

# Database.

Database management system MySQL.

# Learning objectives

- describe relational databases and their use
- use the terms attribute, entity, index record, table and tuple to describe databases

# Success criteria

- knows and understands the purpose of using the database
- can provide examples of the database
- knows the types of the database
- can describe a relational, network, and hierarchical database
- knows the main elements of the database
- knows and understands the purpose of using MySQL

**A database** is a collection of information that is organized so that it can be easily accessed, managed and updated.

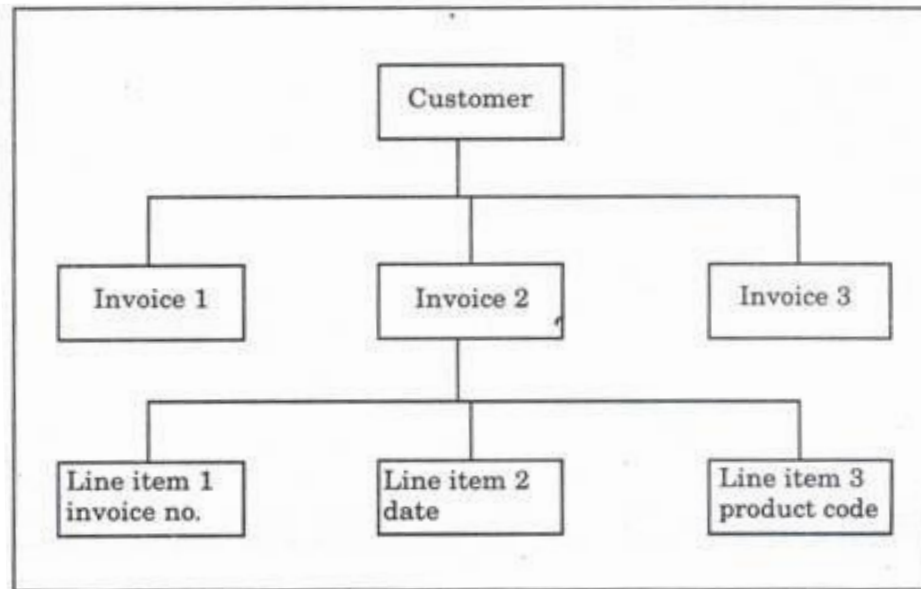
Types of the databases: **network, hierarchical and relational.**

**Database Management System (DBMS)** software that allows users to create, maintain, and query your data in the related tables. (Oracle, DB2, MySQL).

# Hierarchical model

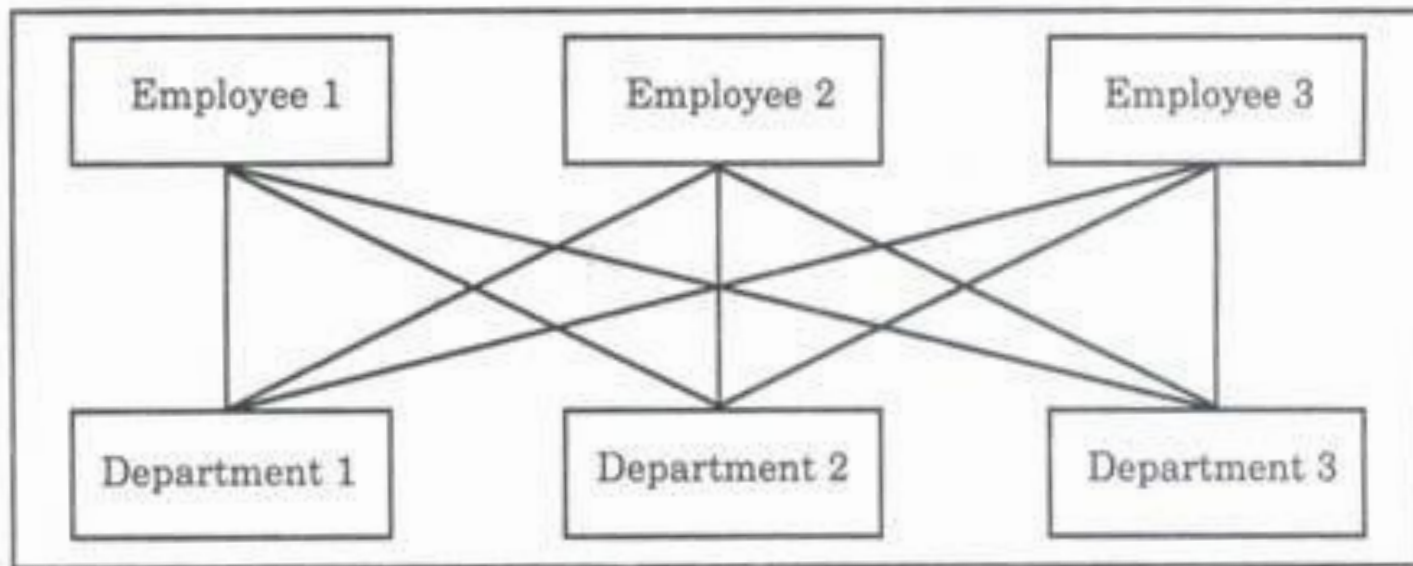
This model presents data to users in a hierarchy of data elements that can be represented in a sort of inverted tree.

In a sales order processing system, a customer may have many invoices raised to him and each invoice may have different data elements. Thus, the root level of data is customer, the second level is invoice and the last level is line items such as invoice number, date, product, quantity, etc.



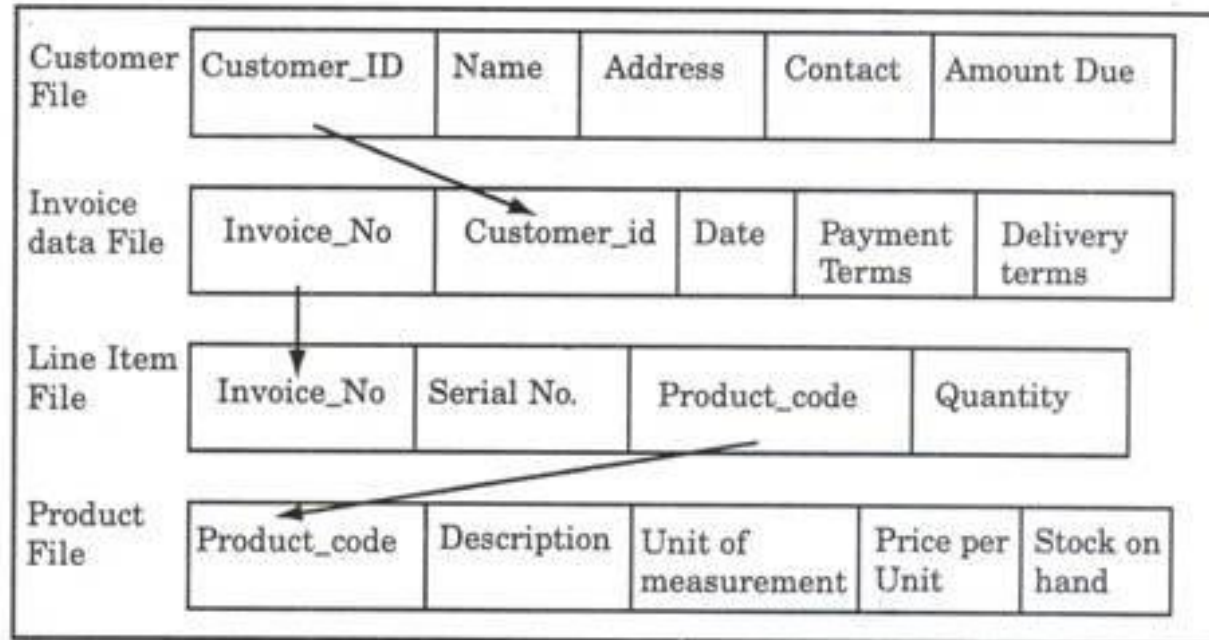
# Network model:

In the network model of database, there are no levels and a record can have any number of owners and also can have ownership of several records.



# Relational model:

The most recent and popular model of database design is the relational database model. In relational database, data is organized into tables.



# Main database objects

- **Tables** – Data collection objects
- **Queries** – Questions of your data
- **Forms** – Predefined format to display or enter data
- **Reports** – Printable version of database information



# Main objects

- **Field** (attribute): a single piece of information. Could be a name, or a number.
- **Record** (Row): a collection of related fields.

A number of pieces of information that relate to the same object. Records on an employee, their name, address, social security number, phone number, etc. This would be the employee's record.

- **Table** (entity): a collection of related records. If you put all the employee records together, you have a table of employees.

**MySQL** is an open source relational database management system (RDBMS) based on Structured Query Language (SQL).

## Basic MySQL Operations

- Create table
- Insert records
- Load data
- Update records
- Delete records
- Modify table
- Join table
- Optimize table

**SQL** (Structured Query Language) is a standardized programming language used for managing relational databases and performing various operations on the data in them.

# SQL Commands:

**SQL commands** are instructions, coded into SQL statements, which are used to communicate with the database to perform specific tasks, work, functions and queries with data.

SQL commands are grouped into four major categories depending on their functionality:

**Data Definition Language (DDL)**

**Data Manipulation Language (DML)**

**Transaction Control Language (TCL)**

**Data Control Language (DCL)**

- **Data Definition Language (DDL)** - These SQL commands are used for creating, modifying, and dropping the structure of database objects. The commands are CREATE, ALTER, DROP, RENAME, and TRUNCATE.
- **Data Manipulation Language (DML)** - These SQL commands are used for storing, retrieving, modifying, and deleting data. These Data Manipulation Language commands are: SELECT, INSERT, UPDATE, and DELETE.

- **Transaction Control Language (TCL)** - These SQL commands are used for managing changes affecting the data. These commands are COMMIT, ROLLBACK, and SAVEPOINT.
- **Data Control Language (DCL)** - These SQL commands are used for providing security to database objects. These commands are GRANT and REVOKE.

## **SQL Create DataBase**

```
CREATE DATABASE database_name
```

## **SQL Alter DataBase**

The ALTER DATABASE Statement is used to change characteristics of a database.

```
ALTER DATABASE database_name  
[COLLATE collation_name ]
```

## **SQL Drop DataBase**

The DROP DATABASE Statement is used to drop or delete a database. Dropping of the database will drop all database objects (tables, views, procedures etc.) inside it.

```
DROP DATABASE database_name;
```

## SQL CREATE TABLE

```
CREATE TABLE table_name  
(column_name1 datatype,  
column_name2 datatype,  
... column_nameN datatype  
);
```

```
CREATE TABLE employee  
( id number(5),  
name char(20),  
dept char(10),  
age number(2),  
salary number(10),  
location char(10)  
);
```

## SQL ALTER TABLE Statement

The SQL ALTER TABLE command is used to modify the definition (structure) of a table by modifying the definition of its columns. The ALTER command is used to perform the following functions.

- 1) Add, drop, modify table columns
- 2) Add and drop constraints
- 3) Enable and Disable constraints

Syntax to add a column

```
ALTER TABLE table_name ADD  
column_name datatype;
```

Syntax to drop a column

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

Syntax to modify a column

```
ALTER TABLE table_name MODIFY column_name datatype;
```

Syntax to rename a table

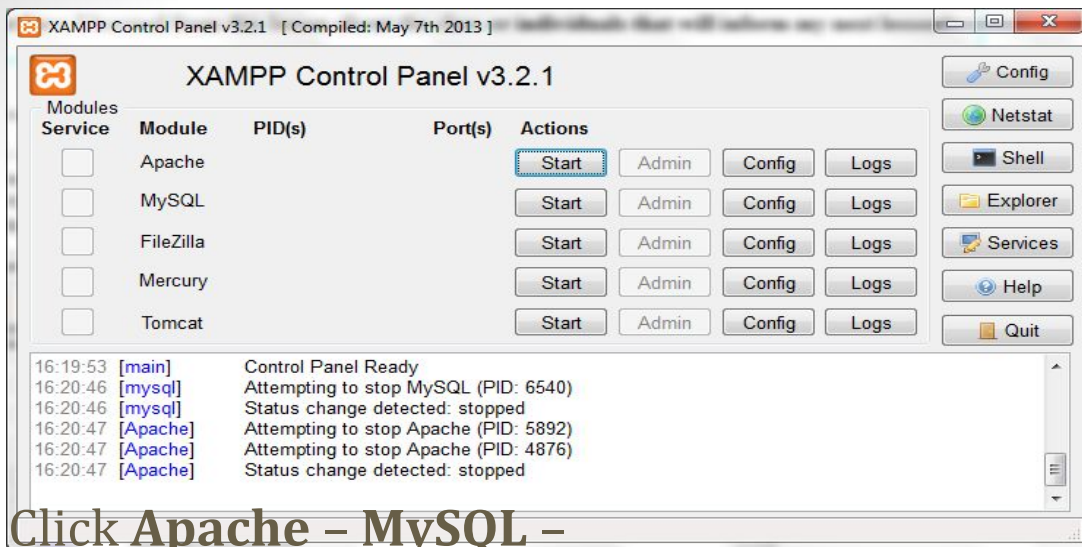
```
RENAME old_table_name To  
new_table_name;
```



# Local server XAMPP

**XAMPP** is a free and open source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MySQL(M), database, and interpreters for scripts written in the PHP and Perl programming languages.

XAMPP stands for Cross-Platform, XMP (X), Apache (A), MySQL(M), PHP (P) and Perl (P).

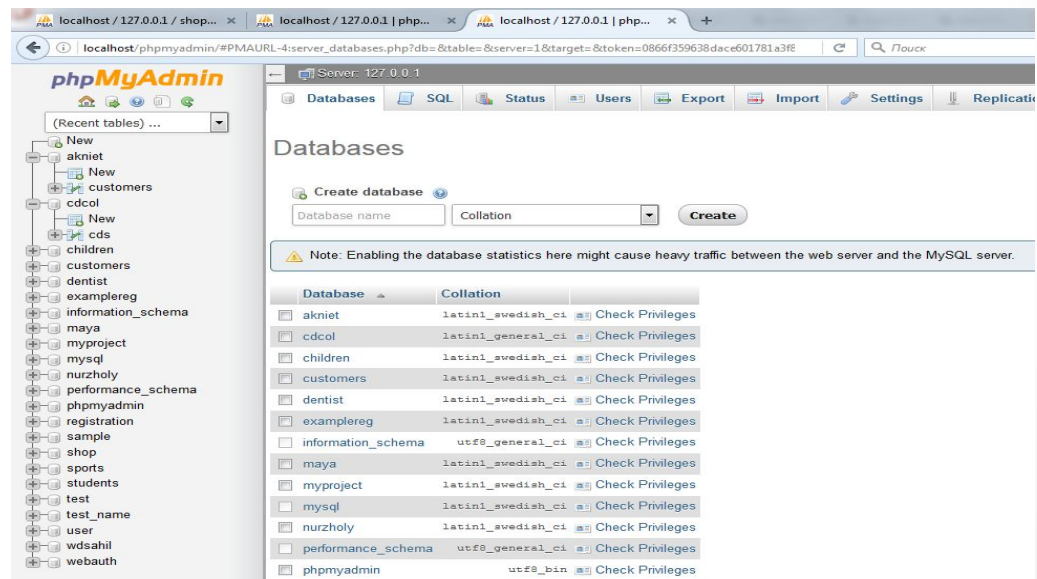


Click Apache – MySQL –

Start.

Where **MYSQL** click  
Admin.

You can see next localhost  
site



<http://beginner-sql-tutorial.com/sql-commands.htm>