MySQL Interview Questions for Fresher's & Experienced

1) What is MySQL?

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)

2) What are the technical features of MySQL?

MySQL database software is a client or server system which includes

- Multithreaded SQL server supporting various client programs and libraries
- Different backend
- Wide range of application programming interfaces and
- Administrative tools.

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3) Why MySQL is used?

MySQL database server is reliable, fast and very easy to use. This software can be downloaded as freeware and can be downloaded from the internet.

4) What are Heap tables?

HEAP tables are present in memory and they are used for high speed storage on temporary

basis.

• BLOB or TEXT fields are not allowed

• Only comparison operators can be used =, <,>, = >,=<

• AUTO_INCREMENT is not supported by HEAP tables

• Indexes should be NOT NULL

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5) What is the default port for MySQL Server?

The default port for MySQL server is 3306.

6) What are the advantages of MySQL when compared with Oracle?

- MySQL is open source software which is available at any time and has no cost involved.
- MySQL is portable
- GUI with command prompt.
- Administration is supported using MySQL Query Browser

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7) Differentiate between FLOAT and DOUBLE?

Following are differences for FLOAT and DOUBLE:

• Floating point numbers are stored in FLOAT with eight place accuracy and it has four bytes.

• Floating point numbers are stored in DOUBLE with accuracy of 18 places and it has eight bytes.

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8) Differentiate CHAR_LENGTH and LENGTH?

CHAR_LENGTH is character count whereas the LENGTH is byte count. The numbers are same for Latin characters but they are different for Unicode and other encodings.

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9) How to represent ENUMs and SETs internally?

ENUMs and SETs are used to represent powers of two because of storage optimizations.

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10) What is the usage of ENUMs in MySQL?

ENUM is a string object used to specify set of predefined values and that can be used during table creation.

```
Create table size(name ENUM('Small', 'Medium','Large');
```

1) Define REGEXP?

REGEXP is a pattern match in which matches pattern anywhere in the search value.

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12) Difference between CHAR and VARCHAR?

Following are the differences between CHAR and VARCHAR:

- CHAR and VARCHAR types differ in storage and retrieval
- CHAR column length is fixed to the length that is declared while creating table. The length value ranges from 1 and 255
- When CHAR values are stored then they are right padded using spaces to specific length. Trailing spaces are removed when CHAR values are retrieved.

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13) Give string types available for column?

The string types are:

- SET
- BLOB
- ENUM
- CHAR
- TEXT
- VARCHAR

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14) How to get current MySQL version?

```
SELECT VERSION ();
```

is used to get the current version of MySQL.

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15) What storage engines are used in MySQL?

Storage engines are called table types and data is stored in files using various techniques.

Technique involves:

- Storage mechanism
- Locking levels
- Indexing
- Capabilities and functions.

16) What are the drivers in MySQL?

Following are the drivers available in MySQL:

- PHP Driver
- JDBC Driver
- ODBC Driver
- C WRAPPER
- PYTHON Driver
- PERL Driver
- RUBY Driver
- CAP11PHP Driver
- Ado.net5.mxj

17) What does a TIMESTAMP do on UPDATE CURRENT_TIMESTAMP data type?

TIMESTAMP column is updated with Zero when the table is created. UPDATE CURRENT_TIMESTAMP modifier updates the timestamp field to current time whenever there is a change in other fields of the table.

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18) What is the difference between primary key and candidate key?

Every row of a table is identified uniquely by primary key. There is only one primary key for a table.

Primary Key is also a candidate key. By common convention, candidate key can be designated as primary and which can be used for any foreign key references.

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19) How do you login to MySql using Unix shell?

We can login through this command:

```
# [mysql dir]/bin/mysql -h hostname -u <UserName> -p <password>
```

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20) What does myisamchk do?

It compress the MyISAM tables, which reduces their disk or memory usage.

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21) How do you control the max size of a HEAP table?

Maximum size of Heal table can be controlled by MySQL config variable called max_heap_table_size.

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22) What is the difference between MyISAM Static and MyISAM Dynamic?

In MyISAM static all the fields will have fixed width. The Dynamic MyISAM table will have fields like TEXT, BLOB, etc. to accommodate the data types with various lengths.

MyISAM Static would be easier to restore in case of corruption.

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23) What are federated tables?

Federated tables which allow access to the tables located on other databases on other servers.

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24) What, if a table has one column defined as TIMESTAMP?

Timestamp field gets the current timestamp whenever the row gets altered.

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25) What happens when the column is set to AUTO INCREMENT and if you reach maximum value in the table?

It stops incrementing. Any further inserts are going to produce an error, since the key has been used already.

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26) How can we find out which auto increment was assigned on Last insert?

LAST_INSERT_ID will return the last value assigned by Auto_increment and it is not required to specify the table name.

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27) How can you see all indexes defined for a table?

Indexes are defined for the table by:

```
SHOW INDEX FROM <tablename>;
```

---

28) What do you mean by % and _ in the LIKE statement?

% corresponds to 0 or more characters, _ is exactly one character in the LIKE statement.

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29) How can we convert between Unix & MySQL timestamps?

UNIX_TIMESTAMP is the command which converts from MySQL timestamp to Unix timestamp

FROM_UNIXTIME is the command which converts from Unix timestamp to MySQL timestamp.

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30) What are the column comparisons operators?

The = , <>, <=, <, >=, >,<<,>>, <=>, AND, OR, or LIKE operators are used in column comparisons in SELECT statements.

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31) How can we get the number of rows affected by query?

Number of rows can be obtained by

```
SELECT COUNT (user_id) FROM users;
```

---

32) Is Mysql query is case sensitive?

No.

```
SELECT VERSION(), CURRENT_DATE;
SeLect version(), current_date;
seleCt vErSiOn(), current_DATE;
```

All these examples are same. It is not case sensitive.

---

33) What is the difference between the LIKE and REGEXP operators?

LIKE and REGEXP operators are used to express with ^ and %.

```
SELECT * FROM employee WHERE emp_name REGEXP "^b";
SELECT * FROM employee WHERE emp_name LIKE "%b";
```

---

34) What is the difference between BLOB AND TEXT?

A BLOB is a binary large object that can hold a variable amount of data. There are four types of BLOB –

- TINYBLOB
- BLOB
- MEDIUMBLOB and
- LONGBLOB

They all differ only in the maximum length of the values they can hold.

A TEXT is a case-insensitive BLOB. The four TEXT types

- TINYTEXT
- TEXT
- MEDIUMTEXT and
- LONGTEXT

They all correspond to the four BLOB types and have the same maximum lengths and storage requirements.

The only 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.

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35) What is the difference between mysql_fetch_array and mysql_fetch_object?

Following are the differences between mysql_fetch_array and mysql_fetch_object:

mysql_fetch_array() -Returns a result row as an associated array or a regular array from database.

mysql_fetch_object – Returns a result row as object from database.

---

36) How can we run batch mode in mysql?

Following commands are used to run in batch mode:

```
mysql ;
mysql mysql.out
```

---

37) Where MyISAM table will be stored and also give their formats of storage?

Each MyISAM table is stored on disk in three formats:

- The '.frm' file stores the table definition
- The data file has a '.MYD' (MYData) extension
- The index file has a '.MYI' (MYIndex) extension

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38) What are the different tables present in MySQL?

Total 5 types of tables are present:

- MyISAM
- Heap
- Merge
- INNO DB
- ISAM

MyISAM is the default storage engine as of MySQL.

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39) What is ISAM?

ISAM is abbreviated as Indexed Sequential Access Method.It was developed by IBM to store and retrieve data on secondary storage systems like tapes.

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40) What is InnoDB?

InnoDB is a transaction safe storage engine developed by Innobase Oy which is a Oracle Corporation now.

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41) How MySQL Optimizes DISTINCT?

DISTINCT is converted to a GROUP BY on all columns and it will be combined with ORDER BY clause.

```
SELECT DISTINCT t1.a FROM t1,t2 where t1.a=t2.a;
```

---

42) How to enter Characters as HEX Numbers?

If you want to enter characters as HEX numbers, you can enter HEX numbers with single quotes and a prefix of (X), or just prefix HEX numbers with (Ox).

A HEX number string will be automatically converted into a character string, if the expression context is a string.

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43) How to display top 50 rows?

In MySql, top 50 rows are displayed by using this following query:

```
SELECT * FROM
LIMIT 0,50;
```

---

44) How many columns can be used for creating Index?

Maximum of 16 indexed columns can be created for any standard table.

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45) What is the different between NOW() and CURRENT_DATE()?

NOW () command is used to show current year,month,date with hours,minutes and seconds.

CURRENT_DATE() shows current year,month and date only.

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46) What are the objects can be created using CREATE statement?

Following objects are created using CREATE statement:

- DATABASE
- EVENT
- FUNCTION
- INDEX
- PROCEDURE
- TABLE
- TRIGGER
- USER
- VIEW

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47) How many TRIGGERS are allowed in MySql table?

SIX triggers are allowed in MySql table. They are as follows:

- BEFORE INSERT
- AFTER INSERT
- BEFORE UPDATE
- AFTER UPDATE
- BEFORE DELETE and
- AFTER DELETE

---

48) What are the nonstandard string types?

Following are Non-Standard string types:

- TINYTEXT
- TEXT
- MEDIUMTEXT

- LONGTEXT

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49) What are all the Common SQL Function?

CONCAT(A, B) – Concatenates two string values to create a single string output. Often used to combine two or more fields into one single field.

FORMAT(X, D) – Formats the number X to D significant digits.

CURRDATE(), CURRTIME() – Returns the current date or time.

NOW() – Returns the current date and time as one value.

MONTH(), DAY(), YEAR(), WEEK(), WEEKDAY() – Extracts the given data from a date value.

HOUR(), MINUTE(), SECOND() – Extracts the given data from a time value.

DATEDIFF(A, B) – Determines the difference between two dates and it is commonly used to calculate age

SUBTIMES(A, B) – Determines the difference between two times.

FROMDAYS(INT) – Converts an integer number of days into a date value.

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50) Explain Access Control Lists.

An ACL (Access Control List) is a list of permissions that is associated with an object. This list is the basis for MySQL server's security model and it helps in troubleshooting problems like users not being able to connect.

MySQL keeps the ACLs (also called grant tables) cached in memory. When a user tries to authenticate or run a command, MySQL checks the authentication information and permissions against the ACLs, in a predetermined order.

1. What is SQL Server?

SQL Server is one of the database management systems (DBMS) and is designed by Microsoft. DBMS are computer software applications with the capability of interacting with users, various other applications, and **databases**. The objective of SQL Server is capturing and analyzing data and managing the definition, querying, creation, updating, and administration of the database.

2. Compare MySQL vs SQL Server.

Criteria	MySQL	SQL Server
Developed by	Oracle	Microsoft
Programmed in	C and C++	Mainly C++, but some parts in C
Platforms	Supports many platforms	Supports only Linux and Windows
Syntax	Complex Syntax	Simpler and easy-to-use syntax

3. How and why use SQL Server?

SQL Server is free and anyone can download and use it. The application uses SQL (Structured Query Language), and it is easy to use.

4. What are the features of MySQL?

MySQL provides cross-platform support, a wide range of interfaces for application programming, and has many stored procedures like triggers and cursors that help in managing the database.

5. What are the advantages and disadvantages of using MySQL?

There are various advantages and disadvantages of using MySQL. Some of them are given below:

Advantages

- MySQL helps in the secure management of databases. By using it, we can securely execute database transactions.
- It is fast and efficient in comparison to other database management systems as it supports varieties of storage engines.
- As its transaction processing is high, MySQL can execute millions of queries.

Besides, some of the features that make MySQL unique are deadlock identification, execution of multiple transactions, efficient processing, and easy management.

Disadvantages

- Scalability in MySQL is a redundant task.
- MySQL serves good for large databases mostly.
- There are issues of the instability of software.

6. What is the Traditional Network Library for a system?

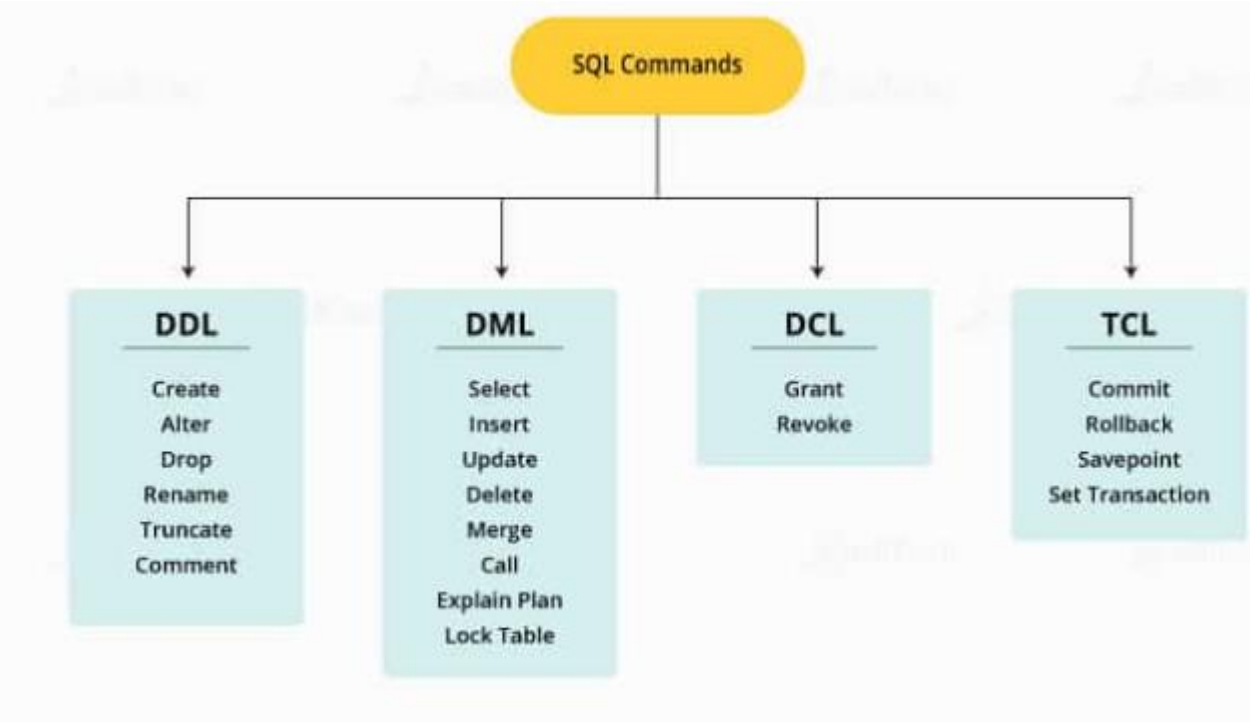
The Traditional Network Library is a software framework that offers pre-built functions and protocols for developing networked applications. It simplifies the complexities of **socket programming** by providing higher-level abstractions, allowing developers to establish connections, exchange data, and manage network protocols in a conventional manner.

7. What is the default port for MySQL Server?

The default port for MySQL Server is 3306. Another standard default port is 1433 in TCP/IP for SQL Server.

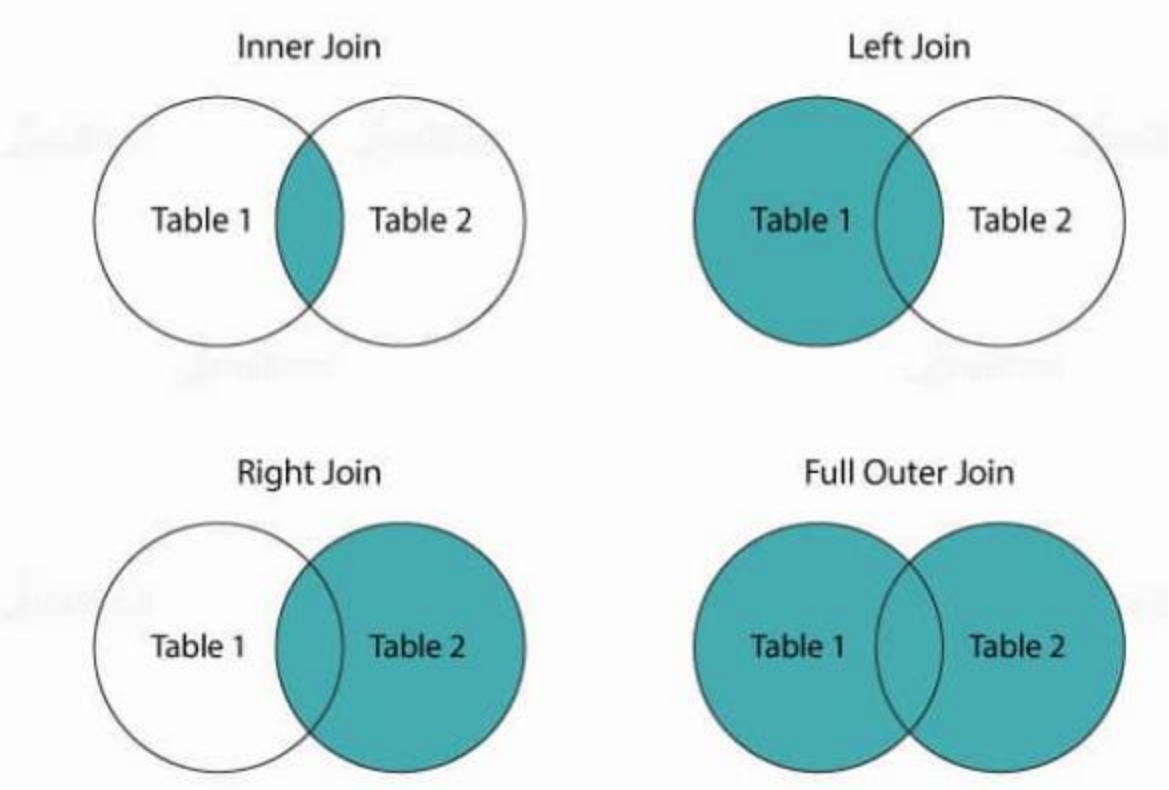
8. What do DDL, DML, and DCL stand for?

DDL is the abbreviation for Data Definition Language dealing with database schemas, as well as the description of how data resides in the database. An example of this is the CREATE TABLE command. DML denotes Data Manipulation Language which includes commands such as SELECT, INSERT, etc. DCL stands for Data Control Language and includes commands like GRANT, REVOKE, etc.



9. What is a join in MySQL?

In MySQL, joins are used to query data from two or more **tables**. The query is made using the relationship between certain columns existing in the table. There are four types of joins in MySQL.



Inner join returns rows if there is at least one match in both tables. Left join returns all the rows from the left table even if there is no match in the right table. Right join returns all the rows from the right table even if no matches exist in the left table. Full join would return rows when there is at least one match in the tables.

10. What are the common MySQL functions?

Common MySQL functions are as follows:

- **ABS():** Returns the absolute value of a number. It removes the negative sign if the number is negative.
- **ROUND():** Rounds a number to a specified number of decimal places. It can round to the nearest integer or a specific decimal position.
- **CEIL():** Returns the smallest integer greater than or equal to a given number. It rounds up the value to the nearest integer.
- **FLOOR():** Returns the largest integer less than or equal to a given number. It rounds down the value to the nearest integer.
- **EXP():** Calculates the exponential value of a number. It returns the result of raising the mathematical constant e to the power of the given number.
- **LOG():** Calculates the natural logarithm of a number. It returns the logarithm base e (natural logarithm) of the given number.
- **NOWO:** The function for returning the current date and time as a single value
- **CURRDATEO:** The function for returning the current date or time

- **CONCAT (X, Y):** The function to concatenate two string values creating a single string output
- **DATEDIFF (X, Y):** The function to determine the difference between two dates

11. What is the difference between CHAR and VARCHAR?

When a table is created, CHAR is used to define the fixed length of the table and columns. The length value could be in the range of 1–255. The VARCHAR command is used to adjust the column and table lengths as required.

12. What are Heap Tables?

Basically, Heap tables are in-memory tables used for high-speed temporary storage. But, TEXT or BLOB fields are not allowed within them. They also do not support AUTO INCREMENT.

13. What is the syntax for concatenating tables in MySQL?

The syntax for concatenating tables in MySQL:

```
CONCAT (string 1, string 2, string 3)
```

14. What is the limit of indexed columns that can be created for a table?

It depends on the storage engine used:

For the MyISAM storage engine, the limit is 64 while for the InnoDB storage engine, the limit is 16.

15. What are the different types of strings used in database columns in MySQL?

In MySQL, the different types of strings that can be used for database columns are SET, BLOB, VARCHAR, TEXT, ENUM, and CHAR.

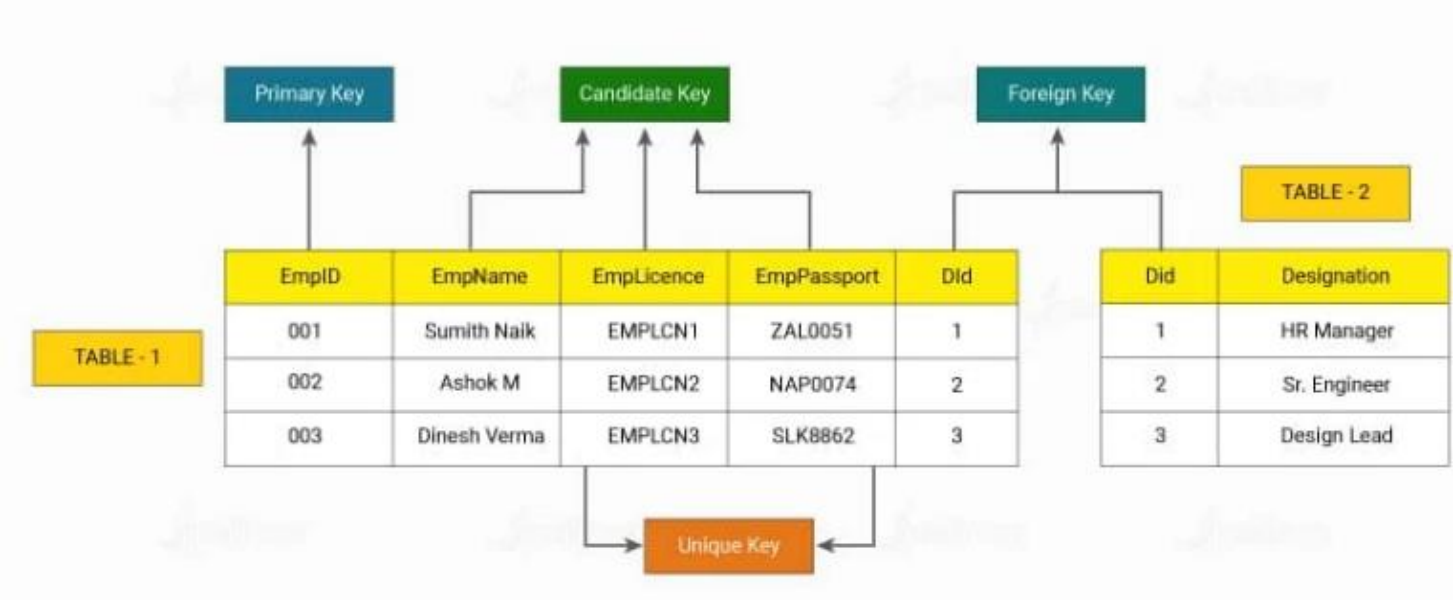
16. How can a user get the current SQL version?

The syntax for getting the current version of MySQL:

```
SELECT VERSION ();
```

17. What is the difference between primary key and unique key?

While both are used to enforce the uniqueness of the column defined, the primary key would create a clustered index, whereas the unique key would create a non-clustered index on the column. The primary key does not allow ‘NULL’, but the unique key does.



18. Is there an object-oriented version of MySQL library functions?

Yes. MySQLi is the object-oriented version of MySQL, and it interfaces in PHP.

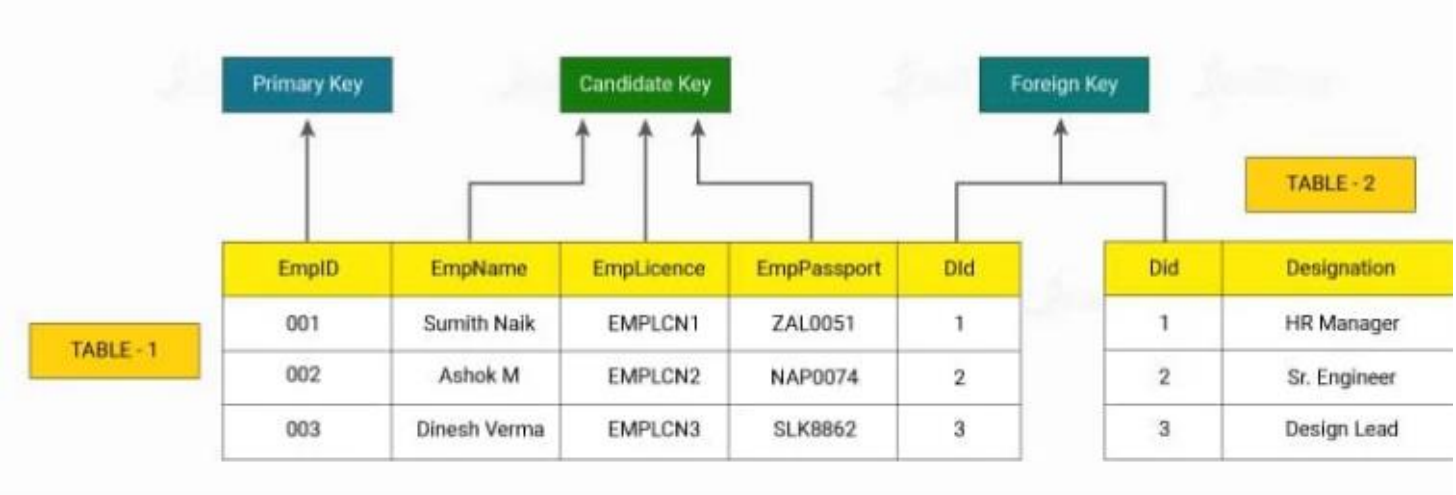
19. What is the storage engine used for MySQL?

The storage engine used for MySQL refers to the component responsible for managing how data is stored, organized, and accessed within the database system. The default storage engine in MySQL is InnoDB, offering features like transaction support and referential integrity.

Other commonly used engines include MyISAM, known for its simplicity and performance, and NDB Cluster, providing distributed storage for MySQL Cluster. The choice of engine depends on specific application requirements such as data integrity, performance, and scalability.

20. What is the difference between the primary key and the candidate key?

The primary key in MySQL is used to identify every row of a table in a unique manner. For one table, there is only one primary key. The candidate keys can be used to reference the foreign keys. One of the candidate keys is the primary key.



21. What are the different types of tables in MySQL?

- MyISAM is the default table that is based on the sequential access method.
- Heap is the table that is used for fast data access, but the data will be lost if the table or the system crashes.
- InnoDB is the table that supports transactions using the COMMIT and ROLLBACK commands.
- BDB can support transactions similar to InnoDB, but the execution is slower.

22. What are the differences between a primary key and a foreign key?

Primary Key	Foreign Key
It helps in the unique identification of data in a database	It helps establish a link between tables
There can be only one primary key for a table	There can be more than one foreign key for a table
Primary key attributes cannot have duplicate values in a table	Duplicate values are acceptable for a foreign key
Null values are not acceptable	Null values are acceptable

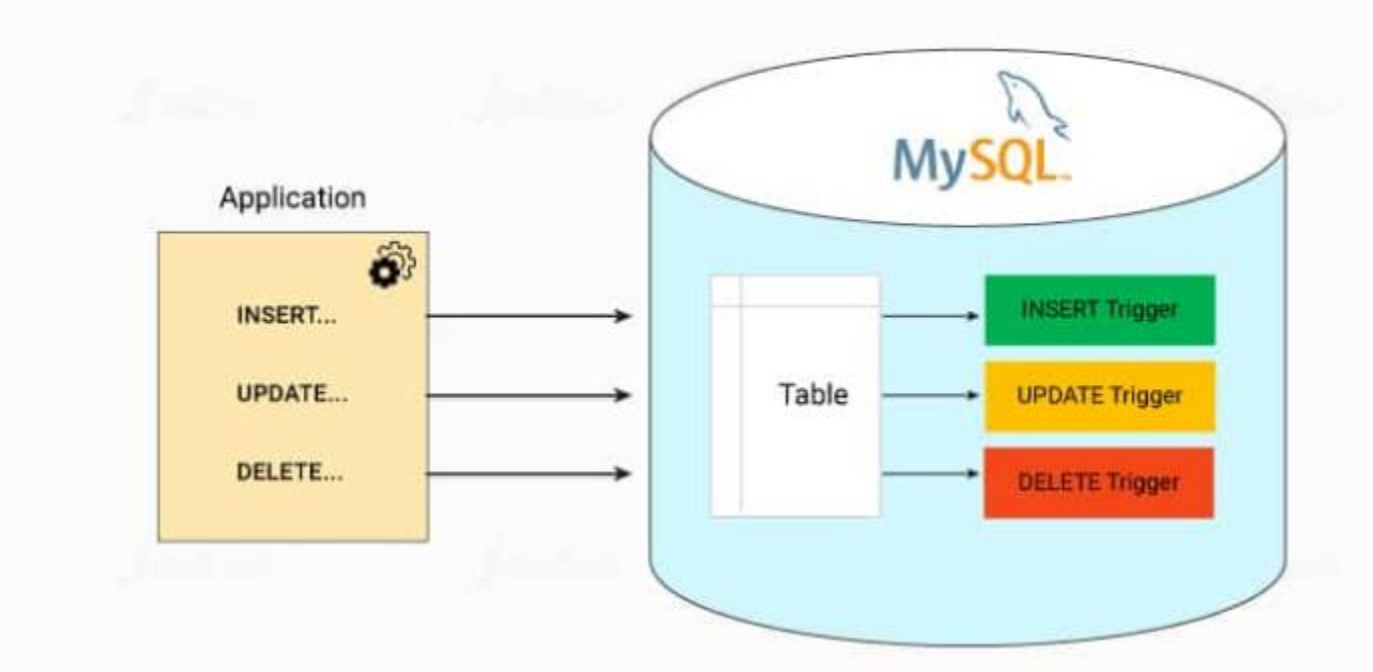
We can define primary key **constraints** for temporarily created tables	It cannot be defined for temporary tables
The primary key index is automatically created	The index is not created automatically

23. What is the use of ENUM in MySQL?

The use of ENUM will limit the values that can go into a table. For instance, a user can create a table giving specific month values and other month values would not enter into the table.

24. What are the TRIGGERS that can be used in MySQL tables?

Following TRIGGERS are allowed in MySQL:



- BEFORE INSERT
- AFTER INSERT
- BEFORE UPDATE
- AFTER UPDATE
- BEFORE DELETE
- AFTER DELETE

25. What is the difference between LIKE and REGEXP operators in MySQL?

LIKE matches an entire column. If the text to be matched existed in the middle of a column value, LIKE would not find it and the row would not be returned (unless wildcard characters were used). LIKE is denoted using the '%' sign.

For example:

```
SELECT * FROM user WHERE user name LIKE "%NAME"
```

REGEXP, on the other hand, looks for matches within column values, and so if the text to be matched existed in the middle of a column value, REGEXP would find it and the row would be returned. The use of REGEXP is as follows:

```
SELECT * FROM user WHERE username REGEXP "^NAME";
```

26. How to use the MySQL slow query log?

Information that is provided on the slow query log could be huge in size. The query could also be listed over a thousand times. In order to summarize the slow query log in an informative manner, one can use the third-party tool 'pt-query-digest'.

27. How can you change the root password if it is lost?

In such cases when the password is lost, the user should start the DB with skip-grants-table and then change the password. Thereafter, with the new password, the user should restart the DB in normal mode.

Queries to be used:
a) To start DB with skip-grant-table: –skip-grant-tables
b) Connect to the MySQL server as the root user: mysql -u root
c) Use the following command to change the root password: UPDATE mysql.user SET authentication_string=PASSWORD('new_password') WHERE User='root';
d) Flush the privileges: FLUSH PRIVILEGES;
e) Exit MySQL: Exit;
f) Restart MySQL in normal DB mode.

28. How to resolve the problem of the data disk that is full?

When the data disk is full and overloaded, the way out is to create and soft link and move the .frm and the .idb files into that link location.

29. What is the difference between the DELETE TABLE and TRUNCATE TABLE commands in MySQL?

DELETE TABLE

1. **Syntax and Usage**: Typically, you would use `DELETE FROM table_name [WHERE condition];`. "DELETE TABLE" is not a standard SQL statement.
2. **Logged Operation**: `DELETE` is indeed a logged operation, and each row deletion is logged.
3. **Where Clause**: It allows for conditionally deleting data, i.e., you can specify a `WHERE` clause to delete specific data.
4. **Triggers**: `DELETE` will activate any triggers associated with the table.
5. **Speed**: It is generally slower than `TRUNCATE` especially for deleting all rows.
6. **Space Reclaim**: Space used by the table is not reclaimed (unless using `DELETE` with no `WHERE` clause in some MySQL storage engines like InnoDB).

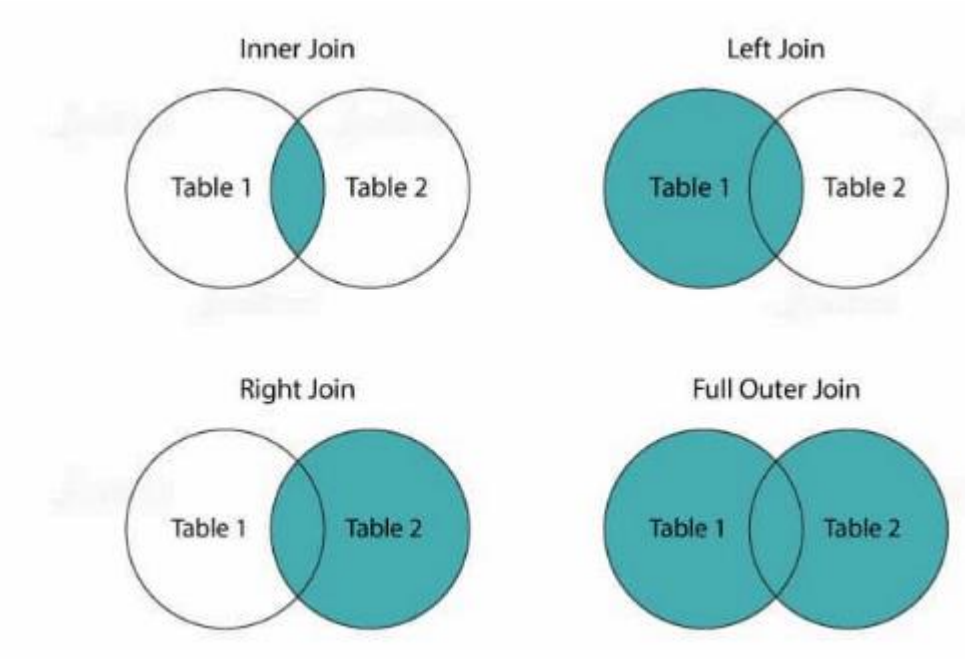
TRUNCATE TABLE

1. **Syntax and Usage**: The correct syntax is `TRUNCATE TABLE table_name;`.
2. **Logged Operation**: `TRUNCATE` is also a logged operation, but it typically logs fewer transactions because it logs the deallocation of the data pages in which the data exists, not the individual row deletions.
3. **Where Clause**: It does not allow for a `WHERE` clause. It will remove all rows.
4. **Triggers**: `TRUNCATE` will not activate triggers.
5. **Speed**: It is usually faster for deleting all rows in a table because it does not log individual row deletions.
6. **Space Reclaim**: Space used by the table is reclaimed, and the table is reset to its empty state, often times also resetting the auto-increment value to zero (or the starting value).

Rollback

Both `DELETE` and `TRUNCATE` operations can be rolled back if used within a transaction that is not yet committed. However, it's essential to note that `TRUNCATE` is a data definition language (DDL) statement, and in some database systems, it might auto-commit the transaction, making the rollback impossible for the previous transactions within the same transaction block.

30. What are the types of joins in MySQL?



There are four types of joins in MySQL.

Inner join returns rows if there is at least one match in both tables. Left join returns all the rows from the left table even if there is no match in the right table. Right join returns all the rows from the right table even if no matches exist in the left table. Full join would return rows when there is at least one match in the tables.

31. What are the storage models of OLAP?

The storage models in OLAP are MOLAP, ROLAP, and HOLAP.

32. How to define the testing of network layers in MySQL?

For this, it is necessary to review the layered architecture and determine hardware and software configuration dependencies with respect to the application put to test.

33. How can one take an incremental backup in MySQL?

A user can take an incremental backup in MySQL using Percona XtraBackup.

34. What is meant by transaction? What are ACID properties?

In the context of databases, a transaction refers to a logical unit of work that consists of one or more database operations. These operations are treated as a single, indivisible unit, meaning they either all succeed or all fail. Transactions are used to ensure data consistency and integrity within a database system.

Transactions are commonly used in scenarios where multiple database operations need to be executed as a cohesive unit. For example, consider a banking application where a transfer of funds involves deducting an amount from one account and adding it to another account. In this case, the deducting and adding operations should be performed together to maintain data consistency. If one operation succeeds but the other fails, it could lead to an inconsistent state in the database.

ACID properties are a set of fundamental principles that ensure reliability and consistency in database transactions. ACID stands for Atomicity, Consistency, Isolation, and Durability.

35. How can one restart SQL Server in the single user or the minimal configuration modes?

The command line SQLSERVER.EXE used with '–m' will restart SQL Server in the single-user mode and the same with '–f' will restart it in the minimal configuration mode.

36. What is the difference between BLOB and TEXT?

BLOBs are binary large objects holding huge data. The 4 types of BLOB are:

TINYBLOB: This data type can store up to 255 bytes of binary data.

BLOB: This data type can store up to 65,535 bytes of binary data.

MEDIUMBLOB: This data type can store up to 16,777,215 bytes of binary data.

LONGBLOB: This data type can store up to 4 GB of binary data.

TEXT is a case-sensitive BLOB. Four types of TEXT are TINY TEXT, TEXT, MEDIUMTEXT, and LONG TEXT.

37. Can you use MySQL with Linux operating system?

Yes. The syntax for using MySQL with Linux operating system is as follows:

etc/init.d/mysqlstart

38. What is the TIMESTAMP data type?

Timestamp in SQL Server helps in row versioning. Row versioning is a type of concurrency that allows retaining the value until it is committed in the database. It shows the instant time of any event. It consists of both the date and time of the event. Also, timestamp helps in backing up data during the failure of a transaction.

While we insert, update, or delete a record, the date and time automatically get inserted.

- Format of timestamp: YYYY-MM-DD HH:MM: SS
- Range of timestamp: “1970-01-01 00:00:01” UTC to “2038-01-19 03:14:07” UTC

39. What is the function of mysqldump?

As the name suggests, mysqldump is used to dump one or more created databases. It performs backups for data or transfers the data from SQL Server to another. Also, it helps in producing the initial database schema by logical backups. Moreover, unlike triggers, mysqldump does not backup the stored procedures or functions by default.

Syntaxes

For a single database:

```
mysqldump [options] db_name [tables]
```

For multiple databases:

```
mysqldump [options] –databases db1 [db2 db3...]
```

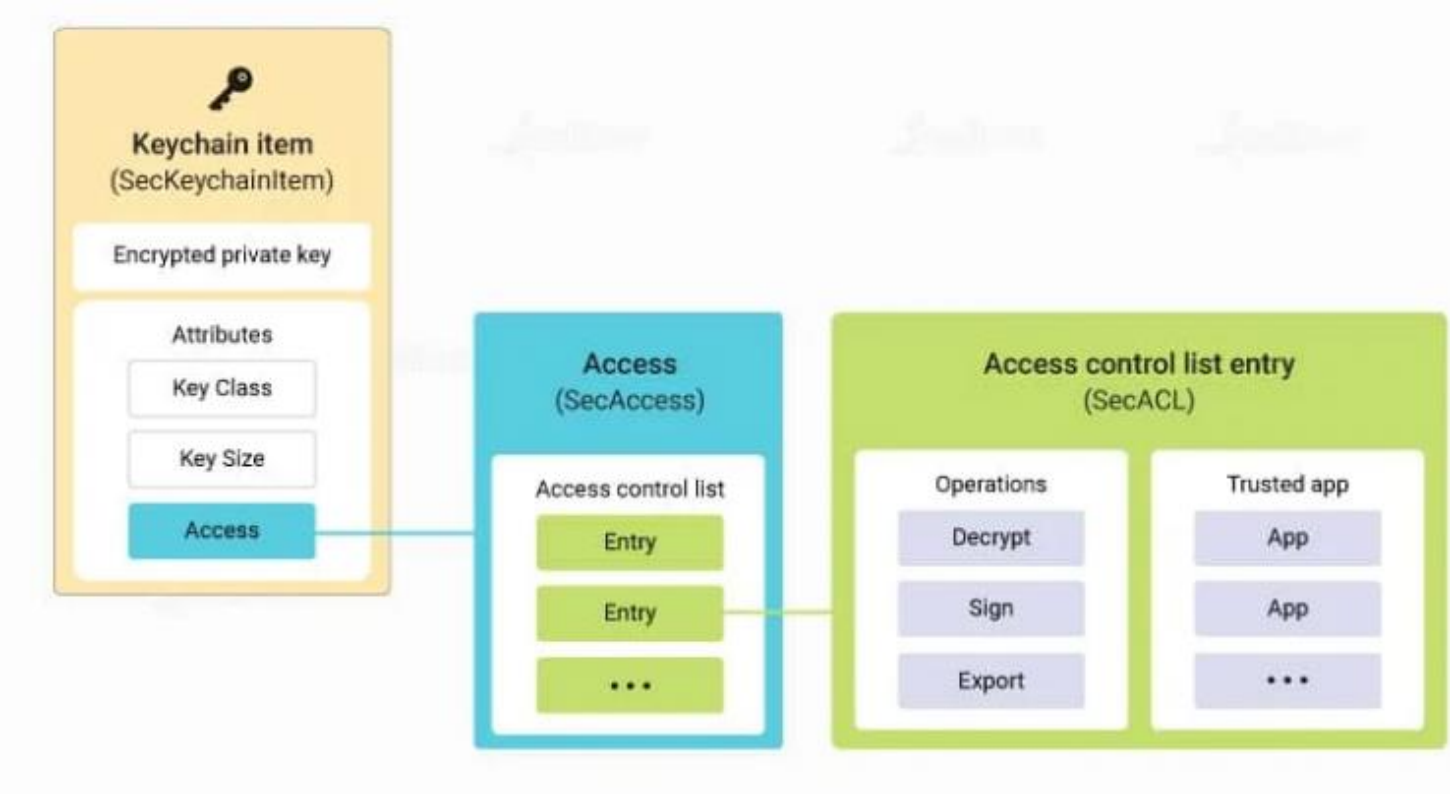
For all databases:

```
mysqldump [options] –all-databases
```

40. What is an access control list?

Every organization has some crucial data specific to its business. This data needs secure access so that any consequence due to data loss can be avoided. For this, organizations create a sequence of

permissions that are linked to various data objects. These lists are known as the access control list (ACL).



ACL serves as the basis for the server's security that helps troubleshoot the connection problems for users. These are also known as grant tables that are cached by MySQL. MySQL verifies a user for authentication and grants permissions in a sequence when the user executes a command.

41. What is the main difference between MySQL and PostgreSQL?

The basic difference between MySQL and PostgreSQL are:

My SQL is purely a relational database whereas PostgreSQL is an object-relational database. PostgreSQL is more complex and slower than MySQL. In MYSQL, troubleshooting is easy but it is difficult to troubleshoot PostgreSQL. MySQL does not support materialized view whereas PostgreSQL support materialized view.

1. What is MySQL?

This is going to be the most asked MySQL interview questions for all experience-level professionals. You must have a clear idea about the basics first.

MySQL is the world's second most popular and most commonly used open-source relational database management system (RDBMS). It is based on a structured query language that Oracle supports. In addition, MySQL supports many operating systems, the most well-known of which are Windows, Linux, and UNIX.

Although the MySQL database can be used to create a wide range of applications, it is exclusively utilized for web applications. Therefore, it is a critical component of the open-source Lamp project.

MySQL was once owned by a for-profit company, MySQL AB, before being purchased by Sun Microsystems, which was later purchased by Oracle, which now controls MySQL.

2. What is LAMP Stack?

The LAMP is a web development tech stack. It comprises Linux (operating system), Apache (web server), MySQL (database), and PHP (programming language).

3. MySQL database is written in which language?

MySQL is written in C and C++ languages.

This is one of the most common MySQL interview questions for freshers, as they should know the base of the database they are using.

4. What are the features of MySQL database?

It has the following features that you must know if you are preparing for the MySQL interview questions and answers:

- Flexible structure
- High performance
- Manageable and easy to use
- Replication and high availability
- Security and storage management
- Drivers
- Graphical Tools
- MySQL Enterprise Monitor
- MySQL Enterprise Security
- JSON Support
- Replication & High-Availability
- Manageability and Ease of Use
- OLTP and Transactions
- Geo-Spatial Support

5. What are the differences between MySQL and SQL?

You must know the differences between the two because this can be asked among the interview questions on MySQL.

SQL stands for Standard Query Language. It is used to interface with databases such as MySQL.

MySQL is a database that stores and protects numerous sorts of data. A PHP script is necessary to store and retrieve values from the database.

SQL is a programming language, but MySQL is a database.

SQL is used to create database management systems, whereas MySQL allows data handling, storage, deletion, and modification.

6. What are the differences between a database and a table?

There is a significant difference between a database and a table. The distinctions are as follows:

- Tables represent data division in a database, whereas a database represents a set of data and tables.
- Tables are used to group data about one another to produce a dataset. This dataset will be incorporated into the database. The data saved in any form in the table is a part of the database, but the opposite is not valid.

7. Why use the MySQL database server?

The core reason to choose the MYSQL server is that it is open source and can be used by developers and small businesses at no cost. There are several more reasons to use it that you must know as part of your preparation for MySQL technical interview questions and answers.

- The MySQL server is free and open source.
- MySQL's community is vast and supportive. Thus any issues with MySQL are fixed as soon as feasible.
- MySQL has been available on the market for a while, and relatively stable versions are available. All bugs found in prior releases have been continuously removed, and each upgrade provides a more stable version.
- The MySQL database server is speedy, dependable, and simple to use. The software is simple to use and customize. On the internet, MySQL software is freely downloadable.

8. What are the various tables available in MySQL?

There are various tables in MySQL that can be used. However, MyISAM is the default database engine in MySQL. There are five different types of tables available:

- MyISAM
- Heap
- Merge
- INNODB
- ISAM

9. How to check the MySQL version?

If you have been using this database system for a while, then you must know the process because it is also one of the most frequently asked and top MySQL interview questions.

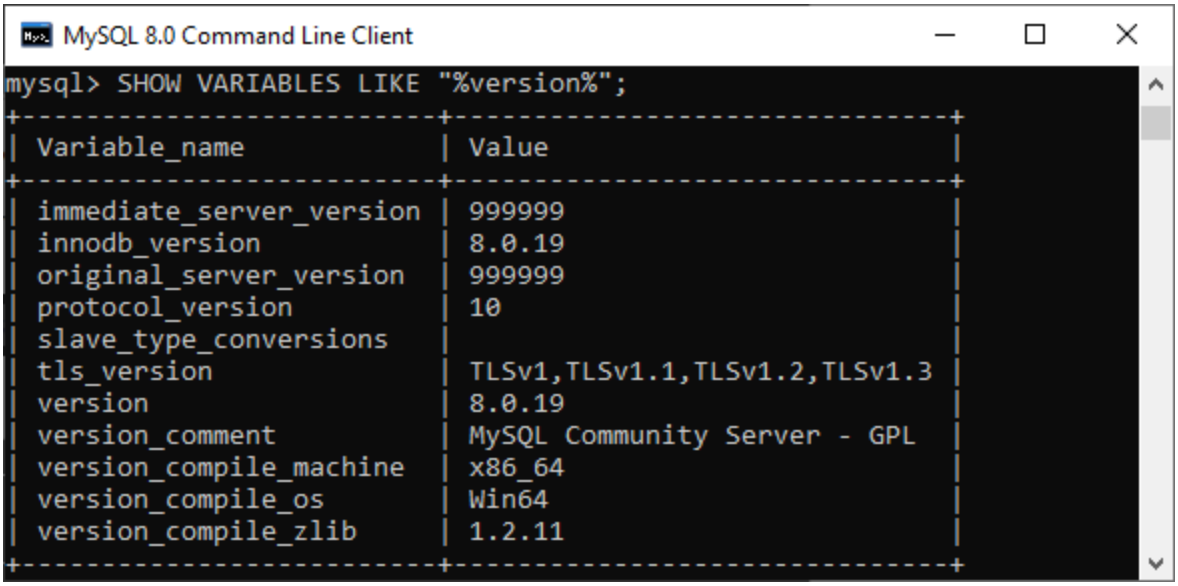
On Linux, we can check the MySQL version with the following command:

```
mysql -v
```

When we use MySQL in Windows, we should open the MySQL command-line tool, which provides the version information without any flags. Use the following statement to learn more about the server information:

```
SHOW VARIABLES LIKE "%version%";
```

It will provide the following output:



We may see further version information about the installed MySQL software in this output, such as the versions of InnoDB, protocol, and SSL library.

10. How to create columns in MySQL?

A column is a set of cells in a table that holds one value for each row. For adding columns to an existing table in MySQL, you should use the ALTER TABLE command.

11. How to delete a table in MySQL database?

The Drop Table command in MySQL can be used to delete a table. This permanently deletes a table's whole data set from the database, including structure and definition.

You must know that precautions are essential while deleting a table. It is because we are unable to retrieve the table in MySQL after using this command.

```
DROP TABLE table_name;
```

12. How to add a foreign key constraint in MySQL database?

To link two or more tables together, utilize a foreign key. To join the two tables, it matches the primary key field of another table. It enables us to form a parent-child bond with the tables.

There are two ways to add a foreign key to a table:

- Using the CREATE TABLE Statement
- Using the ALTER TABLE Statement

The syntax for defining a foreign key using the CREATE TABLE OR ALTER TABLE statement is as follows:

```
[CONSTRAINT constraint_name]

  FOREIGN KEY [foreign_key_name] (col_name, ...)

  REFERENCES parent_tbl_name (col_name,...)
```

You must practice these things before going to the job interview so that you are well prepared for such MySQL technical interview questions and answers.

13. How to change the MySQL root password?

We can change the MySQL root password by typing the following statement into a new notepad file:

```
ALTER USER 'root'@'localhost' IDENTIFIED BY 'NewPassword';
```

Open the Command Prompt tool and go to the MySQL directory. Please copy the following folder, paste it into the DOS command, and press the Enter key.

```
C:\Users\wscube> CD C:\Program Files\MySQL\MySQL Server\bin
```

After this, use the below statement to update or reset the password:

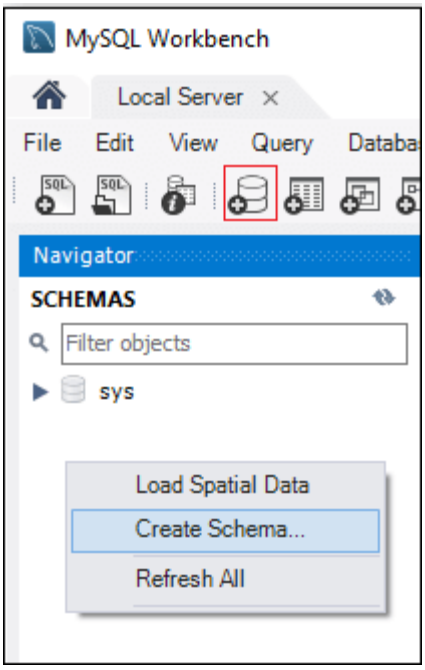
```
mysqld --init-file=C:\\mysql-notepadfile.txt
```

Finally, we can use this new password to log into the MySQL server as root. To ensure the password change, delete the *C:myswl-init.txt* file after launching the MySQL server.

14. How can we create a database in MySQL Workbench?

For this, we must first run the program and log in with the username and password.

Next, navigate to the **Navigator** tab and select the **Schema** menu. Finally, choose **Create Schema** from the Schema menu, or click the database icon, as seen in the following screen.

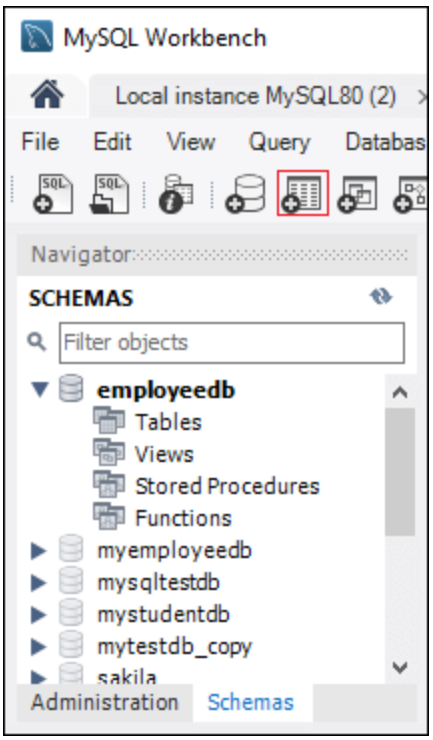


A new popup box displays where we must enter all of our information. After inputting the information, click the **Apply** button, followed by the **Finish** button, to finish the database construction.

15. How can we create a table in MySQL Workbench?

This is yet another important thing that you must know and have in your list of MySQL interview questions and answers for experienced professionals.

- Launch MySQL Workbench and navigate to the **Navigation** tab, then click on the **Schema** menu, which displays all previously created databases.
- Double-click on any database to open it. It will display the sub-menus from which we must select the **Tables** option.



- Select the Tables sub-menu, right-click it, and then choose the **Create Table** option.
- We can also construct a table by clicking the create a new table icon.
- It will launch a new popup page where we must enter all the necessary information to construct a table. Enter the table name and then column information here.
- After inputting the information, click the **Apply** button, followed by the **Finish** button, to complete the table creation.

16. How to change a table's name in MySQL?

To change the name of the table, we must modify or rename the table name. To change the name of one or more tables in the current database, use the rename command, and use the following syntax:

```
mysql> RENAME existing_table TO new_table;
```

For changing the names of multiple tables, you can go with this syntax:

```
RENAME TABLE existing_tab1 TO new_tab1,

        existing_tab2 TO new_tab2, existing_tab3 TO new_tab3;
```

17. How to change the name of a database in MySQL?

We may sometimes need to update or rename the database. To do so, we must first create a new database on the MySQL server.

MySQL includes the mysqldump shell command. Using it, you can create a dumped copy of the database, as well as import the data to the new database.

```
mysqldump -u username -p "password" -R existingdatabasename > existingdatabasename.sql
```

The following command can be used for data importing from the existing to new database:

```
mysql -u username -p"password" newdatabaseame < existingdatabasename.sql
```

This is how you can rename a MySQL database. You must be prepared for this type of MySQL interview questions with 3 years of experience or below.

18. How to import a MySQL database?

Importing a database in MySQL is moving data from one location to another. However, it is a highly beneficial tool for backing up essential data or transferring data across sites.

For example, we have a database of contacts that must be kept in a secure location. So we must export it to a safe area, and if it is lost from its original site, we can restore it using import options.

We can import a database into MySQL in two ways:

- Command Line Tool
- MySQL Workbench

19. How can we change the column name in the MySQL database?

We kept one of the column names erroneously while generating a table. In MySQL, we must use the ALTER TABLE and Alter commands in tandem to change or rename an existing column name.

The syntax for renaming a column in MySQL is as follows:

```
ALTER TABLE table_name

  CHANGE COLUMN existing_column_name new_column_name column_definition [FIRST|AFTER existing_column];
```

20. How to delete columns in MySQL database?

Using the *ALTER TABLE* command, we can remove, drop, or delete one or more columns from an existing table:

```
ALTER TABLE table_name DROP COLUMN columnname_A, columnname_B....;
```

21. How to insert data into MySQL table?

Using the *INSERT* command, we can insert data into a MySQL table. For example, we can use this expression to insert a single or several rows into a table. The basic syntax for inserting a record into a table is as follows:

```
INSERT INTO table_name (fieldA, fieldB,...fieldN )

VALUES (valueA, valueB,...valueN);
```

For inserting multiple rows into a table, use the below syntax:

```
INSERT INTO table(fieldA, fieldB,...fieldN)

VALUES

  (valueA, value B, ...),

  (valueA, valueB, ...),

   ...

  (valueB, valueB, ...);
```

22. How to delete a row in a table in MySQL?

Using the *DELETE* command within the database, a row can be deleted. The generic syntax of the *DELETE* command is as follows:

```
DELETE FROM table_name WHERE Condition_specified;
```

It should be noted that if the *WHERE* clause is not included with the syntax, this statement will delete every record in the table.

23. How to join two tables in MySQL?

We can join tables in MySQL using the *JOIN* clause. MySQL supports a variety of JOIN clauses. These clauses relate to many tables and return only records that have the same value and property in all of them.

The four most straightforward techniques to combine two or more tables in MySQL are as follows:

- Inner Join
- Left Join
- Right Join
- Cross Join

24. How to update a table in MySQL?

We can use the *UPDATE* statement, which comes with the *SET* and *WHERE* clauses, to update existing records in a table.

The SET clause modifies the values of the columns supplied. The WHERE clause, which specifies the criteria, is optional. This statement can also be used to alter the values in one or more columns of a single row or multiple rows simultaneously.

The following is a generic syntax for the UPDATE statement used to edit data in a MySQL table:

```
UPDATE table_name
SET field1=new-value1, field2=new-value2, ...
[WHERE Clause]
```

25. What is MySQL Workbench?

MySQL Workbench is a user interface for MySQL (GUI) applications for accessing and managing MySQL databases. Oracle created and maintained it, offering SQL creation, data migration, and complete administrative tools for server configuration, user management, backup, and so on.

In addition, this Server Administration can be used to generate new physical data models, E-R diagrams, and SQL development. It works with all major operating systems. MySQL Server versions 5.6 and higher include support for it.

It is primarily available in three editions, as listed below:

- Community Edition (Open Source, GPL)
- Standard Edition (Commercial)
- Enterprise Edition (Commercial)

26. How to remove the primary key from MySQL?

We can do it using the ALTER TABLE statement. The syntax for this is:

```
ALTER TABLE table_name DROP PRIMARY KEY;
```

This is among the crucial interview questions on MySQL that is a bit technical, but you must know the correct answer.

27. What is a Stored Procedure in MySQL?

A stored procedure in MySQL is a group of SQL statements saved in the database. SQL queries such as INSERT, UPDATE, DELETE, and so on can be included in the stored procedure.

A procedure allows us to reuse the same code by running a single line. It saves the data dictionary in the database.

28. How to run a stored procedure in MySQL?

Using the *CALL* query, we may execute a stored procedure in MySQL. This query accepts the name of the stored procedure and any parameters that must pass to it. The basic syntax for running a stored procedure is as follows:

```
CALL stored_procedure_name (argument_list);
```

Let's understand it with this example:

```
CALL Product_Pricing (@pricelow, @pricehigh);
```

Here, *Product_Pricing* is a stored procedure that calculates and returns the lowest and maximum product prices.

29. How to create a view in MySQL?

A view is a database object that derives its values from the base table. It is a virtual table produced by connecting one or more tables in a query. It functions similarly to the base table but contains no data. If the underlying table changes, the changes are mirrored in the View.

The general syntax for creating a VIEW in MySQL is as follows:

```
CREATE [OR REPLACE] VIEW view_name AS

SELECT columns

FROM tables

[WHERE conditions];
```

30. How to create a MySQL trigger?

A MySQL trigger is a code that performs a certain action in a database automatically invoked if certain events occur on a table or View in the database.

For example, it can be run whenever records are added to a table, or any columns are modified.

In MySQL, we can create a trigger with the following syntax:

```
CREATE TRIGGER trigger_name

   [before | after]
```

```
{insert | update | delete}
 ON table_name [FOR EACH ROW]
 BEGIN
    --variable declarations
    --trigger code
 END;
```

31. How to clear the console screen in MySQL?

Before version 8, it was impossible to clear the screen using MySQL in Windows. At the time, the only way to remove the screen was to exit the MySQL command-line tool and reopen MySQL.

After MySQL version 8, we can use the following command to clear the command line screen:

```
mysql> SYSTEM CLS;
```

32. How to create a new MySQL user?

In MySQL, a USER is a record in the USER-TABLE. It holds the login details, account privileges, and host information for the MySQL account so that the database can be managed.

A new user account can be created with the help of MySQL Establish User statement. It provides recent reports with authentication, SSL/TLS, resource limit, role, and password management characteristics.

The fundamental syntax for creating a new user in MySQL is as follows:

```
CREATE USER 'username'@'host' IDENTIFIED WITH authentication_plugin BY 'password';
```

33. How to check for USERS in MySQL?

To manage a database in MySQL, we need to see a list of all user accounts on a database server. The command below is used to get a list of all database server users:

```
mysql> SELECT USER FROM mysql.user;
```

34. How to insert a date into a table in MySQL database?

To add a date to a MySQL table, we can use the *INSERT* statement. MySQL supports date data types, including *DATE*, *TIMESTAMP*, *DATETIME*, and *YEAR*. The date format in MySQL is YYYY-MM-DD by default.

The following is the fundamental syntax for inserting a date into a MySQL table:

```
INSERT INTO name_of_table (name_of_column, column_date) VALUES ('DATE: Manual Date', '2022-07-22');
```

Use the below statement to insert mm/dd/yyyy format:

```
INSERT INTO name_of_table VALUES (STR_TO_DATE(date_value, format_specifier));
```

35. How to find the database size in MySQL?

To have information about the tables and databases, we can query the *information_schema.tables* table in MySQL. It will return data length, index length, collation, creation time, etc.

Using the syntax below, we can determine the size of the database on the server:

```
SELECT table_schema AS "Database",
ROUND(SUM(data_length + index_length) / 1024 / 1024, 2) AS "Size (MB)"
FROM information_schema.TABLES
GROUP BY table_schema;
```

36. How does MySQL indexing work?

Indexing is the process of converting an unsorted list into an ordered list. It aids in increasing query efficiency when searching tables in MySQL. The indexing functions similarly to a book index.

For example, we have a book and wish to learn about search. Go through each page without indexing until the desired topic is located. It contains a collection of keywords that may be used to find the topic stated on pages. Then we may go directly to those pages without having to wade through all of them.

37. Who owns MySQL?

MySQL is the most widely used free and open-source database software under the GNU General Public License. MySQL AB, a Swedish firm, initially owned and sponsored it. It is presently owned by Sun Microsystems (formerly Oracle Corporation), which manages and improves the database.

38. In MySQL, how to view the database?

Viewing or listing the accessible databases is a regular operation while working with the MySQL server. For example, using the following command, we can inspect all of the databases on the MySQL server host:

```
mysql> SHOW DATABASES;
```

39. How to enable auto increment in MySQL?

Auto Increment is a constraint that creates a unique number automatically when inserting a new entry into the table. It is typically used for a table's primary key field.

For example, in MySQL, we can use the *ALTER TABLE* query to set the value of an *AUTO_INCREMENT* column as follows:

```
ALTER TABLE table_name AUTO_INCREMENT = value;
```

40. What are the differences between TRUNCATE and DELETE in MySQL?

- DELETE is a DML command, and TRUNCATE is a DDL command.
- The Where command cannot be used with TRUNCATE QL, although it can be used with DELETE.
- TRUNCATE cannot be used in conjunction with indexed views, although DELETE may.
- To erase data from a table, use the DELETE command. It just deletes the rows of data from the table, but truncating is a dangerous operation that should be used with caution because it permanently deletes every row from a table.

41. How many triggers can be used in MySQL?

In the MySQL database, only six triggers are permitted to be used.

- Before Insert
- After Insert
- Before Update
- After Update
- Before Delete
- After Delete

42. What is a heap table?

HEAP tables are tables that are stored in memory. When creating a heap table in MySQL, you must define the TYPE as HEAP. These are frequently referred to as memory tables. They are used for temporary high-speed storage. They don’t support BLOB or TEXT fields.

43. What are BLOB and TEXT in MySQL?

A huge binary object is referred to as a BLOB. It is used to store varying amounts of info.

The BLOB comes in four varieties.

- TINYBLOB
- BLOB
- MEDIUMBLOB
- LONGBLOB

The only distinction between these is the maximum length of data they can carry.

The BLOB TEXT is case-insensitive. The values of TEXT are non-binary strings (character strings). Character sets and values are saved and compared depending on the character set collation.

TEXT is classified into four categories.

- TINYTEXT
- TEXT
- MEDIUMTEXT
- LONGTEXT

44. What is a MySQL trigger?

A trigger is a sequence of instructions that run in response to certain occurrences.

45. What is the difference between a heap table and a temporary table?

Heap tables:

- They are present in memory and are utilized for temporary high-speed storage. They don’t support BLOB or TEXT fields.
- Heap tables do not support AUTOINCREMENT.

- Indexes should not be NULL.

Temporary tables:
They are used to store temporary data. However, it is sometimes advantageous to keep transitory data. Therefore, the temporary table is erased when the client session ends.

Main differences:
All clients share the heap tables. However, the temporary tables are not.

Heap tables are another storage engine, whereas temporary tables require a particular privilege (create a temporary table).

46. What's the difference between FLOAT and DOUBLE?

FLOAT saves floating-point integers with up to 8 places of precision and allocates 4 bytes.

DOUBLE, on the other hand, keeps floating-point integers with accuracy up to 18 places and allocates 8 bytes.

47. What are the disadvantages of MySQL?

If you have been working on this database for some years now, then this is going to be one of the top MySQL interview questions and answers for experienced professionals.

Here are some drawbacks of MySQL:

- For large-scale databases, MySQL is inefficient.
- Versions below 5.0 do not support the COMMIT and STORED PROCEDURES capabilities.
- Transactions are not processed efficiently.
- MySQL's functionality is heavily reliant on third-party extensions.
- Development is not a community-driven process.

48. What are the differences between CHAR and VARCHAR?

Here are the main differences between CHAR and VARCHAR:

- In terms of storage and retrieval, CHAR and VARCHAR differ.
- The length of a CHAR column is constant, whereas the size of a VARCHAR column is flexible.
- The maximum number of characters CHAR data types can carry is 255, but VARCHAR data types can hold up to 4000.
- VARCHAR is 50 percent slower than CHAR.
- VARCHAR employs dynamic memory allocation, whereas CHAR uses static memory allocation.

49. In MySQL, how to retrieve the current date?

Use the following syntax to get the current date:

```
SELECT CURRENT_DATE();
```

50. What is the default MySQL port number?

MySQL’s default port is 3306.

51. What is REGEXP in MySQL?

REGEXP is a regular expression pattern match. A regular expression is a vital tool for specifying a pattern for a complex search.

It is essentially a customized text string used to describe a search pattern. To further comprehend it, consider a circumstance in which you search for.txt files in the file manager to list all text files. *.*\.txt* is the regex equivalent of .txt.

52. How many columns can be added to an index?

A typical table can have a maximum of 16 indexed columns.

53. What is the difference between the functions NOW() and CURRENT DATE() in MySQL?

The *NOW()* command displays the current year, month, and date with hours, minutes, and seconds.

On the other hand, the *CURRENT DATE()* only indicates the current year, month, and date.

As a beginner, you must be ready to face such MySQL interview questions and answers for freshers.

54. What query is used to display the top 20 rows?

It is one of the top interview questions on MySQL queries that can be asked to experienced professionals.

Use this syntax:

```
select column1, column2, ... from table_name LIMIT n
```

Here, put n=20 so that it will show the top 20 rows from your MySQL database table.

55. What is MySQL SAVEPOINT statement?

A savepoint is a defined point in any transaction.

SAVEPOINT is a MySQL statement used to create a named transaction savepoint with the name of the identifier.

56. What is SQLyog?

SQLyog is the most popular administrative GUI tool. It is the most widely used MySQL development and administration tool. It combines the functionality of MySQL administrator, phpMyadmin, and other programs.

57. How to back up a MySQL database?

This is among the frequently asked MySQL interview questions for 3 years experience. It can also be put forward even if you have more experience.

phpMyAdmin makes data backup simple. First, you can choose which database to back up by clicking the database name in the left-hand navigation bar.

Then, select the export button and ensure that all the tables you wish to back up are highlighted. Then, under export, select the desired option and save the output.

58. What is the use of ENUMs in MySQL?

It is a data type in MySQL. By creating ENUMs, we allow the end-user to supply accurate input. If the user offers information not part of the ENUM-defined data, the query will not execute, and an error message stating “The incorrect Query” will be presented.

For example, imagine we wish to take the user’s gender as an input. Therefore we define *ENUM(‘male,’ ‘female,’ ‘other’)*, and hence any text other than these three results in error.

ENUMs are used to restrict the values that can be inserted into the table:

For example:

```
CREATE TABLE months (month ENUM 'January', 'February', 'March'); INSERT months VALUES ('April').
```

59. What benefits does MyISAM have over InnoDB?

MyISAM takes a cautious approach to disk space management, storing each MyISAM table in its file that can be compressed further if necessary.

InnoDB, on the other hand, keeps the tables in the tablespace. As a result, it is difficult to optimize it further.

60. What is the difference between mysql_connect and mysql_pconnect?

It’s yet another technical interview question on MySQL. Here is the short answer.

Mysql_connect() creates a new database connection, whereas mysql_pconnect() creates a permanent database connection.

It specifies that *mysql_pconnect()* does not open the database each time the page is loaded.

61. What is the function mysql_close() used for?

It is used to cancel a connection started by *mysql_connect()*.

62. What is a MySQL data directory?

The MySQL data directory is where MySQL saves its data. This data dictionary’s subdirectories each represent a MySQL database. The information controlled by MySQL = server *mysqld* is saved in the data directory by default.

63. How to find the location of the MySQL data directory?

In Windows, the default location of the MySQL data directory is *C:\mysql\data* or *C:\Program Files\MySQL\MySQL Server 5.0 \data*.

64. What is the “i-am-a-dummy” flag in MySQL used for?

The *“i-am-a-dummy”* signal in MySQL causes the MySQL engine to reject *UPDATE* and *DELETE* operations unless the *WHERE* clause is present.

65. What is Access Control List in MySQL?

An Access Control List is a set of permissions associated with a particular item. MySQL caches the Access Control Lists in memory, and anytime a user attempts to authenticate or execute a command; it checks the permissions required for the object. If the permissions are available, the execution succeeds.

66. What is InnoDB?

InnoDB is a SQL storage database. InnoDB also supports ACID transactions and includes support for foreign keys. Initially held by InnobaseOY, it currently belongs to Oracle Corporation, which bought it in 2005.

67. How to activate batch mode in MySQL?

In MySQL, we use the following command to enable batch mode:

```
mysql;

mysql mysql.out;
```

68. What are the drivers in MySQL?

The following are the drivers available in MySQL:

- PHP Driver
- JDBC Driver
- ODBC Driver
- C WRAPPER
- PYTHON Driver
- PERL Driver
- RUBY Driver
- CAP11PHP Driver
- Ado.net5.mxz

69. What are DDL, DML, and DCL?

SQL instructions are broadly classified into DDL, DML, and DCL.

- **Data Definition Language (DDL)** is responsible for all database schemas and describes how data should be stored in the database. DDL includes commands such as CreateTABLE and ALTER TABLE.

- **Data Manipulative Language (DML)** is concerned with data operations and manipulations. DML commands include Insert, Select, and so on.
- **Data Control Languages (DCL)** are associated with permits and grants. In short, these define the authorization to access any part of the database.

1. What is MySQL?

Answer: MySQL is an open-source relational database management system that is based on the SQL language.

---

2. What are the advantages of MySQL?

- MySQL is compatible with various operating systems, making it flexible.
- Performance is a major focus for MySQL.
- In the past, MySQL lacked advanced features like subqueries, views, and stored procedures at the enterprise level.
- Full-text indexing and searching are supported in MySQL.
- Query caching is available in MySQL to improve its speed.
- Replication is a useful feature of MySQL that allows duplication of a server for various benefits.
- MySQL has configuration and security options to ensure its proper functioning and protection against threats.

---

3. What are some of the common MySQL commands?

Command	Action
ALTER	To alter a database or table
BACKUP	To back-up a table
\c	To cancel Input
CREATE	To create a database
DELETE	To delete a row from a table

Command	Action
DESCRIBE	To describe a table’s columns
DROP	To delete a database or table
EXIT(ctrl+c)	To exit
GRANT	To change user privileges
HELP (\h, \?)	Display help
INSERT	Insert data
LOCK	Lock table(s)
QUIT(\q)	Same as EXIT
RENAME	Rename a Table
SHOW	List details about an object
SOURCE	Execute a file
STATUS (\s)	Display the current status
TRUNCATE	Empty a table
UNLOCK	Unlock table(s)
UPDATE	Update an existing record
USE	Use a database

---

4. What are some of the features of MySQL?

Answer: MySQL includes support for transactions, triggers, views, stored procedures, and many other advanced features that make it a powerful and flexible database management system.

5. How do you create a database in MySQL?

Answer: To create a database in MySQL, use the CREATE DATABASE command followed by the name of the database.

---

6. How do you create a new MySQL database?

Answer:

```
CREATE DATABASE database_name;
```

---

7. How do you create a table in MySQL?

Answer: To create a table in MySQL, use the CREATE TABLE command followed by the name of the table and the list of columns.

---

8. What is a primary key in MySQL?

Answer: A primary key is a unique identifier for a record in a table. It is used to ensure that each record in the table can be uniquely identified.

---

9. What are the differences between MySQL and SQL Server?

Criteria	MySQL	SQL Server
Developed by	Oracle	Microsoft
Programmed in	C and C++	Mainly C++, but some par
Platforms	Supports many platforms	Supports only Linux and V
Syntax	Complex Syntax	Simpler and easy-to-use sy

---

10. How do you add a column to a table in MySQL?

Answer: To add a column to a table in MySQL, use the ALTER TABLE command followed by the name of the table and the new column definition.

---

11. What is a foreign key in MySQL?

Answer: A foreign key is a field in one table that refers to the primary key of another table. It is used to establish a relationship between two tables.

---

12. How do you create a new MySQL table?

Answer:

```
CREATE TABLE table_name (column1 datatype1, column2 datatype2, ...);
```

---

13. What is a stored procedure in MySQL?

Answer: A stored procedure is a set of SQL statements that are stored in the database and can be executed as a single unit.

---

14. What are the differences between a primary key and a foreign key?

Primary Key	Foreign Key
It helps in the unique identification of data in a database	It helps establish a link between tables
There can be only one primary key for a table	There can be more than one foreign key for a table
Primary key attributes cannot have duplicate values in a table	Duplicate values are acceptable for a foreign key

Null values are not acceptable	Null values are acceptable
We can define primary key **constraints** for temporarily created tables	It cannot be defined for temporary tables
The primary key index is automatically created	The index is not created automatically

---

15. How do you create a trigger in MySQL?

Answer: To create a trigger in MySQL, use the CREATE TRIGGER command followed by the name of the trigger, the table it applies to, and the SQL statements that define it.

---

16. What is a cursor in MySQL?

Answer: A cursor in MySQL is a mechanism for iterating over the rows in a result set. It allows you to process each row in turn and perform operations on it.

---

17. How do you create a cursor in MySQL?

Answer: To create a cursor in MySQL, use the DECLARE CURSOR command followed by the name of the cursor and the SELECT statement that defines the result set.

---

18. What is a transaction in MySQL?

Answer: A transaction in MySQL is a set of SQL statements that are executed as a single unit. It allows you to ensure that a group of changes to the database are all executed successfully or rolled back if any one of them fails.

---

19. What is normalization in MySQL?

Answer: Normalization in MySQL is the process of organizing data in a database to reduce redundancy and dependency.

20. What is the difference between the primary key and the candidate key?

- In MySQL, the primary key is utilized to uniquely identify each row of a table. A table can have only one primary key.
- Candidate keys, on the other hand, can be used to reference foreign keys. The primary key is one of the candidate keys that can be used for this purpose.

---

21. How do you normalize a database in MySQL?

Answer: To normalize a database in MySQL, you need to identify the dependencies between the data elements and organize them into tables that follow certain rules.

---

22. When should denormalization be used in MySQL?

Answer: Denormalization should only be used in MySQL when there is a clear performance benefit that outweighs the cost of introducing redundancy and complexity into the database.

---

23. What is indexing in MySQL?

Answer: Indexing in MySQL is the process of creating an index on a column or set of columns in a table in order to improve the performance of queries that use those columns.

---

24. How do you insert data into a MySQL table?

Answer:

```
INSERT INTO table_name (column1, column2, ...) VALUES (value1, value2, ...);
```

---

25. How do you create an index in MySQL?

Answer: To create an index in MySQL, use the CREATE INDEX command followed by the name of the index, the name of the table, and the name of the column or columns to be indexed.

---

26. What is a full-text index in MySQL?

Answer: A full-text index in MySQL is an index that allows you to perform text-based searches on the contents of a column or set of columns.

---

27. How do you create a full-text index in MySQL?

Answer: To create a full-text index in MySQL, use the CREATE FULLTEXT INDEX command followed by the name of the index, the name of the table, and the name of the column or columns to be indexed.

---

28. What is a query in MySQL?

Answer: A query in MySQL is a request for data from a database that matches certain criteria.

---

29. How do you write a basic SELECT query in MySQL?

Answer: To write a basic SELECT query in MySQL, use the SELECT command followed by the name of the column or columns you want to retrieve and the name of the table you want to retrieve them from.

---

30. What is a subquery in MySQL?

Answer: A subquery in MySQL is a query that is embedded inside another query. It is used to retrieve data that is then used as input to the outer query.

---

31. How do you write a subquery in MySQL?

Answer: To write a subquery in MySQL, enclose the inner query in parentheses and use it as input to the outer query.

---

32. What is a join in MySQL?

Answer: A join in MySQL is a mechanism for combining data from two or more tables based on a common column or set of columns.

---

33. What are the different types of joins in MySQL?

Answer: The different types of joins in MySQL include inner joins, left joins, right joins, and full outer joins.

---

34. What is an inner join in MySQL?

Answer: An inner join in MySQL is a join that returns only the rows that have matching values in both tables being joined.

---

35. What is a left join in MySQL?

Answer: A left join in MySQL is a join that returns all the rows from the left table and the matching rows from the right table. If there are no matching rows in the right table, the result will contain NULL values for those columns.

---

36. How do you update data in a MySQL table?

Answer:

```
UPDATE table_name SET column1 = value1, column2 = value2, ... WHERE condition;
```

---

37. How do you start a transaction in MySQL?

Answer: To start a transaction in MySQL, use the START TRANSACTION command.

---

38. How do you commit a transaction in MySQL?

Answer: To commit a transaction in MySQL, use the COMMIT command.

---

39. How do you rollback a transaction in MySQL?

Answer: To rollback a transaction in MySQL, use the ROLLBACK command.

---

40. What is the difference between a DELETE statement and a TRUNCATE statement in MySQL?

Answer: A DELETE statement in MySQL removes individual rows from a table based on a certain condition, while a TRUNCATE statement removes all rows from a table.

41. What is the difference between a UNION statement and a UNION ALL statement in MySQL?

Answer: A UNION statement in MySQL combines the result sets of two or more SELECT statements into a single result set, removing any duplicates. A UNION ALL statement also combines the result sets of two or more SELECT statements, but does not remove duplicates.

---

42. What is the difference between a primary key and a unique key in MySQL?

Answer: A primary key in MySQL is a column or set of columns that uniquely identifies each row in a table. A unique key in MySQL is a column or set of columns that does not allow duplicate values, but does not necessarily identify each row uniquely.

---

43. What is the difference between a CHAR data type and a VARCHAR data type in MySQL?

Answer: A CHAR data type in MySQL is a fixed-length string, while a VARCHAR data type is a variable-length string.

---

44. What is the difference between a FLOAT data type and a DOUBLE data type in MySQL?

Answer: A FLOAT data type in MySQL is a single-precision floating-point number, while a DOUBLE data type is a double-precision floating-point number.

---

45. What is the difference between a TIMESTAMP data type and a DATETIME data type in MySQL?

Answer: A TIMESTAMP data type in MySQL stores the number of seconds since the Unix epoch (January 1, 1970), while a DATETIME data type stores a date and time in a more human-readable format.

---

46. What is a database index?

Answer: An index in MySQL is a data structure that improves the speed of data retrieval operations on a table.

---

47. What are the benefits of database indexing?

Answer: The benefits of database indexing in MySQL include:

- Faster data retrieval: Indexing can significantly speed up data retrieval operations, particularly for large tables.
- Improved query performance: Queries that use indexed columns as filters can be executed much more quickly than those that do not.
- Reduced disk I/O: Indexing can reduce the amount of disk I/O required to retrieve data, which can improve overall system performance.

- Improved concurrency: Indexing can improve concurrency by reducing the amount of time that database locks are held during data retrieval operations.

---

48. What is denormalization in MySQL?

Answer: Denormalization is the process of intentionally introducing redundancy into a database in order to improve performance. This is often done by adding redundant columns to a table or by duplicating data in multiple tables.

---

49. What is a self-join in MySQL?

Answer: A self-join in MySQL is a join that is performed on a single table. This is done by creating two or more aliases for the same table and joining them together using different columns.

---

50. What is the difference between a left join and a right join in MySQL?

Answer: A left join in MySQL returns all rows from the left table and matching rows from the right table. A right join returns all rows from the right table and matching rows from the left table.

---

51. What is the difference between a correlated subquery and a non-correlated subquery in MySQL?

Answer: A correlated subquery in MySQL is a subquery that references columns from the outer query. A non-correlated subquery does not reference columns from the outer query.

---

52. What is a compound key in MySQL?

Answer: A compound key in MySQL is a key that is made up of two or more columns. The combination of columns must be unique.

---

53. What is a temporary table in MySQL?

Answer: A temporary table in MySQL is a table that is created and used for a single session or query. Temporary tables are automatically dropped when the session or query ends.

---

54. How do you delete data from a MySQL table?

Answer:

```
DELETE FROM table_name WHERE condition;
```

---

55. What is the difference between an inner join and an outer join in MySQL?

Answer: An inner join in MySQL returns only the rows that have matching values in both tables. An outer join returns all rows from both tables, and includes null values for columns where there is no match.

---

56. What is a full outer join in MySQL?

Answer: A full outer join in MySQL returns all rows from both tables, and includes null values for columns where there is no match.

---

57. What is a cross join in MySQL?

Answer: A cross join in MySQL returns the Cartesian product of the two tables being joined. This means that every row in the first table is joined with every row in the second table.

---

58. How do you select all data from a MySQL table?

Answer:

```
SELECT * FROM table_name;
```

---

59. What is a clustered index in MySQL?

Answer: A clustered index in MySQL is an index that determines the physical order of data in a table. Tables can have only one clustered index.

---

60. What is a non-clustered index in MySQL?

Answer: A non-clustered index in MySQL is an index that does not determine the physical order of data in a table. Tables can have multiple non-clustered indexes.

---

61. How do you select specific columns from a MySQL table?

Answer:

```
SELECT column1, column2, ... FROM table_name;
```

---

62. What are the Numeric Data Types in MySQL?

Answer:

Type Name	Meaning
TINYINT	Very Small Integer
SMALLINT	Small Integer
MEDIUMINT	Medium-sized Integer
INT	Standard Integer
BIGINT	Large Integer

Type Name	Meaning
DECIMAL	Fixed-point number
FLOAT	Single-precision floating-point number
DOUBLE	Double-precision floating-point number
BIT	Bit-field

---

63. What is the difference between the CHAR and VARCHAR data types in MySQL?

Answer: The CHAR data type in MySQL is used to store fixed-length character strings. VARCHAR is used to store variable-length character strings. VARCHAR is typically more space-efficient than CHAR, but may require more processing time when inserting or updating data.

---

64. How do you select data from a MySQL table based on a condition?

Answer:

```
SELECT * FROM table_name WHERE condition;
```

---

65. How do you join two MySQL tables?

Answer:

```
SELECT * FROM table1 JOIN table2 ON table1.column = table2.column;
```

---

66. How do you group data in a MySQL query?

Answer:

```
SELECT column1, SUM(column2) FROM table_name GROUP BY column1;
```

---

67. What is a foreign key constraint in MySQL?

Answer: A foreign key constraint in MySQL is a rule that enforces a relationship between two tables. The foreign key column in one table references the primary key column in another table.

---

68. What is the difference between a primary key constraint and a unique key constraint in MySQL?

Answer: A primary key constraint in MySQL is used to enforce the uniqueness of a column or set of columns, and to identify each row in the table. A unique key constraint is used to enforce the uniqueness of a column or set of columns, but does not necessarily identify each row in the table.

---

69. How do you order data in a MySQL query?

Answer:

```
SELECT * FROM table_name ORDER BY column1 ASC/DESC;
```

---

70. How do you limit the number of rows returned in a MySQL query?

Answer:

```
SELECT * FROM table_name LIMIT 10;
```

---

71. What is the purpose of the EXPLAIN statement in MySQL?

Answer: The EXPLAIN statement in MySQL is used to analyze and optimize the performance of SQL statements. The statement provides information on how MySQL executes the statement and can be used to identify potential performance issues.

72. What is a database index in MySQL?

Answer: A database index in MySQL is a data structure that is used to improve the performance of database queries. Indexes can be created on one or more columns in a table and can be used to speed up searches, joins, and other operations.

---

73. How do you calculate the average value of a column in a MySQL table?

Answer:

```
SELECT AVG(column_name) FROM table_name;
```

---

74. How do you count the number of rows in a MySQL table?

Answer:

```
SELECT COUNT(*) FROM table_name;
```

---

75. What is a natural join in MySQL?

Answer: A natural join in MySQL is a join that is performed on columns with the same name in both tables. The join condition is implicit.

---

76. What is a self-referential foreign key in MySQL?

Answer: A self-referential foreign key in MySQL is a foreign key that references the same table. This is often used to create hierarchical relationships within a single table.

---

77. How do you find the maximum value in a column in a MySQL table?

Answer:

```
SELECT MAX(column_name) FROM table_name;
```

---

78. How do you find the minimum value in a column in a MySQL table?

Answer:

```
SELECT MIN(column_name) FROM table_name;
```

---

79. What is a right join in MySQL?

Answer: A right join in MySQL is a join that returns all the rows from the right table and the matching rows from the left table. If there are no matching rows in the left table, the result will contain NULL values for those columns.

---

80. What is the difference between the MyISAM and InnoDB storage engines in MySQL?

Answer: The MyISAM storage engine in MySQL is a simple, fast storage engine that is well-suited for read-heavy applications. The InnoDB storage engine is a more complex storage engine that supports transactions and is well-suited for write-heavy applications.

---

81. How do you create an index on a MySQL table?

Answer:

```
CREATE INDEX index_name ON table_name(column_name);
```

---

82. What are the common MySQL functions?

Answer:

Common MySQL functions are as follows:

- **NOWO:** The function for returning the current date and time as a single value
- **CURRDATEO:** The function for returning the current date or time
- **CONCAT (X, Y):** The function to concatenate two string values creating a single string output
- **DATEDIFF (X, Y):** The function to determine the difference between two dates

---

83. What is replication in MySQL?

Answer: Replication in MySQL is the process of copying data from one database to another. This can be used to distribute data across multiple servers for load balancing or fault tolerance.

---

84. How do you create a stored procedure in MySQL?

Answer:

```
CREATE PROCEDURE procedure_name(parameters)
BEGIN
— code goes here
END;
```

---

85. How do you create a view in MySQL?

Answer:

```
CREATE VIEW view_name AS SELECT column1, column2 FROM table_name WHERE condition;
```

---

86. How do you grant privileges to a user in MySQL?

Answer:

```
GRANT privilege_name ON database_name.table_name TO ‘username’@’localhost’;
```

---

87. Explain the logical architecture of MySQL

Answer:

- The first layer of MySQL encompasses essential services required by client/server tools and servers, including connection management, security, and authentication.
- The second layer of MySQL is where much of the database management system’s intelligence resides. It comprises the code responsible for analyzing, parsing, optimizing queries, and caching, along with all the built-in functions.
- The third layer of MySQL comprises storage engines that are accountable for storing and retrieving data from the database.

---

88. What is a view in MySQL?

Answer: A view in MySQL is a virtual table that is based on the result of a SELECT statement. Views can be used to simplify complex queries, and can be used in place of tables in most SQL statements.

---

89. What is a trigger in MySQL?

Answer: A trigger in MySQL is a set of actions that are automatically executed when a specified event occurs. Triggers can be used to enforce business rules or data integrity constraints.

---

90. What are the TRIGGERS that can be used in MySQL tables?

Below are TRIGGERS that are allowed in MySQL:

- BEFORE INSERT
- AFTER INSERT
- BEFORE UPDATE
- AFTER UPDATE
- BEFORE DELETE
- AFTER DELETE

---

91. What is a deadlock in MySQL?

Answer: A deadlock in MySQL is a situation where two or more transactions are waiting for each other to release locks on resources. This can result in a situation where none of the transactions can proceed.

---

92. What is the difference between the UPDATE and DELETE commands in MySQL?

Answer: The UPDATE command in MySQL is used to modify existing data in a table. The DELETE command is used to remove data from a table.

---

93. What is the difference between the IS NULL and IS NOT NULL operators in MySQL?

Answer: The IS NULL operator in MySQL is used to test whether a column contains a null value. The IS NOT NULL operator is used to test whether a column does not contain a null value.

---

94. What is the difference between the COUNT(*) and COUNT(column_name) functions in MySQL?

Answer: The COUNT(*) function in MySQL is used to count the number of rows in a table, regardless of whether any specific column contains a null value. The COUNT(column_name) function is used to count the number of non-null values in a specific column.

---

95. What is an access control list?

Answer:

- To prevent data loss and ensure secure access, organizations establish a set of permissions that are associated with different data objects. This set of permissions is referred to as an access control list (ACL).
- The ACL serves as the foundation for the server's security and can help resolve connection issues for users. These lists are also referred to as grant tables and are cached by MySQL. When a user executes a command, MySQL verifies the user for authentication and grants permissions in a particular sequence.

---

96. What is the difference between the INNER JOIN and OUTER JOIN clauses in MySQL?

Answer: The INNER JOIN clause in MySQL is used to return only the rows that have matching values in both tables being joined. The OUTER JOIN clause is used to return all the rows from one table and only the matching rows from the other table being joined.

---

97. What is the difference between a LEFT JOIN and a RIGHT JOIN in MySQL?

Answer: A LEFT JOIN in MySQL returns all the rows from the left table and only the matching rows from the right table being joined. A RIGHT JOIN returns all the rows from the right table and only the matching rows from the left table being joined.

---

98. What is the difference between a UNION and a UNION ALL operation in MySQL?

Answer: A UNION operation in MySQL is used to combine the results of two or more SELECT statements into a single result set. The UNION ALL operation is similar, but it includes duplicate rows in the result set.

---

99. What is the difference between a clustered index and a non-clustered index in MySQL?

Answer: A clustered index in MySQL is an index that determines the physical order of the rows in a table. A non-clustered index is an index that does not affect the physical order of the rows in a table.

---

100. What is a database constraint in MySQL?

Answer: A database constraint in MySQL is a rule that is enforced by the database to ensure data integrity. Constraints can be used to ensure that data is unique, non-null, or within a specific range of values.