

Database

Lecture 2





Contents

- DB vs DBMS
- Introduction to MySQL
- Preparing Environment for MySQL
- Introduction to PhpMyAdmin

Why DBMS

- Development (Frontend, Backend, Database)
- Database Administrator
- Data Scientist
- Data Science (Research)
- Freelancing (Data Entry Operator, DB Administrator)

DATABASE MANAGEMENT SYSTEM (DBMS)

Why Use a DBMS?



Course Details

- Course Title: Database (**MySQL/** Oracle/ SQL Server)
- Durations:
 - 80 hours (25+ Lectures)
 - 10 hours Mentorship session (Industrial Resources)
- Assessment
 - Class attendance: 10%
 - Quiz and assignment: 10%
 - Assignment: 10%
 - Mid-term assessment: 20%
 - Final Evaluation: 25%
 - Project: 25%
- Class Routine
 - Friday (3.00pm-6.00pm): Networking Lab (NL)
 - Sunday (3.00pm-6.00pm): Networking Lab (NL)
 - Tuesday (3.00pm-6.00pm): Networking Lab (NL)

Skills to Achieve



- Understanding of DBMS
- Designing Database
- Implementing Database
- Database Operations
- MySQL
- SQL (Structured Query Language)
- ***Data Science with SQL***

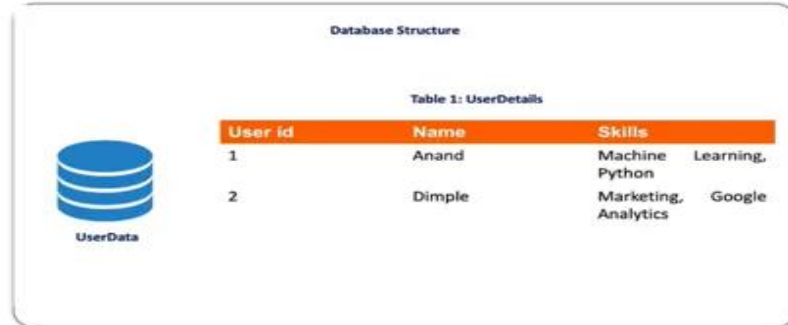


Prerequisite to Develop

Basic Computer Skills

Programming Skills (Not Mandatory)

How data is stored in database



Relational Database

```
{
  "id": 1,
  "name": "Anand",
  "skills": ["Machine Learning", "Python"]
},
{
  "id": 2,
  "name": "Dimple",
  "skills": ["Marketing", "Google Analytics"],
  "education": {
    "Graduation": {
      "School": "IIT Delhi",
      "CGPA": 9.8
    }
  }
}
```

No-SQL Database

DB VS DBMS



- **Data** is a collection of facts and figures that can be processed to produce information.
 - **E.g.** recordable facts, text, numbers, images
 - **Database** is a collection of related data
 - **E.g.** TDB, MDB, GIS
 - A **DBMS** is a **software** that allows creation, definition and manipulation of database
 - It is a **tool** used to perform any kind of operation on data in database
 - Provides protection and security to database
- Example: MySQL, SQL Server, Oracle, MongoDB, PostgreSQL

Data is stored in database in table format

Examples of Database



ORACLE



Uses of DBMS



- To develop software applications in less time
- Data independence and efficient use of data
- For uniform data administration
- For data integrity and security
- For concurrent access of data and data recovery from crashes
- To use user friendly declarative query language

Database Application Examples

• Airlines, Telecom , Universities/Education, Banking, Industry, Online Shopping

• **Enterprise Information**

–Sales: customers, products, purchases

–Accounting: payments, receipts, assets

–Human Resources: Information about employees, salaries, payroll taxes.



Database Application Examples

- **Manufacturing**: management of production, inventory, orders, supply chain.

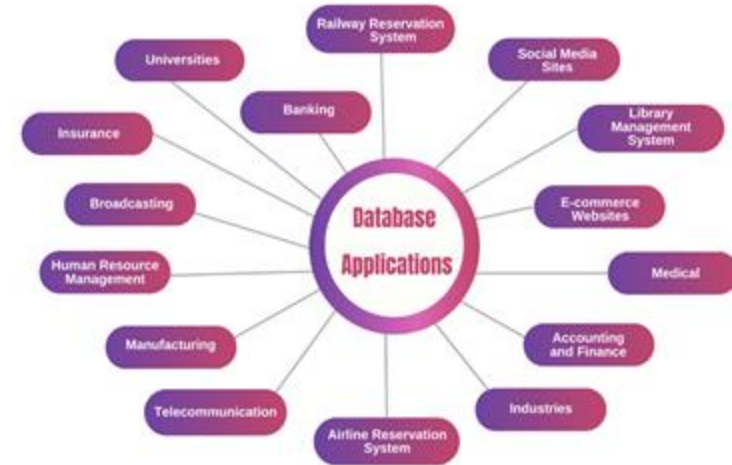
- **Banking and finance**

- customer information, accounts, loans, and banking transactions.

- Credit card transactions

- Finance: sales and purchases of financial instruments (e.g., stocks and bonds; storing real-time market data

- Universities**: registration, result Processing





MySQL

- MySQL is a relational database management system
- MySQL is open-source
- MySQL is free
- MySQL is ideal for both small and large applications
- MySQL is very fast, reliable, scalable, and easy to use
- MySQL is cross-platform
- MySQL is compliant with the ANSI SQL standard
- Users of MySQL: Facebook, Twitter, Youtube, Uber, Github, and CMS like Wordpress, Drupal, Joomla, and large number of web developers around the world.

Preparing Environment for MySQL



- Install XAMPP and Notepad++
- Note:
 - **Mysql** : Database Management System
 - **XAMPP**: Software which provides environment for MySQL
 - **Apache and MySql Server**: Xampp provides these server

How to Launch phpmyadmin



- Launch *Xampp Control Panel*
- Start *Apache* and *Mysql* server
- Click *admin* for mysql or type *localhost/phpmyadmin* in any browser



XAMPP Control Panel v3.2.4

Modules

Service	Module	PID(s)	Port(s)	Actions			
	Apache	7824 5068	80, 443	Stop	Admin	Config	Logs
	MySQL	5744	3306	Stop	Admin	Config	Logs
	FileZilla			Start	Admin	Config	Logs
	Mercury			Start	Admin	Config	Logs
	Tomcat			Start	Admin	Config	Logs

Config

Netstat

Shell

Explorer

Services

Help

Quit

9:25:34 PM [main] All prerequisites found
9:25:34 PM [main] Initializing Modules
9:25:34 PM [main] Starting Check-Timer
9:25:34 PM [main] Control Panel Ready
10:14:40 PM [Apache] Attempting to start Apache app...
10:14:41 PM [Apache] Status change detected: running
10:14:44 PM [mysql] Attempting to start MySQL app...
10:14:46 PM [mysql] Status change detected: running

General settings

Server connection collation: utf8mb4_unicode_ci

[More settings](#)

Appearance settings

Language: English (United Kingdom)

Theme: pmahomme [View all](#)

Database server

- Server: Localhost via UNIX socket
- Server type: MariaDB
- Server connection: SSL is not being used
- Server version: 10.4.28-MariaDB - Source distribution
- Protocol version: 10
- User: root@localhost
- Server charset: UTF-8 Unicode (utf8mb4)

Web server

- Apache/2.4.56 (Unix) OpenSSL/1.1.1t PHP/8.2.4 mod_perl/2.0.12 Perl/v5.34.1
- Database client version: libmysql - mysqlnd 8.2.4
- PHP extension: mysqli curl mbstring
- PHP version: 8.2.4

phpMyAdmin

- Version information: 5.2.1 (up to date)
- [Documentation](#)
- [Official Homepage](#)
- [Contribute](#)
- [Get support](#)
- [List of changes](#)
- [Licence](#)



Table: students

ID	Name	Email	Date Joined
2001	Meena	meena@gmail.com	02 – January -2024
2002	Raju	raju@gmail.com	05 – December -2023
2003	Rohan	rohan@gmail.com	02 – January -2024
2004	Rita	rita@gmail.com	02 – January -2024
2005	Himu	himu@gmail.com	02 – January -2024