Lab 7 – Programming Arrays, Objects

Purpose

- Programming using Arrays
- Programming using Objects
- Upload your website to a Web server

Due Date

- This lab must be handed in:
  Friday July 17, 2020 – before midnight

Assessment

- This Lab is worth 2% of your total course mark.

Assigned Readings

- **Lecture Slides** posted on Brightspace
  - Module 3 -> Part 3
- The following chapters of **Fundamentals of Web Development** will be useful in completing this exercise:
  - Chapter 9
  - Chapter 10

Lab Supplies

To complete this lab you will require the following lab supplies:

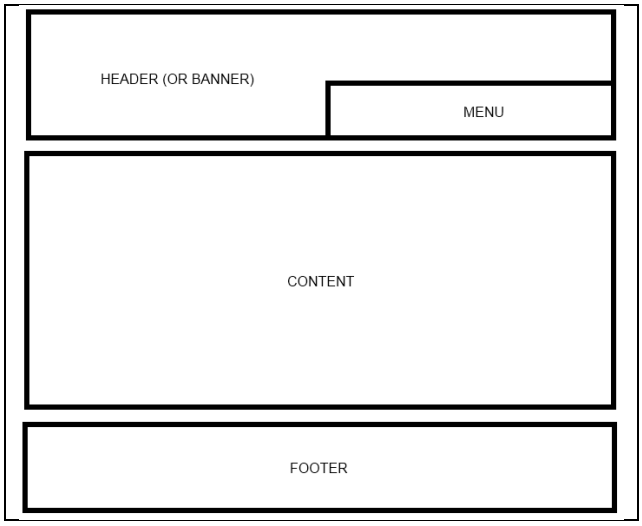
- Lecture Slides (**Module 3 -> Part 3**) posted on Brightspace
- Textbook: **Fundamentals of Web Development** by Randy Connolly and Ricardo Hoar
- EasyPHP, or other WAMP server
- Eclipse, Notepad (or other text editor, or IDE)
- FileZilla (or other FTP client)

Summary of Tasks

1. Develop the logic to solve and display the output for Arrays.php.
2. Develop the logic to solve and display the output for Currency.php.
3. Develop the logic to solve and display the output for Vehicle.php.
4. Upload your website to the webserver
5. View your webpage using a web browser
6. Submit Lab Link on Brightspace
7. Submit source code of all PHP files on Brightspace

Task 1

Before getting started with the following tasks, review the 'Common Look and Feel' video provided on Brightspace (under: Course Content → Extra Materials). Using the knowledge gained in these materials, implement the following Design Pattern to create a 'Common Look and Feel' to be used on every page of your website.



Your web site will include the following PHP scripts:

- Header.php
- Footer.php
- Menu.php
- Arrays.php
- Currency.php
- Vehicle.php

Header.php

Header.php must contain a script to display a Common Header that will appear on every page. The header must contain a banner (images, css, etc).

Footer.php

Footer.php must contain a script to display a Common Footer that will appear on every page. The footer must contain Student Number, First Name, Last Name, and Email Address

Menu.php

Menu.php must contain a script to display a Common Menu to be shown on every page. The menu must contain links to Arrays.php, Currency.php and Vehicle.php

Arrays.php

Sub-Task 1:
Create an array, $noKeyArray without specifying any key. Display the keys and the corresponding values of the array using the following command:
var_dump($noKeyArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

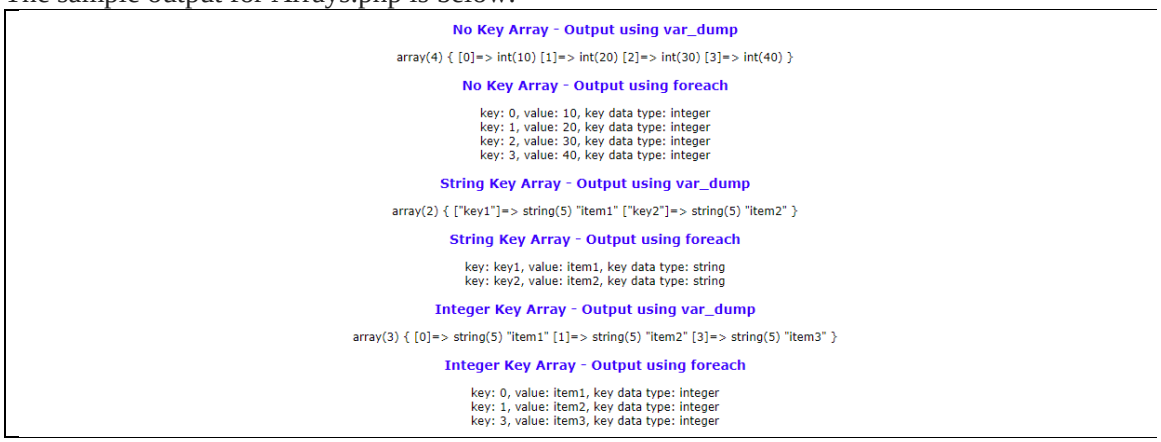
Sub-Task 2:
Create an array, $stringKeyArray with only string keys. Display the keys and the corresponding values of the array using the following command:
var_dump($stringKeyArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

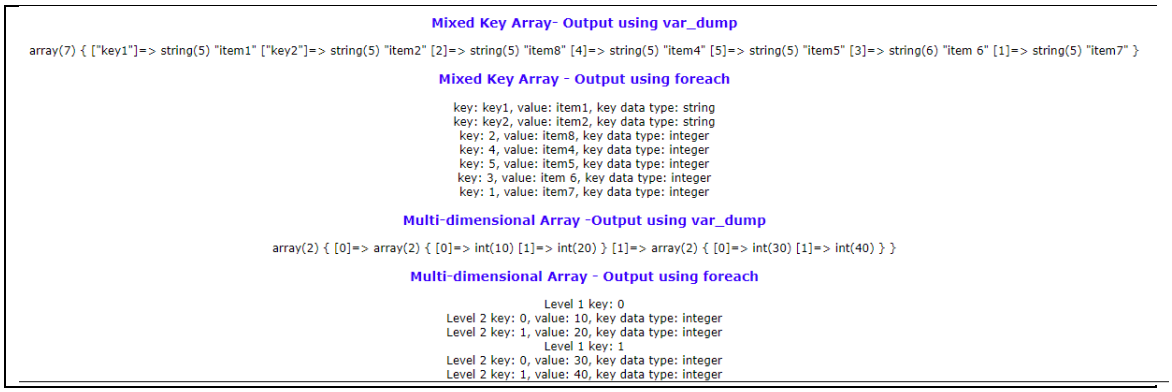
Sub-Task 3:
Create an array, $intKeyArray with only integer keys. Display the keys and the corresponding values of the array using the following command:
var_dump($intKeyArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

Sub-Task 4:
Create an array, $mixedKeyArray with both string and integer keys. Display the keys and the corresponding values of the array using the following command:
var_dump($mixedKeyArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

Sub-Task 5:
Create a multi-dimensional (2-D) array, $multiDimensionArray. Display the keys and the corresponding values of the array using the following command:
var_dump($multiDimensionArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

The sample output for Arrays.php is below:





N.B.: It is **NOT** necessary to make the output identical to the sample output of **Arrays.php** provided in this documentation. You just need to make sure that you have satisfied all the requirements for Arrays.php specified in this documentation.

You must include common Header, Menu and Footer to the **Arrays.php** web page.

Hints for retrieving the key data type of the array:
In PHP, the built-in function to retrieve the data type of a variable, $var is:
gettype($var)

Currency.php

Create a PHP script that will generate the outcome shown below. Your code must be able to convert from Canadian Dollar to New Zealand Dollar and vice versa; Canadian Dollar to US Dollar and vice versa; US Dollar to New Zealand Dollar and vice versa. You must implement it using HTML form elements as well as associative array of PHP.

The form fields are as follows:
Conversion amount: srcamt
Base currency: basecurr
Destination currency: destcurr

You have two arrays already declared with the following information:

```
$currencies = array(    "CAD" => "Canadian Dollar",
   "NZD" => "New Zealand Dollar",
   "USD" => "US Dollar");

$rates = array(  "CAD" => 0.97645,
   "NZD" => 1.20642,
   "USD" => 1.0         );
```

Hints for solving Currency.php:

Formula for Currency Coversion:

$converted_output = ($amount_input/$rates[$basecurr]) * $rates[$destcurr]

For example:

- CAD to NZD conversion:

If you want to convert from 100 CAD to eqivalent NZD, the formula works as follows:

$converted_output = ($amount_input/$rates[$basecurr]) * $rates[$destcurr]
= ($amount_input/$rates[CAD]) * $rates[NZD]
= (100/0.97645) * 1.20642
= 123.55

Expected Output = 100.00 Canadian Dollar converts to 123.55 New Zealand Dollar

- NZD to CAD conversion:

If you want to convert from 123.55 NZD to eqivalent CAD, the formula works as follows:

$converted_output = ($amount_input/$rates[$basecurr]) * $rates[$destcurr]
= ($amount_input/$rates[NZD]) * $rates[CAD]
= (123.55/1.20642) * 0.97645
= 100.00

Expected Output = 123.55 New Zealand Dollar converts to 100.00 Canadian Dollar

You must include common Header, Menu and Footer to the **Currency.php** web page.

Vehicle.php

Create a PHP script that will perform the following tasks.

1. Define an interface ***Vehicle*** with a method ***displayVehicleInfo()***.
2. Define a class ***LandVehicle*** which implements ***Vehicle*** interface and contains protected properties: ***make, model, year, price.*** Create a ***constructor*** method that takes in ***make, model, year,*** and ***price.*** Implement the method ***displayVehicleInfo()*** to display the properties of each object instance.
3. Define a derived class ***Car*** that inherits from the ***LandVehicle*** class and contains a private property: ***speedLimit***. You may need to override the ***constructor*** and ***displayVehicleInfo()*** method for this derived class.
4. Define a class ***WaterVehicle*** which implements ***Vehicle*** interface and contains protected properties: ***make, model, year, price.*** Create a ***constructor*** method that takes in ***make, model, year,*** and ***price.*** Implement the method ***displayVehicleInfo()*** to display the properties of each object instance.

5. Define a derived class ***Boat*** that inherits from the ***WaterVehicle*** class and contains a private property: ***boatCapacity***. You may need to override the ***constructor*** and ***displayVehicleInfo()*** method for this derived class.
6. Instantiate (Create) at least two objects of ***Car*** and display the properties of each object instance. Sample output is as follows:

Car

Make: Toyota, **Model**: Camry, **Year**: 1992, **Price**: 2000 , **Speed Limit**: 180

Make: Honda, **Model**: Accord, **Year**: 2002, **Price**: 6000 , **Speed Limit**: 200

7. Instantiate (Create) at least two objects of ***Boat*** and display the properties of each object instance. Sample output is as follows:

Boat

Make: Mitsubishi, **Model**: Turbo, **Year**: 1999, **Price**: 20000 , **Boat Capacity**: 18

Make: Hyundai, **Model**: XT, **Year**: 2012, **Price**: 26000 , **Boat Capacity**: 8

You must include common Header, Menu and Footer to the **Vehicle.php** web page.

Task 2

Upload your website to a Web server. Use an FTP client to connect to your Web server. Once you connect to the webserver using an FTP client, create a directory called '/CST8238/Lab7'. Once your course directory has been created navigate to that new directory. Add your all php files to this location. (Using FileZilla simply drag all PHP files into your folder).

Task 3

View your website using a web browser. Open a web browser and navigate to the following web address:
http://web-server_domain_name/CST8238/Lab7/<filename>

For example, the URL of a web page is:
http://profrejaul.com/CST8238/Lab7/Arrays.php

Assume, 'profrejaul.com' is the domain name of the Web server, ' /CST8238/Lab7' is the name of the directory created in the Web server using FTP client and 'Arrays.php' is the homepage of this lab.

Task 4

Once you have confirmed that your webpage is available online, you are ready to hand in your lab.
Create a compressed file (**Lab7.zip**) which will contain the following PHP files:

- Header.php
- Footer.php
- Menu.php
- Arrays.php
- Currency.php
- Vehicle.php

Create a word document (**Lab7.doc**) in which write the following Information:

- Student Number
- First Name
- Last Name
- The URL, or hyperlink of the home page (Arrays.php) of Lab 7

To hand in your lab, go to Brightspace and navigate to *Course Content* → *Labs* and click on 'Lab 7 – Programming Arrays, Objects' link.

Upload the word document (**Lab7.doc**) and the compressed file **(Lab7.zip**) on Brightspace.

Finally, click the 'Submit' button to send the lab to your professor.

N.B. Please keep in mind that ONLY .zip file is accepted as the format of the compressed file.

N.B. You must submit Lab7.doc and Lab7.zip separately to the Brightspace.

IMPORTANT NOTE: **If the URL does not direct the professor to the lab, you will receive a ZERO for the lab assignment.**