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| Men’s Shed Web Application Final Close-out Report  SOC09109 2022-3 TR2 001 - Group Project |
| |  |  |  | | --- | --- | --- | | Men’s Shed Group | 2/4/13 | SOC09109 | |

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# Introduction

## Group Project

This is the final report for the Group Project. The Project chosen by this team was the Men’s Shed Web Application. This report will focus on the overarching principles of managing a project, the dynamics of the team and the initial assessment, agreement, and delivery of the chosen project. The report will also discuss the methods used to deliver the project and there will be a stakeholder evaluation and analysis covering the project.

## The Team

The Men’s Shed group team is made up of 3 disciplines Computing Engineering, Software Developers and Security Specialists. The individuals who signed up to be part of the team and their roles are listed in Table 1 below:

|  |  |  |
| --- | --- | --- |
|  | Name | Role |
| 1 | John Johnston | Project Manager (PM) |
| 2 | Jonathan Cloke | Security and testing (ST) |
| 3 | Rory Mackintosh | Principle Backend Developer (PBD) |
| 4 | Duncan Hastie | Secondary Backend Developer (SBD) |
| 5 | Joe Black | Principle UI Developer (PUD) |
| 6 | Daniel Beardmore | Secondary UI Developer (SUD) |
| 7 | Iain Donald | Sponsor |

Table 1 Men’s Shed Project Team and Roles

## The Goal

The goal of this group project was to develop a piece of work for a live project proposed by a real client. The client being the Dunfermline Men’s Shed Committee. Mr Ron Skirving (MS) is their spokesperson and the main contact for the project, all communications with the client are passed through the PM to the MS.

# Project Description

## Dunfermline Men’s Shed objective.

The committee of the Dunfermline Men’s Shed (MS) aspires to create a comprehensive and engaging resource for their community The MS has access to some additional facilities and is keen to attract additional members and promote diverse activities. They already have selection of interest groups away from the typical MS Activities of woodwork or metalwork. As part of their aspirations, the intended application should provide a platform upon which they can build as the need arises.

## The project

Following the initial between the university Project Team and the MS representatives on the 2nd February 2023. The MS representatives highlighted their vision for the Dunfermline association, their long-term objectives, and aspirations. The MS team want to build an exemplar of a modern adaptive association embracing the wider community and diverse interests. i.e., Computer club, guitar club and workshop facilities. But also a lending library for the many tools, books, videos, and publications that the people of the community have donated at large.

They proposed the development of a web application as a tool for both embers and the management of the organisation to track the donated equipment and manage their equipment, including the facility at large.

The PT highlighted to MS representatives this module’s learning objectives and the available time available to produce a worthwhile and in-depth application proposal. The reality of the project is that the exercise is to be done over a trimester and that the PT members will have other learning and assignments to achieve during the same time allocation, so the time available is limited.

The negotiations cleared a way forward from the conversation, and the PT suggested as a team, the limited time would be better spent on creating a foundation piece of work that could be developed further by subsequent student project teams.

There were many different directions that the MS wished to develop the application however, much of their aspirations were simply not feasible within the time frame allowed. Therefore, an agreement was confined to the following list.

1. Core application with:
   1. User interface
   2. Database
   3. Administrators User interface.
   4. Administrators access to maintain Data.

The MS agreed to provide the following items to assist with the development of the application:

1. Management personal information for the Administrator’s access
2. A spreadsheet with tools and images to display as being available for use.

## MoSCoW prioritisation (Proposed)

|  |  |
| --- | --- |
| Label | Interpretation |
| M | * Constructing the backend and the database * Way method to restrict users from accessing dangerous tools that have or could have a severe impact on health and safety (Mental Health, Ability) * Admin check that items are still safe to use, * Health and safety requirements, PPE is needed for the item. * Admin functions * The ability to add/update/retire resources, User registration, * User Registration |
| S | * Hiding an item from view if currently booked out. * High amount of good documentation for people in the future to build on. * The static directory should be required to hold all images that will be used for the web app. |
| C | * Could have a feature to possibly set up a delivery option for larger equipment for sharing amongst Men's shed locations |
| W | * The blog page application Men’s Shed expressed interest in will not be involved in our project. |

Table MoSCoW Prioritisation (Proposed)

## MoSCoW prioritisation (Achieved)

|  |  |
| --- | --- |
| Label | Interpretation |
| M | * Constructing the backend and the database * Way method to restrict users from accessing dangerous tools that have or could have a severe impact on health and safety (Mental Health, Ability) * Admin check that items are still safe to use, * Health and safety requirements, PPE is needed for the item. * Admin functions * The ability to add/update/retire resources, User registration, * User Registration |
| S | * Hiding an item from view if currently booked out. * High amount of good documentation for people in the future to build on. * The static directory should be required to hold all images that will be used for the web app. The only time this would not be required is if the web app did not have any images involved. |
| C | * Could have a feature to possibly set up a delivery option for larger equipment for sharing amongst Men's shed locations |
| W | * The blog page application Men’s Shed expressed interest in will not be involved in our project. |

Table MoSCoW Prioritisation (Achieved)

## Deliverables Map

Diagram

Description automatically generated

Figure 1 Deliverables Map

## 

## Project Management

The PT is happy to report that the project has been a valuable learning experience and that all members have actively participated in the development of the project. At the start of this learning experience, the team members were invited to share their preferences on what elements of the project (based on the initial documentation) they wished to contribute; 50% volunteered their roles, while the other 50% needed to be recruited. Where positions were appointed, those team members embraced their roles with enthusiasm. Each team member has been valued, and their opinions are sought at every stage of the project development.

With each role being clearly defined, i.e., Project manager, Principle Backend Developer, Principle UI Developer and finally, Security and Testing, The PM (Project Manager) used his experience to enable the team to take ownership of their area of work. They have been guided where necessary to collaborate with their counterparts for the benefit of the overall project. Each area of development has had the benefit of multidisciplinary team members from the BEng Computing, BEng (Hons) Cybersecurity and Forensics and BSc Software development courses. This worked well as team members collaborated and complimented each other’s disciplines. The net result is a comprehensive cross-learning experience and collaboration on a live project.

All the project monitoring paperwork was collated, and where necessary, tables and spreadsheets joined to update each other, making recording information and time spent on the project simple and streamlined. At each scrum meeting, the members were encouraged to complete their contributions, maintaining the ownership of their individual contributions although the PM had to prompt to ensure these activities were completed from time to time.

In the absence of the PM the ST, Mr Cloke deputised and maintained the continuity of the team, hosting meetings and ensuring that the team met deadlines and completed all relevant paperwork.

## The Project manager

The project managers role was taken by John Johnston who by a significant number of years is the oldest member of the team. John took the role in the absence of any other team member taking the initiative to bring a team together. Using his experience of team and collaborative working within the Military and Prison Service, John saw an opportunity to build an effective team that could deliver an acceptable product with endless possibilities for the Men’s Shed organisation. While at the same time sharing his professional experiences with the team, empowering them to do well and work together for the benefit of both the team and the client.

While empowered to take ownership of their development areas, the team required some motivational and encouraging feedback from time to time. Still, most of the work completed was under their own initiative.

## Principle Backend Developer

Rory please put a pen picture here about your role and what you gained from the experience

## Secondary Backend Developer

Duncan before you go off to the navy please do the same

## Principle UI Developer

Joe please put a pen picture here about your role and what you gained from the experience

## Secondary UI Developer

Daniel please put a pen picture here about your role and what you gained from the experience

## Security and Testing

Jonathan Cloke fulfilled the role of security and testing on the project as a student on the BEng (Hons) Cybersecurity & Forensics programme. Jonathan was added to the team by the PM at the team finalisation stage of the module.

With such a different educational pathway from the other students, Jonathan’s primary role was to assess the technical teams' development work, highlight security considerations in the project documentation, carry out product testing, and document it.

The main benefits gained were insights into web-application development and team-working in general. Cybersecurity as a subject area tends to favour and foster a certain type of mentality, and invaluable experience was gained to balance and integrate this way of tackling problems into a multi-disciplinary team with different ways of approaching problems.

During the project, the PM had to take a step back for a short time, and he had instructed that the ST should act as deputy PM until his return. Jonathan ensured that the team maintained the weekly meeting and followed the in-place documentation procedures as much as possible during this time. The PM had already established an efficient working framework, and this short step-in only added value to and enhanced the learning experience for the ST.

**Backend Development**

Rory please write about the backend development and the technologies employed and your collaboration where needed with the UI team

**User Interface**

Joe please do the same for the UI development

## Security and testing

During the initial stages of design planning and development, there was little demand placed on this role. Security considerations were communicated with the team in order to guide them as much as possible in developing a secure final product.

Any user account system must have security designs in place for storing the passwords of the registered user accounts. Bcrypt was suggested and approved for the storing and authentication of user passwords in a hashed format.

Members’ personal information stored by the application was recommended to have encryption applied to it to keep compliance with the Data Protection Act 2018 and the UK GDPR implementations in mind.

Input validation was recommended to receive attention to reduce the risks from malformed and malicious entries affecting or reaching the underlying database.

A user account password policy was recommended to be enforced to reduce the risks of insecure account passwords during account creation.

The team worked hard to consider these considerations alongside their development approaches.

During the project initiation, it was agreed that with the limits on time and other competing time interests for the team, that the framework for the application would be developed with the intention of other teams in the future adding to the development process.

Due to this agreement, the testing of the application was rather challenging to undertake, a test build was created by the team using the most current version of the application at that time, and the initial framework for testing was planned out to include three main areas.

* Functionality Testing – Core functionality that was agreed to be completed during the project was tested.
* User Experience – The application was evaluated from the perspectives of the potential end-users. Due to the application still being in development, this testing was unable to be fully completed and requires revisiting after future development cycles.
* Security Testing – This testing area had three planned objectives, firstly was to assess if the security considerations identified in the project initiation report had been implemented, secondly to scan the web application for potential vulnerabilities and weaknesses and thirdly to perform dynamic security testing on the application from the perspective of a threat actor.

Security Testing had to be adjusted as the application required more development before being tested in this way. The test build provided was deployed using the PythonAnywhere platform which would not be used to host the app in the future, due to the public nature of this web server only limited testing could be attempted and limited value was able to be gained with the current version of the app.

The security testing needs to be completely redone once the application has reached the stage of being ready for live deployment and conducted on the privately owned intended host infrastructure.

## Stakeholder Evaluation

The stakeholder evaluation was conducted to establish satisfaction of the project delivery 4 question were posed as to the effectiveness of the project progression. The questions were see table 4

|  |  |
| --- | --- |
| 1 | The project documentation that you saw |
| 2 | Communications with the team |
| 3 | The quality of the work that you have seen |
| 4 | The pace of the project |

Table Stakeholder Evaluation Questions

Each question was scored out of 10 at the end of each month’s cycle over the length of the project. The results generally show an overall 80% sense of satisfaction which is confidently a positive review the details of the evaluation can be seen at Appendix 6. The main recommendations for improvement are centred around effective communications and the recording of the communications.

These results perhaps highlight some weaknesses in individuals and the method of the communications used to share information. The teams Chat platform was used in this project as the entire timeline is available throughout the development cycle and transparent for all users. While it has not been mentioned directly, confidence amongst the younger team members may have also contributed to the overall scores in the evaluation.

## Stakeholder List

The stakeholders for this project include the following personnel.

|  |  |  |
| --- | --- | --- |
| **Role** | **Name** | **Organization** |
| Project manager | John Johnston | Napier University PT |
| Main Client Contact | Ron Skirving | Men’s Shed Committee |
| Sponsor | Iain Donald | Napier University Tutor |
| Project Team | Jonathan Cloke | Napier University PT |
| Project Team | Rory Mackintosh | Napier University PT |
| Project Team | Joe Black | Napier University PT |
| Project Team | Daniel Beardmore | Napier University PT |
| Project Team | Duncan Hastie | Napier University PT |
| Men’s Shed | Committee members | Men’s Shed Committee |

Table 5 Stakeholder List

## Appendix 1 Follow-Up Register

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | | **Cause** | **Effect** | **Impact** | | **Likelihood** | | **Importance** | **Response** | | **Response** | | **Custodian** | |
| R | Coding | | Inefficient application and failures. Incorrect programming, being under pressure | | 70 | 50 | 2 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
| R | Joining coding elements between team members | | Inefficient application and failures. Incorrect programming, being under pressure | | 70 | 50 | 2 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
| R | SQL Scripting errors | | Inefficient application and failures. Incorrect programming, being under pressure | | 70 | 50 | 2 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
| R | Broken Object Level Authorization | | Integrity of the site being compromised | | 60 | 30 | 1 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
| R | Broken User Authentication | | Unauthorised access to the site | | 50 | 30 | 1 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
| R | Broken Function Level Authorization | | Application failure | | 40 | 30 | 1 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
| R | Security Misconfiguration | | Application security compromise | | 40 | 30 | 1 | | Avoid | Testing and Adjust | | JJ, RM, JB, JC, DB, DH | |
|  |  | |  | |  |  |  | |  |  | |  | |
|  |  | |  | |  |  |  | |  |  | |  | |
|  |  | |  | |  |  |  | |  |  | |  | |

## Appendix 2 Project Final Close-Out Peer Review

**Reviewer: Team:**

**Reviewee: Team:**

**Date of review:**

**Project description**

**Reviewer’s comments and recommendations**

**Response and actions taken**

**Deliverables map**

**Reviewer’s comments and recommendations**

**Response and actions taken**

**Follow-up register**

**Reviewer’s comments and recommendations**

**Response and actions taken**

**Quality of document (clarity, presentation, etc.)**

**Reviewer’s comments and recommendations**

**Response and actions taken**

## Appendix 3 Client Project Final Report Feedback

## Appendix 4 Lessons Learned

## Appendix 5 Evaluations

