Q1. What do you mean by databases?

Ans: A database is a structured collection of data stored in a computer system and organized in a way to be quickly searched. With databases, information can be rapidly retrieved.

Q2. What is MySQL?

Ans: MySQL is an open-source Database Management System (DBMS) for managing and organizing the data in a tabular format, These data can be manipulated using MySQL programming language. It supported and distributed by MySQL AB (now acquired by Oracle).

Q3. What are some of the advantages of using MySQL?

Ans:

- **Flexibility:** MySQL runs on all operating systems
- **Power:** MySQL focuses on performance
- **Advanced Features:** MySQL had some advanced features such as **subqueries**, **views**, and **stored procedures.**
- **Indexing and Searching**
- **Query Caching:** This helps enhance the speed of MySQL greatly

Q4. Data Types in MySql?

Ans: MySQL data types are important to understand before you start creating and working with a MySQL database. If you properly assign each column, you ensure that the database is optimized and data is safely stored.

A name and a data type define each column in a database table. The specified data type tells MySQL what kind of values it will store, how much space they require, and what type of operations it can perform with this type of data.

There many different data types you can store in a MySQL table.

They are grouped into five main categories:

- Numeric data types
- Date and time data types
- String data types
- Spatial data types
- JSON data types

Numeric Data Types

When storing numbers in a database column, use one of the numeric data types. MySQL supports both exact and approximate numeric data types.

The numeric category is further subdivided into the following groups:

- Integer data types
- Floating-point data types
- Bit-value data types

Date and Time Data Types

Date and time are commonly used data types. Whether you are storing a time of a data entry, a date of birth or the current timestamp, you use one of the following columns.

Date and time data types include:

- **DATETIME**, **TIMESTAMP**
- **DATE**
- **TIME**
- **YEAR**

String Data Types

When storing strings of data, use one of the string data types. They can contain letters, numbers, images, or files.

Accordingly, there are several different string data types:

- **CHAR** and **VARCHAR**
- **BINARY** and **VARBINARY**
- **BLOB** and **TEXT**
- **ENUM**
- **SET**

Spatial Data Types

When storing spatial data, you can use one of the many different spatial data types that MySQL supports. They are utilized to represent information about geometric shapes and physical location.

We can divide them into two groups:

- Single geometry values
- Collections of values

JSON Data Types

- Since version 5.7.8, MySQL included support for the native **JSON** data type, allowing users to store and manage JSON documents through a database.
- MySQL makes sure that the JSON documents are valid and stores them into the JSON column.

Q5. What are the different tables present in MySQL?

Ans:

MySQL stores everything in logical tables. Tables can be thought of as the core storage structure of MySQL. And hence tables are also known as storage engines. Here are the storage engines provided by MySQL:

- · **MyISAM** – MyISAM is the default storage engine for MySQL. It extends the former ISAM storage engine. MyISAM offers big storage, up to 256TB! The tables can also be compressed to get extra storage. MyISAM tables are not transaction-safe.
- · **MERGE** – A MERGE table is a virtual table that consolidates different MyISAM tables that have a comparable structure to one table. MERGE tables use the indexes of the base tables, as they do not have indexes of their own.
- · **ARCHIVE** – As the name suggests, Archive helps in archiving the tables by compressing them, in-turn reducing the storage space. Hence, you can store a lot of records with the Archive. It uses the compression-decompression procedure while writing and reading the table records. It is done using the Zlib library.
- · **CSV** – This is more like a storage format. CSV engine stores the values in the Comma-separated values (CSV) format. This engine makes it easier to migrate the tables into a non-SQL pipeline.
- · **InnoDB** – InnoDB is the most optimal while choosing an engine to drive performance. InnoDB is a transaction-safe engine. Hence it is ACID-compliant and can efficiently restore your database to the most stable state in case of a crash.
- · **Memory**– Memory tables were formerly known as HEAP. With memory tables, there can be a performance boost as the tables are stored in the memory. But it does not work with large data tables due to the same reason.
- · **Federated** – Federated tables allow accessing remote MySQL server tables. It can be done without any third-party integration or cluster technology.

Q6. Difference between Primary Key and Unique Key?

Ans:

Primary Key can be only one in a table whereas unique key can be multiple.

Example of Unique Key: **email,mobile,**

Q7. How to rename a table in MySQL?

Ans: We can rename the table by the following command:

RENAME old_table **TO** new_table;

Example:

RENAME employee TO employeelist;

Q8. How to add a column in the table in MySQL?

Ans: We can add the column in the table by the following command:

Command:

ALTER TABLE table ADD [COLUMN] column_name column_definition [FIRST|AFTER existing_column];

Example:

ALTER TABLE vendors ADD COLUMN phone VARCHAR(15) AFTER name;

Q9. What is a foreign key?

Ans: A foreign key is used to connect two tables. A FOREIGN KEY is a field (or assortment of it) in one table that alludes to the PRIMARY KEY in another table. The FOREIGN KEY requirement is utilised to forestall activities that would crush joins between tables.

Q10. How to delete columns in MySQL?

Ans: We can delete the columns in MySQL by the following command:

ALTER TABLE table_name **DROP COLUMN** column_name1, column_name2....;

Q11. Joins in MySQL?

Ans: Joins help retrieving data from two or more tables. The tables are mutually related using primary and foreign keys.

Types of joins

1. Cross JOIN

- Cross JOIN is a simplest form of JOINs which matches each row from one database table to all rows of another.
- In other words it gives us combinations of each row of first table with all records in second table.

2. INNER JOIN

- The inner JOIN is used to return rows from both tables that satisfy the given condition.
- Suppose , you want to get list of members who have rented movies together with titles of movies rented by them. You can simply use an INNER JOIN for that, which returns rows from both tables that satisfy with given conditions.

3. Outer JOINs

- MySQL Outer JOINs return all records matching from both tables .
- It can detect records having no match in joined table. It returns **NULL** values for records of joined table if no match is found.

4. LEFT JOIN

- Assume now you want to get titles of all movies together with names of members who have rented them. It is clear that some movies have not being rented by any one. We can simply use **LEFT JOIN** for the purpose.
- The LEFT JOIN returns all the rows from the table on the left even if no matching rows have been found in the table on the right. **Where no matches have been found in the table on the right, NULL is returned.**

5. RIGHT JOIN

- RIGHT JOIN is obviously the opposite of LEFT JOIN. The RIGHT JOIN returns all the columns from the table on the right even if no matching rows have been found in the table on the left. Where no matches have been found in the table on the left, NULL is returned.
- In our example, let's assume that you need to get names of members and movies rented by them. Now we have a new member who has not rented any movie yet

Q12. What are the common mysql functions?

Ans:

1. AVG()
2. MAX()
3. MIN()
4. GREATEST()
5. LEAST()
6. DATEDIFF()
7. INSTR()
8. ROUND()
9. COUNT()
10. SUM()

Q13. How to save image in MySQL?

Ans: There are two ways to store images in mysql:

First, developers, mostly store image name in database and image file into directory by using move_uploaded_file() function of PHP.

Second, we can store image in database rather than into directory by using BLOB data type of mysql.

Mostly developers uses First way to store image, because it is more convenient to second.

Q14. Difference between BLOB and text?

Ans:

BLOB stands for Binary Large Objects and as its name suggests, it can be used for storing binary data that means we can store pictures, videos, sounds and programs also.

BLOB values behave like byte string and BLOB does not have a character set. Therefore, comparison and sorting is fully dependent upon numeric values of bytes.

TEXT is used for storing large number of strings.

TEXT values behave like non-binary string or character string. TEXT has a character set and the comparison/ sorting fully depends upon the collection of character set.

The difference between BLOB and TEXT types is that sorting and comparison is performed in case **sensitive** for BLOB values and case-**insensitive** for TEXT values.

Q15. How can you filter the duplicate data while retrieving records from the table?

Ans: Using DISTINCT we can filter duplicate data from the database.

Q16. How can you improve the performance of mysql query?

Ans: There are some points to improve the performance of mysql query, which are following:

- **Do Not Use * In Select Statement**
- **Use Join Instead Of Subquery**
- **Use “Where” Instead Of “Having” A Clause**
- **Apply Index On Necessary Columns**
- **Avoid Query In A Loop**
- **Apply Valid Data type On The Column**

Q17. Can you explain order of mysql query execution?

Ans:

from or joins

Where

Group by

Having

Select

Order by

limit

Q18. Find 2nd Highest salary in mysql?

Ans:

1. select *from employee group by salary order by salary desc limit 1,1;

this query should do your job. First we are sorting the table in descending way so the person with the highest salary is at the top, and the second highest is at the second position. Now limit a,b means skip the starting a elements and then print the next b elements. So you should use limit 1,1 in this case.

2. select MIN(salary) from employee order by salary desc limit 2;

It sorts the column in descending order takes the top 2 and returns the minimum of them which is the second highest.

Q19. Difference between turncate and delete?

Ans:

Delete command is used to delete particular row.

Turncate is used to delete all rows of the table.

Q20. Explain Different Types of mysql Commands?

Ans: The four main categories of mysql/SQL statements are as follows:

DML (Data Manipulation Language)

DML statements affect records in a table. These are basic operations we perform on data such as Selecting data from database, insert data into database, update existing data, remove unnecessary data from database.

DML statements include the following −

- **SELECT** – select records from a table
- **INSERT** – insert new records
- **UPDATE** – update/Modify existing records
- **DELETE** – delete existing records

DDL (Data Definition Language)

DDL statements are used to alter/modify a database or table structure and schema. These statements handle the design and storage of database objects.

- **CREATE** – create a new Table, database, schema
- **ALTER** – alter existing table, column description
- **DROP** – delete existing objects from database

DCL (Data Control Language)

DCL statements control the level of access that users have on database objects.

- **GRANT** – allows users to read/write on certain database objects
- **REVOKE** – keeps users from read/write permission on database objects

TCL (Transaction Control Language)

TCL statements allow you to control and manage transactions to maintain the integrity of data within SQL statements.

- **BEGIN Transaction** – opens a transaction
- **COMMIT Transaction** – commits a transaction
- **ROLLBACK Transaction** – ROLLBACK a transaction in case of any error

Q21. What is a trigger in MySQL?

Ans: A trigger is a table-associated database object in MySQL. It is activated when a specified action takes place.

A trigger can be invoked after or before the event takes place. It can be used on INSERT, DELETE, and UPDATE. It uses the respective syntax to define the triggers. For example, BEFORE INSERT, AFTER DELETE, etc.

Q22. What is an index? How can an index be declared in MySQL?

Ans:

An index is a data structure that allows us to add indexes in the existing table. It enables you to Improve the faster retrieval of records on a database table. We use it to quickly find the record without searching each row in a database table whenever the table is accessed. We can create an index by using one or more **columns** of the table for efficient access to the records.

When a table is created with a primary key or unique key, it automatically creates a special index named **PRIMARY**. We called this index as a clustered index. All indexes other than PRIMARY indexes are known as a non-clustered index or secondary index.

How to Create Index

CREATE INDEX [index_name] **ON** [table_name] (**column** names)

How to see index on table

SHOW INDEXES **FROM** student;

High Priority Questions

Q. Joins
Q. How to Improve the Performance of mysql
Q. Order of Query Execution
Q. Data Types
Q. Difference Between Primary Key and Unique Key
Q. Common mysql Functions
Q. What is Foreign Key

Medium Priority Questions

Q. What are different table present in mysql
Q. How to add column in mysql
Q. How to remove column in mysql
Q. Rename table in mysql
Q. How to save image in mysql
Q. Difference between BLOB and Text
Q. How to filter duplicate Data from table

Low Priority Questions

Q. Trigger
Q. Index
Q. Types of mysql Commands
Q. Difference between turncate and delete
Q. Find 2nd Highest