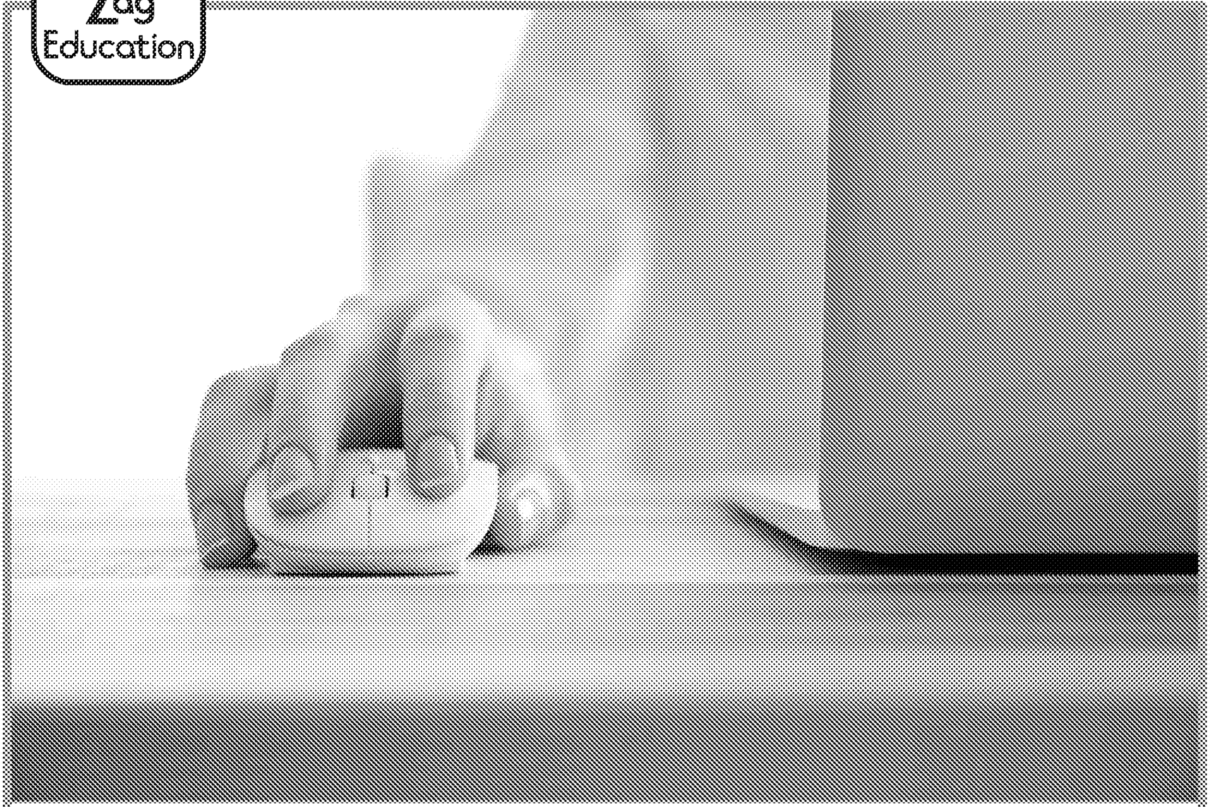
Zig Zag Education

Computer Science



PHP Learning Tasks

for Beginners

- DIGITAL RESOURCE -

This pack includes paper versions of the electronic files.

Go to zzed.uk/ProductSupport to download the electronic files.

zigzageducation.co.uk

POD 10825

Contents

Teacher's Introduction

This set of 19 tasks is intended for students who are absolute beginners at PHP, taking them from zero to creating a mini website for a restaurant.

The exercises are ordered in increasing difficulty; we recommend you set your students these tasks in order. If they have already learnt to program, they should find the initial exercises very quick to do. A few of the challenges build on a previous exercise – if so, this is stated clearly at the beginning of the challenge.

This pack guides your students to structure their code into MVC (Model–View–Controller) from the very beginning so that they intuitively develop their programming with a separation of database SQL queries and front-end HTML from the controller code.

MVC

MVC is a method of coding which aims to prevent the creation of long files made up of a jumble of SQL database queries, PHP functions, HTML and CSS. Files like that are hard to read and hard to maintain. Instead, MVC seeks to separate out the code that is concerned with data management from the presentation of that data. There are many subtly different implementations of the MVC pattern, but at its simplest you could think of it as:

- all HTML and CSS should be in the view
- all calls to the database and all substantive logic (the code that calculates and manipulates data) belong in the model
- the controller should act as the intermediary between the model and the view (see the student introduction for further descriptions of the controller, model and view).

Note that we have tried to keep things simple for this course. This includes:

- Most frameworks that use MVC (e.g. CodeIgniter, Laravel) have a separate folder to contain the controllers, models and views, but we recommend a simpler structure for learning, where the models and views are in a simple include file.
- We have created a new controller for each task, usually with only one function. In reality, it is common for there to be more functions in a controller. This is possible in MVC frameworks as they use routing to call a particular function in a particular controller. To avoid that complication we have added multiple controllers where sometimes there would have been only one.
- Controllers often share models. In this case have one model file per task so that it is easier for the students to understand.

PHP on a Stick

We list one local development solution under 'Local and Live Development' (page 6), but another option is to use *PHP on a Stick* from ZigZag Education (ZZBR/4334). *PHP on a Stick* is a unique all-in-one tool that allows students to learn about, develop and run their own PHP and SQLite projects straight from a USB memory stick.

January 2024

Electronic files for this resource are provided on the ZigZag Education Support Files system, which can be accessed via **zzed.uk/productsupport**

Learning Points

Each task makes use of a new PHP programming element that hasn't been used i
listed below:

Task	New Learning Point
1	MVC, functions, input, output
2	*if* statements, numerical input, division, test for null, formatted outpu
3	Nested *if* statements
4	SWITCH statement, testing
5	Nested FOR loops
6	Arrays, standard functions [illegible] and *in_array*
7	2D arrays, standard function *rand*
8	Function output of an array
9	String manipulation functions *strtolower*, *strtoupper*, *strlen*, *str_replac* *array_reverse*
10	String manipulation functions *str_replace* and *str_ireplace*
11	Array comparison, standard function *sizeof*
12	Standard function *exit*
13	Number manipulation function *base_convert*, testing
14	Mathematical function *round*
15	Mathematical function *pi*
16	PHP sort function, *bubble sort* algorithm
17	Database creation and inserting records
18	Session data, database insertion and retrieval
19	Application of all skills to create a restaurant menu system

Student Introductio

This set of tasks is intended to teach through doing. It can be used by someone w programming. If you already have some experience you should still do all the tas super-quick to do until you find your level.

It is important to add comments and indentation to make your code easier to rea code to the example solution. There is rarely a 'best' solution, but when you com students' code and to the example solution, think about a balance of the followi

- Which is right and always gives the right result?
- Which caters for erroneous input and never crashes.
- Which runs the fastest?
- Which is the best documented with clear but concise comments?
- Which is the easiest to read and, therefore, to update next year when
- Which didn't take long to write?

Model–View–Controller (MVC)

When carrying out these tasks you will be splitting your code into three different controller (model only applies to questions that require a database).

MVC is the concept that code is structured into three types of file:

1. The controller is the code that starts running first, and calls functions in the information needed, then calls the function in the view to display the outpu
2. The model contains functions to add, edit and remove data from the database database interactions are needed). The model also handles any calculation an
3. The view contains the HTML, CSS, and JavaScript for the front end (this contro

There is a range of interpretations of the MVC approach; however, for the purpo using the following definitions.

View

This is the code that controls what the user sees. This could be a table of data or submit. The view should only handle the presentation of that data and should no data handling. However, it may include some presentation logic. For example, in display a message at the end of the quiz which could be determined by a variable

```
if($quizResult === "pass"){
    echo "You have passed";
}else{
    echo "You have failed!";
}
```

However, the view should not include the business logic that determines whethe code does not belong in the view:

```
if($quizScore >  65){
    echo "You have passed";
}else{
    echo "You have failed!";
}
```

Model

The model is the code which deals with the data handling and logic.

The model usually includes code for getting and storing information in a databas
example, consider a customer visiting a takeaway restaurant's website. The data
available to order will have been obtained from a function in a model that calls t
chicken curry, the model will have a function that stores this data in the databas

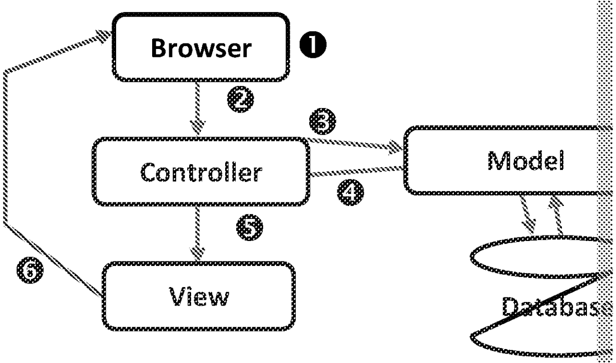
To think of some logic a model might contain, we can extend the same example.
payment screen, they will be told whether or not they are entitled to free delive
have worked this out by checking whether the total value ordered is greater tha

Controller

The controller is the connection between the view and the model. It will receive
send commands to the model. It will then receive data back from the model and
and send it the relevant data to display.

MVC Overview

Let us consider a simplified example of a user who has just typed in their login detai



Interactions:

1. The user has just filled in a form in the browser and clicked submit.
2. The URL from the login form determines which controller is used, and the d
3. The controller calls a function in the model which stores the email address a
4. The model sends back a confirmation of success to the controller.
5. The controller calls a view that explains that the user has successfully been a
6. The HTML in the view is displayed in the browser.

Views: Mixing PHP and HTML

Sometimes you have HTML code in a view that includes an HTML variable. You c
screen including the variable within PHP, or you can just use the PHP to echo the
code do exactly the same thing:

```
<?php echo "<p>Your name is $username</p>"; ?>
```

```
Your name is <?php echo $username; ?></p>
```

You will normally do the first if it is within a block of PHP, and the second if it is w

Models: Database Code

Your teacher will set up (or help you set up) a database. It will most likely be an
MySQL database.

For task 17 the code for the *model.php* file has been given; which connects to a d
code you will need to substitute in the connection details for your database in th
is in the root folder). This sample model file includes code for executing a select
table, for deleting a table, and for seeing whether a table exists. Adapt this code
tasks, create the model file yourself and use it for any logic needed to solve the t

PHP 'Cheat Sheet'

Below are a number of basic PHP functions which you can use when needed in th constantly use the Internet to check what functions are available – it's not actuall

PHP Functions[1]	
`intval($input)`	Converts from a string to an integer
`round($num1,2)`	Rounds the variable $num1 to two decimal p
`number_format($num1,2)`	Returns the variable $num1 expressed to tw
`floor($num1)`	Rounds the variable $num1 down to the nea
`max($num1,$num2)`	Returns the largest of $num1 and $num2
`microtime(true)`	Returns a number representing the current t
`pi()`	Returns an approximation of pi (i.e. 3.14, etc

Basic PHP String Manipulation Functions[1]	
`strlen(string $string): int`	Returns the length of the given
`count_chars(string $string, int $mode = 0): array|string`	Counts the number of occurren in string. Depending on mode *count_char* • 0 – an array with the byte v of every byte as value • 1 – same as 0 but only byte greater than zero are listed • 2 – same as 0 but only byte to zero are listed • 3 – a string containing all u • 4 – a string containing all n
`strtolower(string $string): string`	Returns string with all alphabet lower case.
`strtoupper(string $string): string`	Returns string with all alphabet upper case.
`strrev(string $string): string`	Returns string, reversed.
`str_word_count(string $string, int $format = 0, ?string $characters = null): array|int`	Counts the number of words ins optional format is not specified, an integer representing the num event that the format is specifie array, content of which is depen possible value for the format an listed below.

`str_replace(`
`    array|string $search,`
`    array|string $replace,`
`    string|array $subject,`
`    int &$count = null`
`): string|array`
	This function returns a string or of search in subject replaced wi count is passed, this will be set performed.

`str_split($word,1)`	Splits a string into chunks one c

[1] Descriptions of functions adapted from php.net. More information on these an found at **https://www.php.net/**

Local and Live Developr

You may be learning PHP within a school or college, in which case you can ignore you a login and explain to you the set-up. If, however, you are using this resourc practise some coding at home, this content may be helpful.

We will make the assumption that you are using a Windows computer, but the p are using an Apple Mac or a Linux computer.

Although it is relatively easy to create your own website, if you are going to store take credit card payments, then under the GDPR (Data Protection Act) you need which requires more technical knowledge.

Local Development

For PHP coding on your computer you need to install:

- Apache (web server software)
- A database program – we recommend MySQL
- PHP – scripting language used by web developers
- A program to access and control the database – we recommend phpMyAdm
- A program to edit your code – we recommend Microsoft Visual Studio Code
- A browser – any modern browser will be fine, although we like Chrome (wh tools built in)

Rather than setting all these up individually, we recommend using WampServer (MySQL + PHP; it also includes phpMyAdmin):

1. First, download Visual Studio Code and install it from ***https://code.visualstu*** into C:\Users\Admin\AppData\Local\Programs\Microsoft VS Code)
2. Download and install the WampServer check program from ***http://wampserver.aviatechno.net/files/tools/check_vcredist.exe*** – take the c
3. Install any files it says are needed – there are links to all the files at ***https://w***
4. Then you can install WampServer from ***https://sourceforge.net/projects/w*** we recommend you pick Chrome as your browser and Visual Studio Code as

Once installed, run WampServer by double-clicking the icon. When loaded you w screen; go to the WampServer icon on the taskbar – when it is green it has finish

Check that it is all working:

- Go into the *C:\wamp64\www* folder and create a subfolder called *test*
- Create a very simple PHP page in the test folder by creating a file called *inde*
- Type this code into the page and save it: *<?php echo "This is a test"; ?>*
- Go to ***http://localhost*** and you should see the WampServer page. Then go your program should run and you should see 'This is a test' on the page
- You are now ready to code…

When you get to a task that requires using a database, select **phpMyAdmin** from ***http://localhost*** page. The default username is root, and there is no password u select Databases from the menu bar. Enter a name for your database, and press

Live Development

Although not the focus of this resource, if you want to put your programs on a liv hosting package; this will usually have the following installed:

- Apache (web server software)
- cPanel or Plesk (interface to make changes to your server)
- MySQL (database)
- phpMyAdmin (for editing your database manually)
- PHP (latest version)

In addition, you will usually need an SFTP program such as FileZilla to transfer file your hosted web server.

Example – Display User

Task

- Prompt the user to type their name
- Display the name on the screen
- Use MVC

Solution

Camel case (capital letter at the beginning of each word except the first)

Adds some PHP code that turns on error reporting

Start and end of PHP

Start and end of *if* statement

Controller – controller.php

```
<?php
include ("../setUp.php");
include("view.php");
include ("model.php");

$userName = null;
if (isset($_POST['userNameInput'])){
    $userName = $_POST['userNameInput'
}

showview($userName);
?>
```

Start and end of *function*

This is HTML code, not PHP code, so isn't in the <?php ... ?> brackets

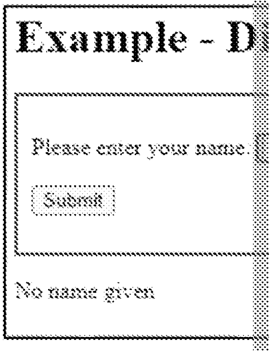
View – view.php

```
<?php
function showview($userName) {
    ?>
    <h1>Example - Display User Input</h1>
    <form action="index.php" method="post" sty
       2px solid blue;width:400px;padding:10px
       </p>Please enter your name: <input type=
       name="userNameInput" required><p>
        <input type="submit">
    </form>
    <?php
    if ($userName === null) {
        echo "<p>No name given</p>";
    }else {
        echo "<p>Name is <i>$userName</i></p>";
    }
}
?>
```

Model – model .php

```
<?php
    //no logic manipulation or database calls needed for th
model is empty!
?>
```

We suggest that you copy what you need from this example to get started with your first task.


Example - D

Please enter your name.

No name given

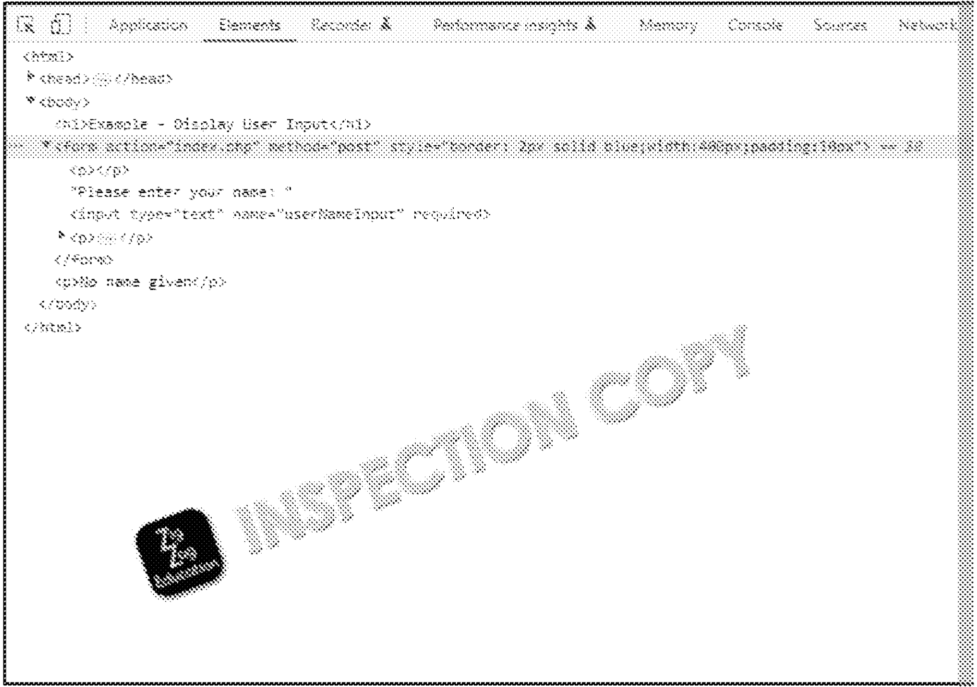
HTML Source

In the browser, when you are running your program, right-click on the page and s the menu to see the source code for the page generated by the program. For th

```
    <h1>Example - Display User Input</h1>
    <form action="index.php" method="post" style="border: 2px solid
    </p>Please enter your name: <input type="text" name="userNameInp
        <input type="submit">
    </form>
    <p>No name given</p>
```

If you make a mistake with your code, sometimes it is helpful to view the source your program is generating.

Some browsers, including Chrome, also have other useful tools for developers. I select 'Inspect' you will see the HTML in the page, but you will also see a breakdo can also see the console, which may come in handy if you are using JavaScript, a network tab can also help you to see what is happening when forms are posted (including errors).

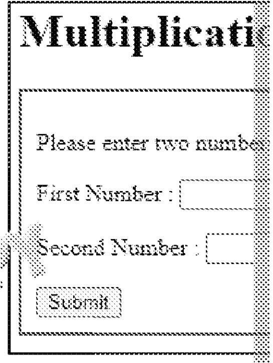


```
<html>
 ▶<head>…</head>
 ▼<body>
    <h1>Example - Display User Input</h1>
  ▼<form action="index.php" method="post" style="border: 2px solid blue;width:400px;padding:10px"> == $0
      <p></p>
      "Please enter your name: "
      <input type="text" name="userNameInput" required>
    ▶<p>…</p>
    </form>
    <p>No name given</p>
  </body>
</html>
```

Task 1 – Multiplication

Task

- Prompt the user to type two numbers
- Ensure they are integers and multiply them together
- Output the result
- Use MVC



Multiplicati

Please enter two numbe

First Number :

Second Number :

Submit

Notes

- You need a form to input numbers; two input text boxes and one button, like the example shown here
- Ensure that the exact name (including capital letters) of the inputs is used in the code – just one mistake and it won't work

Hints

- Look at the example task; in the same way create a function called *showview* the HTML
- Look up which different data types can be used in HTML text boxes
- You will need to check that the input fields are not empty
- The arithmetic operator for multiply is *
- Look for a PHP function that returns the integer value for your variable

Task 2 – Division

Task

- Prompt the user to type two numbers
- Divide the first number by the second number
- Output the result to two decimal places

Notes

- You need a form to input numbers; it will need two inputs and one button
- Your code should work with decimals and negative numbers

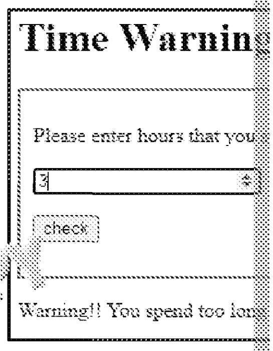
Hints

- Before you start, think about what data might be entered that could cause a your program, i.e. don't allow characters other than numbers to be typed, a zero
- Check that the user types something into both boxes
- Use a PHP function to round the decimal number

Task 3 – Time Warning

Task

- Ask the user how long they spend on their phone each day
- Tell them well done if it is an hour or less, to be careful if it is between 1 hour and 2 hours 30 minutes, or warn them to reduce their hours if they spend 2 hours 30 minutes or longer



Time Warnin

Please enter hours that you

3

Warning!! You spend too lon

Hints

- ❖ You need a form to [illegible] number; it will need one input and one button
- ❖ Use a function [illegible]view() for the view containing the form and the output
- ❖ Look at the conversion ratio for converting time between hours and minutes; 1
- ❖ You can use multiple *if* statements to go through all the possible options
- ❖ Use the HTML attribute *required* to avoid any empty input fields

Task 4 – Grade Calculator

Task

- Create a function called *printgrade* which is passed the grade and returns a sent where x is the grade, based on the following table. It should accept the input a

Boundary	Grade
90	A
80	B
71	C
65	D
40	E
<40	Fail

- Ask the user to enter their last exam mark out of 100 and then give them th

Hints

- ❖ Use the *switch case* statement to calculate the grade. Don't use multip
- ❖ When your code is working, do some testing by typing in marks in each grad boundary to check it works perfectly
- ❖ Even if you limit your text box to accept numbers only, it is still a good idea number so that if something goes wrong it doesn't crash your program

Task 5 – Hex Colours

Task

An HTML colour is made up of three colours: red, green and blue. Each colour is number from 0 to F (from 0 to 15 in decimal), where 10 is A, 11 is B, 12 is C, 13 is colours are, therefore, written as hexadecimal numbers from #000000 to #FFFFF the colours where each of the three colours is a double digit, i.e. #000000, #1100

Notes

- You don't need to use a form for this task
- Create a function in the view that takes in three integers from 0 to 15 and co hexadecimal number with a # at the front
- Table cells can have a background colour which is set with the hexadecimal n
- Rotate through all the possible combinations of x, y and z being the numbers hexadecimal using your function, and output them in a table cell with the ba hexadecimal number
- Use a CSS <style> command to create styling for your table cells

Hints

- ❖ Use three nested loops to loop through all the different combinations
- ❖ You will need to know or look up how to create HTML tables for this task

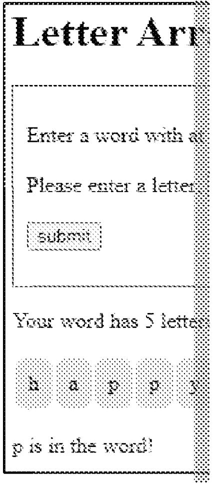
Task 6 – Letter Array

Task

Ask the user to enter a word containing at least three letters, and also a single letter.

Convert the word into an array of letters and then search the array to see whether it contains the letter.

Display how many letters are in the array, display the array, and inform the user whether or not the letter is in the word.



Letter Arr

Enter a word with a

Please enter a letter

Your word has 5 lette

h a p p y

p is in the word!

Hints

- ❖ Use minlength, maxlength and required for your input boxes where appropriate
- ❖ Use styles for your table that displays the array
- ❖ An array is a variable which can be made up of multiple values – for exampl 'fruit' that has three values of different fruit: *$fruit = array("banana", "apple*
- ❖ You can refer to those values by using an index (starting at 0) – so *$fruit[0] = "apple";*
- ❖ Use PHP functions *str_split* and *in_array*

Task 7 – 2D HTML Table

Task

Create a 3 × 3 array of random numbers between 0 and 9. Print out the array in a
array by transposing the rows to columns and the columns to rows and print it ag

8	1	5
3	5	7
4	8	2

→

8	3
1	5
5	7

Hints

- Create a function in the controller to generate the array
- Create a function in the view to print a 3 × 3 array, and another to flip a 3 × 3
- Each coordinate (x,y) in the first grid becomes (y,x) in the second grid
- You will need to know how to create an HTML table

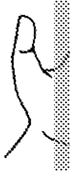
Task 8 – Rock, Paper, Scissors

Task

Write a game that plays *rock, paper, scissors* against the computer.
The user picks one of the three; when they click the submit button the computer picks one at random.

Scoring:

- Rock beats scissors; scissors beats paper; and paper beats rock
- The winner gets one point
- If both the user and the computer pick the same, no points are awarded
- The game finishes when the user or the computer gets to five points



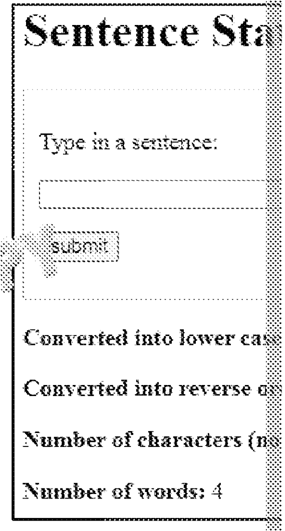
Hints

- Display the score as the game progresses
- When the user or the computer gets to five points, give the user the option t
- Ensure relevant information is clearly shown on the screen at all times
- Use a hidden field to keep track of the scores

Task 9 – Sentence Statistics

Task

Prompt the user to type a sentence. Output the sentence in lower case, then again but reversed and in upper case. Then output the number of characters in the sentence and the number of words in the sentence.



Sentence Sta

Type in a sentence:

Converted into lower cas

Converted into reverse o

Number of characters (n

Number of words: 4

Hint

- See introduction for basic string manipulation functions in PHP

Task 10 – Replacement

Task

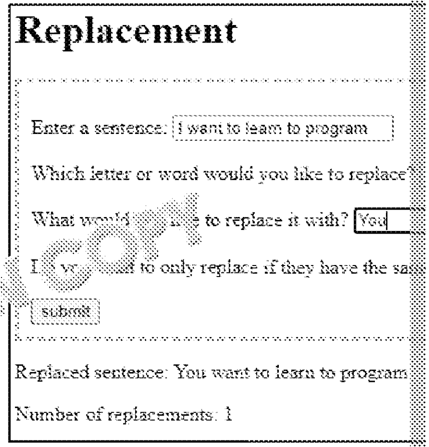
Ask the user to type a sentence, something they would like replaced, and someth

Provide a radio button to ask the user whether or not the case of the word matte

Output the sentence with the letter or word replaced and how many replacemen

Hint

- Note that there are two string replacement functions, *str_replace* and *str_ireplace*, both of which can replace the words and return how many replacements were made at the same time. Look up the difference between them.



Replacement

Enter a sentence: I want to learn to program

Which letter or word would you like to replace?

What would you like to replace it with? You

If you want to only replace if they have the sa

Replaced sentence: You want to learn to program

Number of replacements: 1

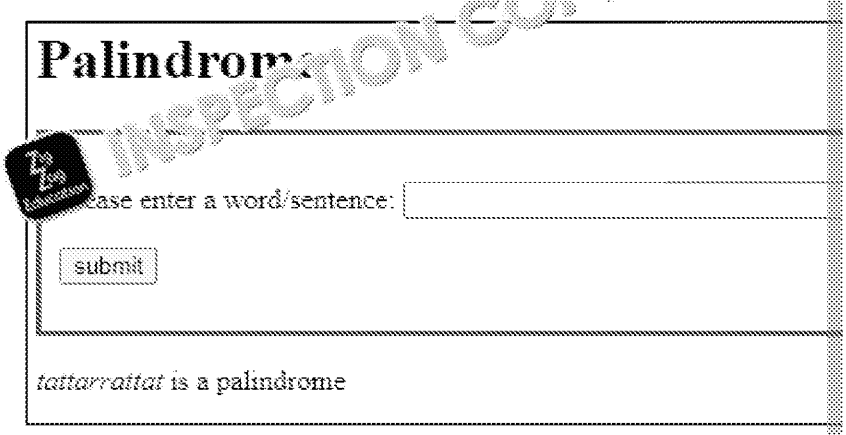
Task 11 – Palindrome

Task

Ask the user to type in a palindrome. It must allow the user to type any characte and numbers. Output whether or not it is a palindrome.

Hints

- For this task, convert the string as an array, then create a second array which then compare them to see whether they are the same
- Test your palindrome with *tattarrattat* and your own words



Palindrome

Please enter a word/sentence:

tattarrattat is a palindrome

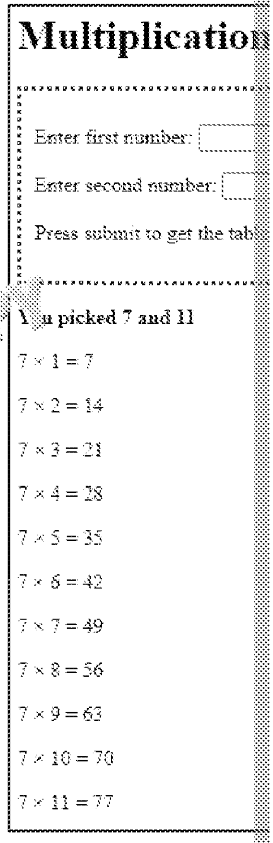
Task 12 – Multiplication Table

Task

Ask the user to type two numbers. Print the times table for the first number as many times as indicated by the second number. Let the user finish by clicking on an exit button and showing them a goodbye message.

Hints

- Before you start, plan what extreme and erroneous data might be entered and cater for these in your program. After coding, test that the maximum and minimum entries work.
- *&#215;* is the HTML code for multiplication sign



Multiplication

Enter first number:

Enter second number:

Press submit to get the tab

You picked 7 and 11

```
7 × 1 = 7
7 × 2 = 14
7 × 3 = 21
7 × 4 = 28
7 × 5 = 35
7 × 6 = 42
7 × 7 = 49
7 × 8 = 56
7 × 9 = 63
7 × 10 = 70
7 × 11 = 77
```

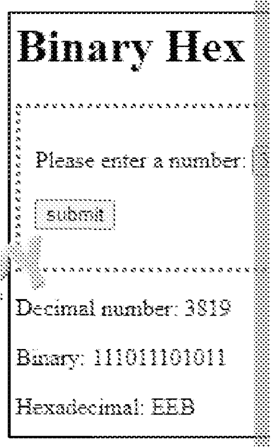
Task 13 – Binary Hex

Task

Ask the user to type in a decimal number. Work out and output the number as a binary number and as a hexadecimal number.

Manually convert the decimal to binary with your own algorithm; do not use a PHP function, otherwise you are not learning all the skills you need. (You can, however, use a PHP function to convert from binary to hexadecimal.)

Test your program with 3819 and check you get the same results as shown here.



Binary Hex

Please enter a number:

Decimal number: 3819

Binary: 111011101011

Hexadecimal: EEB

Hints

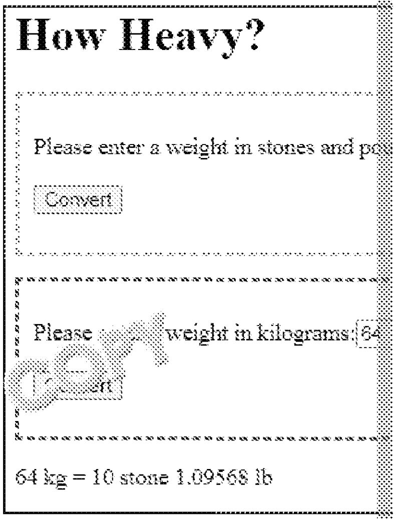
- ❖ You can use the *base_convert()* function to convert from binary to hexadeci
- ❖ Plan what extreme and erroneous data might be entered and cater for these whether or not both 2,000,000,000 and 3,000,000,000 give the right answer

Task 14 – How Heavy?

Task

Ask the user to enter a weight in stones and pounds. Display the weight in kilograms.

Also ask the user to enter a weight in kilograms. Display the conversion in stones and pounds.



How Heavy?

Please enter a weight in stones and po

Please enter a weight in kilograms: 64

64 kg = 10 stone 1.09568 lb

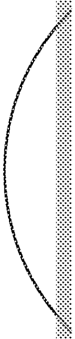
Hints

- ❖ 10 kg = 22.0462 pounds = 1 stone 8.0462 pounds
- ❖ Note that there are 14 pounds in a stone
- ❖ You will need to use the [illegible] function
- ❖ The program will need to know which 'Convert' button has been pressed

Task 15 – Circles

Task

Ask the user to enter the radius of two circles. We assume the smaller circle is entirely inside the larger. Output the area of the larger circle which is not covered by the smaller circle.



Hints

- ❖ Hopefully you already know from your Maths lessons that the area of a circle is $\pi \times r^2$
- ❖ Use the PHP function to get the value

Task 16 – Sorted

Task

Ask the user to enter a sentence or paragraph of up to 1000 characters. Store th

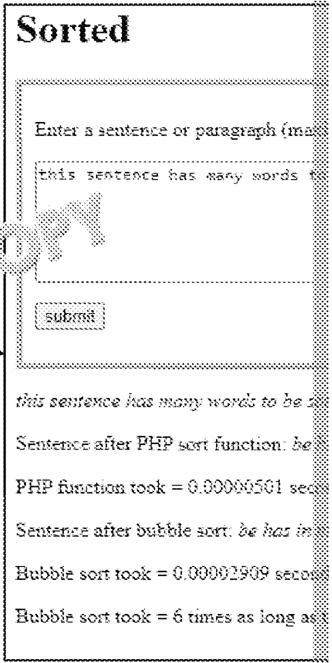
Sort the numbers and letters into order using a PHP function, and output them. R function takes to do the sort.

Write a bubble sort function and sort the numbers again – again logging how lon

Tell the user how much longer the bubble sort took than the PHP sort function.

Hints

- ❖ There are lots of different methods you can use to sort arrays, such as bubble sort, quick sort and insertion sort. You will need to look up the code for a bubble sort.
- ❖ You can use the PHP function *microtime* to get the current time at any point
- ❖ Here is an example of what your output might look like:



Sorted

Enter a sentence or paragraph (ma

```
this sentence has many words t
```

this sentence has many words to be s

Sentence after PHP sort function: *be*

PHP function took = 0.00000501 sec

Sentence after bubble sort: *be has in*

Bubble sort took = 0.00002909 seco

Bubble sort took = 6 times as long as

Task 17 – Scores Database

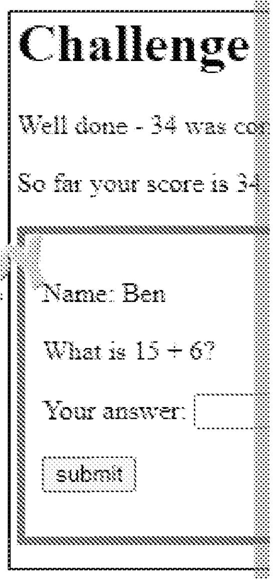
Task

Write a program that asks the user to add two numbers, where the two numbers are randomly generated numbers between 1 and 20. If they get it right, add the sum of the two numbers to their score. At the beginning, also ask for the user's name.

Repeat this four more times, showing their score as they go along.

Save their name, score, date and time in a table called 'Scores'.

Provide a high scores page which ranks in order the top 10 scores.



Challenge

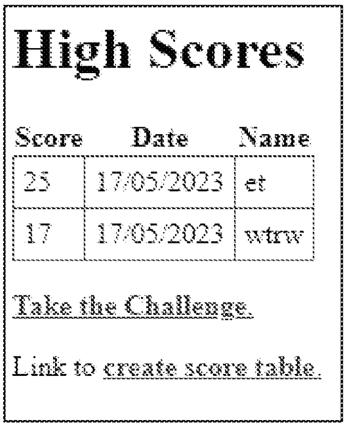
Well done - 34 was co

So far your score is 34

Name: Ben

What is 15 + 6?

Your answer:

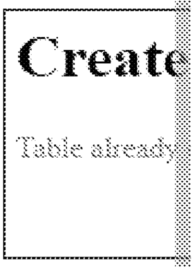


High Scores

Score	Date	Name
25	17/05/2023	et
17	17/05/2023	wtrw

Take the Challenge.

Link to create score table.



Create

Table already

Hints

- You will need to ask your teacher what database to use
- Create a file called *models.php* which contains the functions to:
  - Check to see whether the scores table exists
  - Create the scores table with fields scoreID (autonumber), name (text), s scoredateandtime (datetime)
  - Save a score
  - Look up the 10 highest scores and sort them from highest to lowest
- Create three controllers: one to coordinate the display of the scores table, o doesn't already exist) and the other for the questions of the challenge itself.
- On the following page is the code needed for the database opening and m that you copy and paste in, although you will need to insert the database n

Code for Task 17 models.php

```
<?php
    function openConnection(){
        include("../databaseConfig.php"); //set database name, use
        try {
            $conn = new PDO("$dbLanguage:server=$serverName;Databa
              $userName, $password);
            // set the PDO error mode to exception
            $conn->setAttribute(PDO::ATTR_ERRMODE, PDO::ERRMODE_EX
            //echo "Connected successfully";
            }
        catch(PDOException $e)
            {
            echo "Connection failed: " . $e->getMessage(); exit;
            }
        return $conn;
    }

    function executeSQL($sql){
        $conn = openConnection();
        try{
            $stmt = $conn->query($sql);
        }catch(EXCEPTION $ex){
            die( print_r( $ex->getMessage(), true));
        }
        $conn=null; //close the connection
        return $stmt;
    }

    function doesTableExist($tablename) {
        // Try a select statement against the table
        // Run it in try-catch in case PDO is in ERRMODE_EXCEPTION
        $conn = openConnection();
        try {
            $result = $conn->query("SELECT 1 FROM {$tablename}");
        } catch (Exception $e) {
            // We got an exception (table not found)
            return FALSE;
        }
        // Result is either boolean FALSE (no table found) or PDOS
        return $result !== FALSE;
    }

    function deleteTable($tablename) {
        $sqlString = "DROP TABLE [$tablename]";
        executeSQL($sqlString);
    }

    function createScoreTable() {
        $sqlString = "CREATE TABLE score (
            scoreid INT NOT NULL IDENTITY(1,1) PRIMARY KEY,
            score INT NOT NULL,
            scoredate Datetime DEFAULT CURRENT_TIMESTAMP,
            username VARCHAR(50) NOT NULL
            )";
       executeSQL($sqlString);
   }

?>
```

Task 18 – Registration

Task

Create a database table called 'users' which contains the following fields: *id, forename, surname, email* and *password. id* should be an auto-incrementing number.

Write a program to allow a user to login by checking that the email address exists and that the password matches the password saved in the database. When they successfully login take them to a welcome page and display their user ID. Provide a link to a registration screen where they can sign up.

When they register it should ask for their first name, last name, email address and password. It shouldn't allow them to register with the same email address more than once. Save the information in the database.

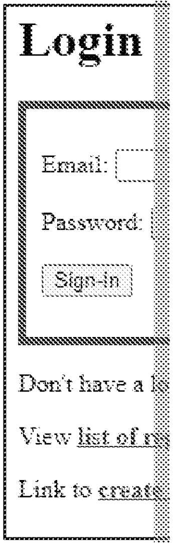
Also create a page which shows all the email addresses of registered users.

Notes

- You will need to ask your teacher what database to use; note that it is good practice to save the connection details for the database in a separate file.
- It is a good idea when coding to save the SQL query that you will run to create database tables. This means that another coder can run your SQL set-up code if they are testing the rest of your code.
- You will need three controllers: the initial controller, which is the starting point (the login page), a welcome controller and a register controller.

Hints

- Use $_SESSION in PHP to store the user ID. You must put *session_start();* at the top of each controller that uses session variables.
- The login and registration pages might look like those shown here – notice the links at the bottom to move from page to page:



Login

Email:

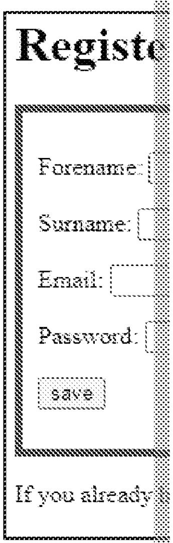
Password:

Sign-in

Don't have a l

View list of r

Link to creat



Registe

Forename:

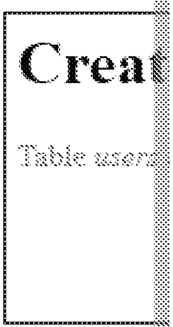
Surname:

Email:

Password:

save

If you already



Creat

Table users

Task 19 – Restaurant

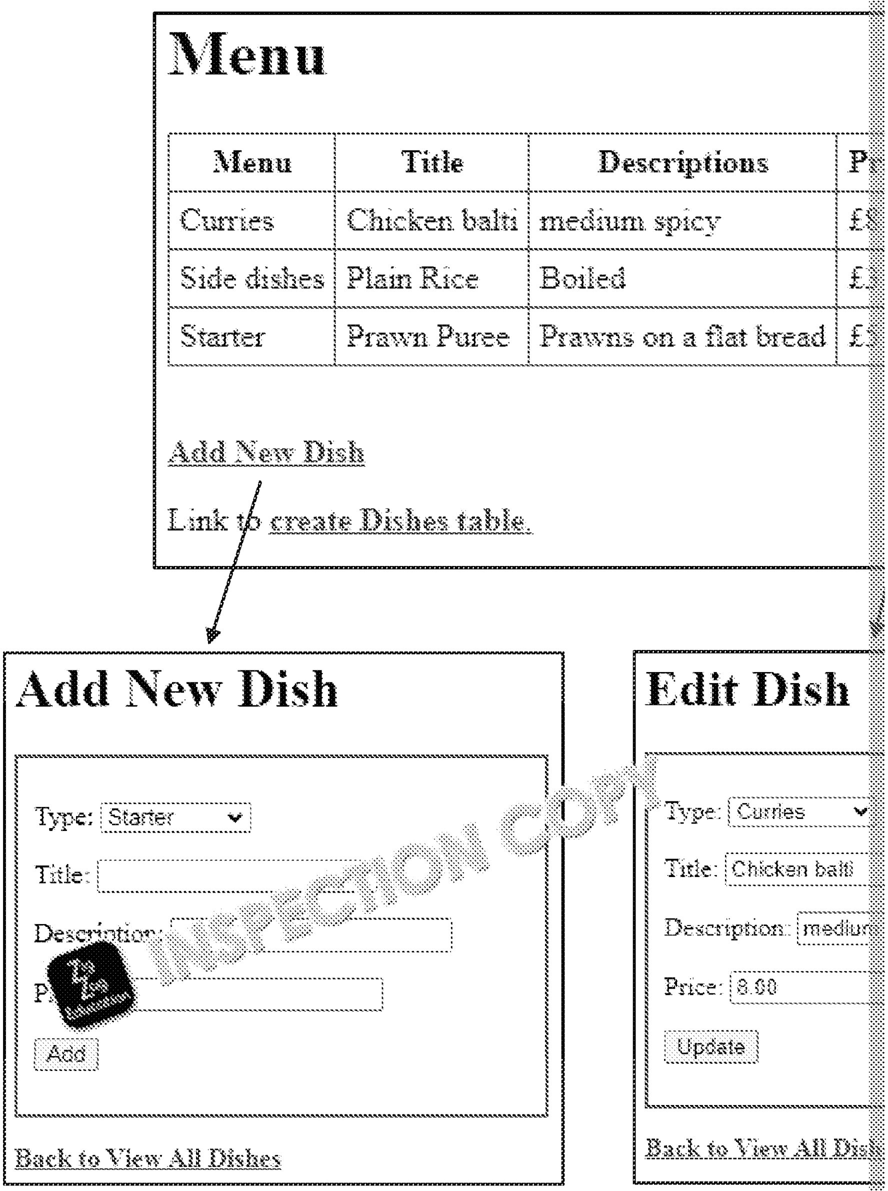
Task

Restaurant mini-website:

- Create the code to create a table to hold the details of items on the menu fo following fields: Menu (Starter, Curries, Side dishes), Title (dish name), Desc
- Create a page to show all the menu items available.
- Create an *Add* page to add new dishes which saves them to the database.
- Add an *Edit* link next to each item on the menu for the restaurant owner to dish descriptions.

Hints

- Use the code to create the table that was provided for task 17
- Although not essential, if possible use the same view to add and edit a record, t
- Below is an example of what the interface might look like:



Menu

Menu	Title	Descriptions	Pr
Curries	Chicken balti	medium spicy	£
Side dishes	Plain Rice	Boiled	£
Starter	Prawn Puree	Prawns on a flat bread	£

Add New Dish

Link to create Dishes table.

Add New Dish

Type: Starter

Title:

Description:

Price:

Add

Back to View All Dishes

Edit Dish

Type: Curries

Title: Chicken balti

Description: mediu

Price: 8.00

Update

Back to View All Dis

Model Solutions

Global Include Files

databaseConfig.php

```
<?php
    $databaseName = "TestDB";
    $userName = "**********";
    $password = "**********";
    $serverName = "ZZ-WEB02\SQLEXPRESS";
    $dbLanguage = "sqlsrv"; //eg sqlsrv or mysql (for sql serv
?>
```

setup.php

```
<?php
    ini_set('display_errors', 1);
    error_reporting(E_ALL);
?>
```

Menu

index.php (controller)

```
<?php

include("setUp.php");
include("view.php");

showview();

?>
```

view.php

```
<?php

function showview() {
    ?>
    <html>
        <body>
            <h1>PHP Challenges for Beginners</h1>
            <ul>
            <li><a href="example/controller.php">Example Task</a>
            <li><a href="task1/controller.php">Task 1</a> Multipli
            <li><a href="task2/controller.php">Task 2</a> Divisio
            <li><a href="task3/controller.php">Task 3</a> Time Wa
            <li><a href="task4/controller.php">Task 4</a> Grade C
            <li><a href="task5/controller.php">Task 5</a> Hex Col
            <li><a href="task6/controller.php">Task 6</a> Letter
            <li><a href="task7/controller.php">Task 7</a> 2D HTML
            <li><a href="task8/controller.php">Task 8</a> Rock, P
            <li><a href="task9/controller.php">Task 9</a> Sentence
            <li><a href="task10/controller.php">Task 10</a> Repla
            <li><a href="task11/controller.php">Task 11</a> Palin
            <li><a href="task12/controller.php">Task 12</a> Multi
            <li><a href="task13/controller.php">Task 13</a> Binary
            <li><a href="task14/controller.php">Task 14</a> How H
            <li><a href="task15/controller.php">Task 15</a> Circle
            <li><a href="task16/controller.php">Task 16</a> Sorte
            <li><a href="task17/main-controller.php">Task 17</a>
            <li><a href="task18/main-controller.php">Task 18</a>
            <li><a href="task19/main-controller.php">Task 19</a>
        </body>
    </html>
    <?php
}
?>
```

Task 1

controller.php

```
<?php

include("../setUp.php");
include("view.php");
include("model.php");

$multiple = null;
if (isset($_POST['num1']) && isset($_POST['num2'])){
    $num1  = intval($_POST['num1']);  //intval converts decima
    $num2 = intval($_POST['num2']);
    $multiple = multiply($num1, $num2);
}
showview($multiple);

?>
```

model.php

```
<?php

    function multiply($num1, $num2){
        $multiple = $num1*$num2;
        return $multiple;
    }

?>
```

view.php

```
<?php

function showview($multiple) {
    ?>

    <h1>Multiplication</h1>
    <form action="controller.php" method="post" style="border:
blue;width:400px;padding:10px">
        <p>Please enter two numbers below to multiply them toge
        <p>First Number  : <input type="number" name="num1" re
        <p>Second Number : <input type="number" name="num2" re
        <input type="submit">
    </form>

    <?php
    // output if variable $multiple contains anything
    if ($multiple !== null) {
        echo "<p>The multiple of these numbers is $multiple</p
    }
}

?>
```