UNIVERSITY OF CHESTER - Postgraduate Programmes Assignment Specification
Faculty of Science, Business & Enterprise
Department of Computer Science

Module No	Module Title	Assessment No	Weighting
CO7006	Web Systems	1	100%

Submission Date	Feedback due by
11th July 2024	8th August 2024

Assignment Title

Data Driven Website & Critique

Learning Outcomes Assessed

1. Design and create structurally sound web sites with suitable stylistic features using a wide range of techniques appropriate for a given set of requirements.
2. Implement scripting to enhance the functionality of a website.
3. Utilise server-side applications in the process of the development of a data-driven web application.
4. Critically evaluate different methodologies for implementing data driven websites

Submission Information

The Turnitin submission box will have multiple parts. You must submit to the appropriate part:

- A PDF file containing**, in order**,
  - a link to your website, which must be live on student web space.
  - a brief description of the data-driven aspect(s), and if there is more than one, where additional ones can be found on the site.
  - all code from your project (in a monospace font), with headings indicating the name of each source file (do not use a dark background for the code)
  - your written component and reference list (in Arial font)
- A ZIP file containing all parts of the web project.

Both files must be named with your assessment (J number), e.g. J123456.pdf and J123456.zip.

The name for each entry on TurnItIn must also be your assessment number.

Files submitted in an incorrect format will usually be marked as zero.

All components must be submitted to avoid receiving a mark of zero.

Any late work penalties for assignments will be calculated using the latest submission date/time.

Extensions

Extensions should be requested through the online system available on the Registry services pages on Portal. Late work is penalised at the rate of 5 marks per day or part thereof.

Academic Conduct
The material you submit must be your own work. Please avoid colluding with peers on your work. The penalties for breaching the academic conduct policy are severe. The minimum penalty is usually zero for that piece of work. Further information is available at Portal > Support Departments > Academic Services > Academic Standards > Academic Conduct > Information for Students > Academic Conduct

Generative AI
The use of generative AI tools where not permitted will be treated as a breach of the academic integrity policy.

This assignment **does not** permit the use of any generative AI tools, including but not limited to ChatGPT, Bard, Copilot, Midjourney, and others.

Referencing code
Code adapted from third parties must be clearly referenced using comments to denote the start and end of the adapted code. You must also include an APA format reference in the PDF file.

Example of referenced code
//code adapted from Thomson, 2012
if (someCharacter == 'z' || someCharacter == 'Z') {
 someCharacter -= 25;

} else {
 someCharacter += 1;
}
//end of adapted code

Example of reference entry in PDF file
Thomson, C. (2012). *Rot-13 function in Java?.* Stackoverflow. Retrieved October 25, 2021, from
http://stackoverflow.com/questions/8981296/rot-13-function-in-java

Assignment Brief
Website Brief
Develop a website, consisting of up to 2 pages. The website should have the following features:
- The website should display a list of postcodes.
- A user should be able to select a postcode and see some information relating to the postcode.
- Users should be able to select two postcodes and find the distance between those postcodes in miles. See Distance Calculation definition for help on the formula.
  For the purposes of this assignment, you can assume that the earth is a perfect sphere. You do not need to compensate for any errors.
- Only authenticated users should be able to add/edit/remove from the list of postcodes.
- Only valid postcodes should be presented in the list.
- The list should persist between user sessions, through database storage.
- A unique design

Your website must be created using HTML, CSS, and JavaScript that is written by yourself. The use of third-party libraries is expressly forbidden. Frameworks and automated authoring tools (Bootstrap, Angular, etc) is also expressly forbidden. Your website should be original and should not be built following a tutorial or template. Use the techniques you have learnt on this module and from your self-study.

A database for you to use in your assignment has been provided to you, in the file postcodeDB.sql on Moodle. You should create a database from this backup file and create a new user for the database through cPanel. The website you develop should manipulate this database.

For the avoidance of doubt, the inclusion of a data driven aspect requires you to write original code. Implementations which can be achieved by copying and pasting code 'as-is' such as the integration of a YouTube video or mapping provider would not meet the requirements for this aspect.

Third party images, videos and copy may be used to provide content for the site, but these must all be attributed on the page where they are used (see
https://codepen.io/andymuncey/pen/eozpZR for examples of how to do this). The reference for every item of third-party content must be provided in the footer of the page on which it is used, in APA format.

To calculate the distance between two longitudinal and latitudinal points, you can use the following formula:

$$Distance = R \cdot (2 \cdot atan2(\sqrt{a}, \sqrt{1-a}))$$

Where

$$a = \sin\left(\frac{\Delta\phi}{2}\right)^2 + \cos(\phi) \times \cos(\lambda) \times \sin\left(\frac{\Delta\lambda}{2}\right)^2$$

$$\Delta\phi = latitude2 - latitude1$$
$$\Delta\lambda = longitude2 - longitude1$$
$$\phi = latitude1$$
$$\lambda = latitude2$$
$$R = \text{earthRadiusInMeters}$$

Note:
- *a* requires that all inputs are radians.
- This formula returns the distance in meters. For more information see the haversine formula https://en.wikipedia.org/wiki/Haversine_formula.

Critical Reflection Brief
You must also provide a 1500-word written submission with two 750-word components as follows:
Part 1: Critically evaluate two different technology stacks (such as LAMP, MEAN, the ASP.NET framework or a serverless stack) for implementing data driven websites.

Part 2: Evaluate the various approaches to securing user credentials in web applications (from the developer's, not the user's, perspective). You may want to consider both the storage and transmission of credentials, as well as supplementary forms of authentication.

Assessment Criteria
Weightings
- Website 65%
- Critical Reflection 35%

Mark Requirements
Your work must meet the minimal requirements in order to achieve the additional marks available in the assignment.

Website
Minimal Requirements (50%)
- All HTML pages are valid to W3C standards.
- All CSS is valid to W3C standards and provided in a separate stylesheet.
- All JS is provided in a separate file.
- Reasonable conformance to WCAG 2.1
- Users are able to add postcodes to a list (This is not stored in the database).
- The list of postcodes is retrieved from a database.
- Appropriate comments included in the JavaScript files.
- Information relating to a selected postcode is shown to the user dynamically.

Additional Requirements
- Styling has been used to make the website look more appealing.
- Users can add/edit/delete from the list of postcodes and this is reflected in the database.
- Only valid postcodes are entered into the database.
- Only authenticated users are able to add/edit/delete postcodes to the database.
- The website handles incorrect data.

- The distance between two postcodes is shown and is accurate (Assuming the earth is a perfect sphere)

Critical Reflection
Minimal Requirements (50%)
- The critique includes a satisfactory evaluation of current systems for building data-driven applications.
- Arguments are supported with evidence.
- The critique is formatted sensibly, including headers and paragraphs.
- Citations reasonably conform to APA style.

Additional Requirements
- The critique demonstrates a high degree of analysis and evaluation and may provide new insights into knowledge in the domain of data-driven web application technologies.
- The critique demonstrates a convincing and sustained command of accepted critical positions regarding data driven web application technologies.
- Arguments are supported with strong evidence.
- Citations confirm to APA style.

Pre-submission checklist

This checklist is provided to help you avoid some of the most common errors found in previous submissions, it is not comprehensive, and you must still ensure you meet the criteria set out above.

Website
- ☐ All pages checked for valid HTML using the validator at https://validator.w3.org/
- ☐ All pages checked for valid CSS using validator at https://jigsaw.w3.org/css-validator/
- ☐ All pages checked for accessibility issues using the WAVE tool at https://wave.webaim.org/
- ☐ The layout is consistent e.g., menus appear in the same place (and work) on each page.
- ☐ All pages checked manually for accessibility issues, in particular ensuring alt text for images that accurately describes each image.

Written component
- ☐ Both your critique, and your discussion on credential security, are supported by citations from a range of sources.
- ☐ Your critique is structured with headings and paragraphs.