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# 1. PHP Syntax and Structure

## Hello World (First Program)

```
<?php  
echo "Hello, World!";  
?>
```

---

## Variables and Data Types

```
<?php  
$name = "Alice";           // String  
$age = 25;                // Integer  
$height = 5.8;             // Float  
$isStudent = true;         // Boolean  
?>
```

---

## Comments

```
<?php  
// This is a single-line comment  
  
/*  
This is a  
multi-line comment  
*/  
?>
```

---

# 2. PHP Output

```
<?php  
echo "Welcome to PHP!";    // Print text  
print "Learning PHP is fun!"; // Alternative to echo
```

```
?>
```

---

## 3. PHP Data Structures

### Arrays

```
<?php
$fruits = ["apple", "banana", "cherry"];
echo $fruits[0]; // Access first item

$fruits[] = "orange"; // Add item
unset($fruits[1]); // Remove item
?>
```

---

### Associative Arrays (Key-Value Pairs)

```
<?php
$person = [
    "name" => "Bob",
    "age" => 30
];
echo $person["name"]; // Access value by key
$person["age"] = 31; // Update value
?>
```

---

## 4. Conditional Statements

```
<?php
$age = 18;

if ($age >= 18) {
    echo "Adult";
```

```
    } else {
        echo "Minor";
    }
?>
```

---

## Multiple Conditions

```
<?php
$score = 85;

if ($score >= 90) {
    echo "Grade A";
} elseif ($score >= 75) {
    echo "Grade B";
} else {
    echo "Grade C";
}
?>
```

---

# 5. Loops

## For Loop

```
<?php
for ($i = 1; $i <= 5; $i++) {
    echo $i;
}
?>
```

---

## While Loop

```
<?php
$count = 0;
```

```
while ($count < 5) {  
    echo $count;  
    $count++;  
}  
?>
```

---

## 6. Functions

```
<?php  
function greet($name) {  
    return "Hello, " . $name . "!";  
}  
echo greet("Alice");  
?>
```

---

### Default Parameters

```
<?php  
function power($base, $exponent = 2) {  
    return $base ** $exponent;  
}  
echo power(3);      // 9  
echo power(3, 3);  // 27  
?>
```

---

## 7. Classes and Objects

```
<?php  
class Dog {  
    public $name;  
  
    public function __construct($name) {
```

```
    $this->name = $name;  
}  
  
public function bark() {  
    return "Woof!";  
}  
}  
  
$dog1 = new Dog("Rex");  
echo $dog1->bark();  
?>
```

---

## 8. File Handling

### Read File

```
<?php  
$content = file_get_contents("example.txt");  
echo $content;  
?>
```

---

### Write to File

```
<?php  
file_put_contents("example.txt", "Hello, World!");  
?>
```

---

## 9. PHP Forms (GET and POST)

### HTML Form Example

```
<form method="POST" action="process.php">  
    Name: <input type="text" name="name">
```

```
<button type="submit">Submit</button>
</form>
```

---

## Processing Form Data (POST Method)

```
<?php
if ($_SERVER["REQUEST_METHOD"] == "POST") {
    $name = $_POST['name'];
    echo "Hello, " . htmlspecialchars($name) . "!";
}
?>
```

---

# 10. Superglobals

## Accessing GET/POST Data

```
<?php
echo $_GET['user']; // Access URL parameter
echo $_POST['email']; // Access form input
?>
```

---

## Working with Sessions

```
<?php
session_start();
$_SESSION['username'] = 'JohnDoe';
echo $_SESSION['username'];
?>
```

---

## 11. Include and Require

```
<?php
include 'header.php';
require 'config.php';
?>
```

---

## 12. PHP and MySQL (Database Connection)

```
<?php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "my_database";

// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);

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

---

## 13. Error Handling

```
<?php
try {
    echo 10 / 0;
} catch (Exception $e) {
    echo 'Error: ' . $e->getMessage();
}
?>
```

---

## 14. Useful String Functions

```
<?php
$text = "Hello World!";
echo strlen($text);          // String length
echo strtoupper($text);      // Uppercase
echo strtolower($text);       // Lowercase
echo str_replace("World", "PHP", $text); // Replace text
?>
```

---

## 15. Array Methods

```
<?php
$numbers = [1, 2, 3, 4, 5];
$doubled = array_map(fn($x) => $x * 2, $numbers);
print_r($doubled); // [2, 4, 6, 8, 10]

$filtered = array_filter($numbers, fn($x) => $x > 3);
print_r($filtered); // [4, 5]
?>
```

---

This cheat sheet provides a quick overview of PHP's essential features.