|  |  |  |
| --- | --- | --- |
| Definition | A function is used to calculate result using given inputs. | A procedure is used to perform certain task in order. |
| Call | A function can be called by a procedure. | A procedure cannot be called by a function. |
| DML | DML statements cannot be executed within a function. | DML statements can be executed within a procedure. |
| SQL, Query | A function can be called within a query. | A procedure cannot be called within a query. |
| SQL, Call | Whenever a function is called, it is first compiled before being called. | A procedure is compiled once and can be called multiple times without being compiled. |
| SQL, Return | A function returns a value and control to calling function or code. | A procedure returns the control but not any value to calling function or code. |
| try-catch | A function has no support for try-catch | A procedure has support for try-catch blocks. |
| SELECT | A select statement can have a function call. | A select statement can't have a procedure call. |
| Explicit Transaction Handling | A function cannot have explicit transaction handling. | A procedure can use explicit transaction handling. |

1. What is MySQL?

MySQL is a database management system for web servers. It can grow with the website as it is highly scalable. Most of the websites today are powered by MySQL.

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

Flexibility: MySQL runs on all operating systems

Power: MySQL focuses on performance

Enterprise-Level SQL Features: MySQL had for some time been lacking in advanced features such as subqueries, views, and stored procedures.

Full-Text Indexing and Searching

Query Caching: This helps enhance the speed of MySQL greatly

Replication: One MySQL server can be duplicated on another, providing numerous advantages

Configuration and Security

3. What do you mean by ‘databases’?

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.

You can download a PDF version of Mysql Interview Questions.

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4. What does SQL in MySQL stand for?

The SQL in MySQL stands for Structured Query Language. This language is also used in other databases such as Oracle and Microsoft SQL Server. One can use commands such as the following to send requests from a database:

SELECT title FROM publications WHERE author = ' J. K. Rowling’;

Note that SQL is not case sensitive. However, it is a good practice to write the SQL keywords in CAPS and other names and variables in a small case.

You can check out this SQL Tutorial to learn more about SQL.

5. What does a MySQL database contain?

A MySQL database contains one or more tables, each of which contains records or rows. Within these rows are various columns or fields that contain the data itself.

6. How can you interact with MySQL?

There are three main ways you can interact with MySQL:

using a command line

via a web interface

through a programming language

7. What are MySQL Database Queries?

A query is a specific request or a question. One can query a database for specific information and have a record returned.

8. 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

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

9. How do you create a database in MySQL?

Use the following command to create a new database called ‘books’:

CREATE DATABASE books;

10. How do you create a table using MySQL?

Use the following to create a table using MySQL:

CREATE TABLE history (

author VARCHAR(128),

title VARCHAR(128),

type VARCHAR(16),

year CHAR(4)) ENGINE InnoDB;

11. How do you Insert Data Into MySQL?

The INSERT INTO statement is used to add new records to a MySQL table:

INSERT INTO table\_name (column1, column2, column3,...)

VALUES (value1, value2, value3,...)

If we want to add values for all the columns of the table, we do not need to specify the column names in the SQL query. However, the order of the values should be in the same order as the columns in the table. The INSERT INTO syntax would be as follows:

INSERT INTO table\_name

VALUES (value1, value2, value3, ...);

12. How do you remove a column from a database?

You can remove a column by using the DROP keyword:

ALTER TABLE classics DROP pages;

13. How to create an Index in MySQL?

In MySQL, there are different index types, such as a regular INDEX, a PRIMARY KEY, or a FULLTEXT index. You can achieve fast searches with the help of an index. Indexes speed up performance by either ordering the data on disk so it's quicker to find your result or, telling the SQL engine where to go to find your data.

Example: Adding indexes to the history table:

ALTER TABLE history ADD INDEX(author(10));

ALTER TABLE history ADD INDEX(title(10));

ALTER TABLE history ADD INDEX(category(5));

ALTER TABLE history ADD INDEX(year);

DESCRIBE history;

14. How to Delete Data From a MySQL Table?

In MySQL, the DELETE statement is used to delete records from a table:

DELETE FROM table\_name

WHERE column\_name = value\_name

15. How do you view a database in MySQL?

One can view all the databases on the MySQL server host using the following command:

mysql> SHOW DATABASES;

16. What are the Numeric Data Types in MySQL?

MySQL has numeric data types for integer, fixed-point, floating-point, and bit values, as shown in the table below. Numeric types can be signed or unsigned, except BIT. A special attribute enables the automatic generation of sequential integer or floating-point column values, which is useful for applications that require a series of unique identification numbers.

Type Name Meaning

TINYINT Very Small Integer

SMALLINT Small Integer

MEDIUMINT Medium-sized Integer

INT Standard Integer

BIGINT Large Integer

DECIMAL Fixed-point number

FLOAT Single-precision floating-point number

DOUBLE Double-precision floating-point number

BIT Bit-field

17. What are the String Data Types in MySQL?

Type Name Meaning

CHAR fixed-length nonbinary(character) string

VARCHAR variable-length nonbinary string

BINARY fixed-length binary string

VARBINARY variable-length binary string

TINYBLOB Very small BLOB(binary large object)

BLOB Small BLOB

MEDIUMBLOB Medium-sized BLOB

LONGBLOB Large BLOB

TINYTEXT A very small nonbinary string

TEXT Small nonbinary string

MEDIUMTEXT Medium-sized nonbinary string

LONGTEXT Large nonbinary string

ENUM An enumeration; each column value is assigned, one enumeration member

SET A set; each column value is assigned zero or more set members

NULL NULL in SQL is the term used to represent a missing value. A NULL value in a table is a value in a field that appears to be blank. This value is different than a zero value or a field that contains spaces.

18. What are the Temporal Data Types in MySQL?

Type Name Meaning

DATE A date value, in ' CCYY-MM-DD ' Format

TIME A Time value, in ' hh : mm :ss ' format

DATETIME Date and time value, in ' CCYY-MM-DD hh : mm :ss ' format

TIMESTAMP A timestamp value, in ' CCYY-MM-DD hh : mm :ss ' format

YEAR A year value, in CCYY or YY format

Example: To select the records with an Order Date of "2018-11-11" from a table:

SELECT \* FROM Orders WHERE OrderDate='2018-11-11'

19. What is BLOB in MySQL?

BLOB is an acronym that stands for a binary large object. It is used to hold a variable amount of data.

There are four types of BLOB:

TINYBLOB

BLOB

MEDIUMBLOB

LONGBLOB

A BLOB can hold a very large amount of data. For example - documents, images, and even videos. You could store your complete novel as a file in a BLOB if needed.

20. How to add users in MySQL?

You can add a User by using the CREATE command and specifying the necessary credentials. For example:

CREATE USER ‘testuser’ IDENTIFIED BY ‘sample password’;

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Intermediate MySQL Interview Questions

1. What are MySQL “Views”?

In MySQL, a view consists of a set of rows that is returned if a particular query is executed. This is also known as a ‘virtual table’. Views make it easy to retrieve the way of making the query available via an alias.

The advantages of views are:

Simplicity

Security

Maintainability

2. How do you create and execute views in MySQL?

Creating a view is accomplished with the CREATE VIEW statement. As an example:

CREATE

[OR REPLACE]

[ALGORITHM = {MERGE | TEMPTABLE | UNDEFINED }]

[DEFINER = { user | CURRENT\_USER }]

[SQL SECURITY { DEFINER | INVOKER }]

VIEW view\_name [(column\_list)]

AS select\_statement

[WITH [CASCADED | LOCAL] CHECK OPTION]

3. What are MySQL Triggers?

A trigger is a task that executes in response to some predefined database event, such as after a new row is added to a particular table. Specifically, this event involves inserting, modifying, or deleting table data, and the task can occur either prior to or immediately following any such event.

Triggers have many purposes, including:

Audit Trails

Validation

Referential integrity enforcement

4. How many Triggers are possible in MySQL?

There are six Triggers allowed to use in the MySQL database:

Before Insert

After Insert

Before Update

After Update

Before Delete

After Delete

5. What is the MySQL server?

The server, mysqld, is the hub of a MySQL installation; it performs all manipulation of databases and tables.

6. What are the MySQL clients and utilities?

Several MySQL programs are available to help you communicate with the server. For administrative tasks, some of the most important ones are listed here:

• mysql—An interactive program that enables you to send SQL statements to the server and to view the results. You can also use mysql to execute batch scripts (text files containing SQL statements).

• mysqladmin—An administrative program for performing tasks such as shutting down the server, checking its configuration, or monitoring its status if it appears not to be functioning properly.

• mysqldump—A tool for backing up your databases or copying databases to another server.

• mysqlcheck and myisamchk—Programs that help you perform table checking, analysis, and optimization, as well as repairs if tables become damaged. mysqlcheck works with MyISAM tables and to some extent with tables for other storage engines. myisamchk is for use only with MyISAM tables.

7. What are the types of relationships used in MySQL?

There are three categories of relationships in MySQL:

One-to-One: Usually, when two items have a one-to-one relationship, you just include them as columns in the same table.

One-to-Many: One-to-many (or many-to-one) relationships occur when one row in one table is linked to many rows in another table.

Many-to-Many: In a many-to-many relationship, many rows in one table are linked to many rows in another table. To create this relationship, add a third table containing the same key column from each of the other tables

Advanced MySQL Interview Questions

1. Can you explain the logical architecture of MySQL?

The top layer contains the services most network-based client/server tools or servers need such as connection handling, authentication, security, and so forth.

The second layer contains much of MySQL’s brains. This has the code for query parsing, analysis, optimization, caching, and all the built-in functions.

The third layer contains the storage engines that are responsible for storing and retrieving the data stored in MySQL.

2. What is Scaling in MySQL?

In MySQL, scaling capacity is actually the ability to handle the load, and it’s useful to think of load from several different angles such as:

Quantity of data

Number of users

User activity

Size of related datasets

3. What is Sharding in SQL?

The process of breaking up large tables into smaller chunks (called shards) that are spread across multiple servers is called Sharding.

The advantage of Sharding is that since the sharded database is generally much smaller than the original; queries, maintenance, and all other tasks are much faster.

4. What are Transaction Storage Engines in MySQL?

To be able to use MySQL’s transaction facility, you have to be using MySQL’s InnoDB storage engine (which is the default from version 5.5 onward). If you are not sure which version of MySQL your code will be running on, rather than assuming InnoDB is the default engine you can force its use when creating a table, as follows.

Conclusion

1. Conclusion

Several free or low-cost database management systems are available from which to choose, such as MySQL, PostgreSQL, or SQLite.

When you compare MySQL with other database systems, think about what’s most important to you. Performance, features (such as SQL conformance or extensions), support, licensing conditions, and price all are factors to take into account.

MySQL is one of the best RDBMS being used for developing various web-based software applications.

MySQL is offered under two different editions: the open-source MySQL Community Server and the proprietary Enterprise Server.

Given these considerations, MySQL has many attractive qualities:

Speed

Ease of use

Query language support

Capability

Connectivity and security

Portability

Availability and cost

Open distribution and source code

For, your better understanding, I will be considering the following tables to write queries.

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EmployeeInfo Table:

EmpID

EmpFname

EmpLname

Department

Project

Address

DOB

Gender

1

Sanjay

Mehra

HR

P1

Hyderabad(HYD)

01/12/1976

M

2

Ananya

Mishra

Admin

P2

Delhi(DEL)

02/05/1968

F

3

Rohan

Diwan

Account

P3

Mumbai(BOM)

01/01/1980

M

4

Sonia

Kulkarni

HR

P1

Hyderabad(HYD)

02/05/1992

F

5

Ankit

Kapoor

Admin

P2

Delhi(DEL)

03/07/1994

M

EmployeePosition Table:

EmpID

EmpPosition

DateOfJoining

Salary

1

Manager

01/05/2022

500000

2

Executive

02/05/2022

75000

3

Manager

01/05/2022

90000

2

Lead

02/05/2022

85000

1

Executive

01/05/2022

300000

Let us start by taking a look at some of the most frequently asked SQL Query interview questions,

Write a query to fetch the EmpFname from the EmployeeInfo table in the upper case and use the ALIAS name as EmpName.

Write a query to fetch the number of employees working in the department ‘HR’.

Write a query to get the current date.

Write a query to retrieve the first four characters of EmpLname from the EmployeeInfo table.

Write a query to fetch only the place name(string before brackets) from the Address column of EmployeeInfo table.

Write a query to create a new table that consists of data and structure copied from the other table.

Write q query to find all the employees whose salary is between 50000 to 100000.

Write a query to find the names of employees that begin with ‘S’

Write a query to fetch top N records.

Write a query to retrieve the EmpFname and EmpLname in a single column as “FullName”. The first name and the last name must be separated with space.

Q1. Write a query to fetch the EmpFname from the EmployeeInfo table in upper case and use the ALIAS name as EmpName.

1

SELECT UPPER(EmpFname) AS EmpName FROM EmployeeInfo;

Q2. Write a query to fetch the number of employees working in the department ‘HR’.

1

SELECT COUNT(\*) FROM EmployeeInfo WHERE Department = 'HR';

Q3. Write a query to get the current date.

You can write a query as follows in SQL Server:

1

SELECT GETDATE();

You can write a query as follows in MySQL:

Databases Training

1

SELECT SYSTDATE();

Q4. Write a query to retrieve the first four characters of EmpLname from the EmployeeInfo table.

1

SELECT SUBSTRING(EmpLname, 1, 4) FROM EmployeeInfo;

Q5. Write a query to fetch only the place name(string before brackets) from the Address column of EmployeeInfo table.

Using the MID function in MySQL

1

SELECT MID(Address, 0, LOCATE('(',Address)) FROM EmployeeInfo;

Using SUBSTRING

1

SELECT SUBSTRING(Address, 1, CHARINDEX('(',Address)) FROM EmployeeInfo;

Q6. Write a query to create a new table which consists of data and structure copied from the other table.

Using the SELECT INTO command:

1

SELECT \* INTO NewTable FROM EmployeeInfo WHERE 1 = 0;

Using the CREATE command in MySQL:

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1

CREATE TABLE NewTable AS SELECT \* FROM EmployeeInfo;

Q7. Write q query to find all the employees whose salary is between 50000 to 100000.

1

SELECT \* FROM EmployeePosition WHERE Salary BETWEEN '50000' AND '100000';

Q8. Write a query to find the names of employees that begin with ‘S’

1

SELECT \* FROM EmployeeInfo WHERE EmpFname LIKE 'S%';

Q9. Write a query to fetch top N records.

By using the TOP command in SQL Server:

1

SELECT TOP N \* FROM EmployeePosition ORDER BY Salary DESC;

By using the LIMIT command in MySQL:

1

SELECT \* FROM EmpPosition ORDER BY Salary DESC LIMIT N;

Q10. Write a query to retrieve the EmpFname and EmpLname in a single column as “FullName”. The first name and the last name must be separated with space.

1

SELECT CONCAT(EmpFname, ' ', EmpLname) AS 'FullName' FROM EmployeeInfo;

Q11. Write a query find number of employees whose DOB is between 02/05/1970 to 31/12/1975 and are grouped according to gender

1

SELECT COUNT(\*), Gender FROM EmployeeInfo WHERE DOB BETWEEN '02/05/1970 ' AND '31/12/1975' GROUP BY Gender;

Q12. Write a query to fetch all the records from the EmployeeInfo table ordered by EmpLname in descending order and Department in the ascending order.

To order the records in ascending and descnding order, you have to use the ORDER BY statement in SQL.

1

SELECT \* FROM EmployeeInfo ORDER BY EmpFname desc, Department asc;

Q13. Write a query to fetch details of employees whose EmpLname ends with an alphabet ‘A’ and contains five alphabets.

To fetch details mathcing a certain value, you have to use the LIKE operator in SQL.

1

SELECT \* FROM EmployeeInfo WHERE EmpLname LIKE '\_\_\_\_a';

Q14. Write a query to fetch details of all employees excluding the employees with first names, “Sanjay” and “Sonia” from the EmployeeInfo table.

1

SELECT \* FROM EmployeeInfo WHERE EmpFname NOT IN ('Sanjay','Sonia');

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Q15. Write a query to fetch details of employees with the address as “DELHI(DEL)”.

1

SELECT \* FROM EmployeeInfo WHERE Address LIKE 'DELHI(DEL)%';

Q16. Write a query to fetch all employees who also hold the managerial position.

1

2

3

SELECT E.EmpFname, E.EmpLname, P.EmpPosition

FROM EmployeeInfo E INNER JOIN EmployeePosition P ON

E.EmpID = P.EmpID AND P.EmpPosition IN ('Manager');

Q17. Write a query to fetch the department-wise count of employees sorted by department’s count in ascending order.

1

2

3

SELECT Department, count(EmpID) AS EmpDeptCount

FROM EmployeeInfo GROUP BY Department

ORDER BY EmpDeptCount ASC;

Q18. Write a query to calculate the even and odd records from a table.

To retrieve the even records from a table, you have to use the MOD() function as follows:

1

SELECT EmpID FROM (SELECT rowno, EmpID from EmployeeInfo) WHERE MOD(rowno,2)=0;

Similarly, to retrieve the odd records from a table, you can write a query as follows:

1

SELECT EmpID FROM (SELECT rowno, EmpID from EmployeeInfo) WHERE MOD(rowno,2)=1;

Q19. Write a SQL query to retrieve employee details from EmployeeInfo table who have a date of joining in the EmployeePosition table.

1

2

3

SELECT \* FROM EmployeeInfo E

WHERE EXISTS

(SELECT \* FROM EmployeePosition P WHERE E.EmpId = P.EmpId);

Q20. Write a query to retrieve two minimum and maximum salaries from the EmployeePosition table.

To retrieve two minimum salaries, you can write a query as below:

1

2

3

SELECT DISTINCT Salary FROM EmployeePosition E1

WHERE 2 >= (SELECTCOUNT(DISTINCT Salary)FROM EmployeePosition E2

WHERE E1.Salary >= E2.Salary) ORDER BY E1.Salary DESC;

To retrieve two maximum salaries, you can write a query as below:

1

2

3

SELECT DISTINCT Salary FROM EmployeePosition E1

WHERE 2 >= (SELECTCOUNT(DISTINCT Salary) FROM EmployeePosition E2

WHERE E1.Salary <= E2.Salary) ORDER BY E1.Salary DESC;

Q21. Write a query to find the Nth highest salary from the table without using TOP/limit keyword.

1

2

3

4

5

6

SELECT Salary

FROM EmployeePosition E1

WHERE N-1 = (

SELECT COUNT( DISTINCT ( E2.Salary ) )

FROM EmployeePosition E2

WHERE E2.Salary > E1.Salary );

Q22. Write a query to retrieve duplicate records from a table.

1

2

3

SELECT EmpID, EmpFname, Department COUNT(\*)

FROM EmployeeInfo GROUP BY EmpID, EmpFname, Department

HAVING COUNT(\*) > 1;

Q23. Write a query to retrieve the list of employees working in the same department.

1

2

3

Select DISTINCT E.EmpID, E.EmpFname, E.Department

FROM EmployeeInfo E, Employee E1

WHERE E.Department = E1.Department AND E.EmpID != E1.EmpID;

Q24. Write a query to retrieve the last 3 records from the EmployeeInfo table.

1

2

3

4

SELECT \* FROM EmployeeInfo WHERE

EmpID <=3 UNION SELECT \* FROM

(SELECT \* FROM EmployeeInfo E ORDER BY E.EmpID DESC)

AS E1 WHERE E1.EmpID <=3;

Q25. Write a query to find the third-highest salary from the EmpPosition table.

1

2

3

4

5

6

SELECT TOP 1 salary

FROM(

SELECT TOP 3 salary

FROM employee\_table

ORDER BY salary DESC) AS emp

ORDER BY salary ASC;

Q26. Write a query to display the first and the last record from the EmployeeInfo table.

To display the first record from the EmployeeInfo table, you can write a query as follows:

1

SELECT \* FROM EmployeeInfo WHERE EmpID = (SELECT MIN(EmpID) FROM EmployeeInfo);

To display the last record from the EmployeeInfo table, you can write a query as follows:

1

SELECT \* FROM EmployeeInfo WHERE EmpID = (SELECT MAX(EmpID) FROM EmployeeInfo);

Q27. Write a query to add email validation to your database

1

SELECT Email FROM EmployeeInfo WHERE NOT REGEXP\_LIKE(Email, ‘[A-Z0-9.\_%+-]+@[A-Z0-9.-]+.[A-Z]{2,4}’, ‘i’);

Q28. Write a query to retrieve Departments who have less than 2 employees working in it.

1

SELECT DEPARTMENT, COUNT(EmpID) as 'EmpNo' FROM EmployeeInfo GROUP BY DEPARTMENT HAVING COUNT(EmpD) < 2;

Q29. Write a query to retrieve EmpPostion along with total salaries paid for each of them.

1

SELECT EmpPosition, SUM(Salary) from EmployeePosition GROUP BY EmpPosition;

Q30. Write a query to fetch 50% records from the EmployeeInfo table.

1

2

3

SELECT \*

FROM EmployeeInfo WHERE

EmpID <= (SELECT COUNT(EmpID)/2 from EmployeeInfo);

So this brings us to the end of the SQL Query Interview Questions article. I hope this set of SQL

the main differences between INNODB and MYISAM

The most commonly used storage engine in MySQL are MyISAM and InnoDB.

With these storage engine there are some advantages and disadvantages according to application needs.

As you all know, the default storage engine chosen by MySQL database is MyISAM.

The main difference between MyISAM and INNODB are :

MyISAM does not support transactions by tables while InnoDB supports.

There are no possibility of row-level locking, relational integrity in MyISAM but with InnoDB this is possible. MyISAM has table-level locking.

InnoDB does not support FULLTEXT index while MyISAM supports.

Performance speed of MyISAM table is much higher as compared with tables in InnoDB.

InnoDB is better option while you are dealing with larger database because it supports transactions, volume while MyISAM is suitable for small project.

As InnoDB supports row-level locking which means inserting and updating is much faster as compared with MyISAM.

InnoDB supports ACID (Atomicity, Consistency, Isolation and Durability) property while MyISAM does not support.

In InnoDB table,AUTO\_INCREMENT field is a part of index.

Once table in InnoDB is deleted then it can not re-establish.

InnoDB does not save data as table level so while implementation of select count(\*) from table will again scan the whole table to calculate the number of rows while MyISAM save data as table level so you can easily read out the saved row number.

MyISAM does not support FOREIGN-KEY referential-integrity constraints while InnoDB supports.