DBMS LAB

1. Write the Applications of Database?

Databases play a crucial role in various industries and applications, enabling efficient data storage, retrieval, and manipulation.

* **E-commerce**: Online stores use databases to manage product listings, customer profiles, order histories, and inventory levels. For instance, Amazon uses a database to store information about products, customer accounts, and order details.
* **Banking and Finance**: Financial institutions use databases to store customer account information, transaction histories, and loan records. A bank's database manages customer balances and facilitates secure transactions, such as ATM withdrawals and online transfers.
* **Healthcare**: Electronic Health Records (EHR) systems use databases to store patient data, including medical history, lab results, and treatment plans. Hospitals and clinics rely on databases to ensure accurate and accessible patient information.
* **Social Media**: Social networking platforms utilize databases to store user profiles, posts, comments, and connections. Facebook's database, for example, stores vast amounts of user-generated content and relationships between users.
* **Education**: Educational institutions use databases to manage student records, course schedules, grades, and attendance. A university's student information system relies on databases to keep track of academic information.

1. Identify the names of existing databases and write which companies are using those databases ?

• **MySQL:**

1. Companies: Facebook, Airbnb, Twitter

2. Description: MySQL is an open-source relational database management system. Facebook, for instance, initially used MySQL extensively for its backend data storage.

• **Oracle Database:**

1. Companies: Amazon, Apple, Walmart

2. Description: Oracle Database is a powerful and widely used relational database management system. Large enterprises like Amazon and Apple use Oracle databases to manage their vast amounts of data.

• **MongoDB:**

1. Companies: The New York Times, eBay, Adobe

2. Description: MongoDB is a popular NoSQL database used for handling unstructured or semi-structured data. MongoDB's flexible data model is suitable for applications like content management (e.g., The New York Times).

• **SQLite:**

1. Companies: Apple, Google, Adobe

2. Description: SQLite is a lightweight and self-contained relational database engine. It's used in various applications, including web browsers (Google Chrome) and operating systems (iOS, macOS).

• **PostgreSQL:**

1. Companies: Apple, Instagram, Spotify

2. Description: PostgreSQL is a powerful open-source relational database management system. Instagram employs PostgreSQL for managing user-generated content and metadata

1. Purpose of those existing databases (Why those databases are developed ?)

• **MySQL:**

Purpose: MySQL is a widely used open-source relational database management system. It was developed to provide an efficient and scalable solution for storing structured data, making it suitable for a wide range of applications such as web development, content management systems, and online applications.

• **Oracle Database:**

Purpose: Oracle Database is a comprehensive and feature-rich relational database management system. It was designed to handle large amounts of data and complex transactions for enterprise-level applications, offering high availability, security, and scalability.

• **MongoDB:**

Purpose: MongoDB is a NoSQL database designed to handle unstructured or semi-structured data. It was developed to address the needs of modern applications that require flexible and scalable data storage, making it suitable for applications with evolving data schemas.

• **SQLite:**

Purpose: SQLite is a lightweight, embedded relational database engine. It was developed to provide a self-contained, serverless database solution that can be embedded within applications and devices, making it suitable for local data storage in desktop and mobile applications.

• **PostgreSQL:**

Purpose: PostgreSQL is an open-source relational database system known for its extensibility and advanced features. It was developed to provide a robust and flexible database platform for various types of applications, ranging from small projects to large enterprise systems.

4.MySQL, Oracle, Mongo DB, Sybase developed by purpose of the database and its functionalities ?

• **MySQL:**

• Purpose: MySQL is an open-source relational database management system. It was originally developed to provide a fast, reliable, and scalable solution for managing structured data, particularly for web applications.

• Unique Functionalities:

1. High Performance: MySQL is known for its high-speed data processing and efficient query execution, making it well-suited for applications requiring quick response times.

2. Replication and Clustering: MySQL supports replication and clustering to enhance availability, scalability, and data redundancy.

• **Oracle Database:**

• Purpose: Oracle Database is a robust relational database management system. It was developed to handle large volumes of data and complex transactions for enterprise-level applications.

• Unique Functionalities:

1. Scalability and Performance: Oracle Database offers features like partitioning, indexing, and query optimization to handle massive amounts of data efficiently.

2. Advanced Security: Oracle provides a range of security features, including encryption, access controls, and auditing capabilities to ensure data protection.

• **MongoDB:**

• Purpose: MongoDB is a NoSQL database designed for flexible and scalable data storage, particularly for applications with dynamic and unstructured data.

• Unique Functionalities:

1. Document-Oriented: MongoDB stores data in JSON-like documents, allowing for flexible and schema-less data modeling.

2. Dynamic Schema: MongoDB's schema-free design allows developers to change the data structure without downtime or migrations.

• **Sybase:**

• Purpose: Sybase is a relational database management system that was initially developed to provide efficient data storage and retrieval for business applications.

• Unique Functionalities:

1. Mobile and Embedded Databases: Sybase includes offerings like SQL Anywhere, designed for mobile and embedded applications with limited resources.

2. Cross-Platform Support: Sybase provides support for various operating systems, making it adaptable to different environments.

5.Installation of MySQL, Write down the steps in the document ?

* **Download MySQL Installer:**

Visit the official MySQL website.

Download the MySQL Installer suitable for your operating system (Windows, macOS, or Linux).

* **Run Installer:**

Locate the downloaded installer file and run it.

* **Choose Setup Type:**

Select the type of installation you want (e.g., "Developer Default" for a full setup).

Follow the prompts to proceed.

* **Configure MySQL:**

Set a root password for MySQL Server.

Choose whether to start MySQL automatically as a service (Windows) or manually (Linux/macOS).

* **Complete Installation:**

Let the installer download and install MySQL and related components.

Confirm the installation completion and configuration details.

After these steps, MySQL should be installed on your system, and you can start using it via the command-line client, graphical tools like MySQL Workbench, or by integrating it with your applications using connectors/drivers.