COMP2245 - Assignment 4 (20 marks)

Due Date: Wednesday, November 9, 2022 at 11:55 PM

For this assignment you will be required to work through an AJAX example. You will need to ensure that you have PHP installed. You can install XAMPP or MAMP which will come with Apache, MySQL and PHP installed together. Links to download either can be found below:

XAMPP: https://www.apachefriends.org/index.html
MAMP: https://www.mamp.info/

Here is a short video on how to install XAMPP on Windows: https://youtu.be/FiFJ1jTflTc

You will be required to submit the URL of your Github repository by the deadline specified above.

Create your Repository

You are also required to create a Git repository on Github called **comp2245-assignment4** and after each exercise commit your code and push to Github. So let us start by creating that repository.

1. You can create a new Github repository by going to https://github.com/new or by clicking the "+" icon in the top right once you are logged into the website and select "New Repository".
2. For this assignment, use the repository name as **comp2245-assignment4**.
3. Ensure that your repository is *Public* and that you select the option to initialize the project with a README file.
4. The remaining options can be left at their defaults. Then click on **Create Repository**.

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? Import a repository.

Owner *   Repository name *

uwi-info2180 ▾ / info2180-lab1 ✓

Great repository names are short and memorable. Need inspiration? How about fuzzy-octo-palm-tree?

Description (optional)

● Public
  Anyone on the internet can see this repository. You choose who can commit.

○ Private
  You choose who can see and commit to this repository.

Initialize this repository with:
Skip this step if you're importing an existing repository.

☑ Add a README file
  This is where you can write a long description for your project. Learn more.

☐ Add .gitignore
  Choose which files not to track from a list of templates. Learn more.

☐ Choose a license
  A license tells others what they can and can't do with your code. Learn more.

This will set ⑂ master as the default branch. Change the default name in uwi-info2180's settings.

Create repository

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5. On your newly created repository, click on the "*Code*" button and copy the URL in the box that appears.

<> Code   ⊙ Issues   ⑁ Pull requests   ⊙ Actions   ▥ Projects   ▭ Wiki   ⊙ Security   �ℳ Insights   ⚙ Settings

⑂ master ▾   ⑂ 1 branch   ⬨ 0 tags   Go to file   Add file ▾   ⬇ Code ▾   About   ⚙

ylynfatt Initial commit   No description, website, or topics
                                          ▣ Clone   ⑦   provided.
README.md   Initial commit
                                          HTTPS SSH GitHub CLI   ▭ Readme
README.md
                                          https://github.com/uwi-info2180/inf   ⎘
info2180-lab1   Use Git or checkout with SVN using the web URL.   Releases

                                          ⊞ Open with GitHub Desktop   No releases published
                                                                                               Create a new release
                                          ▤ Download ZIP
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                                                                                               Publish your first package

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6. Open your command prompt, navigate to the **htdocs** or **www** folder for your installation of XAMPP, MAMP or WAMP (e.g. using the `cd` command) where you would like to clone your repository and using the URL you copied in step 5, type the following:

    `$ git clone `https://github.com/<your-username>/comp2245-assignment4.git

    NOTE: Ensure you change the URL and use the one that you copied in Step 5 with your username.

7. Then navigate to your newly cloned repository by typing:

    `$ cd comp2245-assignment4`

8. You can then type the command `ls` and you should see a `README.md` file.
9. In the file add:

    # COMP2245 Assignment 4

    This is Assignment 4 for <Your Name>

    Of course, change <Your Name> to your actual name.

10. Save the file and then at the command line (or Windows Powershell), type:

    $ git add README.md
    $ git status

    You should then see that the file has been staged.

11. Commit these changes to your local Git repository:

    $ git commit -m "Edited README.md"

12. Check the status of your Git repository:

    $ git status

    It should now mention that there is nothing new to commit and that the working tree is clean.

13. Great! Now we should push this information to GitHub.

    $ git push

    It may ask you to enter your Github username and password. Enter it and then press enter. If all goes well you can then view your Github repository on the Github website and you should see that the file exists on Github with the changes you made to the file.

14. To see the history of the commits you can run the following command:

    $ git log

15. Next, Create a new branch called **ajax-implementation**.

    ```
    $ git checkout -b ajax-implementation
    ```

16. Now download the starter files (if you have not already done so) for the assignment at the following URL:

    https://github.com/uwi-comp2245/ajax-superheroes/archive/master.zip

17. Unzip and copy the starter files (`superheroes.php`) from the link above into your **comp2245-assignment4** folder that you cloned in Step 6 and do an initial commit.

    ```
    $ git add .
    $ git commit -m "Added initial starter files"
    ```

18. Now begin the next set of exercises.

Exercise 1 - Creating a PHP based AJAX Endpoint that prints a list of Superheroes

If you haven't already done so, ensure that you get the **superheroes.php** file from the following repository https://github.com/uwi-comp2245/ajax-superheroes/archive/master.zip.

Once you have the file, save it within your **comp2245-assignment4** folder from the repository that you cloned in Step 1. Remember this needs to be placed in the **htdocs** or **www** directory for your installation of XAMPP, MAMP or WAMP.

For XAMPP or WAMP, you will open your web browser and visit:

http://localhost/comp2245-assignment4/superheroes.php

For MAMP, you might open your web browser and visit:

http://localhost:8888/comp2245-assignment4/superheroes.php

For those of you who have PHP installed separately and have it available on the command line, you can start the built-in PHP development server by running the following command from within your `comp2245-assignment4` folder:

```
$ php -S localhost:8080
```

And in that case open your web browser and visit **http://localhost:8080/superheroes.php**.

If everything was setup correctly you should see a page that looks like Figure 1 below:

- Captain America
- Ironman
- Spiderman
- Captain Marvel
- Black Widow
- Hulk
- Hawkeye
- Black Panther
- Thor
- Scarlett Witch

FIGURE 1: LIST OF SUPERHEROES

Exercise 2 - Make an AJAX call that returns the list of Superheroes

Create a HTML page called **index.html**, a CSS file called **styles.css** and a JavaScript file called **app.js**. Now write some JavaScript code so that when a user clicks a **"Search"** button, the list of Superheroes appears as a JavaScript **alert**.

Hint: Listen for a **"click"** event on the button. Fetch the data by opening an AJAX request which returns the result of **superheroes.php**.

Hint 2: For your AJAX request you may use the XMLHttpRequest object, jQuery ajax() method or the fetch() API.

You should see something that looks like Figure 2 below:
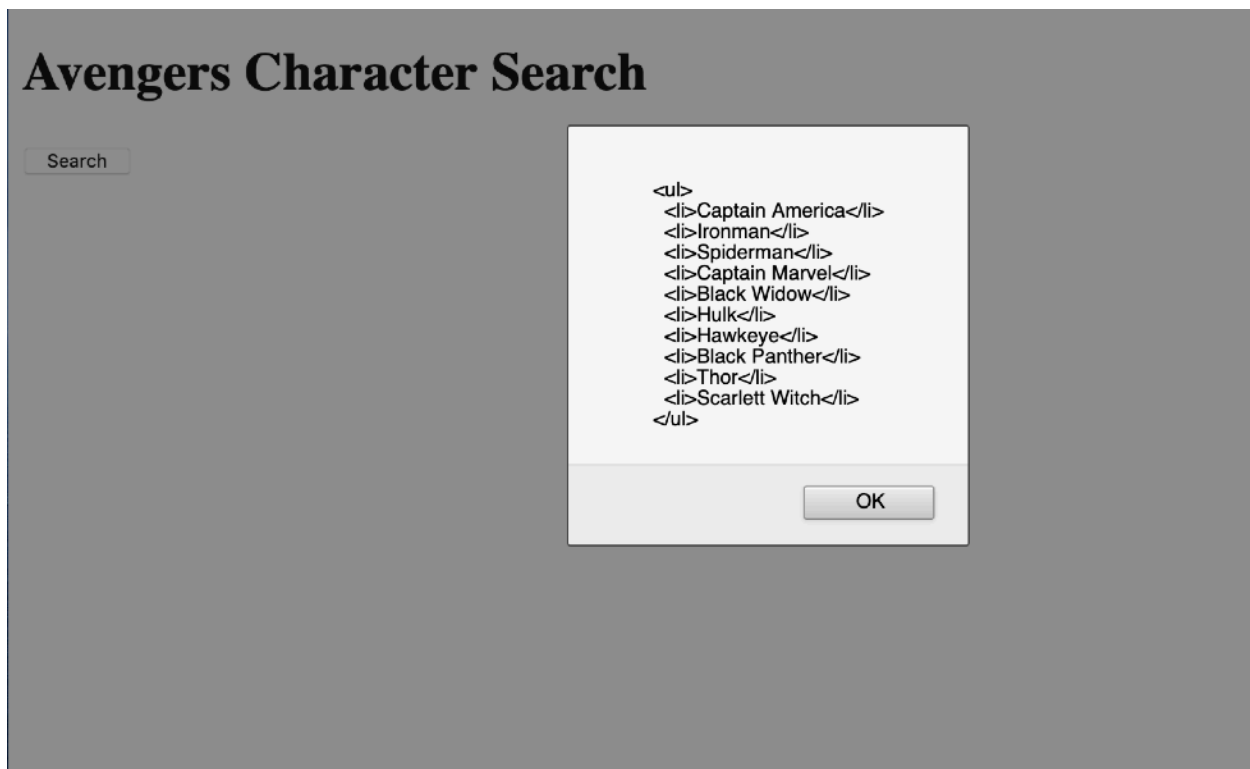
FIGURE 2: LIST OF SUPERHEROES IN A JAVASCRIPT ALERT WHEN SEARCH BUTTON CLICKED

NOTE: You **MUST** make a commit after doing this exercise and push to Github.

Exercise 3 - Look up any Superhero by typing in the name or alias in a Textfield

Modify your code so that a user can either search for a specific superhero by typing the **name or alias** into a text field and retrieve only that superhero (See Figure 4) or leave it blank in which case it will return the original list of superheroes (See Figure 3).
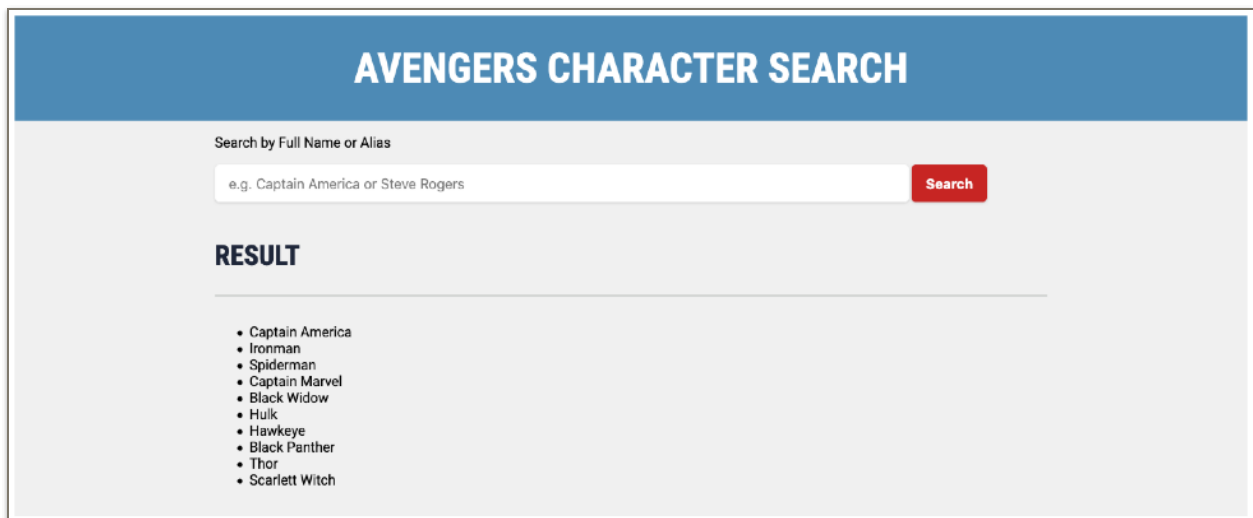
- Show the result inside a **div** on your page with id of **"result"**, rather than an alert.
- Ensure you are still using the **superheroes.php** that was created earlier. **NOTE:** *You are not allowed to change the $superheroes array.*
- Ensure you sanitize the user input from the search text field so that someone can't inject any malicious code into your web page.
- The search query should be passed as a query param in the query string for your AJAX request to `superheroes.php`. For example, **superheroes.php?query=Ironman**

- When returning a single superhero the Superhero's Alias should be in an **\<h3\>** tag, the Superhero's Name in an **\<h4\>** tag and the Superhero's biography in a **\<p\>** tag.
- If a specific superhero cannot be found then you should display a message stating **"Superhero not found"** in the result `div`. See Figure 5.

Hint: You can use the JavaScript `innerHTML` property (plain JavaScript) or the jQuery `html()` method if you are using jQuery.

Hint 2: You may find some of PHP's handy builtin array methods helpful in searching through the array of superheroes for the one matching what the user typed into the search field.

The interface will look something like this (obviously you can call it whatever you would like and style it however you would like), but it MUST have the form field, button and display the output.

FIGURE 3: RESULT WHEN NOTHING IS ENTERED IN THE SEARCH FIELD AND SEARCH IS CLICKED

FIGURE 4: RESULT WHEN YOU SEARCH FOR A SPECIFIC SUPERHERO.

FIGURE 5: ERROR MESSAGE WHEN NO SUPERHERO MATCHES THE SEARCH

NOTE: You **MUST** make a commit after doing this exercise and push to Github.

When you are done and are sure everything is working, switch back to your `master` (or `main`) branch and then merge the changes you made in your "`ajax-implementation`" branch back into your `master` (or `main`) branch. Then ensure you push those changes back to your Github repository.

Submission

Submit your information via the **"Assignment 4 Submission"** link on OurVLE, with your Github repository URL (e.g. https://github.com/yourusername/comp2245-assignment4)