

# BIT607 Web development

## Assessment 3

### Weighting

50%

### Learning outcomes

- LO2 - Apply HCI principles to design and implement a web application using frameworks and techniques that focus on responsive design, user experience (UX), and the usability and accessibility of the application.
- LO3 - Describe applicable standards and protocols, and define the security issues associated with Web applications.
- LO4 - Implement, evaluate and use a range of tools and techniques required for the development of a web application
- LO5 - Supplement the functionality of the solution using frameworks and plug-in modules to address security, compatibility and accessibility issues.

### Instructions

Complete and submit your assessment according to the Open Polytechnic's [Assessments webpage](#). This includes information on academic integrity, word limits and referencing.

- Include your name, student number and the assessment number.
- Number your pages.

### Submission

- Submit your assessment as:
  - Web application with new elements included (A folder with all necessary files)
  - Web enhancement report (1 x word processing document)
- Submit your work through your iQualify course.
- Emailed assessments will not be accepted.
- You will receive an automated notice following submission.

**By submitting your assessment, you confirm that it is your own, original work.**

# Introduction

Assessment 3 is the final assessment for BIT607 Web development.

In Assessment 3, you will complete two assessment tasks to:

- Make enhancements to the web application you created for Assessment 2.
- Reflect on aspects of the web application design and make recommendations for its future.

## Task 1 – Enhancing the web application

### Part 1. Your code

Frameworks and plug-in modules can be used to supplement the functionality of programming solutions.

Explain concisely how plugins and frameworks can help you address the following issues:

- Security
- Compatibility issues
- Accessibility issues

In your answer, explain which plugin or framework you might use, its function, and how you would implement it.

*(Word count guideline: 150 words)*

**(10 marks)**

### Part 2. Web application

Now you will further enhance the web application that you developed in Assessment 2. We suggest that you use Visual Studio Code for this part of the assessment, but if you can use other software if you prefer.

Read the case study on the following page carefully, and ensure you implement all the required enhancements. Your code should be functional, efficient, and well-written.

Your completed web application should meet the following requirements:

- Create a private page for roster details and staff contact information that is protected using a .htaccess configuration file. The content of this page should reflect the client's requirements outlined in the case study.
- Implement visitor tracking into your application using Google Analytics code, or similar.
- Write three different CSS rules using Flexbox to position new or existing elements on your page.
- Have a correctly formatted HTML title and meta description.

Note: You are expected to submit all the files required for a working application, but these don't need to be on a server/hosted.

**(40 marks)**

### **Case study: Haukai Restaurant - a year on**

After a successful first year, the owner is looking to expand their business with longer opening hours and to hire more staff to cope with increased workload. This requires more coordination between staff, and it has been suggested that a private web page be created for this purpose. The web page should allow staff access to contact details (name and mobile phone number) and roster details (who is working on which day for the next 2 weeks). It should be linked from the web application home page but be password protected to prevent non-staff being able to see private information related to staff.

Along with more people visiting the restaurant in person, it's expected that there will more traffic to the website, which requires consideration of an upgraded hosting service for the website. There will also be a higher chance that the web application could be the target of attacks, so you should investigate security issues and possible ways to counteract these.

The owners also want to understand who is visiting their web application and have asked you to implement some analytics. Initially it would be sufficient to count the number of unique visitors to the home page.

Finally, the original implementation of the web application's responsive design was done by hand, which is not easy to maintain in the long term. It's been recommended that the web application be re- implemented using a CMS to simplify maintenance.

## Task 2 – Web enhancement report

Write a report that:

- reflects on the approach you have taken to develop the application, and
- provides a set of recommendations for managing the website.

Your report should be structured into the six parts listed below. Each part should include a recommendation to your client.

*(Word guide: 1000 words)*

### Part 1. UX client summary

Think of two actions/tasks for a potential user to complete using your web application. You may choose the same actions as you did in BIT607 Assessment Two, or different ones.

Recruit a colleague, relative or friend to act as a test user for you. You can ask the same person as you did in Assessment One, or a different person.

Conduct a user testing session where the user:

- Can attempt the selected actions using your web application
- Can respond to your questions

Write a brief report for your client that summarises:

- The tasks the user was asked to complete
- How the user responded to your web application
- Based on the user observation and feedback, would you recommend changes to your website and why/why not?

**(10 marks)**

### Part 2. Security

Consider each of the Parkerian hexad information security attributes with respect to the web application. For each attribute:

- discuss a potential information security breach
- the impact a potential information security breach could have on the business, and
- identify a possible countermeasure.

**(10 marks)**

### Part 3. Web hosting options

Compare two different website hosting services. Evaluate what each service can provide for each of the following: uptime, customer support, features, space and traffic limits, penalties for changing, and costs.

Make a recommendation to the client as to which service is most suitable for their business needs and requirements. Justify your answer.

You may use a table to format your comparison if you wish.

Name of website hosting business package:		
Uptime:		
Customer support:		
Features:		
Space limits:		
Traffic limits:		
Change penalties:		
Costs:		

(10 marks)

### Part 4. Analytics

Tell us three metrics you may want to track and explain what insights they give you about how people are using your website.

(10 marks)

### Part 5. SSL Certificates

Identify and evaluate two different providers of private SSL certificates for the web application. You should consider the type of certificates provided and the most appropriate type for the web application. Compare the features as well as purchase and renewal costs.

(5 marks)

### Part 6. Content Delivery Networks

Recommend Content Delivery Networks by identifying and evaluating two different providers that could be used to optimise performance and protect your web application against denial-of-service attacks. You should consider features provided and both purchase and renewal costs.

(5 marks)

## Marking schedule

Task 1, Part 1. Your code, 10 marks.	8 – 10 Marks	6.5 – 7.5 Marks	5 – 6 Marks	4 – 4.5 Marks	1 – 3.5 Marks
Write a brief analysis of each extension. How does each plug-in help you to improve your code in terms of either security, compatibility, or accessibility?	All relevant technical details are provided and accurate.  Explains how each extension can help to improve your code in terms of either security, compatibility, or accessibility with reference to appropriate standards/technology.	Technical details provided are accurate.  Explains how each extension can help to improve your code in terms of either security, compatibility, or accessibility.	Technical details provided are accurate.  Explains how each extension can help to improve your code in terms of either security, compatibility, or accessibility.	Attempts to explain but is not clear and/or parts are inaccurate.	Little or no attempt to explain is made.

<b>Task 1, Part 2.</b> <b>Web application, 40 marks.</b>	<b>8 – 10 Marks</b>	<b>6.5 – 7.5 Marks</b>	<b>5 – 6 Marks</b>	<b>4 – 4.5 Marks</b>	<b>1 – 3.5 Marks</b>
<p>Your completed web application should meet the following requirements:</p> <ul style="list-style-type: none"> <li>• Create a private page for roster details and staff contact information that is protected using a .htaccess configuration file. The content of this page should reflect the client's requirements outlined in the case study.</li> <li>• Implement visitor tracking into your application using Google Analytics code.</li> <li>• Write three different CSS rules using Flexbox to position new or existing elements on your page.</li> <li>• Have a correctly formatted HTML title and meta description.</li> </ul>	Delivers on all client requirements including: the files needed to create a private webpage, the implementation of Google analytics tools, increased security measures, three CSS rules using FlexBox, correctly formatted HTML title and meta description for each page.	Delivers almost all of the client's requirements, including most of the following: the files needed to create a private webpage, the implementation of Google analytics tools, increased security measures, three CSS rules using FlexBox, correctly formatted HTML title and meta description for each page.	Delivers most of the client's requirements, which include most of the following: the files needed to create a private webpage, the implementation of Google analytics tools, increased security measures, three CSS rules using FlexBox, correctly formatted HTML title and meta description for each page.	Delivers some of the client's requirements, including at least two of the following: the files needed to create a private webpage, the implementation of Google analytics tools, increased security measures, three CSS rules using FlexBox, correctly formatted HTML title and meta description for each page.	Delivers some of the client's requirements, including at least one of the following: the files needed to create a private webpage, the implementation of Google analytics tools, increased security measures, three CSS rules using FlexBox, correctly formatted HTML title and meta description for each page.
<b>Functionality</b>	<b>8 – 10 Marks</b>	<b>6.5 – 7.5 Marks</b>	<b>5 – 6 Marks</b>	<b>4 – 4.5 Marks</b>	<b>1 – 3.5 Marks</b>
	The application compiles successfully without producing any errors.	The application compiles successfully, producing only minor errors that do not impact on the overall functionality of the application.	The application compiles successfully, producing some errors. However, these have little impact on the overall functionality of the application.	The application compiles to an extent. Some errors impact on the functionality of some pages.	The application does not compile, and several errors impact on its overall functionality.
<b>Code efficiency</b>	<b>8 – 10 Marks</b>	<b>6.5 – 7.5 Marks</b>	<b>5 – 6 Marks</b>	<b>4 – 4.5 Marks</b>	<b>1 – 3.5 Marks</b>
	All code is efficient and meets or exceeds all performance requirements	Almost all code is efficient, mostly meeting performance requirements.	Most of the code is efficient, and in many areas of the application, it meets performance requirements.	Some of the code is efficient. However, in some areas of the application performance is hindered by inefficient code	The code is largely inefficient which significantly impacts on the overall performance of the application.

Readability and documentation	8 – 10 Marks	6.5 – 7.5 Marks	5 – 6 Marks	4 – 4.5 Marks	1 – 3.5 Marks
	All lines of code are clean, understandable and well-organised.	Almost all lines of code are clean, understandable and well-organised.	Most lines of code are clean, understandable and well-organised.	Some lines of code are clean, understandable and well-organised.	Very few lines of code are clean, understandable and organised.

Task 2, Part 1. UX client summary, 10 marks.	8 – 10 Marks	6.5 – 7.5 Marks	5 – 6 Marks	4 – 4.5 Marks	1 – 3.5 Marks
<p>Write a brief report for your client that summarises:</p> <ul style="list-style-type: none"> <li>The tasks the user was asked to complete</li> <li>How the user responded to your web application</li> <li>Based on the user observation and feedback, would you recommend changes to your website and why/why not?</li> </ul>	<p>Two tasks for users are clearly and logically stated. Tasks selected suit the nature of the web application proposed.</p> <p>Observations of the user and any feedback are clearly and logically summarised.</p> <p>Explanation for the recommendation of change/no change is clear and justified in relation to the user feedback, web application requirements and UX design theory or HCI principles.</p>	<p>Two tasks for users are stated. Tasks selected suit the nature of the web application proposed.</p> <p>Explanation for the questions chosen is justified with reference to UX design and/or user testing best-practice theory.</p> <p>Observations of the user and any feedback are clearly summarised.</p> <p>Explanation for the recommendation of change/no change is justified in relation to the user feedback and web application requirements.</p>	<p>Two tasks for users are stated. Tasks mostly suit the nature of the web application proposed.</p> <p>Observations of the user and any feedback are summarised.</p> <p>Explanation for the recommendation of change/no change is justified in relation to the user feedback.</p>	<p>At least one task for users is stated. Task/s selected mostly suit the nature of the web application proposed.</p> <p>Observations of the user and any feedback are present, but the points summarised are unclear.</p> <p>Explanation for the recommendation of change/no change is not well-related to user feedback.</p>	<p>One or no tasks for users are stated, OR the tasks selected do not suit the nature of the web application proposed.</p> <p>Observations of the user and any feedback are not present, OR not summarised.</p> <p>Explanation for the recommendation of change/no change is not given or explanation unrelated to user feedback.</p>
Task 2, Part 2. Security, 10 marks.	8 – 10 Marks	6.5 – 7.5 Marks	5 – 6 Marks	4 – 4.5 Marks	1 – 3.5 Marks
Consider each of the Parkerian hexad information security attributes with	Identifies all potential information security breaches, with reference to all Parkerian	Identifies most of the potential information security breaches, with	Identifies most of the potential information security breaches, with	Identifies some of the potential information security breaches, with	Identifies some potential information security breaches, with reference to



<p>respect to the web application. For each attribute:</p> <ul style="list-style-type: none"> <li>• discuss a potential information security breach</li> <li>• the impact a potential information security breach could have on the business, and</li> <li>• identify a possible countermeasure.</li> </ul>	<p>hexad information security attributes.</p> <p>Describes how all of the possible breaches would impact the business and what countermeasures can be taken in all instances.</p>	<p>reference to all Parkerian hexad information security attributes.</p> <p>Describes how most of the possible breaches would impact the business and what countermeasures can be taken in all instances.</p>	<p>reference to almost all Parkerian hexad information security attributes.</p> <p>Describes how most of the possible breaches would impact the business and what countermeasures can be taken in all instances.</p>	<p>reference to at least three Parkerian hexad information security attributes.</p> <p>Identifies how some of the possible breaches would impact the business and/or what countermeasures can be taken.</p>	<p>at least one Parkerian hexad information security attribute.</p> <p>Identifies at least one way in which a breach would impact the business and/or the countermeasure that could be taken.</p>
<b>Task 2, Part 3.</b>	<b>4 – 5 Marks</b>	<b>3.5 Marks</b>	<b>2.5 – 3 Marks</b>	<b>2 Marks</b>	<b>1 – 1.5 Marks</b>
<b>Web hosting options, 10 marks.</b>					
<p>Compare two different website hosting services. Evaluate what each service can provide for each of the following: uptime, customer support, features, space and traffic limits, penalties for changing, and costs.</p> <p>Make a recommendation to the client as to which service is most suitable for their business needs and requirements. Justify your answer.</p> <p>You may use a table to format your comparison if you wish.</p>	<p>Compares two different website hosting services so it is clear what each website can provide for each of the following - uptime, customer support, features (such as email, SSL, cPanel), space and traffic limits, cost (purchase, renewal) penalties and recommendations/public ratings.</p>	<p>Compares two different website hosting services so it is mostly clear what each website can provide for almost all of the following – uptime, customer support, features (such as email, SSL, cPanel), space and traffic limits, cost (purchase, renewal) penalties and recommendations/public ratings.</p>	<p>Compares two different website hosting services so it is mostly clear what each website can provide for most of the following – uptime, customer support features (such as email, SSL, cPanel), space and traffic limits, cost (purchase, renewal) penalties and recommendations/public ratings.</p>	<p>Identifies features of at least one website hosting service. Features that are identified include some of the following – uptime, customer support, features (such as email, SSL, cPanel), space and traffic limits, cost (purchase, renewal) penalties and recommendations/public ratings.</p>	<p>Identifies few features of at least one website hosting service. Features that are identified include at least two of the following – uptime, customer support, features (such as email, SSL, cPanel), space and traffic limits, cost (purchase, renewal) penalties and recommendations/public ratings.</p>
	<b>4 – 5 Marks</b>	<b>3.5 Marks</b>	<b>2.5 – 3 Marks</b>	<b>2 Marks</b>	<b>1 – 1.5 Marks</b>
	<p>Recommends best options for web hosting to the client by thoroughly evaluating each option and all of its features. Recommendations show careful consideration has been made to all of the features.</p>	<p>Recommends options for web hosting to the client by describing most features. Recommendations show careful consideration has been made to most of the features.</p>	<p>Recommends some of the options for web hosting to the client by describing several features. Recommendations show consideration has been made to some of the features.</p>	<p>Recommends some of the options for web hosting to the client by describing several features. There are several important options not discussed.</p>	<p>Recommends some of the options for web hosting to the client by describing several features. Most of the important options are not discussed</p>
<b>Task 2, Part 4.</b>	<b>8 – 10 Marks</b>	<b>6.5 – 7.5 Marks</b>	<b>5 – 6 Marks</b>	<b>4 – 4.5 Marks</b>	<b>1 – 3.5 Marks</b>
<b>Analytics, 10 marks.</b>					

Tell us three metrics you may want to track and explain what insights they give you about how people are using your website.	States three tracking metrics and accurately explains why you would want to track each of them. Explanation is clearly written, detailed and relates the chosen metrics to the client's goals and requirements.	States three tracking metrics and accurately explains why you would want to track each of them. Explanation relates the chosen metrics to the client's goals and requirements.	States three tracking metrics and accurately explains why you would want to track each of them.	States three or less tracking metrics and partially explains why you would want to track each of them, or explanation misses some key insights.	States one or no tracking metrics. Some or no explanation of why you would want to track each of them, OR explanation misses most key insights.
<b>Task 2, Part 5.</b> <b>SSL certificates, 5 marks.</b>	<b>4 – 5 Marks</b>	<b>3.5 Marks</b>	<b>2.5 – 3 Marks</b>	<b>2 Marks</b>	<b>1 – 1.5 Marks</b>
Identify and evaluate two different providers of private SSL certificates for the web application. You should consider the type of certificates provided and the most appropriate type for the web application. Compare the features as well as purchase and renewal costs.	Describes the most suitable type of certificate that is required for the website. Evaluates two different providers of certificates by comparing each in terms of purchase and renewal costs and recommends the best option to choose from with detailed supporting evidence.	Describes the most suitable type of certificate that is required for the website. Evaluates two different providers of certificates by comparing each in terms of purchase and renewal costs, A recommendation is provided.	Identifies a suitable type of certificate that is required for the website. Compares two different providers of certificates in terms of purchase and renewal costs.	Identifies a type of certificate that is required for the website – may not necessarily be the most suitable. Identifies purchase and renewal costs.	Identifies a type of certificate that is required for the website – may not necessarily be the most suitable.
<b>Task 2, Part 6.</b> <b>Content delivery networks, 5 marks.</b>	<b>4 – 5 Marks</b>	<b>3.5 Marks</b>	<b>2.5 – 3 Marks</b>	<b>2 Marks</b>	<b>1 – 1.5 Marks</b>
Recommend Content Delivery Networks by identifying and evaluating two different providers that could be used to optimise performance and protect your web application against denial- of-service attacks. You should consider features provided and both purchase and renewal costs.	Identifies and thoroughly evaluates two different providers that could be used to optimise performance and protect the web application against denial- of-service attacks. Outlines the widest range of features provided and both purchase and renewal costs.	Identifies and evaluates most aspects of two different providers that could be used to optimise performance and protect the web application against denial- of-service attacks. Outlines most of the features provided and purchase costs.	Identifies and describes some aspects of two different providers that could be used to optimise performance and/or protect the web application against denial- of-service attacks. Outlines some features.	Identifies at least one provider that could be used to optimise performance and/or protect the web application against denial- of-service attacks. Outlines some of the features.	Identifies at least one provider that could be used to optimise performance and/or protect the web application against denial- of-service attacks.

