlah  
from barang  
where harga >= 3000;
```

5 AND and OR Operator

1

AND

Controls the number of rows in the query result.

```
select nama_barang, harga, jumlah  
from barang  
where   harga >= 3000  
        and nama_barang = 'Sarimi';
```

2

OR

Displaying data when one of the conditions separated by OR is TRUE.

```
select nama_barang, harga, jumlah  
from barang  
where   harga >= 3500  
        or jumlah = 2;
```

SQL DQL

Data Manipulation Language is a collection of MySQL commands used to manipulate and manage data stored within the database.

6 Limit Clause

Controls the number of rows in the query result.

```
select actor_id, first_name, last_name  
from actor  
where actor_id > 10  
order by first_name asc  
limit 20;
```

7 Like Operator

Searches for patterns in a column.

```
-- Containing a Specific Word or Letter:  
select actor_id ,first_name  
from actor  
where first_name like ('%DAN%');  
  
-- Starting with a Specific Letter:  
select actor_id ,first_name  
from actor  
where first_name like ('P%');  
  
-- Ending with a Specific Letter:  
select actor_id ,first_name  
from actor  
where first_name like ('%A');
```

```
-- Excluding a Specific Word or Letter:  
select actor_id ,first_name  
from actor  
where first_name not like ('%DAN%');
```

8 Between Operator

Retrieves values within a range.

```
select actor_id, first_name, last_name  
from actor  
where actor_id between 10 and 20;
```

9 In Operator

Matches values against a list of values.

```
select actor_id, first_name, last_name  
from actor  
where actor_id in (10, 15, 20);
```

THANK YOU!

