SOUTHAMPTON SOLENT UNIVERSITY
School of Media Arts and Technology

BSc (Hons) **Web Design and Development**

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OLUWASEUN FADIPE

PointOfInterest

AE1

Web Application Development (SWD601)

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Task 1

In this scenario, I am required to develop a script that searches for the POIs in a given region. The regions are stored in table 'pointsofinterest', consequently I need to write a PHP script that sends a SELECT statement to the database to find all the points of interests matching the region the user stated.

```php
<?php
header("Content-type: application/json");

$r = $_GET["region"];
$conn = new PDO("mysql:host=localhost;dbname=xxx;", "xxx","xxx");
$results = $conn->query("SELECT  * FROM pointsofinterest WHERE region LIKE '%$r%'")
$resultsAsAssocArray = $results -> fetchAll(PDO::FETCH_ASSOC);
echo json_encode($resultsAsAssocArray);

?>
```

The first thing that is needed is a header containing the content type, this lets the clients know the JSON is sending from the server to the client. This lets the users know that they need to process the response as JSON instead of something else.

```php
header("Content-type: application/json");
```

I then I create a variable called $r which will store the region, however this needs to be read into the query in by using $_GET.

```php
$r = $_GET["region"];
```

I then created a SELECT statement, that goes through the table pointsofinterest where the region matches what the user enters which is stored in the variable $r which was created earlier.

```php
$results = $conn->query("SELECT  * FROM pointsofinterest WHERE region LIKE '%$r%'");
```

Because it's a search service, it needs to generate JSON as opposed to HTML. To do this, I used fectchAll() which loads the database results into an array of associative $resultsAsAssocArray.

```php
$resultsAsAssocArray = $results -> fetchAll(PDO::FETCH_ASSOC);
```

I then use echo json_encode to echo the JSON. This is shown below.

```php
echo json_encode($resultsAsAssocArray);
```

JSON Encode returns the JSON to represent a value *(php net)*. So it converts a PHP value value into a JSON. In this example from the array $resultsAsAssocArray it can create a JSON representation of that array *(w3rsource 2018)*.

Task 2

In this task I need to create a script which essentially adds the type of city e.g. hotel, alongside the region which what I did in question 1

To do this I to need add another variable I called $t much like I did in question one with the $r variable. Only this time, I called it $t which will store the type, and this also needs to read into the query by using $_GET.
I then I create a variable called $r which will store the region, however this needs to be read into the query in by using $_GET.

```
$t = $_GET["type"];
```

In the SELECT statement I added an AND which means if both statements are true, in this case if both $r and $t are true then it will produce results.

```
$results = $conn->query("SELECT  * FROM pointsofinterest WHERE region LIKE '%$r%' AND type LIKE '%$t%'");
```

Task 3

In this task I need to create a web service that allows clients to add to the POI database, there should also be error handling. To allow users to add clients to the POI, I would create variables for each field e.g. a variable for name.

```
$name =$_POST["name"];
```

I will then create an Insert statement that would add the data into the database in the pointofinterest table.

```
$results2 = $conn->query("INSERT INTO pointsofinterest(name, type, country, region, description, lon, lat, description)
VALUES('$name', '$type', '$address', '$lon', '$lat', '$description')");
```

For the error checking I'd check if any of the variables were blank before the data is inserted in the databased and also if the data had acceptable characters E.g. name should not have numbers, and longitude and latitude should not have letters.

The error code for incorrect characters will be '405 Not Acceptable' and the error code for blank variables will be Null. Because there will be no variable in the error code *(Zeehan 2014)*.

Task 4

For this task I need to allow users to write a review for a POI, and this also must have error checking.

To do this once the user has searched POI and found what POI they want to review, I will need to echo a link saying, "Write a Review", which will have a query string for the POI ID that the user has clicked on.

```
echo "<href=review.php?poiID-" . $row["ID"] . "'>Write A Review</a>"
```

Once clicked on it will send them to the review.php page.
It will contain a variable called $id using $_POST. This will set the statement $id to equal the value from the query string on poiservice.php

```
$id = $_POST["poi_id"];
```

I will then connect to the database as always, and I will do another INSERT statement similar to the one in the previous question. But it will be inserted into the poi_reviews table.

```
$conn->query("INSERT INTO poi_reviews(id, , poi_id, review,)  VALUES('$name', '$poi_id', '$review')");
```

I now need to add the error handling, which will check two things. Firstly, it will check that a review has been written and it will check that the poi_id matches the id of a poi. **How will you do this?**

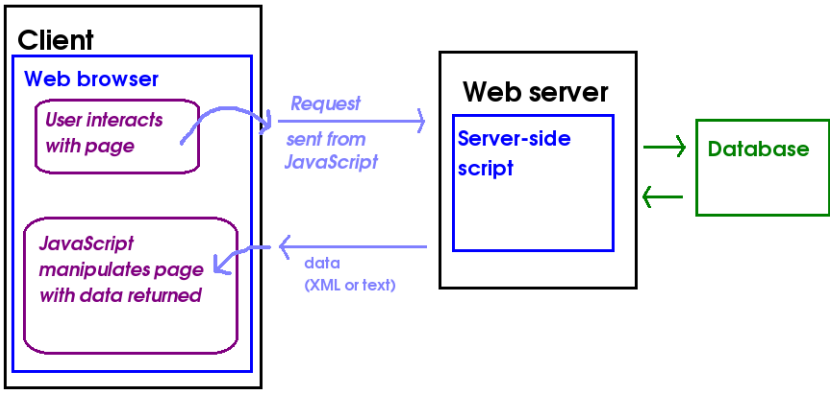
WRITE ERROR CODES

Commented [OF1]: Need to write error codes

Task 5

In this task I need talk about how the front-end page and the Ajax are linked and function. I also need to discuss how the AJAX page is connected to the web service allow users to look up all of the POIs in a region. It should show the POI's information such as the name and type. Firstly, I am going to explain how AJAX works. AJAX is basically a way for the browser to communicate with the web server without the page having to reload.

This would be useful for example if a user wants to search for something, such as a point of interest. Once the user clicks the search button. The search results would be sent from the server however instead of the whole page reloading, only a certain part of the page will refresh with the search results.



A HTML page needs to be created which needs to link to the Ajax.JS script. To link the script to the HTML you need to add the following code in the header

```
<script src="ajax1.js"> </script>
```

This essentially links the script to the HTML file. Once this is completed you need to load the ajax.js script to the HTML by using the onload function on the body. In the init() function I linked the button (shown below) to the sendAjax() function that is going be in the AJAX.JS

```
<body onload= 'init()'>
```

In this example I will create a "form" where the user will be able to search for a POI in a given region e.g.

```
Region: <input id='region' />
```

This will then search the database that matches the region the user enters and takes the ID of the POI of that region. This will then be accompanied by a button which will start the search. When the

```
<input type='button' id='btn1' value='Search for a Point of Interest' />
<div id='responseDiv'></div>
```

Now I'm going to discuss the AJAX.JS page and how it connects to the web service. First thing I need to do is create a function init(), and within that create document.getElementbyID.

```
document.getElementById("btn1").addEventListener("click", sendAjax);
```

When the button 'Search for Point of Interest' is clicked, a regular call back function (sendAjax) will run. The call back collects the data from the server and then processes it and adds It to the front-end (HTML).

I then need to create a sendAjax() function and within that I need to:
Create variables will read in what the user inputs in the form e.g.

```
var a = document.getElementById('region').value;
```

Set up the AJAX connection variable

```
var ajaxConnection = new XMLHttpRequest();
```

The next step I will create a callback function so to speak, however it will actually be an arrow function. An arrow function is an unspecified function and can be used as parameters where the callback function would be expected. It has a shorter syntax than function expression. The call back arrow function will have a parameter of e. The e reprents an even object. The e.target will represent the original ajaxConnection variable that was used to make the connection. Because of this, I will be able to get the text of the response from the server using e.target.responseText. The e.target.responseText will then be parsed into an array of JavaScript objects which will be done by using JSON.parse(). The final thing I will do in this JSON.parse is do a forEach() on the array, this will act as a second function for each of the members of the array, because of this each member is passed into the second function as a parameter.

```
ajaxConnection.addEventListener ("load",e =>
```

Once I have done that, I will use the JSON.parse() to convert the JSON into the matching arrays and objects. A JSON.parse() parses a JSON string, generating the JavaScript value or object which is defined by the string *(wbamberg 2018)*.

```
ajaxConnection.addEventListener("load", e => {
        var output = "";
        var allPOIs = JSON.parse(e.target.responseText);
        allpois.forEach(curPOI => {
           output = output + `poi name: ${curPOI.name} type: ${curpoi.type} region: ${curpoi.region} country:
${curpoi.country} lat: ${curpoi.lat} lon: ${curpoi.lon} <br /> `;
        });
```

I will then open the connection to the remote url and then send the request would be the final step.

```
      ajaxConnection.open("GET" , `https://poi.com/webservice.php?poi=${a}`);
         ajaxConnection.send();
```

Task 6

In this task I need to allow a third-party website VisitHampshire allow its users to look up POIs using the POI database for POIs in the region of Hampshire.

To do this Visit Hampshire needs to connect to the POI database using Curl.
This is done by initialising the cURL connection us like this

```
$connection = curl_init();
```

I then need to specify the URL connection that I want to connect to in this case it would be something like this.

```
curl_setopt($connection, CURLOPT_URL, "https://edward2.solent.ac.uk/~ofadipe/poiservice.php?region=hamsphire+$t");
```

as you can see it's connecting to the poi web service and is showing everything in the region of Hampshire as well as the type which the user inputted.
Once this is done you need to ensure that the http response is returned from curl_exec().

```
curl_setopt($connection,CURLOPT_RETURNTRANSFER,1);
```

I will then make sure it will not be included in the http header response by doing

```
curl_setopt($connection,CURLOPT_HEADER, 0);
```

The final two steps are making sure that its actually connects to the remote URL, which the response is returned from curl_exec() and placed in the $response variable.

I will finally close the connection using

```
curl_close($connection);
```

After that I would create an echo that echoes the response back from the server. I would use foreach which essentially loops through and echo all the results that has a poi in the region of Hampshire.

```
$results = json_decode($response, true);
 foreach($results as $result){
    echo "name " . $result [name] . " " .
        "address " . $result [address] . " " .
        "country " . $result['country'] . " " .
        "region " . $result['region'] . " " .
        "lat " . $result['lat'] . " " .
        "lon " . $result['lon'] . " " ;
 }
```

Task 7

The first thing I'd do is create a create a div which is where the map will be displayed. In the front-end page created in question 5.

```
<div id="map1" style="width:800px; height:600px"> </div>
```

In the head of the front-end file I would add two more JavaScript separate script tags, one will connect to the leaflet library. (Although the one shown in the following example will connect to a local copy). The other will connect to mappapp.js which will generate the map, and the final one being the geolocation API.

```
<script type='text/javascript' src='/wad/leaflet/leaflet.js'></script>
<script type='text/javascript' src='mapapp.js'></script>
<script type='text/javascript' src='geolocation.js'></script>
```

Commented [OF2]: Need to finish off the cURL talk through

Commented [OF3]: Is it a loop or a statement?

Commented [OF4]: Add leaflet CSS file

I would then create a JavaScript file that creates the map. Before anything I would create a global variable called var map.
Within the JavaScript init() function I would first create an object
Notice however the variable would be the same as the div ID in the front-end page. I will also create an object of the type L.Map would also be created with the L.map() method.

```
map = L.map ("map1");
```

Once I done that, I will setup the map layer. The map will contain numerous of layers, this allows us to add things on top of the map layer such as pins for the locations of the point of interest. The map layer is a TitleLayer which is basically a layer of map tiles. Note that the x, y z in the url of the script will automatically work out the correct values and place it in there, using the server.
Now the layer is created I will add it to the map using addTo(map).
The last step will be setting the latitude and longitude as a two-member array.

```
L.tileLayer
    ("https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png",
      { attribution: attrib } ).addTo(map);

  map.setView([51.40601, -0.1641], 13);
```

I will then create a marker at a specified position as a starting point, the L.marker will take in an array of two members. Latitude and longitude and then add it to the map. The longitude and latitude will enter a variable called 'pos'.

```
var pos = [50.908, -1.4];
  map.setView(pos, 14);

  L.marker(pos).addTo(map);
```

This is how the markers will be shown on the map.
For the users to search for a given region, and for it be shown on the map.

Now I will be moving onto the geolocation API which will allow me to get the user's current location on their device within JavaScript. Firstly I will create a function init(). When the whole function init runs, it will check if navigator.geolocation variables exists using an if else statement , if it does not exist then it will display an error alert saying "Hey! Unfortunately, geolocation is not supported in your browser". If it does exist however it will tell the geolocation object attain the current position with getCurrentPosition(). This will actually take two parameters which are both functions (processPosition() and handleError()). The processPosition is a function that will run immediately once it gets the location back from the GPS. The handleError() will only run if there is an error in relation to the location.

```
function init()
 {
   if(navigator.geolocation)
   {
     navigator.geolocation.getCurrentPosition (processPosition, handleError);
   }
   else
   {
     alert("Sorry, geolocation not supported in this browser");
   }
 }
```

Commented [OF5]: Show example

Commented [OF6R5]:

Commented [OF7]: This could change, because this is only a specific place

I would then create a ProcessPosition() function which would be provided with one parameter gpsops. Gpsos is an object that represents the position that is returned from the GPS of the device. It will also have an object coords which will represent the coordinates. The coords object will actually have two properties of it own. Latitude and longitude. Because of this we can get the latitude and longitude with gpspos.coords.latitude and gpspos.coords.longitude.

I would also add a handleError() function that runs if there is any errors getting the position, and will be provided with the parameter err which is an object that represents the exact error that has occurred. In regard to err, there are 3 main numerical codes which what I will display.

1. 1 will mean that the user has denied the browser access to the location of the device.
2. 2 means that the location could not be attained, usual cause of lack of signal.
3. 3 is timeout, so basically the signal has taken too long to contact them

```
    function processPosition(gpspos)
{
   var info = 'Lat: ' + gpspos.coords.latitude + ' lon: ' + gpspos.coords.longitude;
   console.log(info); // show on the console
}

function handleError(err)
{
   alert('An error occurred: ' + err.code);
}
```

Now the error handling is sorted, I now need to display data from the web service onto the map. This will show all the POIs in the region that is shown on the map. To do this I need to create an AJAX request to the web service, and then parse the JSON that is returned and create the markers using that. As discussed before there is a table called pointofinterest which contains the longitude and latitude (and all the other information) about each POI. There is a web service which I already created in question 1, that takes in the region as a query string and returns the JSON.

Commented [OF8]: Check if that's the right one

I will create another button called "Search Region POIs". It will then connect to a new JavaScript function that sends an AJAX request to the web service. I will also amend the AJAX.JS file so that it initialises a leaflet map.
The AJAX callback will parse the JSON return so that a marker is shown on the map for that region.

Task 8

In this task the users in Visit Hampshire should allow their users to be able to review a POI. This will be linked to the web service created in question 6. The first thing I will do is amend the for each loop and add a link that says "Review POI" which will read in the id from the POI.

```
$results = json_decode($response, true);
```

```
foreach($results as $result){
   echo "name " . $result [name] . " " .
      "address " . $result [address] . " " .
      "country " . $result['country'] . " " .
      "region " . $result['region'] . " " .
      "lat " . $result['lat'] . " " .
      "lon " . $result['lon'] . " " ;
      '<a href="review2.php?id=' . $result['id'] . '"> Review POI </a>' ;

}
```

When the user clicks on the link, it will take them to a review form. When it comes to the review form on Visit Hamsphire's website, it will be a standard review form however the information entered in the form will be posted to the cURL that was created in task 6 using the form data using POST. The form will also have a hidden field where the ID will be.

Task 9

In this task I have to allow users to review a POI by interacting with the web service. To do is amend the function init() and add a popup. A popup allows a user to click on a marker, which once clicked will show additional information. To do this I would call the blindPopup() method of the feature I want in this case review. The blindPopup() can only take in one parameter.

Commented [OF9]: Write about blindPop()

```
      marker.bindPopup("Review");
```

Further Research

Vue JS

What is Vue JS?

Vue.js is a progressive JavaScript framework that is used for creating user interfaces. However, unlike most other frameworks Vue is built from the ground up *(vue 2018)*. Vue.js allows you to extend HTML with attributes called directives. Directives offers functionality to HTML applications *(w3schools 2018)*. Vue.js uses double braces {{}}. An example of the Vue object created with Vue(). The el property blinds the new vue object into the HTML element with id=”app”*(w3schools 2018)*.

```
<div id="app">
<h1>{{ message }}</h1>
</div>

<script>
var myObject = new Vue({
    el: '#app',
    data: {message: 'Hello Vue!'}
})
</script>
```

Advantages

- Small size – the size is only usually between 18-21kb unlike other frameworks that are bulky.
- Easy to pick up and understand, this is one of the reasons why it’s becoming popular *(Rica 2017)*

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