

## **1. What is MySQL?**

### **Answer:**

MySQL is an open-source relational database management system (RDBMS) that uses SQL to store, manage, and retrieve data.

## **2. What are MySQL Data Types?**

### **Answer:**

MySQL data types define the type of data a column can store. They are mainly:

- **Numeric types** → INT, FLOAT, DOUBLE
- **String types** → CHAR, VARCHAR, TEXT
- **Date/Time types** → DATE, DATETIME, TIME, TIMESTAMP
- **Boolean** → TINYINT(1)

## **3. Difference between CHAR and VARCHAR?**

### **Answer:**

- **CHAR** → Fixed-length, faster, uses extra space.
- **VARCHAR** → Variable-length, saves space.

## **4. What are frequently used string functions in MySQL?**

### **Answer:**

- LENGTH() – Length of string
- LOWER() / UPPER() – Convert case
- CONCAT() – Join strings
- SUBSTRING() – Extract substring
- TRIM() – Remove spaces
- REPLACE() – Replace part of string

## **5. What are Date and Time functions in MySQL?**

### **Answer:**

- NOW() – Current date & time
- CURDATE() – Current date

- CURTIME() – Current time
- DATEDIFF(date1, date2) – Difference in days
- DATE\_FORMAT() – Format date
- ADDDATE() – Add days to a date

## 6. What is the difference between MySQL and MySQLi?

**Answer:**

Feature	MySQL	MySQLi
API type	Older	Improved
Support	No prepared statements	Supports prepared statements
Security	Less secure	More secure
Object-oriented	No	Yes
Transactions	Limited	Fully supported

## 7. What does MySQLi stand for?

**Answer:**

MySQL Improved.

## 8. How do you connect to MySQL in PHP?

Using MySQLi (OOP):

```
$conn = new mysqli("localhost", "root", "", "testdb");
```

## 9. How to check if the database connection is successful?

```
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
```

## 10. How do you insert data into MySQL using PHP?

```
$sql = "INSERT INTO users(name,email) VALUES('Amit','amit@gmail.com')";
$conn->query($sql);
```

## 11. How do you retrieve data from MySQL in PHP?

```
$result = $conn->query("SELECT * FROM users");
```

## 12. What is a prepared statement? Why is it used?

### Answer:

A prepared statement separates SQL query and data.

It is used to **prevent SQL injection** and improve security.

## 13. How to create a prepared statement in MySQLi?

```
$stmt = $conn->prepare("INSERT INTO users(name) VALUES (?)");  
$stmt->bind_param("s", $name);
```

## 14. What is PHPMyAdmin?

### Answer:

PHPMyAdmin is a web-based GUI tool used to:

- Create databases
- Create/modify tables
- Run SQL queries
- Manage users
- Import/export data

## 15. What are the advantages of using PHPMyAdmin?

### Answer:

- Easy to use
- No need to write SQL manually
- Import/export support
- User and permissions management

## 16. What is SQL Injection?

### Answer:

A hacking technique where malicious SQL commands are inserted into input fields to access or destroy data.

## **17. How to prevent SQL injection in PHP?**

**Answer:**

- Use **prepared statements**
- Validate user input
- Escape strings properly (`mysqli_real_escape_string()`)

## **18. What does `$conn->query()` do in PHP?**

**Answer:**

Executes an SQL query using MySQLi.

## **19. What is the difference between `fetch_assoc()` and `fetch_array()`?**

**Answer:**

- `fetch_assoc()` → Returns data as an associative array only.
- `fetch_array()` → Returns both associative and numeric array.

## **20. How do you close a MySQL connection in PHP?**

```
$conn->close();
```