Installing and creating database

1. Installation Steps Summary

- Downloaded MySQL Community Server from the official MySQL website and selected the Developer Default setup.
- Installed MySQL Server, MySQL Workbench, and required components.
- Configured the server by setting a root password during installation.
- Opened MySQL Workbench, created a new connection, and logged in using the root password.
- Verified successful installation by running the query:

2. SQL Commands Used

- **Create Database**

A database is a structured collection of data. In MySQL, `CREATE DATABASE` is used to create a new database, and `USE` selects it so that all further tables and queries will be created inside it.

```sql
-- Create Database
CREATE DATABASE ecomm_db;
USE ecomm_db;
```

- **Create Tables**

Tables store data in rows and columns. Each table should represent one entity (Ex: customers, products).

We use `CREATE TABLE` to define columns, data types, and primary keys.

Primary keys uniquely identify each record in a table.

```sql
-- Create Products table
CREATE TABLE products (
    product_id INT PRIMARY KEY,
    product_name VARCHAR(100),
    category VARCHAR(50),
    price INT
);
-- Create Customers table
CREATE TABLE customers (
    customer_id INT PRIMARY KEY,
    customer_name VARCHAR(100),
    city VARCHAR(50)
);
-- Create Orders table
CREATE TABLE orders (
    order_id INT PRIMARY KEY,
    customer_id INT,
    order_date DATE,
    FOREIGN KEY (customer_id) REFERENCES customers(customer_id)
);
-- Create Order Items table
CREATE TABLE order_items (
    order_item_id INT PRIMARY KEY,
    order_id INT,
    product_id INT,
    quantity INT,
    FOREIGN KEY (order_id) REFERENCES orders(order_id),
    FOREIGN KEY (product_id) REFERENCES products(product_id)
);
```

- **Insert Data**

The `INSERT INTO` command is used to add new records into a table.

Values must match the order of columns, and you can insert multiple rows at once.

```sql
-- Insert product data
INSERT INTO products VALUES
(1, 'Smartphone', 'Electronics', 15000),
(2, 'T-shirt', 'Fashion', 499),
(3, 'Washing Machine', 'Appliances', 22000);

-- Insert customer data
INSERT INTO customers VALUES
(101, 'Anish Anand', 'Bangalore'),
(102, 'Riya Sharma', 'Mumbai'),
(103, 'Karan Singh', 'Delhi');

-- Insert order data
INSERT INTO orders VALUES
(5001, 101, '2024-01-10'),
(5002, 102, '2024-01-12');

-- Insert order items data
INSERT INTO order_items VALUES
(1, 5001, 1, 1),
(2, 5001, 2, 2),
(3, 5002, 3, 1);
```

- **View Data**

The SELECT command is used to view and retrieve data from tables.

SELECT * shows all columns and all rows.

	product_...	product_name	category	price
	1	Smartphone	Electronics	15000
	2	T-shirt	Fashion	499
	3	Washing Machine	Appliances	22000
	NULL	NULL	NULL	NULL

	customer_id	customer_name	city
	101	Anish Anand	Bangalore
	102	Riya Sharma	Mumbai
	103	Karan Singh	Delhi
	NULL	NULL	NULL

	order_id	customer_id	order_date
	5001	101	2024-01-10
	5002	102	2024-01-12
	NULL	NULL	NULL

	order_item_...	order_id	product_...	quantity
	1	5001	1	1
	2	5001	2	2
	3	5002	3	1
	NULL	NULL	NULL	NULL

3. Benefits of MySQL Workbench

- **User-Friendly Interface:** MySQL Workbench provides an easy graphical interface to create databases, write queries, and manage tables without needing command-line knowledge.
- **Visual Database Design:** It allows visual modeling of tables, relationships, and schemas using diagrams (ER models).
- **SQL Development Tools:** The built-in SQL editor supports syntax highlighting, auto-completion, and quick debugging.
- **Server Administration:** You can easily manage users, configure servers, monitor performance, and take backups.
- **Convenient Data Export/Import:** It supports simple tools for exporting data, importing CSV files, and migrating databases.