Task 1 / Part 1)

Extensions (or ‘plug-ins’) and frameworks can help address security, compatibility and accessibility issues; and can help improve a developer’s writing process. Extensions can be searched for in VS Code via the Marketplace. (“VS Code extensions”)

Information security relates to protecting information from “unauthorised access, use, disclosure, disruption, modification, or destruction”. (“What is information security?”) An example of a VS Code extension that could help improve my code by addressing security issues is Snyk Security, which scans for vulnerabilities and returns results with security issues categorised by issue type and severity.

Compatibility relates to a web application being fully usable and functional across different browsers in line with W3C standards. (“Evolution of web standards”) An example of a VS Code extension that could help improve my code by addressing compatibility issues is Can I Use, which provides a compatibility check for HTML5, CSS3 and SVG based on http://caniuse.com.

Accessibility relates to developing web applications such that everyone can use them. (“Accessibility”) An example of a VS Code extension that could help improve my code by addressing accessibility issues is Web Accessibility, which audits web accessibility issues in VS Code by highlighting elements to consider changing and providing hints on how to do so.

**Client Report**

Prepared for: Haukai Restaurant

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# Introduction

Haukai Restaurant has engaged OP Consulting to prepare a report that presents:

* A reflection on the approach taken to develop the application; and
* A set of recommendations for managing the website.

OP Consulting is pleased to present this report.

# UX client summary

The two tasks the test user was asked to complete were:

1) To make a dinner reservation for 4 people on Friday 5 May at 7.00PM.

2) To identify a main course that she would like to order

Observations of the user and her feedback are summarized as follows:

|  |  |  |
| --- | --- | --- |
| Task | User Observations | User Feedback |
| 1 | The user navigated to Reservations page from the Home page.  The user had difficulty completing the date and time on the Reservations form. | The user noted that she expected a calendar to pop up when entering in the date. (“It’s easier to pick a date than type it in.”)  The user noted that typing in the reservation time included a field for seconds, which didn’t make sense. |
| 2 | The user navigated to the Menu page from the Home page  The user navigated to the Main section of the menu by clicking on Main. | The user noted that she is vegetarian, so would not order any of the mains.  The user suggests indicating which dishes are appropriate for various dietary preferences (e.g. vegetarian; gluten-free; etc.). |

Per user feedback, it is recommended that the reservations form is changed to include a date picker for the reservation date. This relates to the HCI principle of ”recognition rather than recall” by minimizing the user’s memory load by making the days visible for the user to select from vs relying on their memory. A date picker is also a more organized visual that displays the dates on a calendar that would show the days of the week (e.g. ‘Sun Mon Tues…’) as a memory aid. (“Usability heuristics”)

It is also recommended to remove ‘seconds’ from the reservation time. This relates to the HCI principle of “aesthetic and minimalist design” such that the reservation form does not include opportunities for the user to provide irrelevant information. (“Usability heuristics”)

These changes would support the web application requirement of allowing bookings to be submitted online.

# Security

The Parkerian hexad consists of the following six information security attributes:

* Confidentiality;
* Integrity;
* Availability;
* Authenticity;
* Possession or control;
* Utility. (“The Parkerian hexad security model”)

Potential information security breaches with potential impacts to the business and possible countermeasures are summarized as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute** | **Potential Information Security Breach** | **Potential Impact** | **Possible Countermeasure** |
| Confidentiality | A hacker gains access to the staff page of the web application. | The hacker obtains the contact details of the staff. | Use an .htaccess configuration file  List an encrypted password in an .htpasswd file  Use a password manager |
| Integrity | A hacker gains access to the reservations/bookings made through the web application. | The hacker obtains customer contact details and modifies reservation/booking details. | Use HTTPS and a digital certificate to help against a man-in-the-middle attack |
| Availability | A hacker conducts a denial of service (DoS) attack on the web application. | A DoS attack could limit the availability of the web application to potential customers. | Use a content delivery network (CDN) |
| Authenticity | A hacker conducts a phishing attack by emailing staff to log into a fake Haukai Restaurant staff page. | The hacker obtains staff username and password to the staff page of the web application | Conduct staff training on phishing attacks.  Have staff access the web application through a bookmark – not through an email link. |
| Possession or control | A thief steals the restaurant owner’s laptop or computer | The thief obtains the only copy of the web application’s information assets | Have a backup of the web application’s information assets in the cloud |
| Utility | A hacker creates fake reservations/bookings | Reservations/booking data is created but since it is fake, it is not useful to the restaurant owners | Collect datetime stamps and IP addresses when reservations/bookings are made to help confirm reservations/bookings are actually from customers |

It is recommended that Haukai Restaurant implements the countermeasures as indicated above.

# Web hosting options

Bluehost and GoDaddy are two website hosting services. What each service can provide is summarized as follows:



|  |  |  |  |
| --- | --- | --- | --- |
| **Criteria** | **Option 1 – Bluehost Shared Hosting - Basic** | **Option 2 – GoDaddy Web Hosting - Economy** | **Recommendation** |
| Uptime | guarantee not offered  <https://www.bluehost.com/help/article/network-server-uptime> | 99.9% uptime guaranteed | GoDaddy |
| Customer support | Online help center  24/7 phone support  Online chat | Online help center  24/7 phone support | Bluehost |
| Feature 1: email | Google Workspace account; Office 365 account; cPanel account | 2 Office 365 accounts | Bluehost |
| Feature 2: SSL | Free SSL – 1st year | Included with annual plan or longer | GoDaddy |
| Feature 3: cPanel | Yes | Yes | - |
| Space limits | 10 GB storage | 25 GB storage | GoDaddy |
| Traffic limits | “Bluehost offers different shared hosting plans with varying amounts of resources and storage to handle different levels of traffic.” | Unmetered bandwidth | GoDaddy |
| Charge penalties | Non-refundable | Non-refundable | - |
| Costs | 12 months at $2.95/month  THEN $10.99/month | 12 months at $4.30/month  THEN $15.99/month | Bluehost |

Bluehost is recommended over GoDaddy in terms of customer support; email features; and costs.

GoDaddy is recommended over Bluehost in terms of uptime; SSL; space limits; and traffic limits.

It is recommended that the Hauraki Restaurant hosts through Bluehost due to lower purchase and renewal costs; and because its website needs are basic.

# Analytics



The Hauraki Restaurant stated that its goals are to attract more customers and increase productivity for staff. Therefore, three metrics the Hauraki Restaurant may wish to track are:

|  |  |  |
| --- | --- | --- |
|  | **Metric** | **Explanation** |
| 1 | Unique visitors | Tracking this metric would help the Hauraki Restaurant determine when and how unique visitors visit the site for the first time, including keywords that drive traffic to the site. |
| 2 | Return visitors | Tracking this metric could help the Hauraki Restaurant understand customer loyalty through comparing return visitors to the website with repeat customer sales at the restaurant. |
| 3 | Sources | Tracking this metric can help Hauraki Restaurant determine the relative outreach and success of any marketing campaigns and partnerships (e.g. Google search results; site visits from links from tourism bureaus or business associations, etc.). |

It is recommended that the Hauraki Restaurant set up Google Analytics to set up tracking on its website for the above metrics (“Analytics”).

# SSL Certificates

Three types of TLS/SSL certificates are Domain Validation (DV); Organization Validation (OV) and Extended Validation (EV). Out of these, an Organization Validation (OV) certificate is the most suitable type of certificate for the Hauraki Restaurant website as the restaurant will be authenticated by the certificate authority as a legitimate business, thereby providing assurance to site visitors. An OV is the standard type of certificate required for a commercial or public-facing website. (“How to choose the right type of TLS/SSL Certificate”)

GlobalSign and GoDaddy are two providers of private SSL certificates. What each provider offers is summarized as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| **Criteria** | **Option 1 – GlobalSign**  **Organization Validation (OV) SSL** | **Option 2 – GoDaddy**  **Organization Validation (OV) SSL** | **Recommendation** |
| Purchase cost | $349 per year | $229.99 per year  Discounted rates offered for (2/3/5 years) | GoDaddy |
| Renewal cost | $349 per year | $229.99 per year | GoDaddy |

It is recommended that the Hauraki Restaurant selects GoDaddy as its SSL certificate provider due to lower purchase and renewal costs.

# Content Delivery Networks

Two providers of Content Delivery Networks (CDN) that could be used to optimize performance and protect the Hauraki Restaurant’s web application against denial-of-service attacks are CDN77 and Stackpath. What each provider offers is summarized as follows:

|  |  |  |
| --- | --- | --- |
| **Criteria** | **Option 1 – CDN77** | **Option 2 – Stackpath** |
| CDN Bandwidth | 6TB / month | 1TB / month |
| Security features | DDoS, origin and hotlink protection  Secure tokens  SmartWAF  SSL | Content protection features  delivery control  DDoS attack migration  SSL  private network backbone  other platform-wide security measures |
| Purchase cost | $199 / month | $27.50/month  1TB up to 100TB $0.044 / GB  (equivalent $220 for 6TB) |
| Renewal cost | $199 / month | $27.50/month  1TB up to 100TB $0.044 / GB  (equivalent $220 for 6TB) |

It is recommended that the Hauraki Restaurant selects Stackpath as its CDN provider if its bandwidth needs are less than 6TB/month due to the availability of variable pricing.

# Conclusion

This report provided recommendations related to UX; security; web hosting options; analytics; SSL certificates; and content delivery networks. OP Consulting would be pleased to engage further on implementation of any of the above.

# References

Digicert. (2020). *How to choose the right type of TLS/SSL certificate.* https://www.digicert.com/blog/how-to-choose-the-right-type-of-tls-ssl-certificate

Open Polytechnic. (2023). *BIT607 Web Development.* https://openpolytechnic.iqualify.com/course/-NE3Oc6FETtReRCi7jp4