Criteria C

Introduction

The project consist of a web page that shows the weather and forecasts the quality of observation. Also, the users can see on a map how many searches have been made on a location and send contact messages to the admin. Then, the admin can read them. to differentiate between normal users and admin a login was required. To taccle this problems the techniques used were:

- PHP for the backend
- html and css for GUI
- Java Script for the front end processing
- MySQL to store the data on databases
- External API such as Plotly or Darksky

File structure

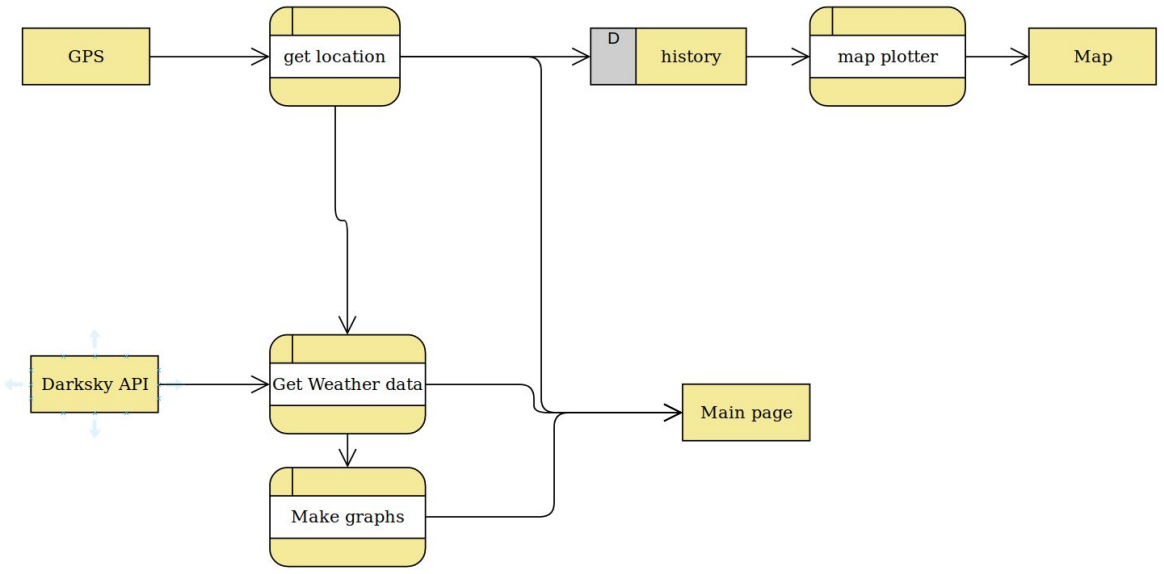
To make it easier to develop and organize I used a basic file structure:

- /
    - Backend
        - php files
    - CSS
        - style css files
    - JS
        - javascript files and libraries
    - contact.php
    - index.html
    - login.html
    - register.html
    - topcities.html

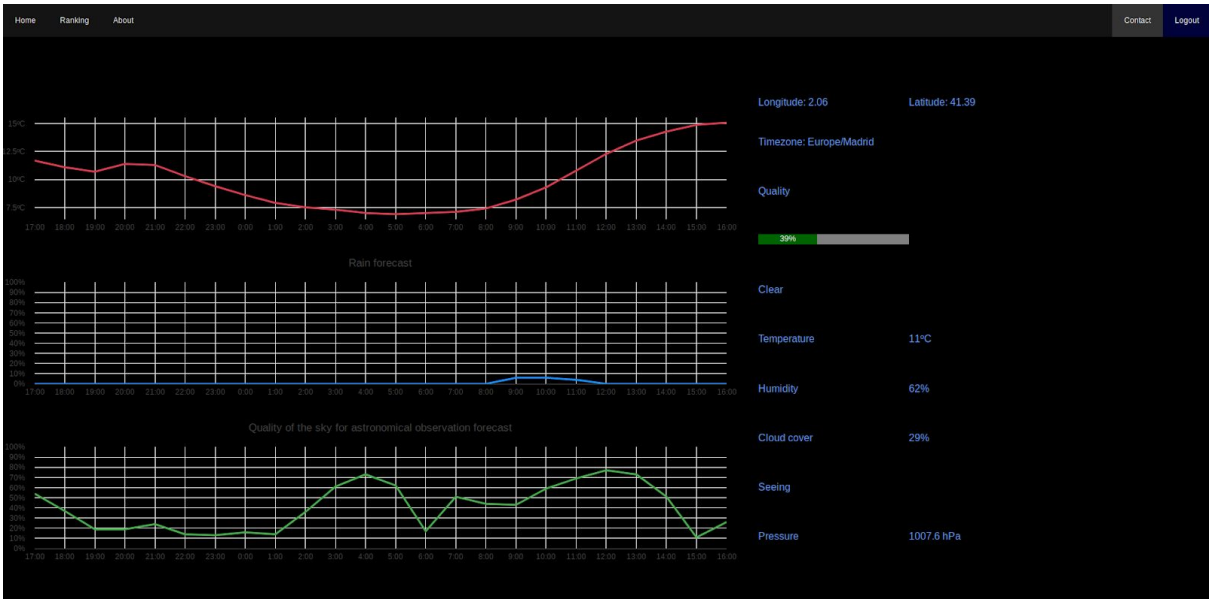
By doing so the code was easier to read, organize and debug. Also, this allowed me to use it as ‘libraries’ and thus, I only had t change the code in one place.

Web structure and procedures

Main page



On landing on the page, the JS request the location from the browser. This data is sended to the dark sky using their API which returns the current weather and the hourly and daily forecast. I only used the current data and the hourly forecast Because it is the most precise data. The current data is shown on the right and using the plotly api the hourly forecast is plotted.



The location is also stored on a database. To keep the user privacy we reduce the precision of the location and keep only the global count of the location with no timestamp.

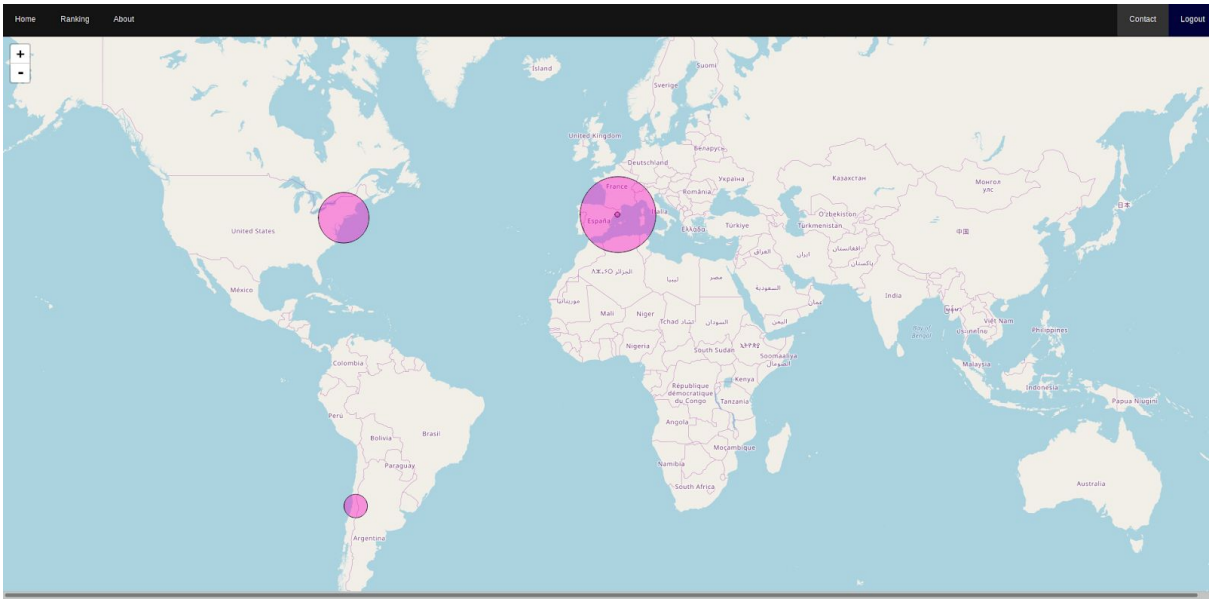
Map page

When loading the page a js script is executed that loads the data from the database using my own API.

```php
// Create connection
$conn = new mysqli($servername, $usr, $pass, $dbname);
// Check connection
if ($conn->connect_error) {
      die("Connection failed: " . $conn->connect_error);
}

$sql = "SELECT * FROM History";
$result = $conn->query($sql);
$data=[];
if ($result) {
      while ($row = mysqli_fetch_assoc($result)) {
      $d=[];
      $d['lat']=$row['lat'];
      $d['lon']=$row['lon'];
      $d['count']=$row['count'];
      $data[$row['id']]=$d;
      }
      echo json_encode($data);
}
```

This code fetches the database and sends it to the client in a json format. The reason for using json is because is the standard to send data between php and js. Then this is fetched and ploted using p5js and mappa API. P5js is an API designed for drawing and graphics generation for js.



Login and Register

When the user register a random string is generated(salt). This string is stored with the username and email. Then is appended to the password and the resulting string hashed. The last string is stored.This way the password aren't stored in plain text making it more secure.

```
$name=$_POST["name"];
$username=$_POST["username"];
$surname=$_POST["surname"];
$pw=$_POST["password"];
$str=rand();
$salt = md5($str);
$pw=hash('sha256', $pw . $salt);
$email=$_POST["email"];
$servername = "localhost";
$usr = "sgomez";
$pass = "sgomez";
$dbname = "sgomez_";

// Create connection
$conn = new mysqli($servername, $usr, $pass, $dbname);
// Check connection
if ($name=="" or $username=="" or $surname=="" or $pw=="" or $email=="")
{
      header('Location: '.'register.html');
}
if ($conn->connect_error) {
      die("Connection failed: " . $conn->connect_error);
}

$sql = "INSERT INTO user_data (name, password,
email,username,surname,salt)
VALUES ('$name','$pw','$email','$username','$surname','$salt')";

if ($conn->query($sql) === true) {
      echo "New record created successfully";
} else {
      echo "Error: " . $sql . "<br>" . $conn->error;
}

$conn->close();
header('Location: '.'index.html');
```

Then when logging the salt is retrieved and the same process is applied. Then the stored

hash and the resulting one are compared to check if it is correct.

```php
$lname=$_POST["logname"];
$pss=$_POST["password"];

$servername = "localhost";
$usr = "sgomez";
$pass = "sgomez";
$dbname = "sgomez_";



// Create connection
$conn = new mysqli($servername, $usr, $pass, $dbname);
// Check connection
if ($conn->connect_error) {
      die("Connection failed: " . $conn->connect_error);
}

$sql = "SELECT * FROM user_data WHERE username='$lname' OR
email='$lname'";
$result = $conn->query($sql);
if ($result->num_rows>0)
{
  $row=$result->fetch_assoc();
  $salt=$row['salt'];
  $pw=hash('sha256', $pss . $salt);
  $resp=[];
  if($row['password']==$pw){
      $resp['status']=1;
      $resp['user']=$lname;
      $resp['salt']=$salt;
  }else{
      $resp['satus']=0;

  }
}else {
      $resp['satus']=2;
}
echo json_encode($resp);
mysqli_free_result($res);
```