Constraints

Constraints are rules or conditions that are imposed on the data in a table to maintain data integrity and consistency.

1. UNIQUE Constraint

Ensures that all values in a column or a combination of columns are unique.
Prevents duplicate values from being inserted.

Example:

```
CREATE TABLE users (
    user_id INT PRIMARY KEY,
    email VARCHAR(100) UNIQUE
);
```

2. NOT NULL Constraint

Specifies that a column cannot have a NULL value.
Ensures that a value is provided for the column when inserting or updating data.

Example:

```
CREATE TABLE orders (
    order_id INT PRIMARY KEY,
    customer_name VARCHAR(50) NOT NULL
);
```

3. CHECK Constraint

Defines a condition or a range of values that are acceptable for a column.

Ensures that the data inserted or updated satisfies the specified condition.

Example:

```
CREATE TABLE products (
   product_id INT PRIMARY KEY,
   price DECIMAL(10, 2) CHECK (price > 0)
);
```

4. DEFAULT Constraint

Specifies a default value for a column when no value is provided during insertion.

Example:

```
CREATE TABLE logs (
   log_id INT PRIMARY KEY,
   log_date DATE DEFAULT CURRENT_DATE()
);
```

5. AUTO_INCREMENT

Automatically generates a unique value for a column when a new record is inserted.

Commonly used for primary key columns to ensure uniqueness.

Example:

```
CREATE TABLE orders (
   order_id INT PRIMARY KEY AUTO_INCREMENT,
```

```
    customer_name VARCHAR(50)
);
```