PHP & MySQL Interview Questions and Answers

What is the advantage of namespace?

Namespaces in programming are used to avoid name conflicts between classes, functions, and variables.
Advantages:
- Avoids name collisions in large applications.
- Enables modular code organization.
- Allows reuse of code from different libraries without conflict.

Example:
```php
namespace MyApp\Controllers;
class UserController {}
```

What are the advantages of using Constructor?

A constructor is a special function that is automatically called when an object is created.
Advantages:
- Initializes object properties at the time of creation.
- Ensures the object is ready to use immediately.
- Can enforce mandatory data when creating objects.

Example:
```php
class User {
  public $name;
  function __construct($name) {
    $this->name = $name;
  }
}
```

What do you mean by Encapsulation?

Encapsulation is an OOP concept where data (properties) and methods (functions) are wrapped together inside a class.
Benefits:
- Improves data security by using private/protected access.
- Prevents unauthorized access to internal object details.
- Promotes code maintainability and modularity.

Example:
```php
class Account {
  private $balance = 0;
  public function deposit($amount) {
    if ($amount > 0) {
      $this->balance += $amount;
    }
  }
  public function getBalance() {
    return $this->balance;
  }
}
```

What is PHP's Authentication Variables? Write with example

PHP uses superglobals like $_SERVER, $_SESSION, and $_COOKIE for managing authentication.
Common variable: $_SERVER['PHP_AUTH_USER'] and $_SERVER['PHP_AUTH_PW'] for basic HTTP authentication.

Example:
```php
if (!isset($_SERVER['PHP_AUTH_USER'])) {
  header('WWW-Authenticate: Basic realm="My Realm"');
  header('HTTP/1.0 401 Unauthorized');
  echo 'Authentication required';
  exit;
} else {
  echo "Hello, {$_SERVER['PHP_AUTH_USER']}.";
}
```

What is Exception?

An exception is an object representing an error or unexpected behavior that occurs during code execution.
It allows structured error handling using try-catch blocks.

Example:
```php
try {
  throw new Exception("Something went wrong");
} catch (Exception $e) {
```

```
    echo 'Caught exception: ',  $e->getMessage();
}
```

Which functions are used to upload a file?

PHP provides these functions for file upload:
- move_uploaded_file(): Moves file to destination.
- is_uploaded_file(): Checks if file was uploaded via HTTP POST.

Example:
```php
if (move_uploaded_file($_FILES['file']['tmp_name'], "uploads/" . $_FILES['file']['name'])) {
    echo "File uploaded successfully.";
}
```

What do you mean by MySQL's authentication and authorization?

Authentication: Verifying the identity of a user (e.g., username/password).
Authorization: Granting the authenticated user permission to perform actions (e.g., SELECT, INSERT).

Example:
```sql
CREATE USER 'user1'@'localhost' IDENTIFIED BY 'password';
GRANT SELECT, INSERT ON mydb.* TO 'user1'@'localhost';
```

Name the storage engine available in MYSQL.

Common MySQL storage engines:
- InnoDB – Default, supports transactions, foreign keys.
- MyISAM – Fast reads, no transaction support.
- MEMORY – Data in RAM, fast, volatile.
- CSV – Stores data in CSV format.
- ARCHIVE – For storing large volumes of data with minimal disk space.

Discuss primary key and foreign key in MySQL.

Primary Key: Uniquely identifies each row in a table. Cannot be null.
Foreign Key: A field in one table that refers to the primary key in another table, creating a relationship.

Example:
```sql
CREATE TABLE users (
    id INT PRIMARY KEY,
```

```
    name VARCHAR(100)
);
CREATE TABLE orders (
    order_id INT PRIMARY KEY,
    user_id INT,
    FOREIGN KEY (user_id) REFERENCES users(id)
);
```

How to connect to MySQL from PHP with mysqli extension?

Using mysqli (procedural or object-oriented) to connect to MySQL.

Procedural:
```php
$conn = mysqli_connect("localhost", "username", "password", "database");
if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}
```

Object-Oriented:
```php
$conn = new mysqli("localhost", "username", "password", "database");
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
```