PHP Basics: Data types/variable, conditional, looping, function, array, string, associative array etc

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1. Simple Greeting 🤦

Scenario: You're building a website and want to greet a user by name when they visit the page.

- **Topics Covered:** Variables, Data Types (String), String Concatenation.
- **Sample Input:**

PHP

$name = "Alice";

- **Expected Output:**
- Hello Alice, welcome!

2. Temperature Converter 🌡️

Scenario: Create a script that converts a temperature from Celsius to Fahrenheit. This is useful for a weather application. The formula is F=(Ctimesfrac95)+32.

- **Topics Covered:** Variables, Data Types (Integer/Float), Arithmetic Operations.
- **Sample Input:**

PHP

$celsius = 25;

- **Expected Output:**
- 25°C is 77°F.

3. Voting Age Checker ✅

Scenario: An online registration form needs to verify if a user is at least 18 years old and thus eligible to vote.

- **Topics Covered:** Variables, Conditional Statements (if-else).
- **Sample Input:**

PHP

$age = 19;

- **Expected Output:**
- You are eligible to vote.

4. Grade Classifier 🎓

Scenario: A teacher needs a simple program to assign a letter grade based on a student's score: A (90-100), B (80-89), C (70-79), D (60-69), F (<60).

- **Topics Covered:** Conditional Statements (if-elseif-else).
- **Sample Input:**

PHP

$score = 85;

- **Expected Output:**
- Your grade is: B

5. Multiplication Table Generator

Scenario: A student is learning multiplication and wants a program that can generate the multiplication table for any given number up to 10.

- **Topics Covered:** Looping (for loop).
- **Sample Input:**

PHP

$number = 7;

- **Expected Output:**
- 7 x 1 = 7
- 7 x 2 = 14
- 7 x 3 = 21

- 7 x 4 = 28
- 7 x 5 = 35
- 7 x 6 = 42
- 7 x 7 = 49
- 7 x 8 = 56
- 7 x 9 = 63
- 7 x 10 = 70

6. The FizzBuzz Challenge

Scenario: This is a classic coding interview question. Write a program that prints numbers from 1 to 50. For multiples of three, print "Fizz" instead of the number. For multiples of five, print "Buzz". For numbers which are multiples of both three and five, print "FizzBuzz".

- **Topics Covered:** Looping, Conditionals.
- **Sample Input:** (The loop runs from 1 to 50)
- **Expected Output (first 15 lines):**
- 1
- 2
- Fizz
- 4
- Buzz
- Fizz
- 7
- 8
- Fizz
- Buzz
- 11
- Fizz

- 13
- 14
- FizzBuzz

7. Simple Star Pattern ⭐

Scenario: You want to print a simple visual pattern using characters. Create a script that prints a solid square of asterisks based on a given size.

- **Topics Covered:** Nested Loops.
- **Sample Input:**

PHP

$size = 5;

- **Expected Output:**
- * * * * *
- * * * * *
- * * * * *
- * * * * *
- * * * * *

8. Reusable Area Calculator

Scenario: You need to calculate the area of rectangles frequently in your code. Create a reusable function to handle this calculation.

- **Topics Covered:** Functions, Parameters, Return Values.
- **Sample Input:**

PHP

// Calling the function

echo calculateArea(5, 10);

- **Expected Output:**
- The area of a rectangle with length 5 and width 10 is 50.

9. Vowel Counter

Scenario: You're building a text analysis tool and need to count the number of vowels (a, e, i, o, u) in a given string. The check should be case-insensitive.

- **Topics Covered:** String Manipulation, Looping, Conditionals.
- **Sample Input:**

PHP

$text = "Hello World";

- **Expected Output:**
- The string "Hello World" has 3 vowels.

10. Palindrome Checker

Scenario: A palindrome is a word that reads the same forwards and backward (e.g., "madam", "level"). Create a function that checks if a given word is a palindrome.

- **Topics Covered:** Functions, String Manipulation (strrev, strtolower).
- **Sample Input:**

PHP

// Calling the function

checkPalindrome("Racecar");

- **Expected Output:**
- "Racecar" is a palindrome.

11. Find the Average of Scores

Scenario: A teacher has a list of student scores from a test and needs to calculate the class average.

- **Topics Covered:** Indexed Arrays, Looping (foreach), Array Functions (count, array_sum).
- **Sample Input:**

PHP

$scores = [88, 92, 75, 68, 95];

- **Expected Output:**
- The average score is 83.6.

12. Remove Even Numbers

Scenario: You have a list of numbers and want to create a new list containing only the odd numbers from the original list.

- **Topics Covered:** Arrays, Looping, Conditionals.
- **Sample Input:**

PHP

$numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10];

- **Expected Output:** (The output is an array, you can print it using print_r or a loop)
- Array
- (
- [0] => 1
- [1] => 3
- [2] => 5
- [3] => 7
- [4] => 9
-)

13. User Profile Display

Scenario: Your web application needs to display a user's profile information, which is stored in a structured way.

- **Topics Covered:** Associative Arrays, foreach loop.
- **Sample Input:**

PHP

```
$userProfile = [
   "firstName" => "John",
   "lastName" => "Doe",
   "email" => "john.doe@example.com",
   "city" => "New York"
];
```

- **Expected Output:**
- First Name: John
- Last Name: Doe
- Email: john.doe@example.com
- City: New York

14. Country and Capital Game

Scenario: You're making a quiz game. Given a country, the user needs to guess its capital. Your script should be able to check if the answer is correct.

- **Topics Covered:** Associative Arrays, Functions, Conditionals.
- **Sample Input:**

PHP

```
$capitals = [
   "USA" => "Washington D.C.",
   "Japan" => "Tokyo",
   "Bangladesh" => "Dhaka"
];
```

$country = "Japan";

$userGuess = "Tokyo";

- **Expected Output:**
- Correct! The capital of Japan is Tokyo.

15. Simple Shopping Cart Total 🛒

Scenario: An e-commerce site needs to calculate the total cost of a shopping cart. The cart contains multiple items, each with a name, price, and quantity.

- **Topics Covered:** 2D Arrays (Array of Associative Arrays), Nested Loops.
- **Sample Input:**

PHP

$cart = [

  ["item" => "Laptop", "price" => 1200, "quantity" => 1],

  ["item" => "Mouse", "price" => 25, "quantity" => 2],

  ["item" => "Keyboard", "price" => 75, "quantity" => 1]

];

- **Expected Output:**
- Item: Laptop, Price: $1200, Quantity: 1, Subtotal: $1200
- Item: Mouse, Price: $25, Quantity: 2, Subtotal: $50
- Item: Keyboard, Price: $75, Quantity: 1, Subtotal: $75
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- Total Cart Value: $1325