# Lab 7 – Programming Arrays, Objects

## Purpose

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

## Due Date

- This lab must be handed in:
  **Friday July 05, 2024 – 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:

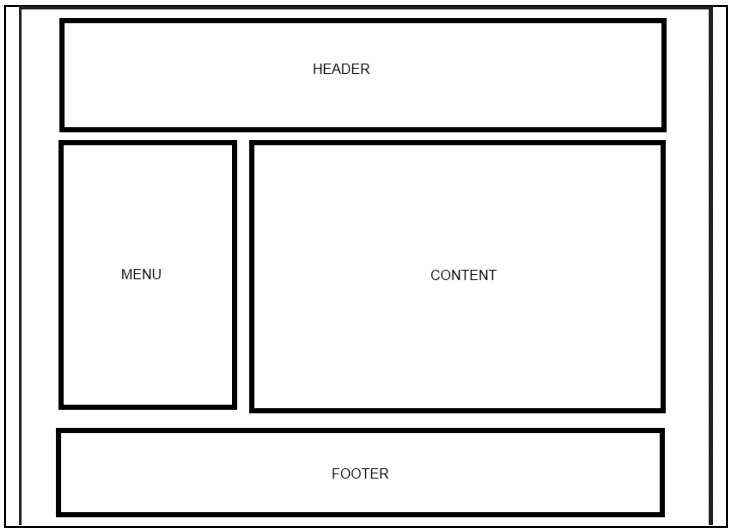
- Lecture Slides (**Module 3 -> Part 3**) posted on Brightspace
- Textbook: **Fundamentals of Web Development** by Randy Connolly and Ricardo Hoar
- EasyPHP, or other WAMP server
- Eclipse, Notepad++ (or other text editor, or IDE)

## 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 Calculator.php.
3. Develop the logic to solve and display the output for Objects.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

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
- Calculator.php
- Objects.php

## Header.php

Header.php must contain a script to display a Common Header that will appear on every page. The header must display Program Name and Course Name

## 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, Calculator.php and Objects.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.

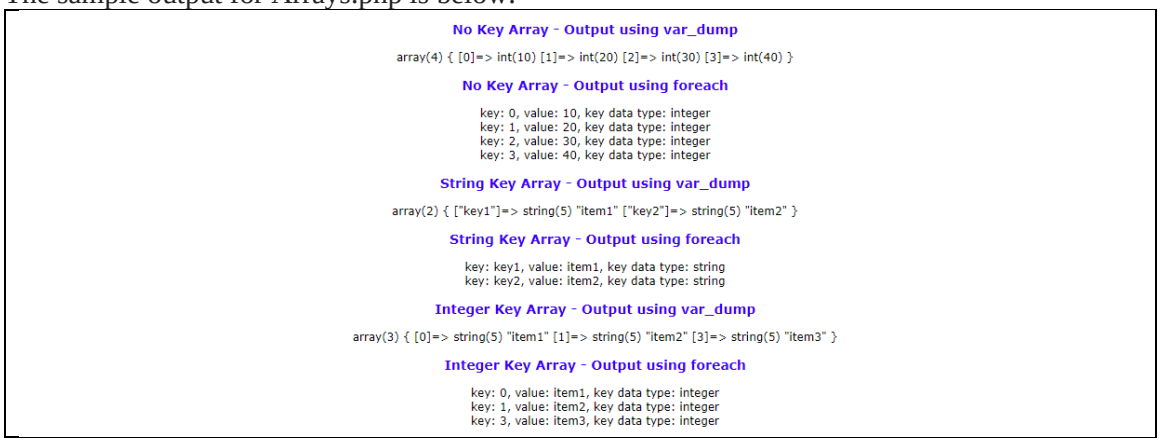
**Sub-Task 2:**
Create an array, $stringKeyArray with only string keys. Display the keys and the corresponding values of the array using the following command:
var_dump($stringKeyArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

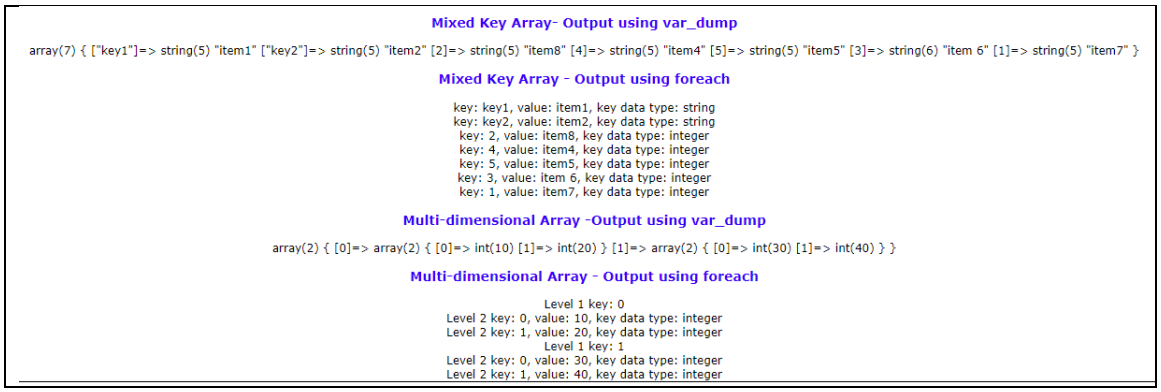
**Sub-Task 3:**
Create an array, $intKeyArray with only integer keys. Display the keys and the corresponding values of the array using the following command:
var_dump($intKeyArray)
Display the keys, the values and the key data type of the array using the '**foreach**' loop.

**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.

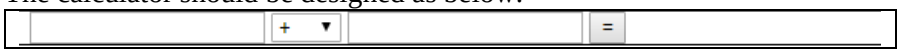
**Hints for retrieving the key data type of the array:**
In PHP, the built-in function to retrieve the data type of a variable, $var is:
***gettype($var)***

# Calculator.php

Create a calculator using PHP script and HTML form elements that will perform the following mathematical operations:
*Addition, Subtraction, Multiplication, Division, Exponentiation.*

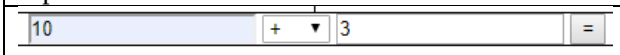
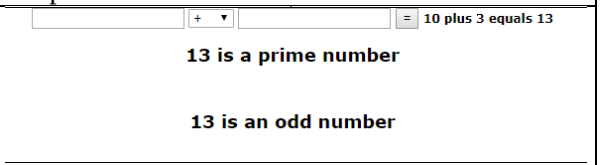
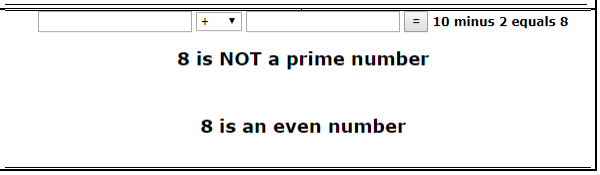
*This calculator needs to determine whether the calculated result is an even or an odd number.*
*This calculator also needs to determine whether the calculated result is a prime number or not.*

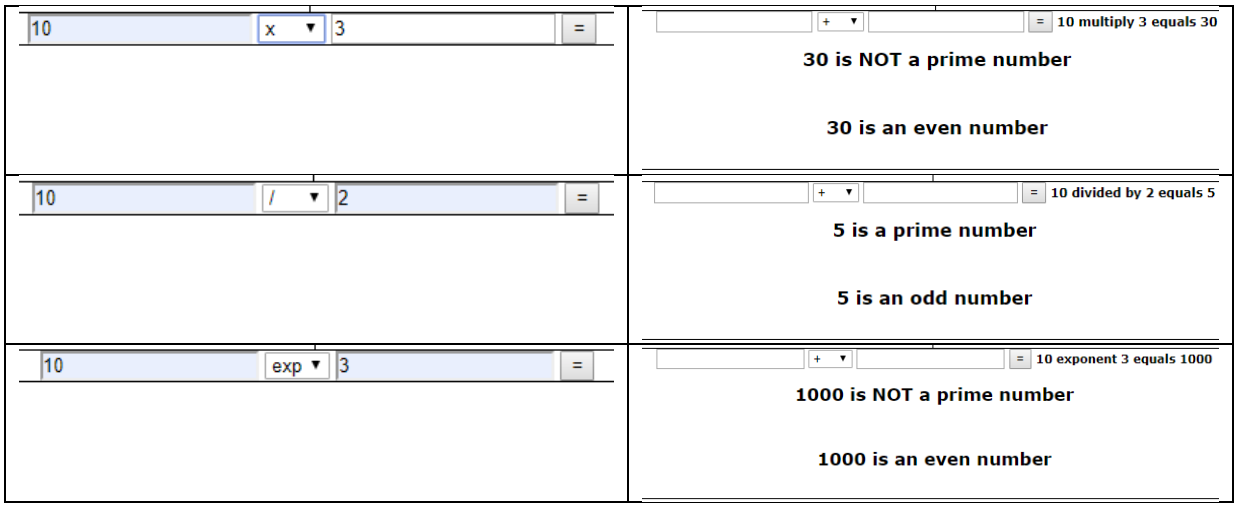
The calculator should be designed as below:




**Operating manual for the calculator**:
In order to operate the calculator, you need to provide numeric values (operands) in two text boxes, select one (+, -, ×, /, exp) of the operators and then click '=' button.

**Sample input and output screenshots of the calculator are below:**

| Input screen | Output screen |
|---|---|
|   |   |
|   |   |




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

**Hints for Exponentiation operation:**
Exponentiation is a mathematical operation, written as $b^n$, involving two numbers, the *base b* and the *exponent* or *power n*. In PHP, the built-in function for exponentiation operation is:
***pow (b,n)***

# Objects.php

Create a PHP script that will perform the following tasks.

**Sub-Task 1:**
Define an interface ***Employee*** with a method ***displayEmployeeInfo()***.

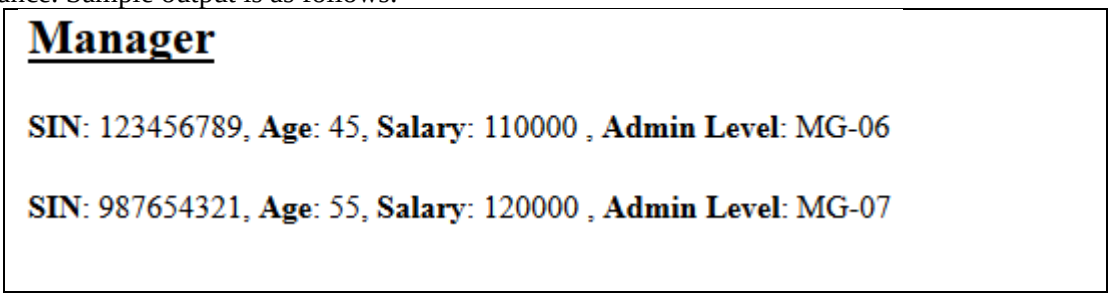
**Sub-Task 2:**
Define a class ***Management*** which implements ***Employee*** interface and contains protected properties: ***sin, age, salary.*** Create a ***constructor*** method that takes in ***sin, age, and salary.*** Implement the method ***displayEmployeeInfo()*** to display the properties of each object instance.

**Sub-Task 3:**
Define a derived class ***Manager*** that inherits from the ***Management*** class and contains a private property: ***adminLevel***. You may need to override the ***constructor*** and ***displayEmployeeInfo()*** method for this derived class.

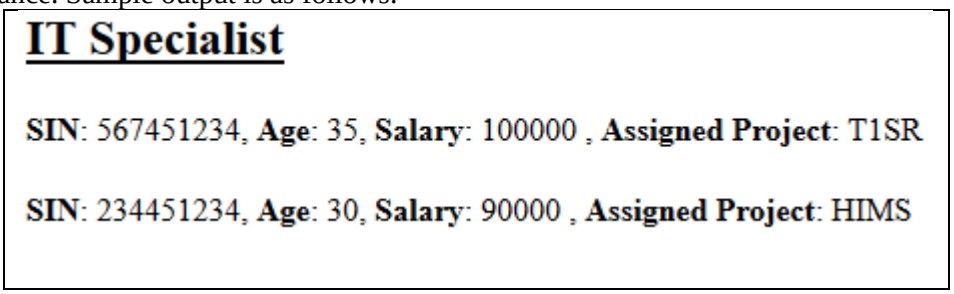
**Sub-Task 4:**
Define a class ***Development*** which implements ***Employee*** interface and contains protected properties: ***sin, age, salary.*** Create a ***constructor*** method that takes in ***sin, age, and salary.*** Implement the method ***displayEmployeeInfo()*** to display the properties of each object instance.

**Sub-Task 5:**
Define a derived class ***ITSpecialist*** that inherits from the ***Development*** class and contains a private property: ***projectAssigned***. You may need to override the ***constructor*** and ***displayEmployeeInfo()*** method for this derived class.

**Sub-Task 6:**
Instantiate (Create) at least two objects of ***Manager*** and display the properties of each object instance. Sample output is as follows:




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




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

## Task 2

Create Lab 7 submission folder '**Lab7**' and copy **Arrays.php**, **Calculator.php**, **Objects.php** and any other required files **(**e.g**. css file)** into this folder**.**

## Task 3

Upload your websites for Lab 7 into a Web Hosting Server by uploading '**Lab7**' folder inside the 'public_html' directory of 'SiteGround' Web Hosting domain using DashBoard.

The 'File Upload' instruction is posted on Brightspace (**Course Contents -> Module 1 -> Part 2 -> SiteGround_FileUpload_Instruction.docx**).

## Task 4

View your websites for Lab 7 using a web browser. Open a web browser and navigate to the following web address:

**http://your_web-hosting_domain_name/Lab7/<filename>**

For example, the sample URL for the home page of Lab 7 on an arbitrary web hosting domain is:

*rejaulc.sgedu.site/Lab7/Arrays.php*

where '*rejaulc.sgedu.site*' is the name of an arbitrary web hosting domain, '*Lab7*' is the submission folder for Lab 7, '*Arrays.php*' is the homepage of Lab 7.

# Task 5

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
- Calculator.php
- Objects.php

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

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.

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

**IMPORTANT NOTE**:
If you do not upload either Lab7.zip or Lab7.doc on Brightspace, you will receive a ZERO for the lab assignment.