1)What is SQL?

SQL, or Structured Query Language, is designed for managing and manipulating relational database management systems (RDBMS).

Relational databases store data in tables, which are connected in a variety of different ways. Tables contain columns and rows of information, with each column specifying the data type of the information within, and each row having a unique key.

To access our information, we need to use a tool that can talk to a relational database. Structured Query Language or SQL is the main tool used by programmers to work with these data structures.

We can use SQL to perform many essential operations on a database, such as adding and removing data.

When we want to operate on a database, we write a SQL **query**.

Ultimately, we can boil down each query’s purpose into one of the following four categories:

1. Create
2. Read
3. Update
4. Delete

2)Uses of SQL?

SQL (Structured Query Language) is a powerful and versatile language used in various application areas for managing and manipulating relational databases. Some of the primary uses and application areas of SQL include:

1. **Database Management Systems (DBMS):** SQL is the standard language for interacting with relational database management systems (RDBMS) such as MySQL, PostgreSQL, Microsoft SQL Server, Oracle, and SQLite. It is used to create, modify, and query databases, ensuring efficient and organized storage of data.
2. **Web Development:**
   * **Data Retrieval:** SQL is used to fetch and display data on websites. Web applications often interact with databases to retrieve information dynamically.
   * **Data Modification:** SQL statements are employed to update, insert, and delete data in response to user actions on websites.
3. **Business Intelligence (BI):**
   * **Data Analysis:** SQL queries are essential for extracting and analyzing data stored in databases, enabling businesses to gain insights, make informed decisions, and generate reports.
   * **Data Warehousing:** SQL is used to manage and query data warehouses, which store large volumes of historical and aggregated data for BI purposes.
4. **Enterprise Resource Planning (ERP):** ERP systems use SQL to manage and organize large datasets related to various business processes, including finance, human resources, inventory, and supply chain management.
5. **Customer Relationship Management (CRM):** CRM applications utilize SQL for storing and retrieving customer-related data, managing interactions, and analysing customer behaviour for improved business relationships.
6. **Mobile Applications:** Many mobile applications rely on databases to store and retrieve data. SQL is used to interact with these databases, providing a seamless and efficient data management system for mobile apps.
7. **Healthcare Information Systems:** SQL is employed in healthcare databases to manage patient records, treatment information, and medical history. It helps in efficiently storing and retrieving critical healthcare data.
8. **Geographic Information Systems (GIS):** SQL is used to manage spatial data in GIS applications, allowing for the storage and retrieval of geographical information for mapping and analysis.
9. **E-commerce:** Online shopping platforms use SQL to manage product catalogs, inventory, user accounts, and order information. SQL is crucial for maintaining the integrity and consistency of e-commerce databases.
10. **Finance and Banking Systems:** SQL is used in financial institutions to manage customer accounts, transactions, and financial data. It ensures the accuracy and security of sensitive financial information.
11. **Education Systems:** SQL is applied in educational databases to manage student records, course information, and grading systems. It facilitates efficient data retrieval for administrative and academic purposes.
12. **Government and Public Services:** SQL is used in various government applications to manage data related to citizens, public services, and administrative processes.

In summary, SQL is widely utilized in diverse domains where structured and relational data management is essential. Its versatility makes it a fundamental tool for developers, database administrators, analysts, and professionals across various industries.

3)what are differences between SQL and MySQL?

SQL (Structured Query Language) and MySQL are related but distinct concepts:

1. **SQL (Structured Query Language):**
   * **Definition:** SQL is a standard programming language designed for managing and manipulating relational databases. It provides a set of commands for defining, querying, updating, and managing data in a relational database management system (RDBMS).
   * **Purpose:** SQL is not a specific database system but rather a language used by various database management systems to interact with databases. It is a standard that is adhered to by many relational databases, including MySQL.
   * **Usage:** SQL can be used with different RDBMS products, such as MySQL, PostgreSQL, Microsoft SQL Server, Oracle, and SQLite, among others.
   * **Key Features:** SQL includes Data Definition Language (DDL) for defining and managing database structures, Data Manipulation Language (DML) for interacting with data, Data Control Language (DCL) for managing access privileges, and Transaction Control Language (TCL) for managing transactions.
2. **MySQL:**
   * **Definition:** MySQL is a specific relational database management system (RDBMS) that implements the SQL language. It is an open-source database system.
   * **Ownership:** MySQL is owned by Oracle Corporation. It was initially developed by a Swedish company, MySQL AB.
   * **Features:** MySQL supports SQL and extends it with additional features specific to the MySQL database system. It includes features such as support for various storage engines, transactional support, and high performance.
   * **Use Cases:** MySQL is widely used for web applications, content management systems (CMS), e-commerce platforms, and various other applications that require a robust and scalable database system.
   * **Community Edition:** MySQL is available in two main editions – the Community Edition (open-source) and the Enterprise Edition (commercial). The Community Edition is free to use and is popular in the open-source community.

In summary, SQL is a standard language for interacting with relational databases, while MySQL is a specific relational database management system that implements the SQL language. MySQL is just one of many RDBMS products that support SQL. Other databases, such as PostgreSQL, Microsoft SQL Server, and Oracle, also support SQL but have their own unique features and capabilities. When working with MySQL, users typically use SQL statements to interact with the database.

4)How did you use SQL in your project

General

It’s a restaurant app, which helps the users

Mysql and hibernate

We used MySQL and Hibernate as ORM layer

Tables

Users

@OneToMany(mappedBy = "user")  
private List<Review> reviews;  
  
@OneToMany(mappedBy = "user")  
private List<Favorite> favorites;

Primary key

@Id  
@GeneratedValue(strategy = GenerationType.*AUTO*)  
private Long id;

Foreign key

Review

@ManyToOne  
@JoinColumn(name = "restaurant\_placeId")  
private RestaurantEntity restaurantEntity;  
  
@ManyToOne  
@JoinColumn(name = "id")  
private User user;

Primary key

@Id  
@GeneratedValue  
private int reviewId

Foreign key

Restaurant

@OneToMany(mappedBy = "restaurantEntity")  
private List<Review> reviews;

Primary key

Foreign key

Favorite

@ManyToOne  
@JoinColumn(name = "user")  
private User user;

Primary key

@Id  
@Column(name = "place\_id")  
private String placeId;

Foreign key