



ALRIGHT!

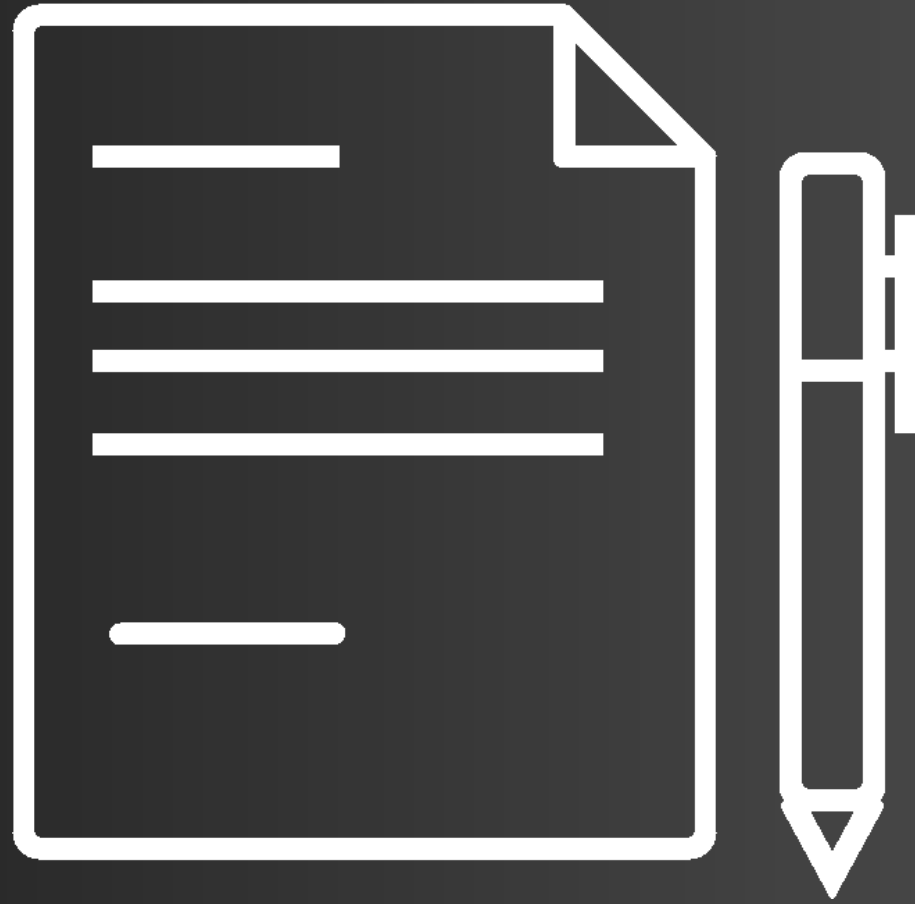


SQL TUTORIAL



# 50 MYSQL QUESTIONS







**Q: What is MySQL?**



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**A: MySQL is an open-source relational database management system that uses Structured Query Language (SQL) to manage, manipulate, and retrieve data.**



**Q: Can you explain the difference between SQL and MySQL?**



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**A: SQL (Structured Query Language) is a standard language for accessing and manipulating databases, whereas MySQL is an RDBMS that uses SQL to manage database operations.**



**Q: What is the purpose of the my.cnf (or my.ini on Windows) configuration file in MySQL?**





**Q: What is the purpose of the my.cnf (or my.ini on Windows) configuration file in MySQL?**

**A: The my.cnf or my.ini file is the primary configuration file for MySQL server. It's used to configure various server settings, including port numbers, data directory locations, memory allocations, and more.**

```
[mysqld]
# Basic server settings
port = 3306
socket = /var/lib/mysql/mysql.sock
datadir = /var/lib/mysql
max_connections = 100
default_storage_engine = InnoDB

# Cache and limit settings
query_cache_size = 10M
query_cache_limit = 1M
table_open_cache = 2000
max_allowed_packet = 16M
thread_cache_size = 10
```

```
# InnoDB settings
innodb_buffer_pool_size = 256M
innodb_log_file_size = 64M
innodb_file_per_table = 1

# Logging
log_error = /var/log/mysql/mysql_error.log
slow_query_log = 1
slow_query_log_file = /var/log/mysql/mysql_slow.log
```



**Q: What is a table & fields in a MySQL?**



**Q: What is a table & fields in a MySQL?**

**A: A table is a collection of related data in a database, organized into rows and columns.**

**Each column represents a field, while each row represents a record.**

# users\_info

id	name	city
101	Raju	Delhi
102	Sham	Mumbai
103	Paul	Chennai
104	Alex	Pune



**Q: What is default port for MySQL server?**



**Q: What is default port for MySQL server?**

**A: 3306**



**Q: How to see all the existing databases?**





**Q: How to see all the existing databases?**

**A: SHOW DATABASES;**



**Q: How to select a database to work with?**



**Q: How to select a database to work with?**

**A: USE db\_name;**



**Q: How to see all the tables present in a database?**



**Q: How to see all the tables present in a database?**

**A: SHOW Tables;**



**Q: How can you see the structure or details of a MySQL table?**



**Q: How can you see the structure or details of a MySQL table?**

**A: Use the DESC table\_name;**



**Q. What is a primary key in MySQL?**





**Q. What is a primary key in MySQL?**

**A: A primary key is a unique identifier for each record in a MySQL table. It must contain unique values and cannot contain NULL values.**

emp_id	fname	lname	desig	dept
101	Raju	Rastogi	Manager	Loan
102	Sham	Mohan	Cashier	Cash
103	Baburao	Apte	Associate	Loan
104	Paul	Philip	Accountant	Account
105	Alex	Watt	Associate	Deposit



**Q: How do you create a new table named 'employees' with an 'employee\_id' column as the primary key?**



**Q: How do you create a new table named 'employees' with an 'employee\_id' column as the primary key?**

**CREATE TABLE employees (employee\_id INT PRIMARY KEY, ...);**



**Q. What is a foreign key, and why is it important?**



**Q. What is a foreign key, and why is it important?**

**A: A foreign key is a field (or collection of fields) in one table that uniquely identifies a row of another table. It is used to establish and enforce a link between the data in two tables and ensure data integrity.**

## Customers

### Primary Key

cust_id	name	email
101	Raju	raju@email.com
102	Sham	sham@email.com
103	Baburao	babu@email.com

## Orders

### Primary Key

order_id	date	amount	cust_id
ord-1	2023-05-15	200	101
ord-2	2023-04-28	500	102
ord-3	2023-05-14	1000	101

### Foreign Key



**Q: What is a constraint in MySQL?**





**Q: What is a constraint in MySQL?**

**A: A constraint is a rule applied to a column or a set of columns in a MySQL table that restricts the data that can be stored in the columns.**

**Ex: UNIQUE, DEFAULT etc**



**Q: What are datatype?**



**Q: What are datatype?**

**A: At the time of defining the structure of our table i.e. columns name, we do need to define the type of data**

**Example: Age should be a no., name should be String**

```
mysql> desc employees;
```

Field	Type	Null	Key	Default	Extra
empid	int	NO	PRI	NULL	
name	varchar(50)	YES		NULL	



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



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

**A: CHAR is a fixed-length data type used for strings. It always reserves the specified amount of space.**

**VARCHAR is a variable-length data type that only uses as much space as needed, up to a specified maximum.**

**CHAR(4)**

**If you try to insert value 'AB'**

**MySQL will store the value as 'AB '**



**Q: What data type would you use for a column that stores product prices?**





**Q: What data type would you use for a column that stores product prices like 15.35?**

**A: The DECIMAL or FLOAT data type.**



**Q: How to find total no. of records?**



**Q: How to find total no. of records?**

**A: Using the COUNT Function**



**Q: How to see only top 3 records?**



**Q: How to see only top 3 records?**

**A: Using the LIMIT**



**Q: How can we format the date and time like 21st Tue  
at 21:20:28?**



**Q: How can we format the date and time like 21st Tue at 21:20:28?**

**A: Using the DATE\_FORMAT function**



# Q: What is CASE in MySQL?





**Q: What is CASE in MySQL?**

**A: It is used to create conditional queries.**

```
SELECT
    name,
    CASE
        WHEN age < 18 THEN 'minor'
        WHEN age BETWEEN 18 AND 65 THEN 'adult'
        ELSE 'senior'
    END as age_group
FROM people;
```



**Q: What is the use of CHECK Constraint?**



**Q: What is the use of CHECK Constraint?**

**A: To limit the values that can be placed in a column.**

```
CREATE TABLE contacts(  
    name VARCHAR(50),  
    mob VARCHAR(15) UNIQUE CHECK (LENGTH(mob) >= 10)  
);  
|
```



**Q: What are types of relationship in sql?**



## Q: What are types of relationship in sql?

- One to One
- One to Many
- Many to Many

1:1

## Employees

emp_id	name	dept
101	Raju	IT
102	Sham	Finance

## Employee Details

emp_id	addr	City	phone	title
101	CP	Delhi	909090909	Manager
102	Bhandup	Mumbai	902020200	Accountant

**1 : MANY**



## Employees

emp_id	name	dept
101	Raju	IT
102	Sham	Finance

## Employee Task

emp_id	task_no	task_detail
101	TS-1	Opening account for Ram
102	TS-2	Closing account for Neru
101	TS-3	Loan sanction

**Many : Many**



**Book A**



**Author A**



**Book B**



**Book C**



**Book D**



**Author B**



# Q: What are Stored Routine?



**Q: What are Stored Routine?**

**A: An SQL statement or a set of SQL Statement that can be stored on database server which can be call no. of times.**

**Types are: Stored Procedure and user defined functions**



**Q. How can you back up a MySQL database?**



**Q. How can you back up a MySQL database?**

**A: A MySQL database can be backed up using the `mysqldump` command-line utility, which creates a dump file of the database that can be used to restore the database if needed.**

```
mysqldump -u username -p database_name >  
backupfile.sql
```



**Q: How to import the data in MySQL from a text file?**





**Q: How to import the data in MySQL from a text file?**

**A: We can use mysqlimport utility**

```
mysqlimport --local -u username -p database_name  
/path/to/my_table.txt --fields-terminated-by=',' --lines-  
terminated-by='\n'
```



**Q: What is a JOIN in MySQL?**



**Q: What is a JOIN in MySQL?**

**A: Join is used to combine rows from two or more tables based on related column between them.**

## Customers

### Primary Key

cust_id	name	email
101	Raju	raju@email.com
102	Sham	sham@email.com
103	Baburao	babu@email.com

## Orders

### Primary Key

order_id	date	amount	cust_id
ord-1	2023-05-15	200	101
ord-2	2023-04-28	500	102
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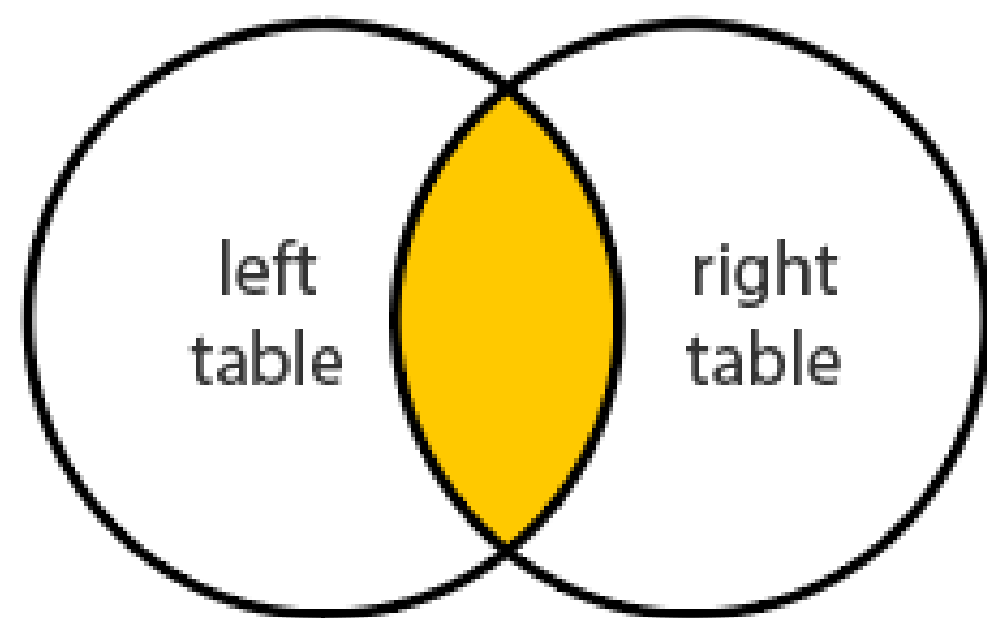
### Foreign Key



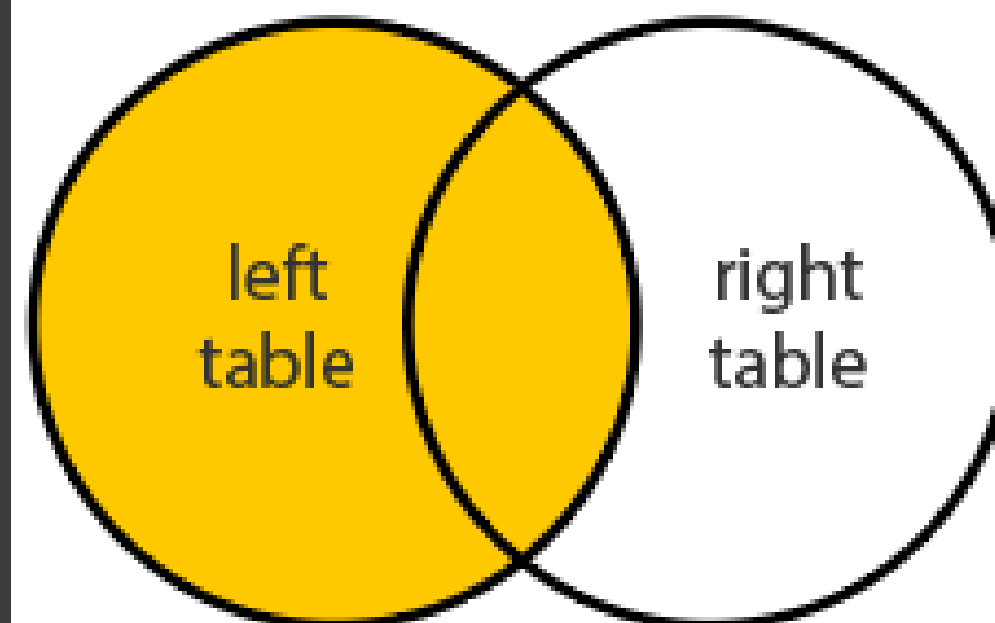
**Q: What are different types of JOIN in MySQL?**

**A: Inner Join, Left Join, Right Join, Full Join, Cross Join, etc.**

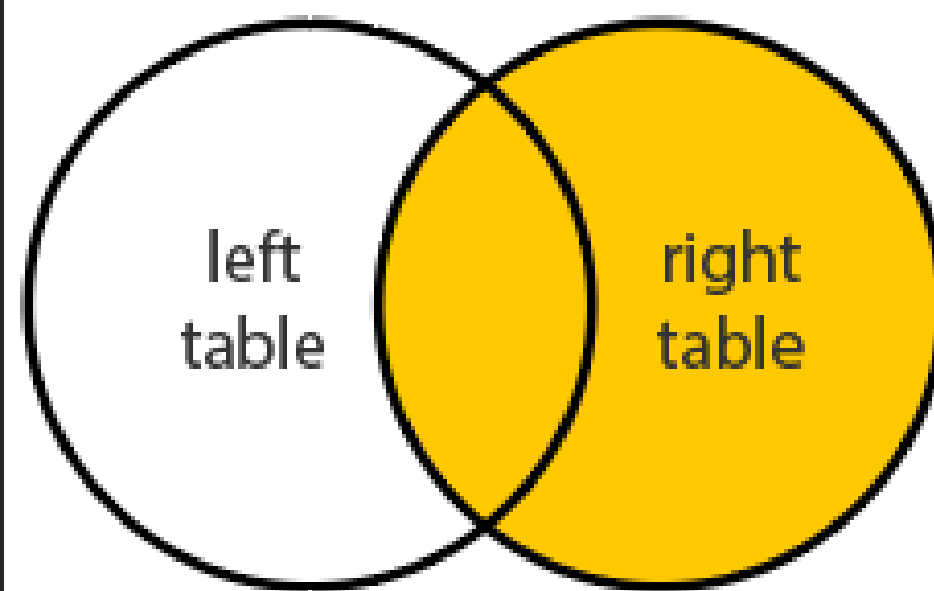
INNER JOIN



LEFT JOIN



RIGHT JOIN





**Q: What is an INDEX in MySQL?**



**Q: What is an INDEX in MySQL?**

**A: An index is used to speed up the search/query process within a table.**





**Q: How do you add an index to a table?**



**Q: How do you add an index to a table?**

**A: Use the command `CREATE INDEX index_name ON table_name (column_name);`**



**Q: What is a null value?**



**Q: What is a null value?**

**A: It represents a missing or unknown value.**

Field	Type	Null	Key	Default	Extra
empid	int	NO	PRI	NULL	
name	varchar(50)	YES		NULL	



**Q: How do you select only unique values from a table?**



**Q: How do you select only unique values from a table?**

**SELECT DISTINCT column\_name FROM table\_name;**



**Q: How do you sort the column data in a table?**



**Q: How do you sort the column data in a table?**

**A: Use ORDER BY.**





**Q: How do you update the email address of a customer in the 'customers' table with a customer ID of 5?**



**Q: How do you update the email address of a customer in the 'customers' table with a customer ID of 5?**

**UPDATE customers SET email =  
'newemail@example.com' WHERE customer\_id = 5;**



**Q: What is normalization?**



## Q: What is normalization?

**Normalization is the process of organizing data in a database to reduce redundancy and improve data integrity.**



**Q: What is a view in MySQL?**



**Q: What is a view in MySQL?**

**A view is a virtual table based on the result-set of an SQL statement.**



**Q: What is a stored procedure?**



**Q: What is a stored procedure?**

**A: Stored procedures are a set of SQL statements that can be stored in the server.**



```
DELIMITER //
```

```
CREATE PROCEDURE UpdateBookStock(IN bookID INT, IN quantitySold INT)
```

```
BEGIN
```

```
    UPDATE books
```

```
    SET stock_quantity = stock_quantity - quantitySold
```

```
    WHERE book_id = bookID;
```

```
END //
```

```
DELIMITER ;
```

```
CALL UpdateBookStock(101, 3);
```



**Q: What is a trigger in MySQL?**



**Q: What is a trigger in MySQL?**

**A: A trigger is a set of commands that are automatically executed in response to certain events on a particular table or view.**



**Q: Explain GROUP BY clause.**



**Q: Explain GROUP BY clause.**

**A: GROUP BY aggregates data by one or more columns.**

```
SELECT dept FROM employees GROUP BY dept;
```

```
SELECT dept, COUNT(fname) FROM employees GROUP  
BY dept;
```



**Q: What is a subquery?**



**Q: What is a subquery?**

**A: A subquery is a query nested within another query.**

```
SELECT Name, Salary
FROM Employees
WHERE Salary > (
    SELECT AVG(Salary)
    FROM Employees
);
```



**Q: What are user-defined functions?**





**Q: What are user-defined functions?**

**A: They are functions created by users to perform specific tasks.**

```
DELIMITER //
```

```
CREATE FUNCTION CalculateBonus(salary DECIMAL(10, 2))
```

```
RETURNS DECIMAL(10, 2)
```

```
BEGIN
```

```
    RETURN salary * 0.10;
```

```
END //
```

```
DELIMITER ;
```

```
SELECT employee_id, name, salary, CalculateBonus(salary) AS bonus  
FROM employees;
```



**Q: What is a deadlock?**



**Q: What is a deadlock?**

**A: Deadlock is a situation when two or more transactions prevent each other from completing.**



**Q: What is the difference between HAVING and WHERE clause?**



**Q: What is the difference between HAVING and WHERE clause?**

**A: WHERE is used to filter records before any groupings, HAVING is used to filter values after they are grouped.**



**Q: What are HEAP tables?**



**Q: What are HEAP tables?**

**A: HEAP tables are in-memory tables used for high-speed storage on a temporary basis.**





**Q: What is the significance of TIMESTAMP data type?**



**Q: What is the significance of TIMESTAMP data type?**

**A: TIMESTAMP data type is used for values that contain both date and time parts, automatically updating whenever the row is modified.**



**Q: Explain the CONCAT function.**



**Q: Explain the CONCAT function.**

**A: CONCAT function is used to concatenate two or more strings into a single string.**



**Q: Write a SQL query to delete a record from the 'orders' table where the 'order\_id' is 'O1001'.**



**Q: Write a SQL query to delete a record from the 'orders' table where the 'order\_id' is 'O1001'.**

**A: DELETE FROM orders WHERE order\_id = 'O1001';**



**Q: Write a SQL command to add a new column 'birthdate' to an existing table 'employees'.**



**Q: Write a SQL command to add a new column 'birthdate' to an existing table 'employees'.**

**A: ALTER TABLE employees ADD COLUMN birthdate DATE;**





**Q: How can you remove the table 'temporary\_data' from the database?**



**Q: How can you remove the table 'temporary\_data' from the database?**

**A: DROP TABLE temporary\_data;**



**Q: How do you rename a table in MySQL?**



**Q: How do you rename a table in MySQL?**

**A: Use the `RENAME TABLE old_table_name TO new_table_name;`**



**Q: What is the use of ROLL UP in MySQL?**



**Q: What is the use of ROLL UP in MySQL?**

**A: ROLLUP clause is used as an extension of the GROUP BY clause. It enables you to create subtotals and grand totals within your result set.**