# Backend Web Development

Lecture 1: Madalitso Kaj Muva

# Topic 2: Introduction to PHP

# What we'll learn:

- PHP Syntax
- PHP variables
- PHP If statements
- PHP Mathematical operations
- PHP For loop and while loop
- Break and Continue statements
- Arrays: Indexed arrays and Associative Arrays

# GitHub Link

https://github.com/v2-kaj/backend

# What is PHP?

PHP - a server-side scripting language primarily designed for web development.

# PHP Syntax

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

```php
<?php
    echo "<h1>Hello World</h1>";
?>
```

# PHP Variable

In PHP, a variable starts with the $ sign

```php
<?php

    $msg = "<h1>Hello World</h1>";

    echo $msg;

?>
```

Rules about naming variables.

Variable names are case-sensitive ($age and $Age are two different variables)

Why use variables in programs. When not to use a variable.

# Data Types in PHP

- String
- Integer
- Float (floating point numbers - also called double)
- Boolean
- NULL
- Array
- …

Examples

PHP is a Loosely Typed Language.

# Decision Constructs aka Conditional Statements

```php
<?php
    $age = 12;
    if ($age>18) {
        echo "You can vote";
    }
    else {
        echo "You can't vote, too young";
    }
    //You cannot vote is going to be printed since $age is less than 18
?>
```

# PHP if elseif else

```php
<?php

    $marks = 80;
    if ($marks<50){
        echo "Fail";
    }
    elseif ($marks<60){
        echo "Pass";
    }
    elseif ($marks<75){
        echo "Merit";
    }
    elseif ($marks<=100){
        echo "Distinction";
    }
    else {
        echo "Invalid Marks";
    }

?>
```

# Math Operators

+ : Adds two numbers.

− : Subtracts one number from another.

* : Multiplies two numbers.

/ : Divides one number by another.

% : Calculates the remainder of a division.

** : Exponentiation (power of a number).

# Comparison Operators

== : Checks if two values are equal.

=== : Checks if two values are identical (equal and same type).

!= : Checks if two values are not equal.

!== : Checks if two values are not identical.

> : Checks if one value is greater than another.

< : Checks if one value is less than another.

>= : Checks if one value is greater than or equal to another.

<= : Checks if one value is less than or equal to another.

# Logical Operators

&& : Logical AND (true if both conditions are true).

|| : Logical OR (true if at least one condition is true).

! : Logical NOT (reverses the condition).

# Break

# Loops in PHP: For loop and while loop

Loops help us to execute a section of code several times.

```php
<?php

    for($i=0; $i<=5;$i++){

        echo("Hello World");

    }

?>
```

Imagine if you wanted to print to print hello world 5 times.

# For Loop to Print 10 numbers

```php
<?php

    for($i=0; $i<10;$i++) {

        echo $i."<br/>";

    }

?>
```

For loop is used when you know how many times a loop has to run.

# While loop

```php
<?php
    $i = 0;
    while($i<=10){
        echo($i."<br/>");
        $i=$i+1;
    }
?>
```

Use the while loop if you do not know how many times the loop will need to run.

# Break and Continue in loops

Break and continue are control flow statements that alter the normal flow of execution.

```php
<?php
    for ($i = 0; $i < 10; $i++) {
        if ($i == 5) {
            break;  // Exit the loop when $i equals 5
        }
        echo $i . "<br>";
    }
?>
```

break statement is used to exit the loop immediately.

Continue statement skips an iteration.

```php
<?php
    for ($i = 0; $i < 10; $i++) {
        if ($i == 5) {
            continue;  // Skip 5
        }
        echo $i . "<br>";
    }
?>
```

# Exercise 0

Write a PHP script that displays numbers from 0 to 20 using a for loop. Each number must be printed on a new line.

# Exercise 1

Write a PHP script that checks whether or not a number is positive and displays the result.

Example: -10

The number is negative

Example: 4

The number is positive

# Exercise 2

Write a PHP script that prints numbers from 0 to 20, but stops the loop when the number 15 is reached using a for loop with break.

# Exercise 3

Write a PHP script that displays even numbers only between 0 and 10 using a for loop. Each number must be printed on a new line.

Break

Arrays in PHP

```php
<?php

    $users = array("Ron","Harry","Hermione",);

?>
```

Display each element in the array.

# Arrays

In PHP, there are three types of arrays:

- Indexed arrays - Arrays with a numeric index
- Associative arrays - Arrays with named keys
- Multidimensional arrays - Arrays containing one or more arrays

# Looping through the array: Using the foreach

```php
<?php

    $users = array("Ron","Hermione","Harry",);

    foreach($users as $user){

        echo ($user."<br/>");

    }

?>
```

# Example of an associative array

```php
<?php
    $users = array("id1"=>"Ron",”id2"=>"Harry","id3"=>"Hermione");
    echo $users["id1"];
    echo "<br/>";
    echo $users["id2"];
    echo "<br/>";
    echo $users["id3"];
    echo "<br/>";
    ?>
```

# Iterating through a php associative array using for each loop

```php
<?php
    $users = array("id1"=>"Ron","id2"=>"Harry","id3"=>"Hermione");
    forEach($users as $user){
        echo $user."<br>";
    }
?>
```

The End