Software Design & Implementation

Project Report

Group Members:

Hannah Ashna Jacob (N0865554)

Jarad Johnson Bailey (N0853071)

Hassaan Naveed (N0898071)

Nicholas McCaig (N0787115)

Lab Tutor:  
Pedro Baptista Machado

# Project Abstract:

# Plagiarism Declaration:

This report and the software it documents is the result of my own work. Any contributions to the work by third parties, other than tutors, are stated clearly below this declaration. Should this statement prove to be untrue I recognise the right and duty of the Board of Examiners to take appropriate action in line with the university’s regulations on assessment.

**Name:** Hannah Ashna Jacob (ID – N0865554)

**Name:** Jarad Johnson-Bailey (ID - N0853071)

**Name:** Hassaan Naveed (ID – N0898071)

**Name:** Nicholas McCaig (ID – N0787115)

# Revision History:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Issue Date** | **Stage** | **Changes** | **Author** |
| 1.0.0 |  | Alpha | Created and structured report template per guidelines | Hannah |
|  |  |  |  |  |

# Table of Contents:

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# Introduction:

# Background Research:

An overview of external tools and libraries that were used to implement the application:

* QT
* Boost
* Crypto Library
* MQTT Mosquito

# List of Requirements & Tasks:

# Risk Analysis:

The risk analysis aspect of the project design stage involves reviewing and planning out solutions for potentials issues that could put the project’s success at risk. Highlighted below at several risks ranging from low to high probability and impact; they are each accompanied by a mitigation plan.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk Number** | **Description of Risk** | **Probability** | **Impact** | **Mitigation Plan** |
| 1 | Unclear or unrealistic requirements and scope | 2 | 5 | Ensure that all requirements are reviewed by all members of the team and are thoroughly discussed before being confirmed. In addition to this, actively seek out support from experts (i.e., lecturers and industry professionals) to ensure that the project scope is attainable within the allocated development window |
| 2 | Insufficient knowledge and background research of messaging applications | 3 | 4 | Carry out an intensive research process before beginning the development process to ensure that all team members are well informed |
| 3 | Security breach due to passwords being compromised | 2 | 5 | Add password encryption and (if feasible) two-factor authentication. |
| 4 | Team member falls ill due to ongoing pandemic or is otherwise unable to support the team due to extenuating circumstances | 3 | 4 | Promote the Software Tester to the role available. |
| 5 | Lost data due to technical failure | 2 | 4 | Make regular backups to GitHub and other cloud storage options used by the team. |
| 6 | Tasks go over the allotted time | 2 | 3 | Give buffer for extra time at end of the project - work to a week before the actual deadline |
| 7 | Team member overwrites an existing file's contents on accident | 3 | 1 | Regularly use version control software (i.e., Git - GitHub) so that the file contents can be easily reverted to an older version |
| 8 | Users struggle to use the application due to the unintuitive user interface (UI) | 2 | 2 | Ensure that during the testing stages user feedback is gathered with regards to the usability of the UI |
| 9 | Major bug found in the testing stage | 2 | 2 | Agile development allows for regular testing to prevent large scale bugs at the end of the project. |
| 10 | Team member struggles to engage with the group or is not actively communicating with the rest of the team | 3 | 4 | The team must have frequent check-ins to ensure how all team members are handling their workload and if anyone requires assistance with managing their tasks, they are encouraged to seek help from the rest of the team. |
| 11 | Member conflict occurs due to differing opinions | 3 | 5 | The team makes use of the quality vote to make the final decision to resolve the conflict |
| 12 | Team experiences issues with computational resources | 1 | 3 | Contact the team's assigned tutor for support in gaining access to university resources. |
| 13 | Member experiences issues with handling the workload | 3 | 4 | The team reviews the assigned task to break it down amongst other members to help support the struggling member |

|  |  |  |
| --- | --- | --- |
| **Probability** | **Impact** | **Description** |
| 5 | 5 | A risk event that if it were to occur, will have a **serious** impact on the project achieving its desired result. To the extent that one or more stated outcome objectives will not be achieved. |
| 4 | 4 | A risk event that if it were to occur, will have a **significant** impact on the project achieving its desired result. To the extent that one or more stated outcome objectives will fall below acceptable levels. |
| 3 | 3 | A risk event that if it were to occur, will have a **moderate** impact on the project achieving its desired result. To the extent that one or more stated outcome objectives will fall below goals but above minimum acceptable levels. |
| 2 | 2 | A risk event that if it were to occur, will have a **minor** impact on the project achieving its desired result. To the extent that one or more stated outcome objectives will fall below goals but well above minimum acceptable levels. |
| 1 | 1 | A risk event that if it were to occur, will have a **minimal** impact or **no** impact on achieving outcome objectives. |

# Gantt Chart:

# Diagrams:

# Test Plans:

# Conclusions & Future Work:

# References:

# Individual Contributions:

# Overall Reflection:

# Appendix:

## Coding Contribution Guide:

Prior to making a contribution to this repository, please first discuss the changes you intend to make via a meeting, text thread or issue

with the other team members/owners of this repository.

As outlined below, please note we have a code of conduct. Do try to ensure that you adhere to it during all your interactions with this project.

### Pull Request Process:

You may merge the Pull Request in once you have the sign-off of all other team members, or if you do not have permission to do that or unable to get a sign-off from all three,

you may request the second reviewer/team member to merge it for you.

### Code of Conduct:

**Our Pledge**

In the interest of fostering an open and welcoming environment, we as contributors and maintainers pledge to making participation in our project a harassment-free experience for everyone, regardless of age, body size, disability, ethnicity, gender identity and expression, level of experience, nationality, personal appearance,

race, religion, or sexual identity and orientation.

**Our Standards**

Examples of behavior that contributes to creating a positive environment include:

1. Using welcoming and inclusive language
2. Being respectful of differing viewpoints and experiences
3. Gracefully accepting constructive criticism
4. Focusing on what is best for the team
5. Showing empathy towards other team members

Examples of unacceptable behavior by participants include:

1. The use of sexualized language or imagery and unwelcome sexual attention or advances
2. Trolling, insulting/derogatory comments, and personal or political attacks
3. Public or private harassment
4. Publishing others' private information, such as a physical or electronic address, without explicit permission
5. Other conduct which could reasonably be considered inappropriate in a professional setting

**Our Responsibilities**

The Project Manager is primarily responsible for clarifying the standards of acceptable behavior and are expected to take appropriate and fair corrective action in response to any instances of unacceptable behavior.

The Software Developer has the right and responsibility to remove, edit, or reject comments, commits, code, wiki edits, issues, and other contributions that are not aligned to this Code of Conduct.

**Scope**

This Code of Conduct applies both within project spaces and in public spaces when an individual is representing the project or its team. Examples of representing a project or team include presenting this project to university staff members, showcasing the project to external parties and receiving feedback on the project.

Representation of a project may be further defined and clarified by project maintainers.

**Enforcement**

Instances of abusive, harassing, or otherwise unacceptable behavior may be reported by contacting the Project Manager. All complaints will be reviewed and investigated and will result in a response that is deemed necessary and appropriate to the circumstances. The project manager is obligated to maintain confidentiality with regard to the reporter of an incident. Further details of specific enforcement policies may be posted separately.

Team members who do not follow or enforce the Code of Conduct in good faith may face temporary or permanent repercussions as determined by other members of the project's leadership.

**Attribution**

This Code of Conduct is adapted from the \*\*Contributor Covenant\*\*, version 1.4, available at <http://contributor-covenant.org/version/1/4>