1420-7001

By

Dr. Abdul Majeed (조교수)

웹 프로그래밍

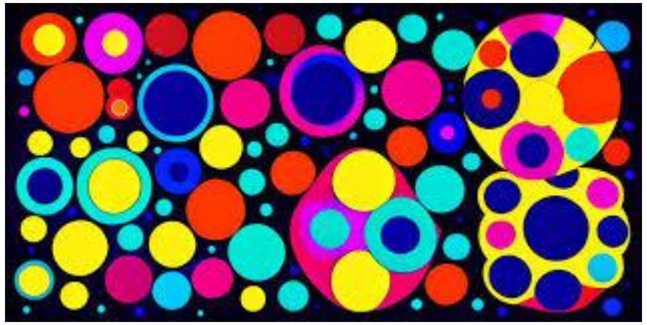
Web Programming

1st Semester, 2025

가천대학교
Gachon University

IT융합대학 컴퓨터공학부(컴퓨터공학전공)

Summary of the Previous Lesson



- JS Object Activity
- Data visualizations in JS
  - Simple line chart
  - Line chart with min-max
  - Pie chart
  - Donut chart
  - Bar chart
  - Random bar chart
  - Introduction of the JS visualization library
    - D3
    - ChartJS

Part I

Server-Side Scripting Language

PHP

Part I (a)

PHP Basics

What is Web Programming? Go Back to Lec.01

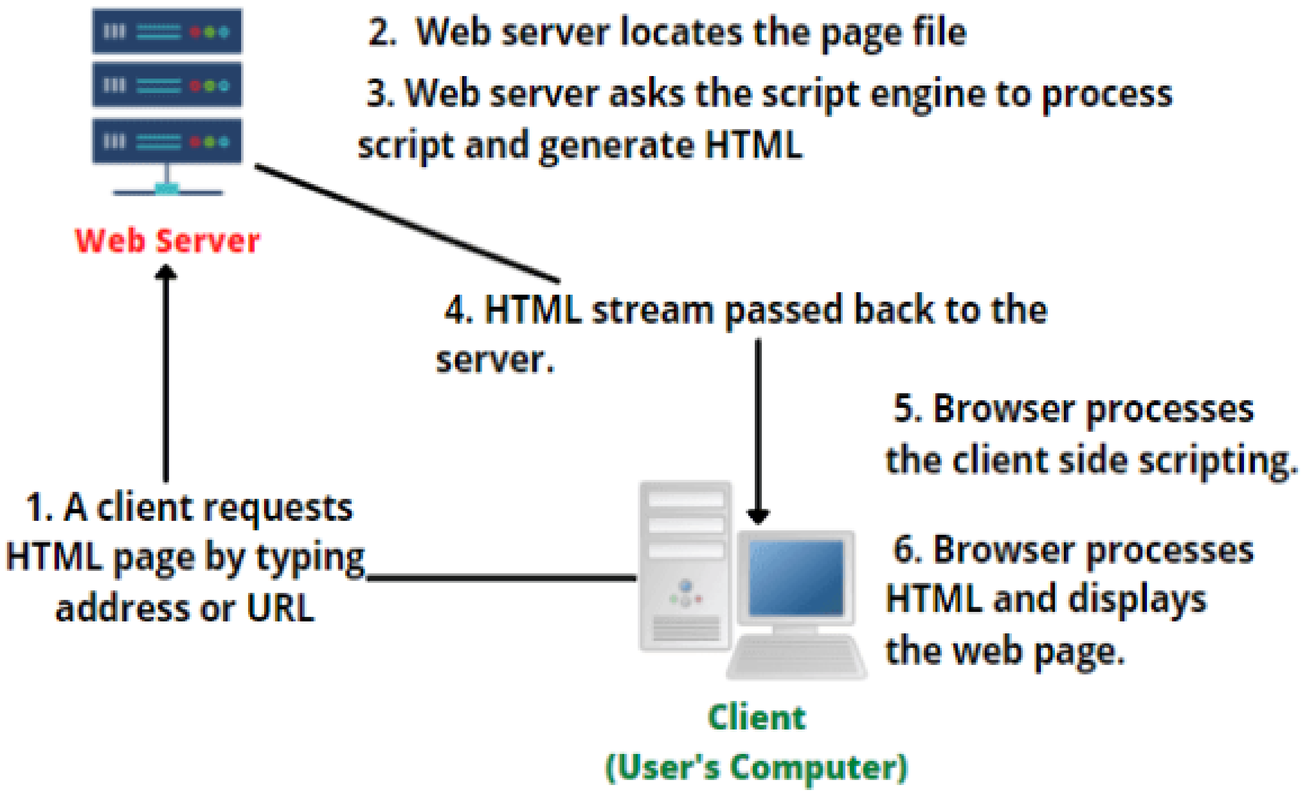
❑ Web programming involves creating dynamic websites that are interactive and user-friendly.

3 aspects of WP

① Client-side scripting

② Server-side scripting

③ Databases



1. A client requests HTML page by typing address or URL

2. Web server locates the page file

3. Web server asks the script engine to process script and generate HTML

4. HTML stream passed back to the server.

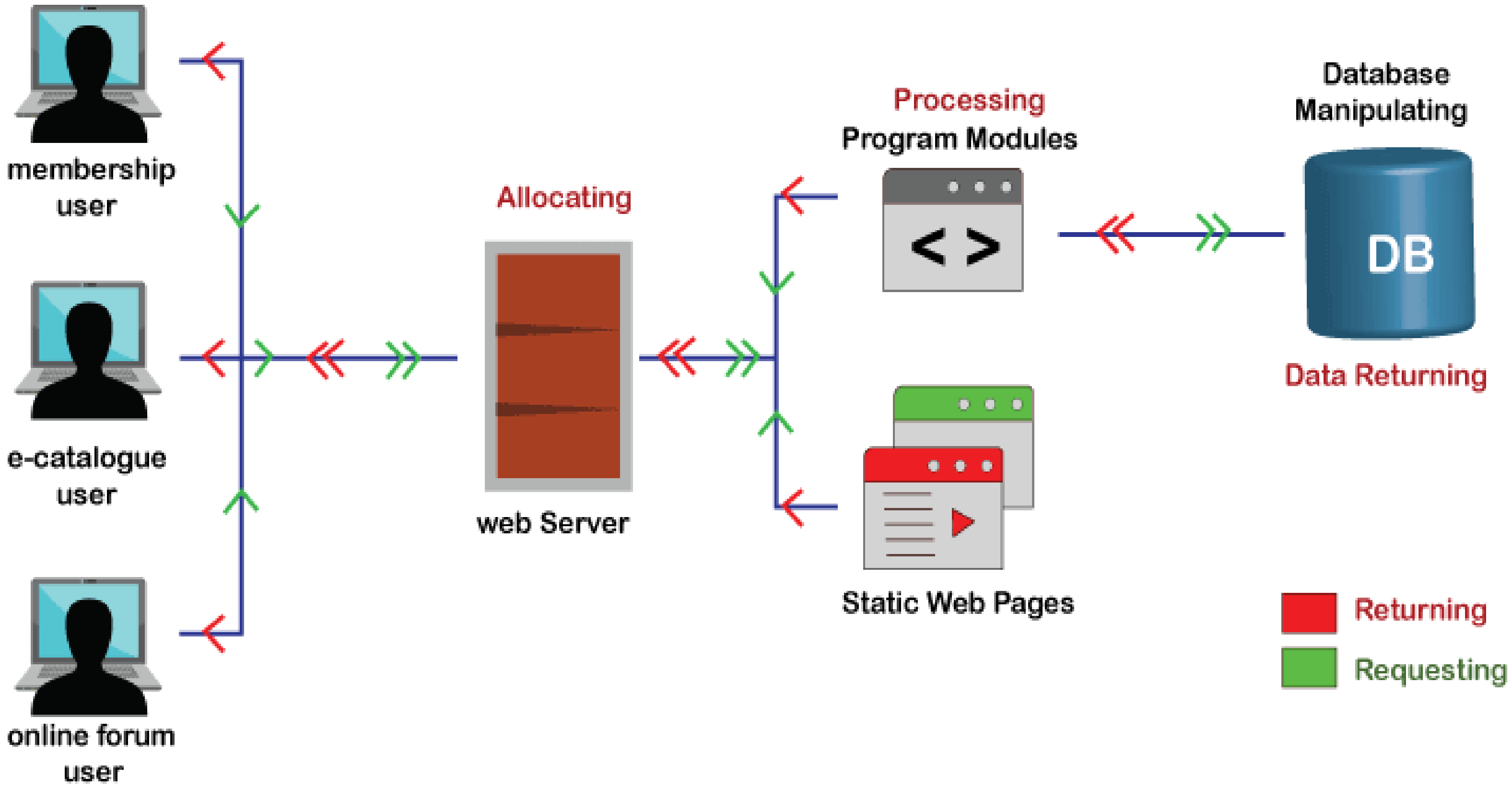
5. Browser processes the client side scripting.

6. Browser processes HTML and displays the web page.

What to do?

process data, display content, and interact with users.

Overview of Web Application Working- Go Back to Lec.01



Three tier applications are a base for development of modern-day dynamic websites. It all started by having on premises servers hosting server-side scripts running on a database engine.

PHP Concepts-Basic Concepts

- PHP is a server scripting language, and a powerful tool for making dynamic and interactive Web pages.

- PHP is a widely-used, free, and efficient alternative to competitors such as Microsoft's ASP

PHP Concepts-Basic Concepts-What is it?

- PHP is an acronym for "PHP: Hypertext Preprocessor"
- PHP is a widely-used, open-source scripting language
- PHP scripts are executed on the server
- PHP is free to download and use

What is a PHP File?

•PHP files can contain text, HTML, CSS, JavaScript, and PHP code

•PHP code is executed on the server, and the result is returned to the browser as plain HTML

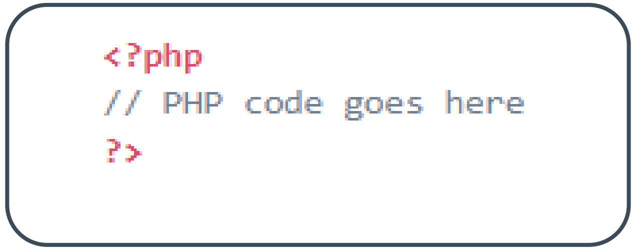
•PHP files have extension ".php"

PHP Concepts-Basic Concepts-What PHP can do?

- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect **form data**
- PHP can send and receive cookies
- PHP can **add, delete, modify data in your database**
- PHP can be used to control user-access
- PHP can encrypt data [Not relevant in the context of this course]

PHP Coding Beginning-Basic Syntax

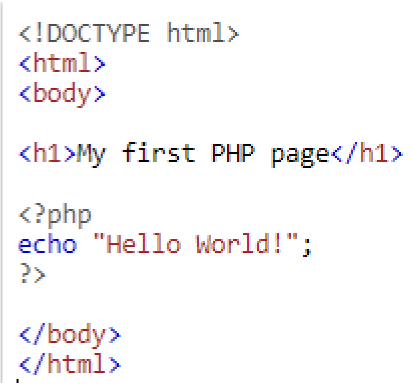
- A PHP script can be placed anywhere in the document.
- A PHP script starts with <?php and ends with ?>:



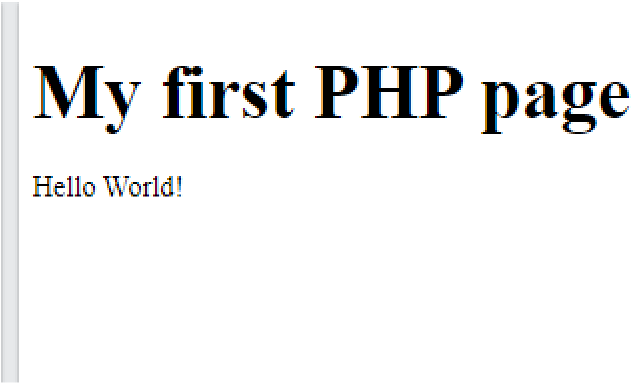
```
<?php
// PHP code goes here
?>
```

- The default file extension for PHP files is ".php".
- A PHP file normally contains HTML tags, and some PHP scripting code.

PHP Coding Example-Basic Example



```
<!DOCTYPE html>
<html>
<body>

<h1>My first PHP page</h1>

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

</body>
</html>
```

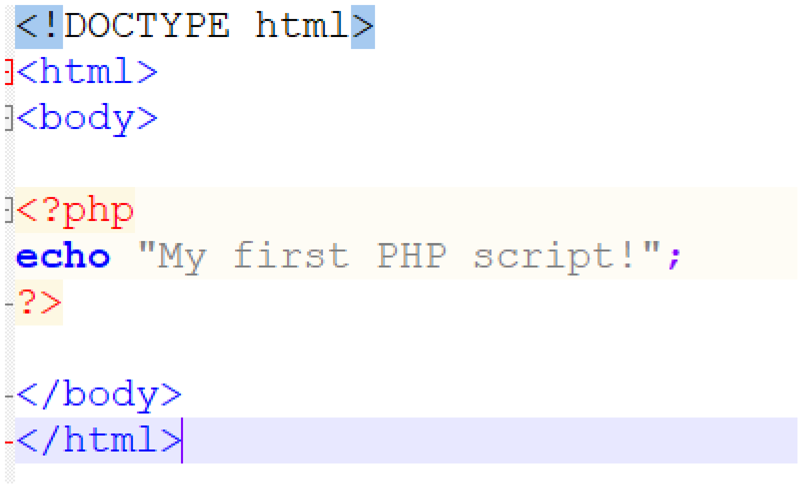


My first PHP page

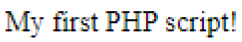
Hello World!

Note: PHP statements end with a semicolon (;).

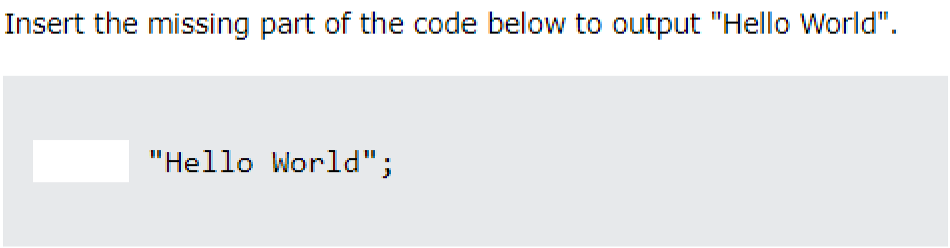
PHP Coding Example-Basic Example



```
<!DOCTYPE html>
<html>
<body>

<?php
echo "My first PHP script!";
?>

</body>
</html>
```



```
My first PHP script!
```



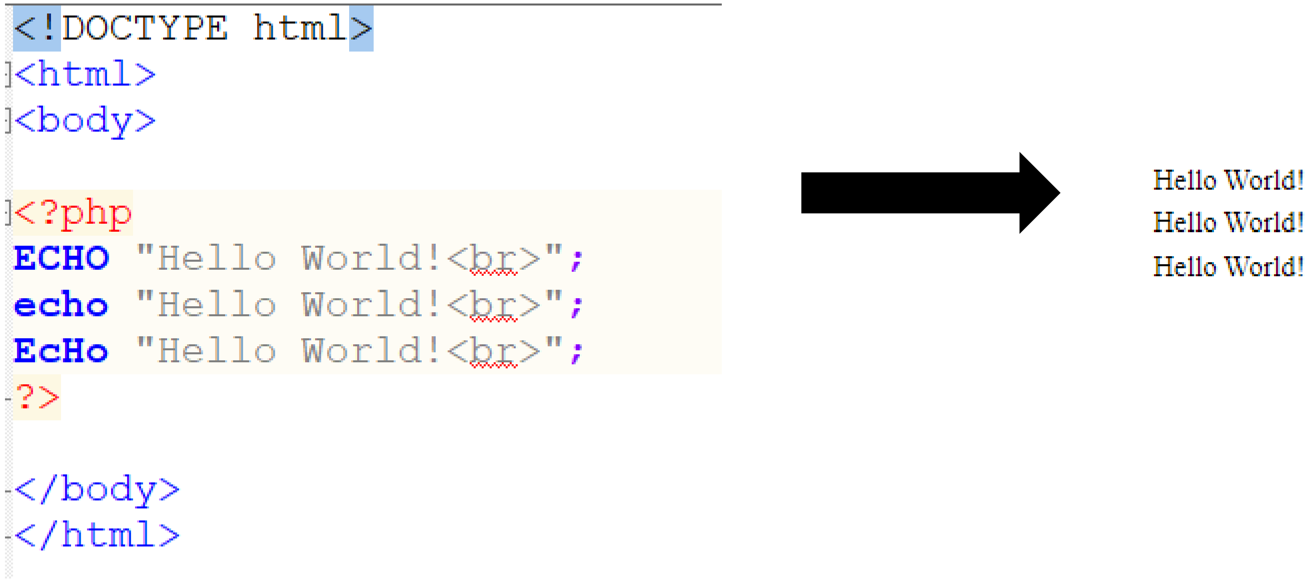
Insert the missing part of the code below to output "Hello World".

```
 "Hello World";
```

PHP Coding Example-Basic Example

- In PHP, keywords (e.g. if, else, while, echo, etc.), classes, functions, and user-defined functions are not case-sensitive.

- In the example below, all three echo statements below are equal and legal:

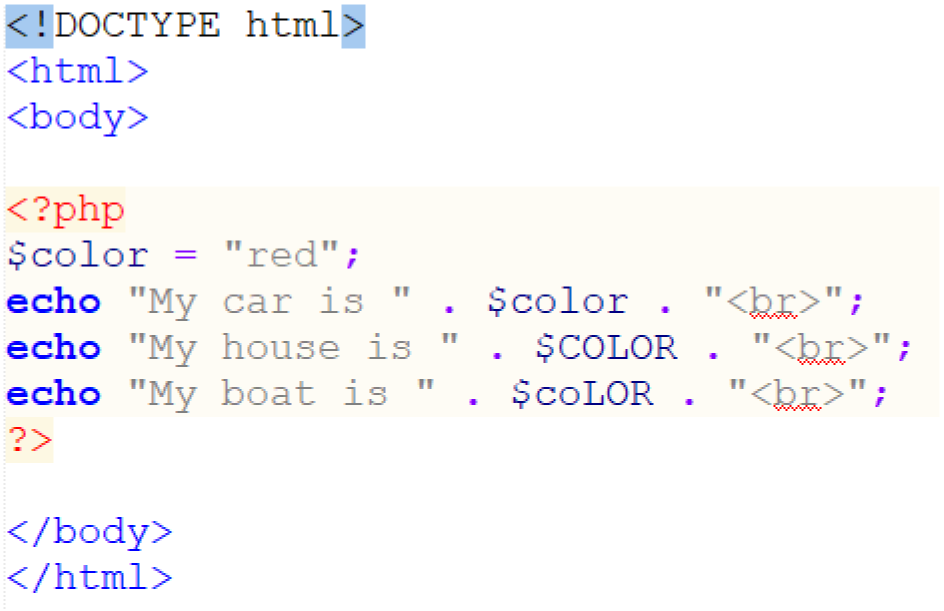


```
<!DOCTYPE html>
<html>
<body>

<?php
ECHO "Hello World!<br>";
echo "Hello World!<br>";
EcHo "Hello World!<br>";
?>

</body>
</html>
```

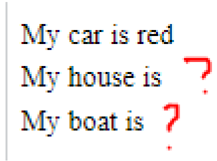
```
Hello World!
Hello World!
Hello World!
```

PHP Coding Example-Basic Example

- Look at the example below; only the first statement will display the value of the $color variable! This is because $color, $COLOR, and $coLOR are treated as three different variables



```
<!DOCTYPE html>
<html>
<body>

<?php
$color = "red";
echo "My car is " . $color . "<br>";
echo "My house is " . $COLOR . "<br>";
echo "My boat is " . $coLOR . "<br>";
?>

</body>
</html>
```

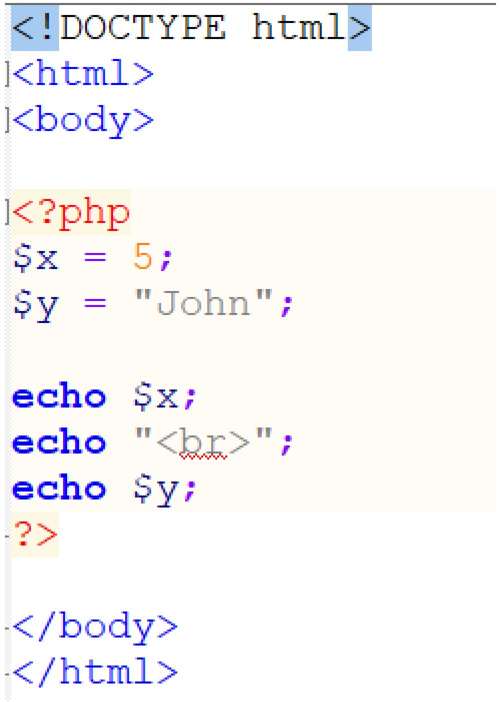


```
My car is red
My house is ?
My boat is ?
```

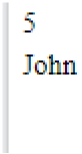
Note: $COLOR is not same as $color:

PHP Coding Example-Variables

⌘ In PHP, a variable starts with the $ sign, followed by the name of the variable:



```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 5;
$y = "John";

echo $x;
echo "<br>";
echo $y;
?>

</body>
</html>
```



```
5
John
```

- In the example above, the variable $x will hold the value 5, and the variable $y will hold the value "John".
- **Note:** When you assign a text value to a variable, put quotes around the value.
- **Note:** Unlike other programming languages, PHP has no command for declaring a variable. It is created the moment you first assign a value to it.

PHP Coding Example-Variables Concepts

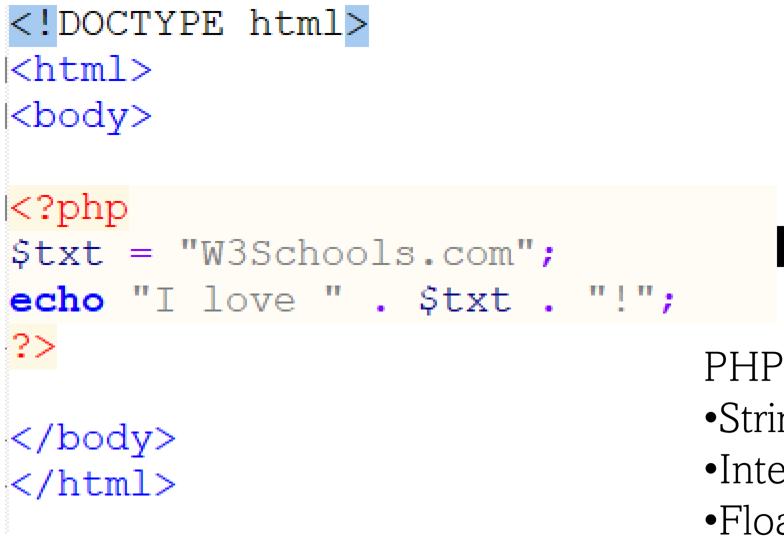
- A variable can have a short name (like $x and $y) or a more descriptive name ($age, $carname, $total_volume).

Rules for PHP variables:

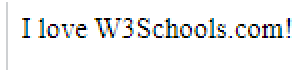
- A variable starts with the $ sign, followed by the name of the variable
- A variable name must start with a **letter** or the **underscore** character
- A variable name cannot start with a **number**
- A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _)
- Variable names are case-sensitive ($age and $AGE are two different variables)
    - *Remember that PHP variable names are case-sensitive!*

PHP Coding Example-Output Variables

- The PHP echo statement is often used to output data to the screen.
- The following example will show how to output text and a variable



```
<!DOCTYPE html>
<html>
<body>

<?php
$txt = "W3Schools.com";
echo "I love " . $txt . "!";
?>

</body>
</html>
```

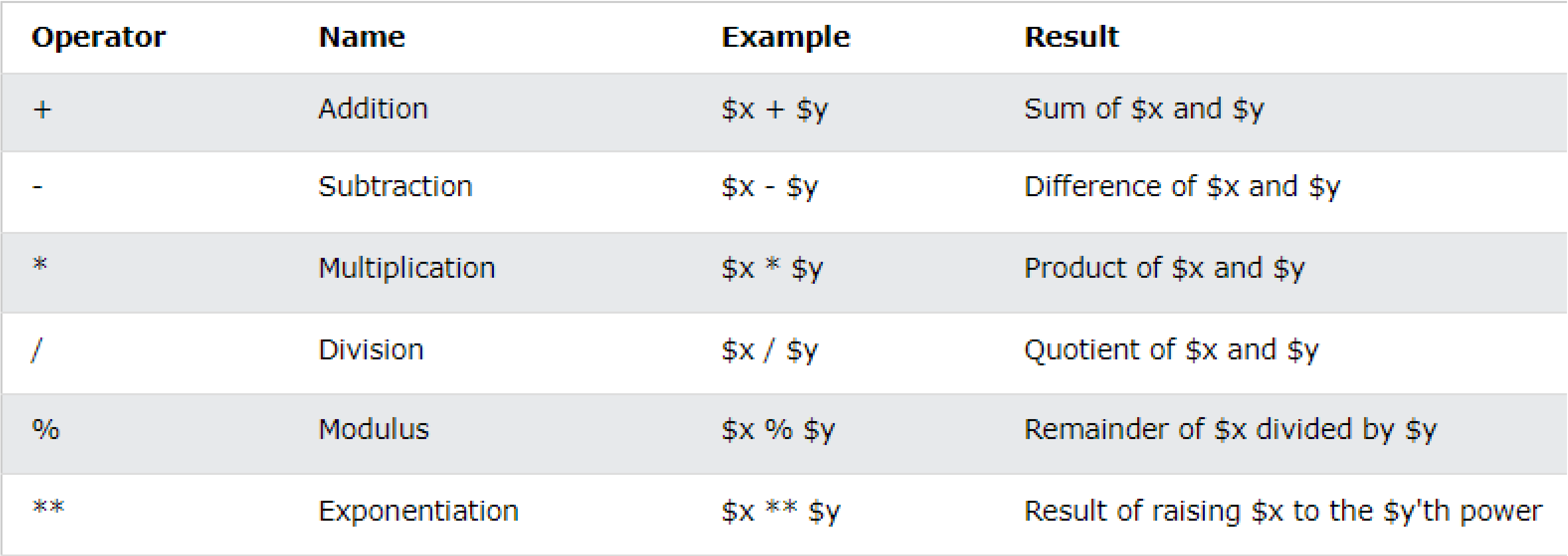


```
I love W3Schools.com!
```

PHP supports the following data types:

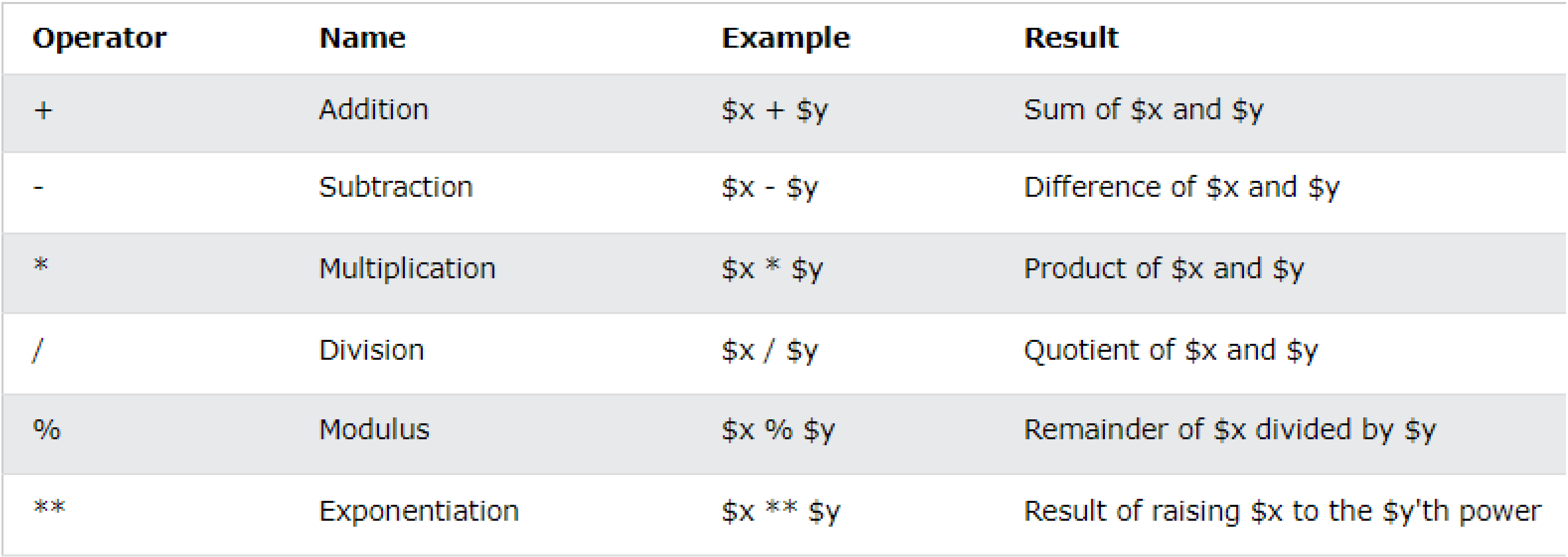
- String
- Integer
- Float (floating point numbers - also called double)
- Boolean
- Array
- Object
- NULL
- Resource

PHP Coding Example-PHP Operators



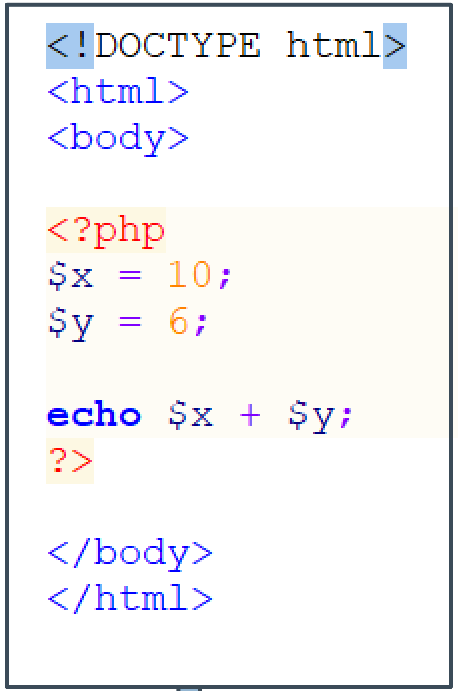
Operator	Name	Example	Result
+	Addition	$x + $y	Sum of $x and $y
-	Subtraction	$x - $y	Difference of $x and $y
*	Multiplication	$x * $y	Product of $x and $y
/	Division	$x / $y	Quotient of $x and $y
%	Modulus	$x % $y	Remainder of $x divided by $y
**	Exponentiation	$x ** $y	Result of raising $x to the $y'th power

PHP Coding Example-PHP Arithmetic Operators



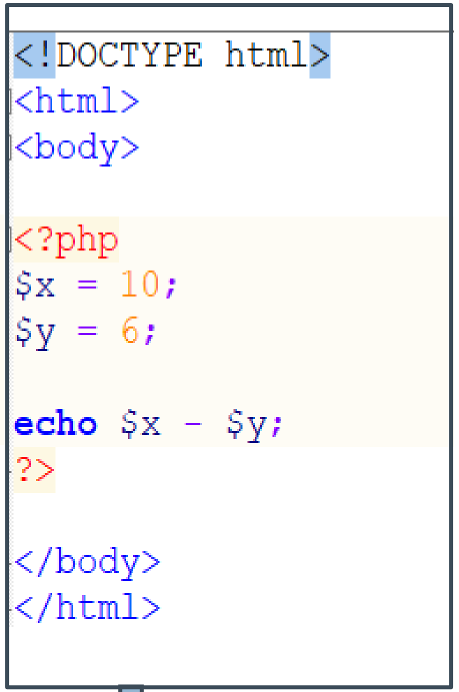
Operator	Name	Example	Result
+	Addition	$x + $y	Sum of $x and $y
-	Subtraction	$x - $y	Difference of $x and $y
*	Multiplication	$x * $y	Product of $x and $y
/	Division	$x / $y	Quotient of $x and $y
%	Modulus	$x % $y	Remainder of $x divided by $y
**	Exponentiation	$x ** $y	Result of raising $x to the $y'th power

PHP Coding Example-PHP Arithmetic Operators



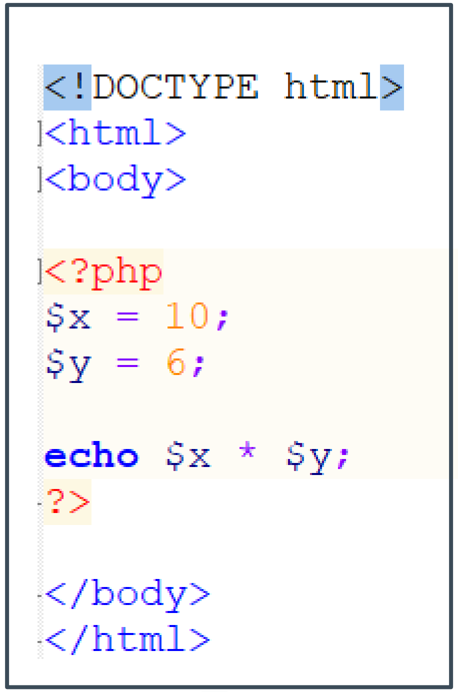
```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 10;
$y = 6;

echo $x + $y;
?>

</body>
</html>
```

16



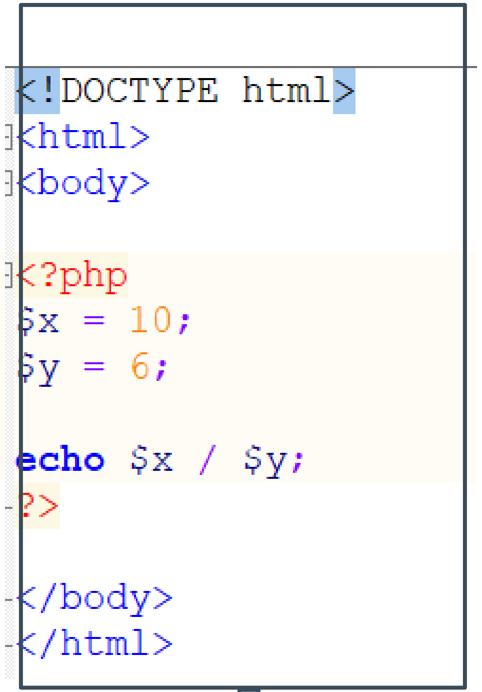
```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 10;
$y = 6;

echo $x - $y;
?>

</body>
</html>
```

4



```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 10;
$y = 6;

echo $x * $y;
?>

</body>
</html>
```

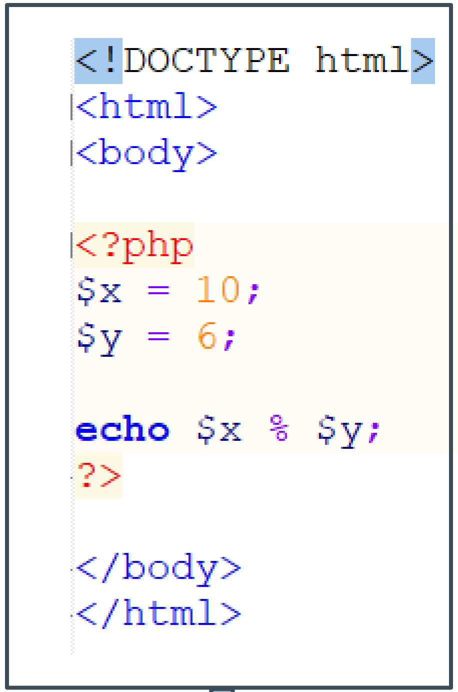
60



```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 10;
$y = 6;

echo $x / $y;
?>

</body>
</html>
```

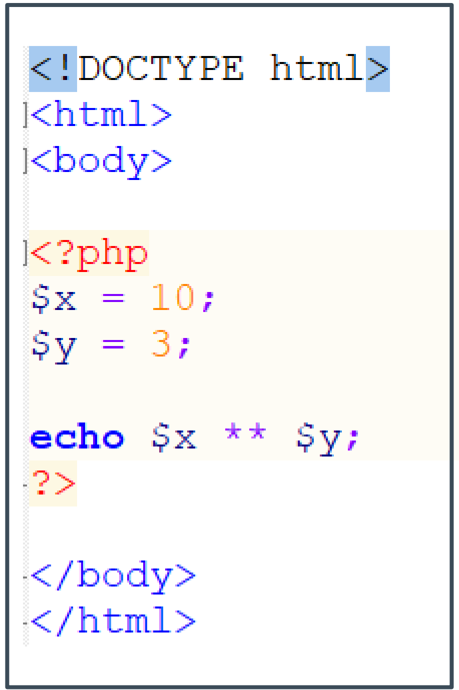
1.66667

PHP Coding Example-PHP Arithmetic Operators



```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 10;
$y = 6;

echo $x % $y;
?>

</body>
</html>
```

```
4
```



```
<!DOCTYPE html>
<html>
<body>

<?php
$x = 10;
$y = 3;

echo $x ** $y;
?>

</body>
</html>
```

```
1000
```

PHP Coding Example-PHP Other Operators

PHP Assignment Operators

The PHP assignment operators are used with numeric values to write a value to a variable.

The basic assignment operator in PHP is "=". It means that the left operand gets set to the value of the assignment expression on the right.

PHP Comparison Operators

The PHP comparison operators are used to compare two values (number or string):

PHP Increment / Decrement Operators

The PHP increment operators are used to increment a variable's value.

The PHP decrement operators are used to decrement a variable's value.

PHP Logical Operators

The PHP logical operators are used to combine conditional statements.

PHP String Operators

PHP has two operators that are specially designed for strings.

Lecture Topic

PHP Coding Concepts-PHP Functions

- The real power of PHP comes from its functions.
- PHP has more than 1000 built-in functions, and in addition you can create your own custom functions.

PHP Built-in Functions

PHP has over 1000 built-in functions that can be called directly, from within a script, to perform a specific task.

PHP User Defined Functions

Besides the built-in PHP functions, it is possible to create your own functions.

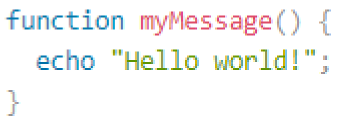
✓ A function is a block of statements that can be used repeatedly in a program.

✓ A function will not execute automatically when a page loads.

✓ A function will be executed by a call to the function.

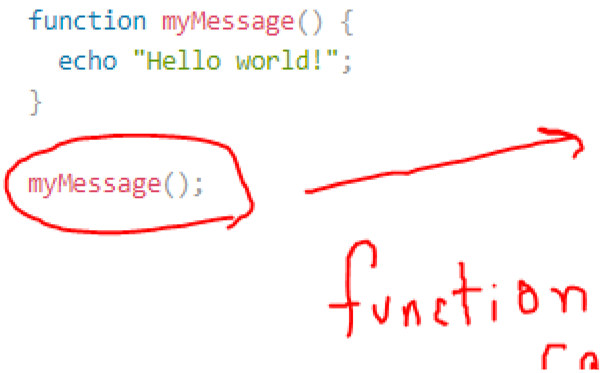
PHP Coding Concepts-PHP Functions

- A user-defined function declaration starts with the keyword function, followed by the name of the function.



```
function myMessage() {
  echo "Hello world!";
}
```

Note: A function name must start with a letter or an underscore. Function names are NOT case-sensitive.
Tip: Give the function a name that reflects what the function does!



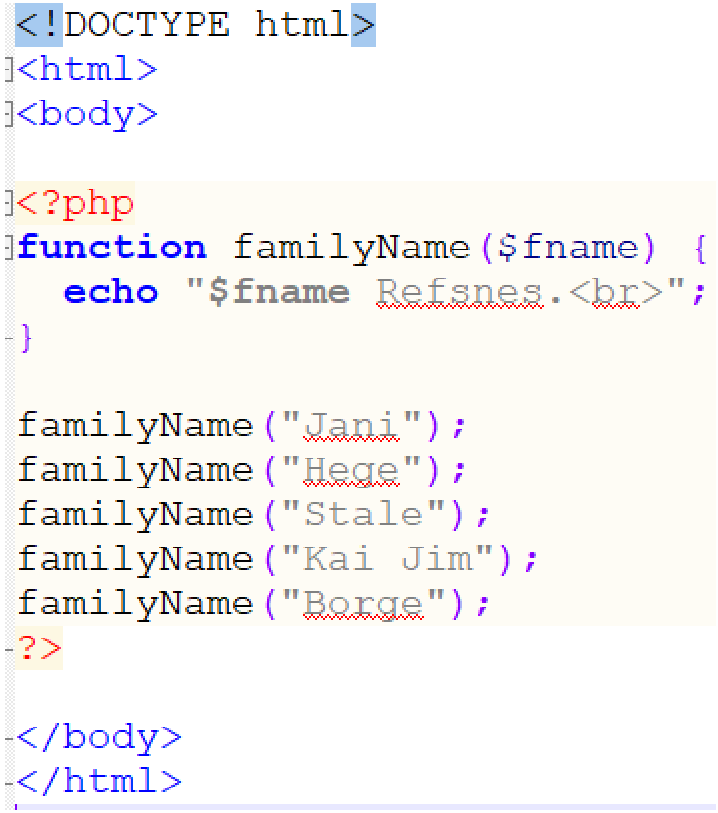
```
function myMessage() {
  echo "Hello world!";
}
myMessage();
```

function Call

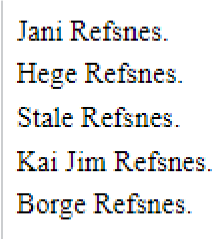
In our example, we create a function named myMessage().
The opening curly brace { indicates the beginning of the function code, and the closing curly brace } indicates the end of the function.
The function outputs "Hello world!".

PHP Coding Example-PHP Functions

- Information can be passed to functions through arguments. An argument is just like a variable.
- Arguments are specified after the function name, inside the parentheses. You can add as many arguments as you want, just separate them with a comma.
- The following example has a function with one argument ($fname). When the familyName() function is called, we also pass along a name, e.g. ("Jani"), and the name is used inside the function, which outputs several different first names, but an equal last name.



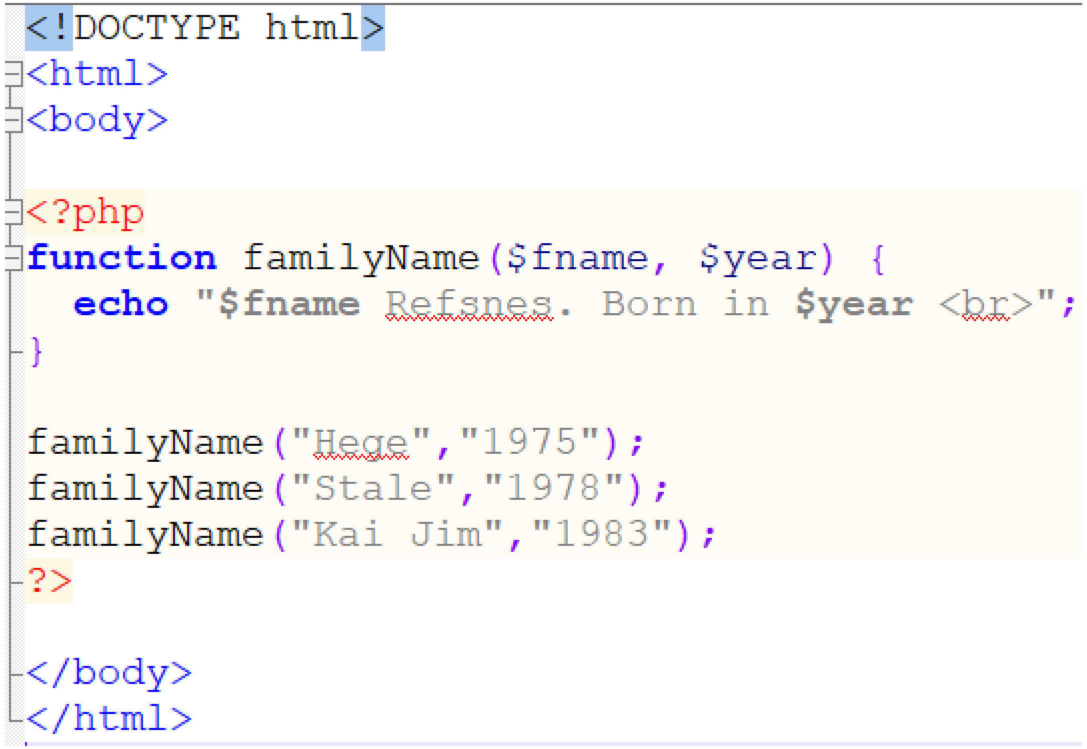
```
<!DOCTYPE html>
<html>
<body>

<?php
function familyName($fname) {
  echo "$fname Refsnes.<br>";
}

familyName("Jani");
familyName("Hege");
familyName("Stale");
familyName("Kai Jim");
familyName("Borge");
?>

</body>
</html>
```



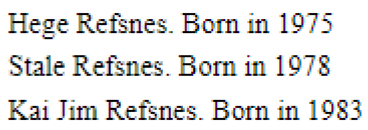
```
Jani Refsnes.
Hege Refsnes.
Stale Refsnes.
Kai Jim Refsnes.
Borge Refsnes.
```

PHP Coding Example-PHP Functions

⌘ The following example has a function with two arguments ($fname, $year):



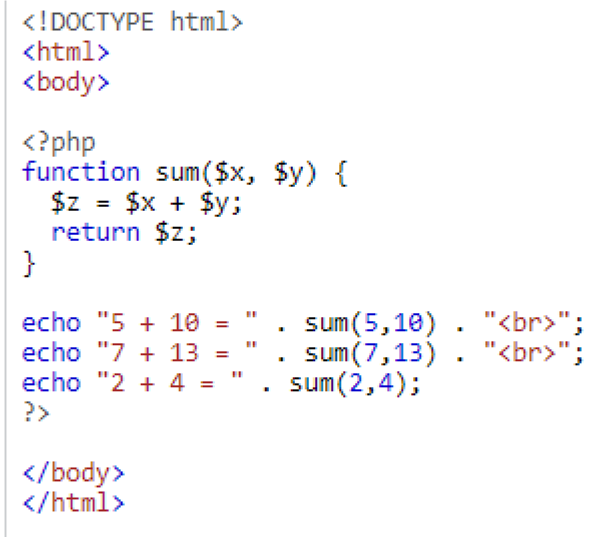
```
<!DOCTYPE html>
<html>
<body>

<?php
function familyName($fname, $year) {
  echo "$fname Refsnes. Born in $year <br>";
}

familyName("Hege","1975");
familyName("Stale","1978");
familyName("Kai Jim","1983");
?>

</body>
</html>
```



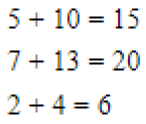
```
Hege Refsnes. Born in 1975
Stale Refsnes. Born in 1978
Kai Jim Refsnes. Born in 1983
```

PHP Coding Example-PHP Functions

- ⌘ To let a function return a value, use the return statement.



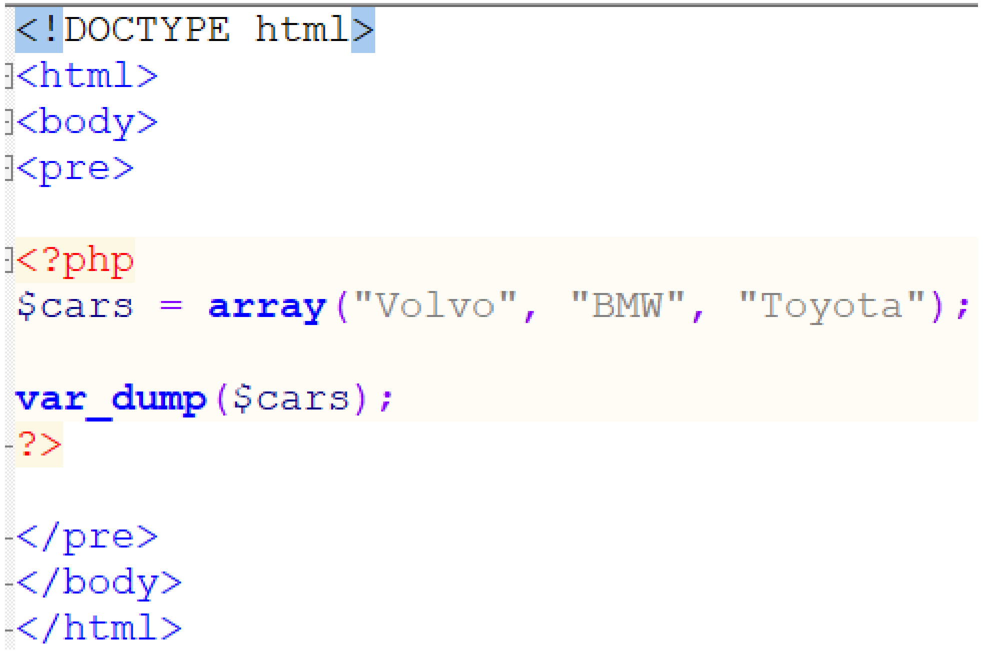
```
<!DOCTYPE html>
<html>
<body>

<?php
function sum($x, $y) {
  $z = $x + $y;
  return $z;
}

echo "5 + 10 = " . sum(5,10) . "<br>";
echo "7 + 13 = " . sum(7,13) . "<br>";
echo "2 + 4 = " . sum(2,4);
?>

</body>
</html>
```



```
5 + 10 = 15
7 + 13 = 20
2 + 4 = 6
```

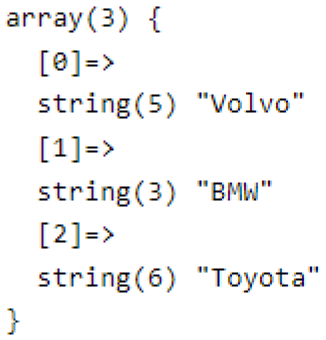
PHP Coding Concepts-PHP Arrays

⌘ An array stores multiple values in one single variable.



```
<!DOCTYPE html>
<html>
<body>
<pre>

<?php
$cars = array("Volvo", "BMW", "Toyota");

var_dump($cars);
?>

</pre>
</body>
</html>
```

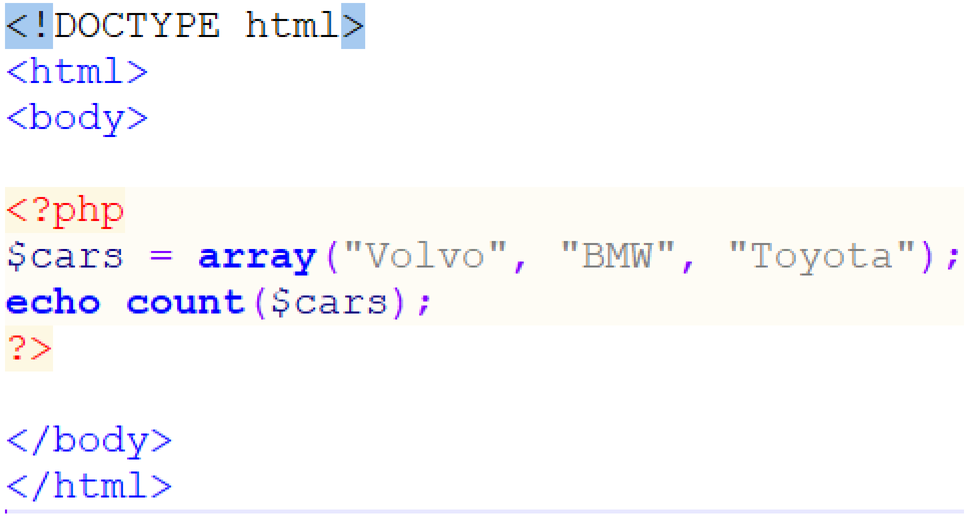
Output



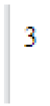
```
array(3) {
  [0]=>
  string(5) "Volvo"
  [1]=>
  string(3) "BMW"
  [2]=>
  string(6) "Toyota"
}
```

PHP Coding Concepts-PHP Arrays (Functions)

- The real strength of PHP arrays are the built-in array functions, like the count() function for counting array items.



```
<!DOCTYPE html>
<html>
<body>

<?php
$cars = array("Volvo", "BMW", "Toyota");
echo count($cars);
?>

</body>
</html>
```



```
3
```

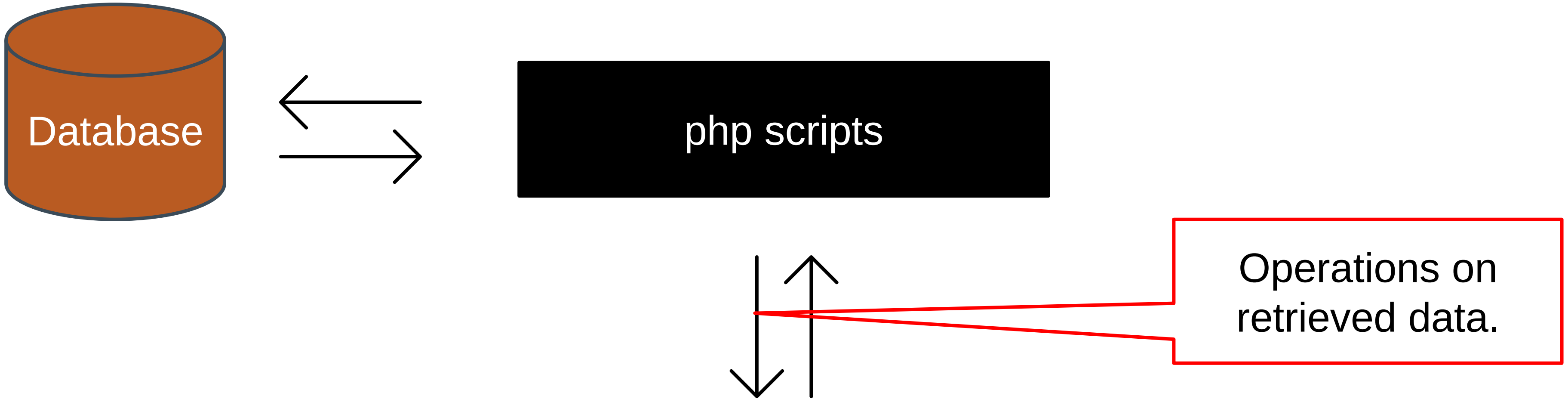
Part I (b)

PHP Advanced

Part II (a)

Data Display/Visualizations by fetching data from the DB

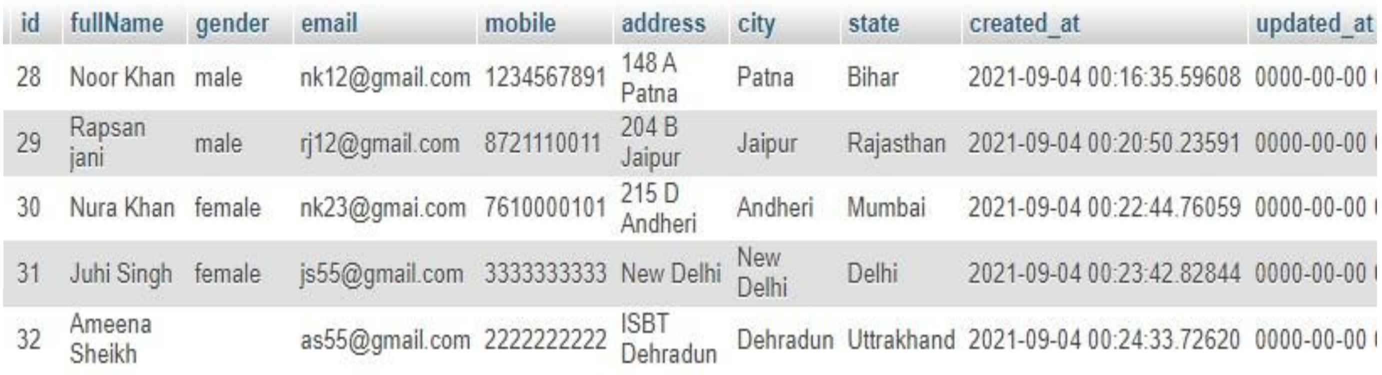
Recap of Previous Lessons-Objectives of this course {Data Retrieval}



Database

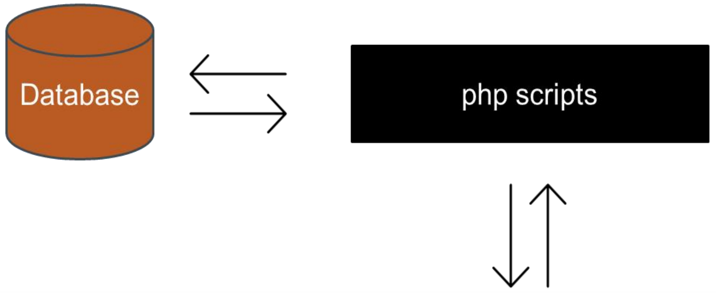
php scripts

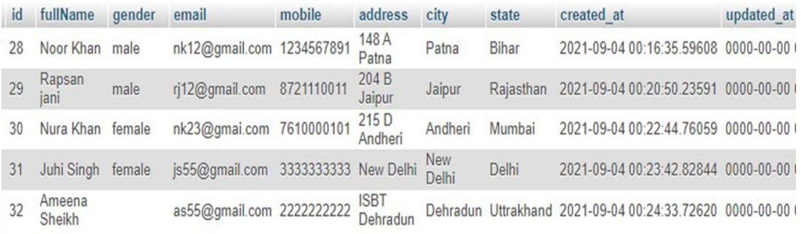
Operations on retrieved data.



id	fullName	gender	email	mobile	address	city	state	created_at	updated_at
28	Noor Khan	male	nk12@gmail.com	1234567891	148 A Patna	Patna	Bihar	2021-09-04 00:16:35.59608	0000-00-00
29	Rapsan jani	male	rj12@gmail.com	8721110011	204 B Jaipur	Jaipur	Rajasthan	2021-09-04 00:20:50.23591	0000-00-00
30	Nura Khan	female	nk23@gmai.com	7610000101	215 D Andheri	Andheri	Mumbai	2021-09-04 00:22:44.76059	0000-00-00
31	Juhi Singh	female	js55@gmail.com	3333333333	New Delhi	New Delhi	Delhi	2021-09-04 00:23:42.82844	0000-00-00
32	Ameena Sheikh		as55@gmail.com	2222222222	ISBT Dehradun	Dehradun	Uttrakhand	2021-09-04 00:24:33.72620	0000-00-00

Data retrieval from the database





id	fullName	gender	email	mobile	address	city	state	created_at	updated_at
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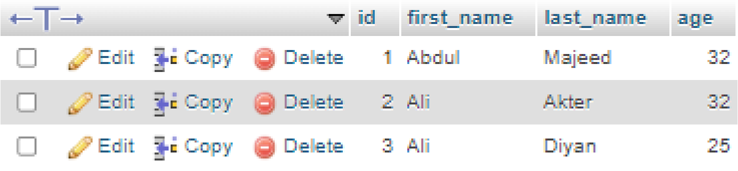
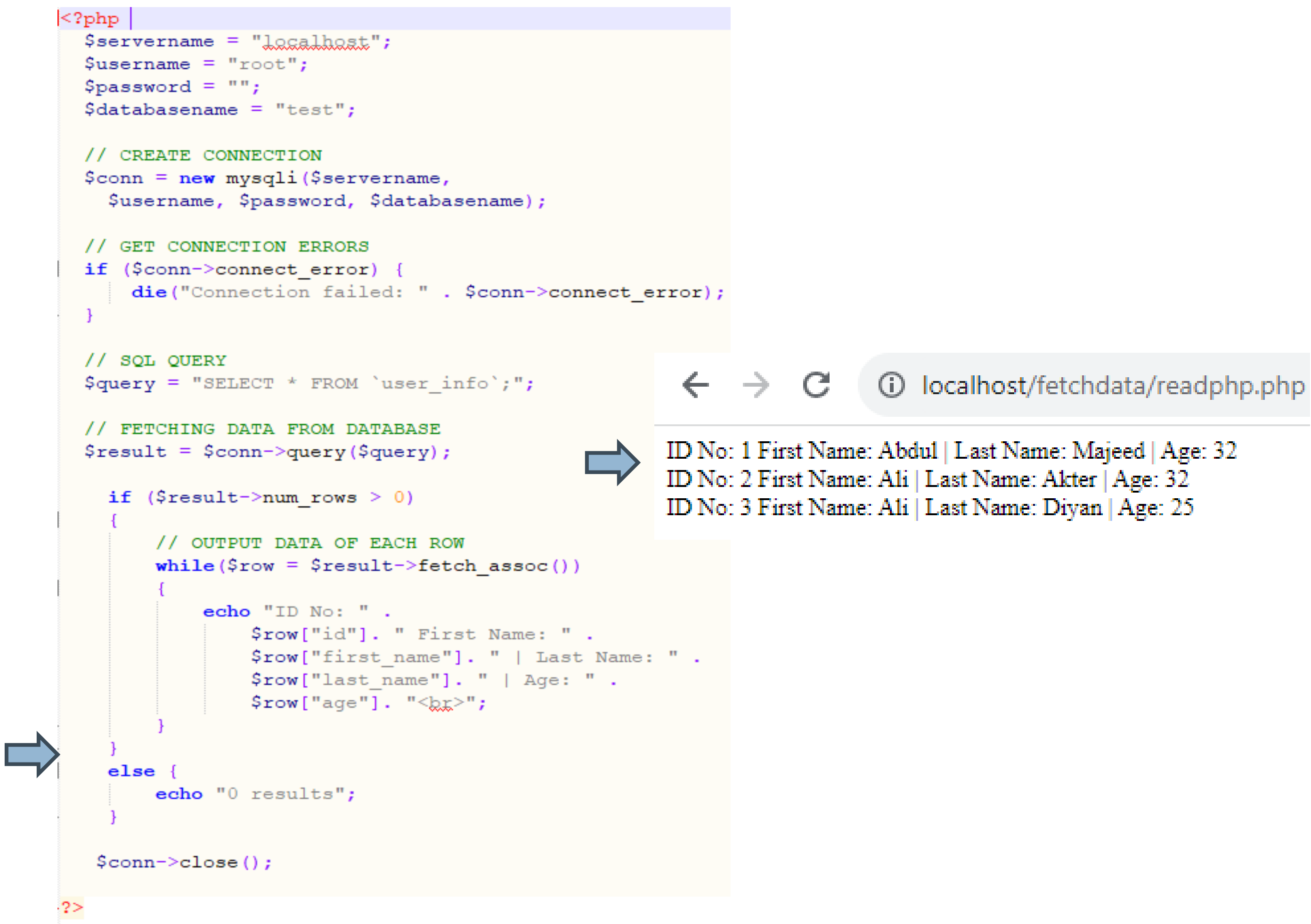
29	Rapsan jani	male	rj12@gmail.com	8721110011	204 B Jaipur	Jaipur	Rajasthan	2021-09-04 00:20:50.23591	0000-00-00
30	Nura Khan	female	nk23@gmai.com	7610000101	215 D Andheri	Andheri	Mumbai	2021-09-04 00:22:44.76059	0000-00-00
31	Juhi Singh	female	js55@gmail.com	3333333333	New Delhi	New Delhi	Delhi	2021-09-04 00:23:42.82844	0000-00-00
32	Ameena Sheikh		as55@gmail.com	2222222222	ISBT Dehradun	Dehradun	Uttrakhand	2021-09-04 00:24:33.72620	0000-00-00



←T→				id	first_name	last_name	age
□	Edit	Copy	Delete	1	Abdul	Majeed	32
□	Edit	Copy	Delete	2	Ali	Akter	32
□	Edit	Copy	Delete	3	Ali	Diyan	25

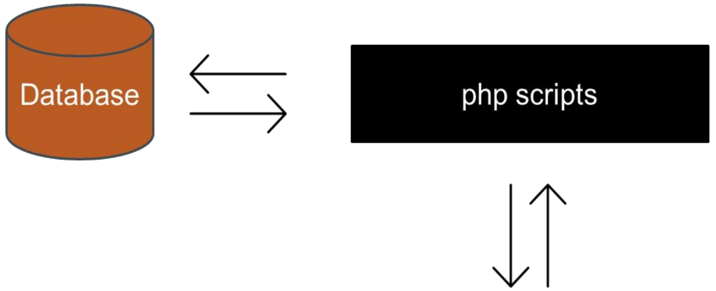


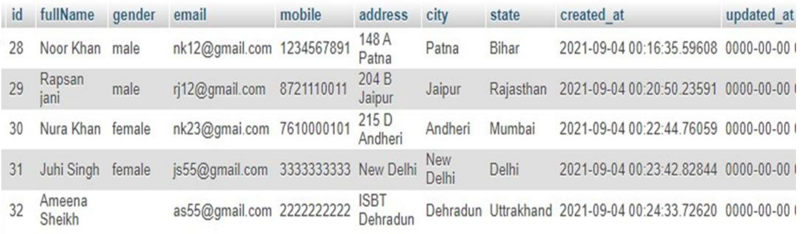
```php
<?php
  $servername = "localhost";
  $username = "root";
  $password = "";
  $databasename = "test";

  // CREATE CONNECTION
  $conn = new mysqli($servername,
    $username, $password, $databasename);

  // GET CONNECTION ERRORS
  if ($conn->connect_error) {
      die("Connection failed: " . $conn->connect_error);
  }

  // SQL QUERY
  $query = "SELECT * FROM `user_info`;";

  // FETCHING DATA FROM DATABASE
  $result = $conn->query($query);

    if ($result->num_rows > 0)
    {
        // OUTPUT DATA OF EACH ROW
        while($row = $result->fetch_assoc())
        {
            echo "ID No: " .
                $row["id"]. " First Name: " .
                $row["first_name"]. " | Last Name: " .
                $row["last_name"]. " | Age: " .
                $row["age"]. "<br>";
        }
    }
    else {
        echo "0 results";
    }

   $conn->close();

?>
```

localhost/fetchdata/readphp.php

```
ID No: 1 First Name: Abdul | Last Name: Majeed | Age: 32
ID No: 2 First Name: Ali | Last Name: Akter | Age: 32
ID No: 3 First Name: Ali | Last Name: Diyan | Age: 25
```

Data retrieval from the database-Few Selections Only





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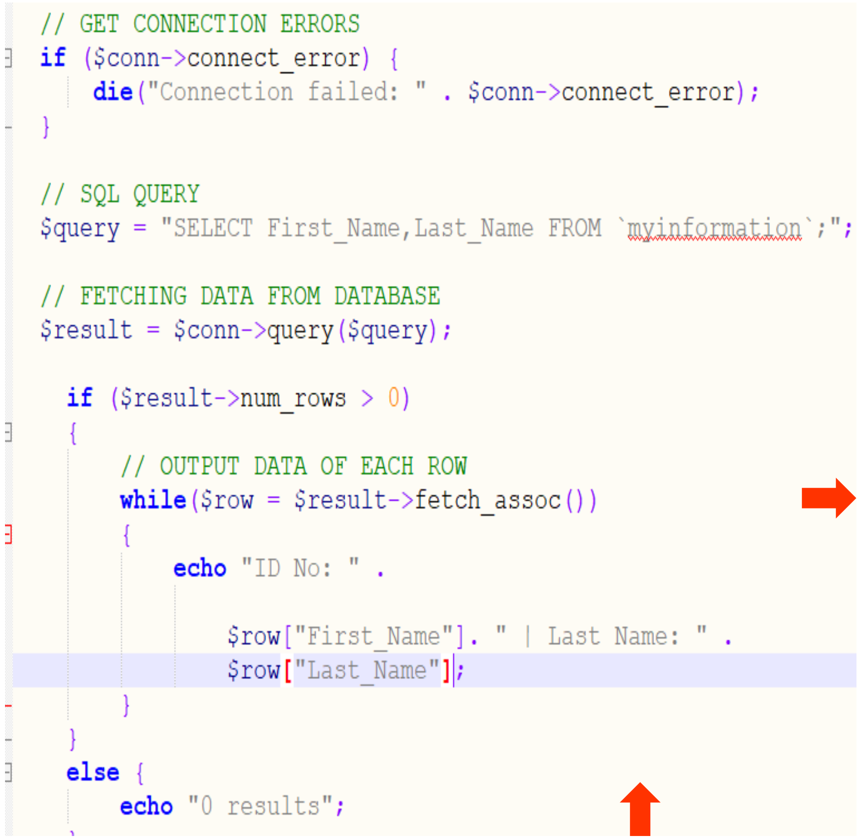
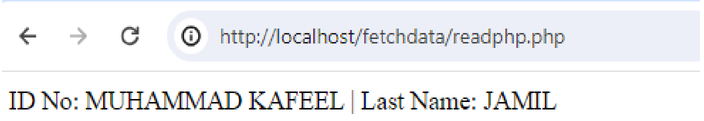
29	Rapsan jani	male	rj12@gmail.com	8721110011	204 B Jaipur	Jaipur	Rajasthan	2021-09-04 00:20:50.23591	0000-00-00
30	Nura Khan	female	nk23@gmai.com	7610000101	215 D Andheri	Andheri	Mumbai	2021-09-04 00:22:44.76059	0000-00-00
31	Juhi Singh	female	js55@gmail.com	3333333333	New Delhi	New Delhi	Delhi	2021-09-04 00:23:42.82844	0000-00-00
32	Ameena Sheikh		as55@gmail.com	2222222222	ISBT Dehradun	Dehradun	Uttrakhand	2021-09-04 00:24:33.72620	0000-00-00

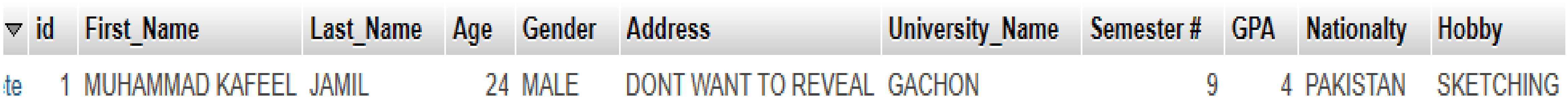


```
// GET CONNECTION ERRORS
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}

// SQL QUERY
$query = "SELECT First_Name,Last_Name FROM `myinformation`;";

// FETCHING DATA FROM DATABASE
$result = $conn->query($query);

  if ($result->num_rows > 0)
  {
      // OUTPUT DATA OF EACH ROW
      while($row = $result->fetch_assoc())
      {
          echo "ID No: " .

              $row["First_Name"]. " | Last Name: " .
              $row["Last_Name"];
      }
  }
  else {
      echo "0 results";
```



http://localhost/fetchdata/readphp.php

ID No: MUHAMMAD KAFEEL | Last Name: JAMIL



▼	id	First_Name	Last_Name	Age	Gender	Address	University_Name	Semester #	GPA	Nationalty	Hobby
te	1	MUHAMMAD KAFEEL	JAMIL	24	MALE	DONT WANT TO REVEAL	GACHON	9	4	PAKISTAN	SKETCHING

Summary of the Today's Lesson

- PHP Basics
  - Basic syntax
  - Variables
  - Operators
    - Arithmetic
    - Logic
    - Comparisons
    - Assignment
    - String
    - Etc.
  - Functions
    - w/ parameters
    - w/o parameters
  - Arrays
- PHP Advanced
  - Fetching data from the XAMP database
- Form data validation and data insertion to DB [Next classes]