COLORADO SCHOOL OF MINES
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CSCI 370 Final Report

Team Haiku Critic

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Revised 2026.06.18

CSCI 370 Summer 2026

Prof. Jeff Paone

Table 1: Revision history

Revision	Date	Comments
New	2026.05.18	Teammate names, team name, and image are included in the first page. Title has been renamed in accordance with the current status of the Final Report. Completed Sections (subject to further modifications): - Introduction - Functional Requirements - Non-Functional Requirements - Risks - Definition of Done
Rev – 2	2026.05.19	Revised and added more information to the introduction section. Reformat the introduction section to a paragraph style.
Rev – 3	2026.05.20	Revised wording and sentences in the introduction, functional requirements, non-functional requirements, risks, and definition of done sections. Also added the team biography section and its necessary contents. Spacing is also addressed for formatting consistency. The references section is also updated to accommodate the proper source and formatting. Additionally, bullet points are used in the following sections as per the directions: ● Functional Requirements ● Non-functional Requirements
Rev – 4	2026.05.28	Revised wording and sentences in the introduction, and definition of done to correspond with events regarding the source code, since we have now obtained them. References and appendix have been updated as well. Additionally, the risk section now has a risk table that shows each risk and how much it would impact the work on the project. The technical issues have also been added and updated accordingly as the team receives the source code. Both the risks, and technical issues have been updated accordingly. Lastly, the system architecture has been added with two diagrams, one wireframe and one workflow diagram, both showing the illustration of the merchandise website and the user functionality of the website respectively.
Rev – 5	2026.06.01	Significantly overhauled the report to no longer mention the circles interface or only briefly mention it in certain sections, such as the Definition of Done. All existing sections have been overhauled to reflect that. Additionally, a Tables and Figures Appendix Table has been added to keep track of tables and images inserted so far in the document. Located at the end of the report. Set up the Project Ethical Considerations and Software Testing Sections. Project Ethical Considerations has been complete but both sections are subject to further discussion between teammates.
Rev – 6	2026.06.05	Overhauled the Functional/Non-Functional Requirements, Risks, and Definition of done to account for the prototype website and circles. Additionally, added two images for the Software Testing Section, namely for the Code Development and Code Review, containing code for software development on one part and how the team organizes the code in another. Further refined Software Testing Section and Ethical Considerations given the development of the digital marketplace and circles prototypes so far.
Rev – 7	2026.06.11	Overhauled the entire document to only mention the digital marketplace and circles as prototypes, as that is what the team will definitely deliver to the client at Haiku Critic. Additionally, some early formatting issues have been fixed. Additional content has been added to System Architecture and Software Testing to reflect latest developments.
Rev – 8	2026.06.15	Final revisions to spacing, formatting, and anything else that is needed for the due date of June 21st.

Table of Contents

I. Introduction

The purpose of the project is to propose and implement a digital marketplace aspect of Haiku Critic [1] and explore aspects of the planned “circles” social interface. By adding in a prototype digital marketplace, it allows Haiku Critic to not only have another source of support from their end users, but will provide a potential source of income for the app and its developers. Aside from that, by adding a prototype circles interface, it also allows the Haiku Critic app to have potential group functionality for its users. Therefore, developing the digital marketplace and the circles prototype for Haiku Critic is our ultimate goal of the project.

The clients and developers of Haiku Critic are John Barrett and his wife, Lusine Sarkisian, who both developed this app when they first met at the onset of COVID-19. John and Lusine have identified both user and technical improvements needed for the app and the website. The main focus of this project is the development of a digital marketplace that will allow users to view and buy products through email, while also delivering a functional prototype for the circles. Additionally, among their other priorities is to develop a community aspect through a ‘circles’ interface, allowing users to join groups and share their haikus. While this feature needs more time to be developed, our team will explore aspects of this functionality through a prototype should time permit during the field session.

At the beginning of the project, our team worked with the clients and the developers at Web Design Glory who coded the existing software platform to gain access to the existing source code and better understand the software architecture. The current source code, developed by Jack and Dan, serves as the base foundation for the new digital marketplace and circles prototype that our team is developing.

There are a couple of definitions and abbreviations in regards to the publishing of the application thus far, such as SDK, a software development kit for Apple devices, or a key, which contains the credentials needed to access developer privileges of the application. The “circles” is an interface definition set by John and Lusine, and is conceptually similar to that of group chats. The users of software will primarily be the end users, those of the healthcare and the education sectors.

Lastly, to maintain the software, the developers at Web Design Glory will be primarily maintaining the software, as they are responsible for ensuring that all code functions correctly. Additionally, John will also be responsible by ensuring that the app stays compliant with Apple and Google in regards to publishing. For the field session, our team would be responsible for ensuring that our digital marketplace and circles prototypes do function and that they are potentially compatible with the current source code when we hand it over to the next development team.

II. Functional Requirements

The critical functional requirements define the core features the system must deliver:

- The official Haiku Critic website must have feasibility for a digital marketplace, which can be achieved through a prototype website that will work on all devices that have internet access.
- The prototype digital marketplace must allow users to scroll, and view the product and its description.
- The prototype digital marketplace must allow users to view email addresses to contact the developer to email them for purchasing merchandise, while also viewing social media hashtags.
- The prototype circles interface must allow a single user to create a new circle, and add other users into an existing circle as a moderator.

- The prototype circles interface must also allow a single user to send invitation requests to an existing circle, and view other members in that circle as a member.

III. Non-Functional Requirements

The non functional requirements for the project define the quality and constraints the system must adhere to:

- The prototype digital marketplace must work on any device, which includes mobile and computer devices, for users to view merchandise.
- The cost constraints are that developing features cannot exceed the production and development costs of the original website.
- Additionally, the app must have some form of security for purchasing merchandise, which can be achieved by contacting the developers.
- The prototype circle interface must be reliable for future enhancements and implementation into the app by the next development team.
- The reliability of the prototype digital marketplace is critical as the new features should be functional and be potentially compatible with the official Haiku Critic website for future integration by the next development team.
- The codebase will be documented in a way that allows developers to understand the application through the use of ReadMe files to clearly explain the contents of each component.

IV. Risks

The primary risk at this stage is the lack of full access to the server on which the website runs. Without it, our team is unable to begin integration on the website development, even though we have already obtained the source code. This is considered a high-impact risk, as it directly affects our team's ability to make any progress on the marketplace live testing. To mitigate this, we are coordinating with John and the developers at Web Design Glory to obtain proper access as early as possible, and while that happens, we are developing a marketplace website that we run on a local server generated by the live server extension in VS Code. Aside from that, the backend file for Haiku Critic could potentially be easily accessed, which can expose the code and the client’s personal information more easily. This can also be considered a high-impact risk, as it exposes potential security issues for the developers. To address this, the client will swap out any personal credentials and addresses with business owners across both Apple and Android platforms and narrow down their email addresses to a single business account. The incomplete transfer of server and developer tools is considered a high impact risk, as it directly blocks the team from deploying any updates, and will be resolved by completing the developer handoff as soon as possible. Weak access controls and potential API key loss are treated as moderate impact risks since they could compromise the integrity of the codebase and disrupt authenticated operations, and will be mitigated by implementing stronger passwords and a secondary verification system. Finally, since the team does not have much experience with mobile development there may be a learning curve at the start, but as this is a medium impact risk the plan is to identify the most important parts of the existing code and tackle those first before moving on to new features.

Asset (numbers)	Vulnerability	Threat	Likelihood	Impact	Risk	Treatment	Control	Mitigated Risk
Server Access	Can’t change the main website	Does not allow changes to the main website	Highly Likely	Serious	15	Reduce impact	Make a website prototype that doesn't go live	needed
Security for Edit Access	Easy to Gain Access	Could compromise access to code and possible hacking attacks	Highly Likely	Doomsday	25	Reduce Impact	Increase security regarding passwords and public information	needed
Backend File	Easy to Gain Access	Could reveal owner and closely related	Highly Likely	Serious	15	Reduce Likelihood	Check folder and remove photos that could be dangerous	needed
API	Requires keys	Loss or theft of API keys	Medium	Catastrophic	12	Reduce Impact	Create a second verification for backup	needed
Server data	Requires access to API keys and to developer software	No account to access the keys or the developer software	Highly Likely	Catastrophic	20	Reduce Impact	Contact the original developer team to gain access to the servers	needed

Table 1: Risk Table

The technical issues that have come with this project so far are that the team has no access to the server that hosts the website. Since obtaining the source code from the previous developers at Web Design Glory, we have been trying to figure out how to use the developer's Firebase [2] account in order to update the API keys needed for developing new features and publishing them to Android and Apple. With this in mind, we are unable to complete many of the tasks that the client wants, but the team will be able to create a simple marketplace prototype website for the company's merchandise with contact information for purchasing and shipping. Lastly, the team will explore and implement a basic prototype of a circles interface that involves users liking haiku posts, as well as creating new groups and adding other users to existing groups.

V. Definition of Done

The definition of done for our client at Haiku Critic is the completion of a functional prototype of both the digital marketplace and the circles feature for the app along with documentation. The primary focus of the project is the development of the prototypes for the marketplace and circles. The marketplace prototype will let the user view the product and if they are willing to buy it they will be able to email the creator regarding purchases. The circles prototype will demonstrate a potential social interface where users can create groups and add members, share haikus, and interact with other posts. These prototypes will provide the client with a clear vision of how the features could be integrated into the platform for the future. Finally, the final deliverable will consist of the prototype of the marketplace, the circles prototype, and the corresponding documentation. Therefore, the definition of done is the completion of these prototypes, and documentation.

VI. System Architecture

Figure 1: Overview of the Haiku Critic platform

Figure 1 illustrates the primary content view for the Haiku Critic platform. The layout features a 3×3 grid of product cards, each represented by a rounded rectangle that will display an individual item available for purchase, along with a short description label beneath it. This grid format allows customers to browse the full catalog at a glance in a clean, organized way. The brand name "Haiku Critic" is displayed in the top-left corner in a handwritten-style font, establishing the platform's artistic identity. At the bottom, a footer is divided into two sections: purchasing and shipping contact information on the left, and social media engagement guidance on the right, directing users to tag posts with #haikuCritic and #haiku. Customers interested in buying any of the displayed items are directed to reach out via email to complete their order and arrange shipping.

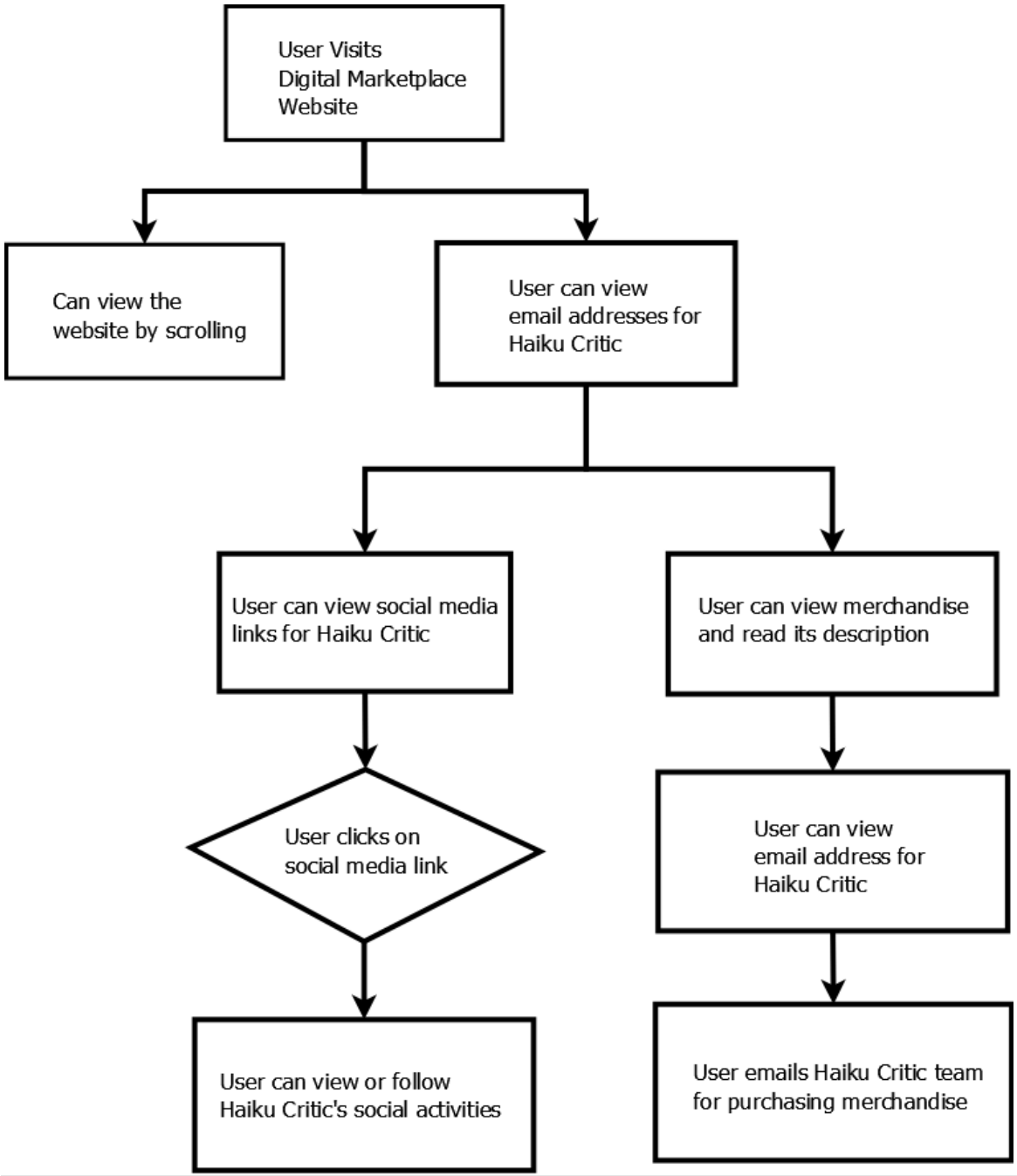

Figure 2: System Architecture of Prototype Digital Marketplace

Figure 2 maps out the different paths a user can take when visiting the Haiku Critic digital marketplace, ensuring that it simulates a live merchandise experience. Starting from the main website, users can browse the merchandise page. On the merchandise side, users can read item descriptions, follow social media links, or go ahead with a purchase, which requires contacting the developer by email for that purchase to happen. On the marketplace page, users can also scroll to the bottom to find contact email addresses or follow Haiku Critic on social media.

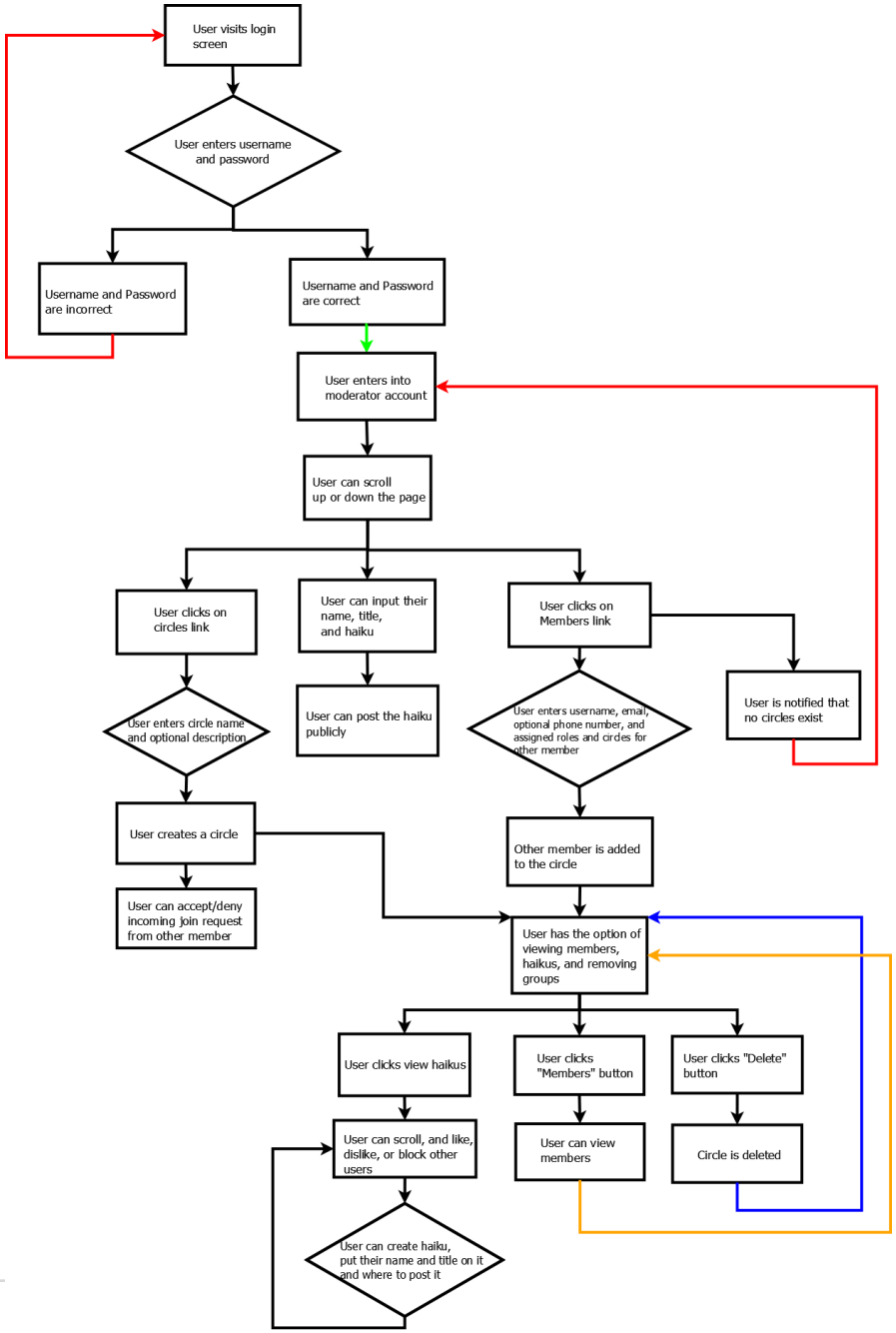

Figure 3: System Architecture of Prototype Circles Interface, Moderator Account

Figure 3 maps out the different paths a moderator can take when creating a circle, and managing its members. Starting from the login screen, users can log in and enter into the main interface. From there, as they are moderators, they can create a group, add members, accept invites, and even set themselves as either a moderator or member. Within a circle, the moderator can post haikus publicly or to a specific circle, but can also ignore other users, and can even remove offensive haikus.

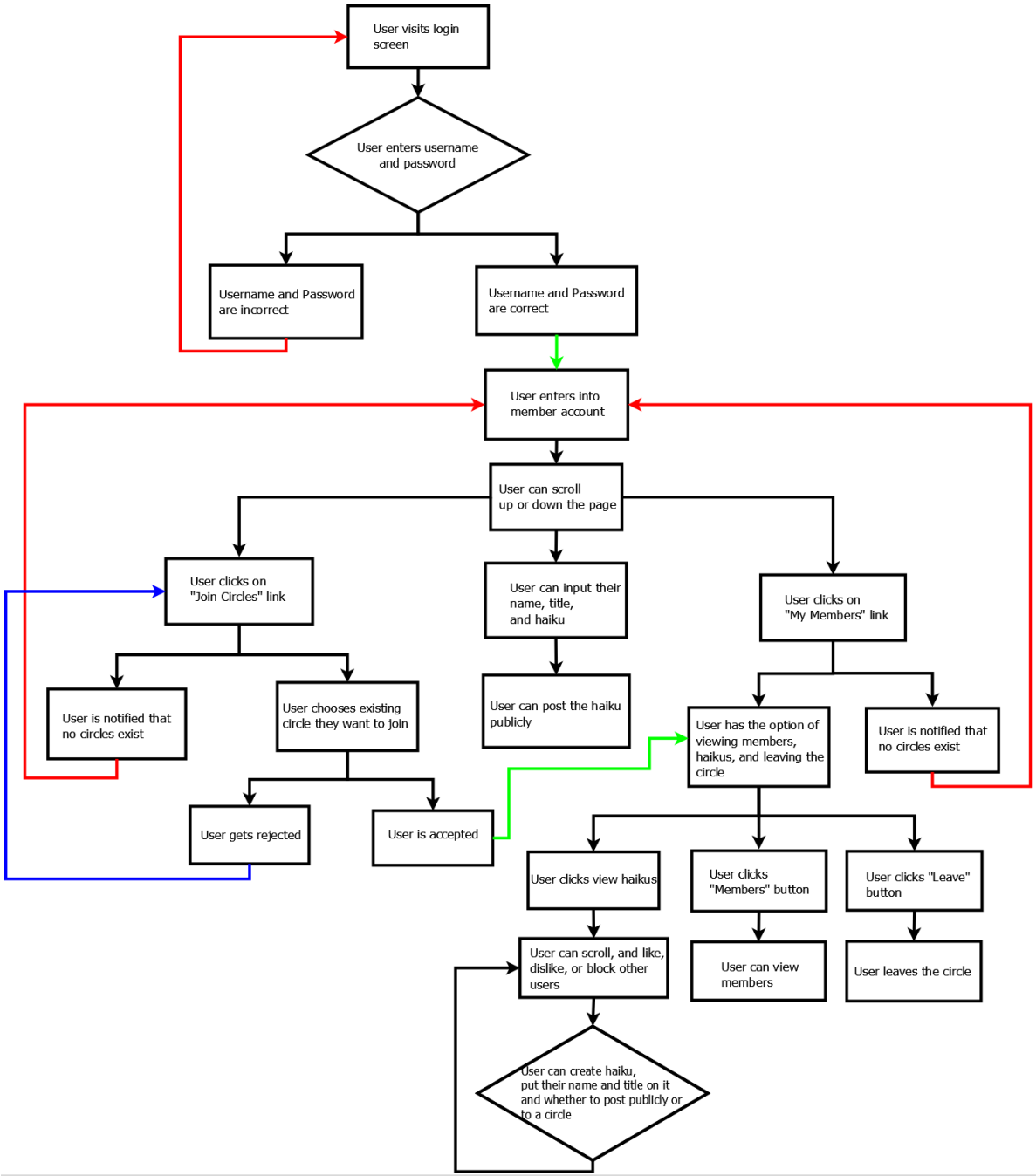

Figure 4: System Architecture of Prototype Circles Interface, Member Account

Figure 4 maps out the different paths a member can take when joining a circle, and managing its membership. Just like the former, starting from the login screen, users can log in and enter into the main interface. From there, as they are members, they can join an existing group, see other members, and even have the option of leaving the group. Within a circle, the member can also post haikus publicly or to a specific circle, but can also ignore or block other users if they find a certain haiku offensive.

VII. Software Test and Quality

Quality Assurance Approach

Given the research and coding focused nature of the project, the quality assurance strategy is centered around static and dynamic program analysis, alongside code development and review. In the end, prototype iterations are created while code is developed to ensure functionality at each step. This included the development of a basic website structure, and ensuring that the digital marketplace prototype simulates a live merchandise expierence, along with creating a semi-functional circles prototype that allows a user to create groups and add other users into an existing group.

Static and Dynamic Program Analysis

- Implementation: The static program analysis involves an isolated environment where the website code can be inspected for functionality. The dynamic program analysis involves updating the website using Excel to correspond to new functionality.
- Focus: Unit Testing, Live Environment Testing, Validation of data from Excel to live environment
- Tools: VSCode, LiveServer VSCode Extension, Excel
- Aspects Addressed: Validation of data from Excel to website during execution, adherence to functional requirements, and error detection and correction

Code Development

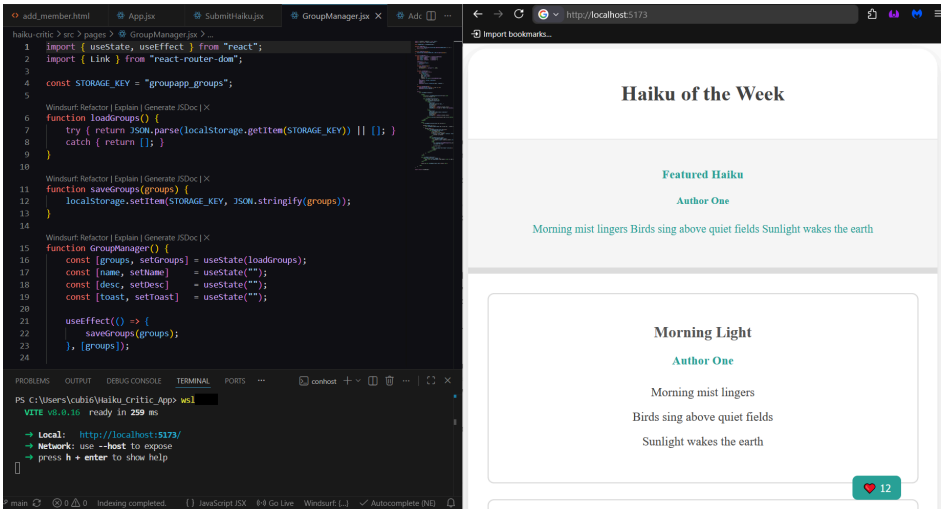

Figure 5: Code Development of Circles

Figure 5 illustrates the coding development process of circles for the Haiku Critic platform. This illustration above shows a main simulation of the main index page for the Haiku Critic App, where the code on the left side illustrates the code and that is executed using a local Node [3] server. On the right side, is the visual output of the code, where it displays the “Haiku of the day” and below are the other haikus, with a liking system attached to each post. The website contains borders, shaded regions, colors for text and buttons, which are covered by a .css file.

- Implementation: The code that will be developed for the prototype circles interface will involve React[4] and a local Node server for basic group functionality. Additionally, the code that will also be

developed for the prototype digital marketplace will involve HTML, CSS, PHP, and JavaScript for basic website functionality. All of the code developed for both prototypes will be pushed to GitHub using Git.

- Focus: Developing the website, ensuring code functionality, and continuous testing and updating the prototype digital marketplace and circles interface code
- Tools: VSCode, LiveServer VSCode Extension, GitHub's push mechanism, Node Local Server
- Aspects Addressed: Website functionality, coding languages for initial prototypes, and implementing coding habits and organization

Code Review

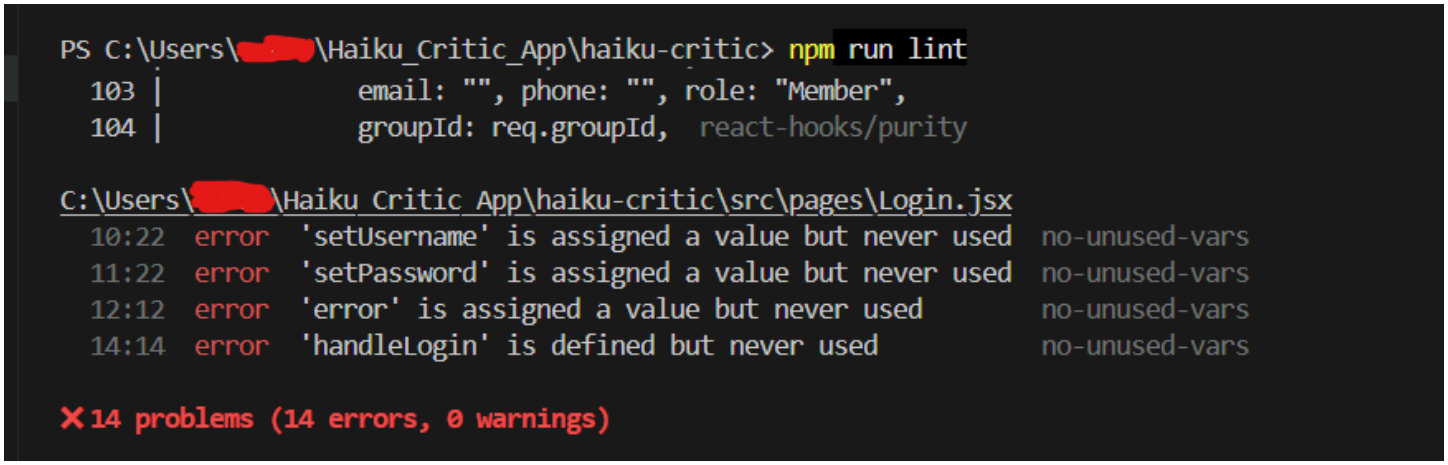

Figure 6: Code Review for Bug Detection

Figure 6 illustrates the process of detecting bugs for the Haiku Critic App based on whether the prototype circles interface has any indicated errors. This screenshot illustrates the output of ESLint, the static analysis tool used for the circles prototype, run via the "lint" script as defined in package.json file within the haiku-critic folder. The most recent run flagged 14 errors across six files, where most were primarily unused variables and imports left over from earlier versions of the code. This tool was also used to catch logic issues in the circles invite system, where a member's stored ID and the ID referenced in the group member's list were created from two separate calls to Date.now(), which can occasionally produce mismatched values and an inaccurate member count for a particular circle.

- Implementation: All code changes underwent peer review before pushing it to main code on GitHub. Reviews prioritized code readability, potential bugs, and improving functionality.
- Focus: Finding and preventing bugs, facilitating knowledge between teammates, and verifying the correctness of the prototype website and circles logic
- Tools: GitHub's pull mechanism, ESLint
- Aspects Addressed: Static analysis findings, coding standards adherence, code organization, verification of logic, improved code readability and functionality, and resolving any possible bugs for the digital marketplace and circles prototypes

Test Results

The prototypes for the Circles interface and digital marketplace were presented to the client in a live demonstration. The client reviewed the group creation flow and merchandise display, confirming that both prototypes reflected their intended direction for the app and website. The client expressed satisfaction with

the structure and layout of each prototype, and feedback gathered from the session will be used to guide the next iteration of development.

VIII. Project Ethical Considerations

Given the team's initial limited experience with app development, a primary ethical focus throughout the project was the strict adherence to ACM/IEEE protocols. The potential for not allowing censorship and not intervening with offensive posts on the Haiku Critic app, as well as displaying the location of the user when posting haikus poses a significant risk. Relevant ACM/IEEE principles apply here, including 1.4 (Be fair and take action not to discriminate), 1.6 (Respect Privacy), 1.2 (Avoid harm) and the IEEE principle of holding paramount the safety, health, and welfare of the public. These decisions made by the client of Haiku Critic, John Barrett, would potentially represent a violation of these principles and can likely result in social and legal consequences beyond the app itself.

Throughout the field session, the team has mitigated the impact of the mentioned risks by applying Michael Davis's "Common practice test", ensuring that the developer's choices do not massively impact the societal consequences of allowing open thoughts on the Haiku Critic app. Additionally, the "Publicity Test" further affirms this commitment, by ensuring that such consequences do not go beyond the app itself. The tests focused on suggestions to limit privacy and societal concerns, by suggesting to John Barrett to add certain filters to prevent offensive posts, as well as making users' locations optional. Additionally, developing and testing a blocking and ignore function for both moderator and member accounts is a compromise that bridges between censorship and free speech for the app. Research, understanding of code, documentation of regulations, and informing the development of potential issues were imperative components of this strategy.

The project scope was initially constrained to security issues regarding user location, as well as the filters needed for certain posts, which requires specific features to develop and can possibly contribute to technical difficulties for other users. As a result, it has been suggested to the developers of Haiku Critic to ensure that there is an option added to make location sharing optional, and that a blocking or ignore system is viable without interference. While this can potentially present some conflicts with the developer's intentions, the project's focus remained on minimizing the impacts of user locations and non-censorship to adhere to ACM/IEEE protocols.

IX. Project Completion Status

The goal of this project is to create a functional prototype of the circles interface, where users can create groups as moderators, and users can also view other members within the group, post haikus within the group, or even block haikus that they find offensive. Additionally, the digital marketplace prototype will also allow users to view merchandise, contact the developer by email for purchasing said item, and even view social media hashtags on the website. Our prototypes meet the majority of the criteria set by the client's functional requirements, as it demonstrates the feasibility of group chats for future development and refinement by the next development team and a place to support the developers further through merchandise.
However, the team has encountered quite a few issues that we are unable to complete during the field session. Firstly, while the circles prototype is mostly functional, there are issues with what status the group creator should get, as they are currently always assumed as a moderator once they create said group. In addition, members cannot invite other members into a group nor can they create the groups as that is under the moderator's control. As for the digital marketplace, the team also has an issue where after saving the

haiku_critic_products.xlsx file as a product.csv file, the digital marketplace prototype will open the products.csv file, but when modifying the products.csv directly, VSCode will not allow these changes to occur. Lastly, access constraints to the client's server, the source code being composed of several different languages, most of which would require weeks for better comprehension, as well as renewed approval from both Apple and Google for listing the app on their stores, has made it less likely that the live features of the circles and the digital marketplace will be implemented due to time constraints.

X. Future Work

One thing that can be done in the future for this project, is the live integration of both the marketplace website and the circle app. For this the marketplace website needs only a few tweaks to have it working for this integration. As for the live integration of circles for the app, it needs to be integrated as a tab in the app and needs to be updated to allow for live users to make and save circles. This is because the team could not access the client's server for the duration of the field session, hence, these two things can be done in the future for this project.

In addition, as for things that could be made in the future to improve the circles interface prototype, there could be a comment section in both the circle and main page for haiku posts so that people can make comments. Also, there will be an option to make a circle public or private on the circles page. In addition, as for the prototype digital marketplace, there could be a navigation bar to connect the digital marketplace and the main Haiku Critic Website, as well as having a dedicated donation section on the navigation bar that links to a third party donation website. Furthermore, there will be fixing the links on the main website for the social media links by making and linking the accounts, as the prototype has implemented these for the duration of the field session. This would allow the digital marketplace to seem more visually appealing, as well as further improving the functionality of the digital marketplace. Therefore, these are what can be improved for our prototypes in the future.

XI. Lessons Learned

One of the important lessons learned from this project was the value of clear and consistent communication with the client. Regular meetings helped ensure we were aligned with design expectations and reduce the risk of moving in the wrong direction. Through these communications, we also learned how crucial it was to clearly define the client's design preferences and goals for this project in order to make progress. This helped us avoid repeated redesigns and make progress towards the clients' goals.

Another lesson learned was the importance of ensuring that all necessary data and access is available from the beginning of the project. The lack of access to the source code during the first two weeks significantly affected our progress and slowed down the development. In addition, we did not and still do not have access to the server, which has limited our ability to make our products available for use. During this period, there were times where the team was unsure how to proceed, which led to delays and time that could have been used more effectively. This experience showed us how early access is important to avoid delays. Overall, the lack of access limited our ability to achieve everything we had initially planned for this project.

XII. Acknowledgments

All members of our team wrote code, readmes, worked on this documentation, and participated in both client and advisor meetings. Our advisor, Prof. Paone, helped us with revisions on this document and answered both technical questions and topic questions. Our client, John Barrett, helped to provide this project as a learning experience and helped us better understand what to make and the reason behind why his recommendations are important.

XIII. Team Profile

Jacob Alltmont
I am going into my senior year at Colorado School of Mines and am majoring in Computer Science. I have experience in data analytics both outside of school and in the classroom while also having experience in various languages such as Java, Python, C++, SQL, Bash, GDScript, and C#. My role within the team is contacting our advisor, organizing team meetings, and assisting with the development of the new applications we are adding to both the app and website.

Fatema Amiri
I am currently a junior at Colorado School of Mines majoring in Computer Science. I have experience with various programming languages such as Python, C++, Java, and SQL. My role within this field session is communicating with our advisor and assisting with the development of the new features for the ios version.

Vincent Nguyen

I am currently a junior at the Colorado School of Mines and I am majoring in Computer Science, with a focus on Computer Engineering, as well as a minor in Electrical Engineering. I have experience in IT services outside of campus, as well as classroom and project experience with coding in languages such as Python, Java, C++, and SQL. My team role within this field session is to organize meetings with clients, teammates, and to assist in developing new features for app development.

Christian Wood

I am currently a junior at Colorado School of Mines. I am majoring in Computer Science with a focus on Computer Engineering. I have experience in Python, C++, and C through classroom experience and projects. My role in this team is to discuss with the client any potential issues and ways we can fix the problem.

References

[1] “Haiku Critic”, Haiku Critic. [Online]. Available: https://thehaikucritic.com/
[2] “Firebase”, Firebase. [Online]. Available: https://firebase.google.com/
[3] “React”, React. [Online]. Available: https://react.dev/
[4] “Node”, Node. [Online]. Available: https://nodejs.org/en

Appendix A – Key Terms

Include descriptions of technical terms, abbreviations and acronyms

Term	Definition
SDK	*Software Development Kit. Developer tools intended for Apple mobile devices, such as the iPad and iPhone.*
key	*"Key" is a reference to the credentials needed to access the developer account. This may include the email, password, and username used for the developer account.*
circles	*Essentially, an interface where users can join groups, and within these groups, they can share their haikus, and some users can have high privileges (such as moderator).*
API	*APIs are mechanisms that allow software components to communicate with each other using definitions and protocols.*
Firebase	*A cloud-based app development platform by google that acts as a backend. It allows users to build mobile and web apps faster by eliminating the need to write server code or manage server infrastructure.*
Node	*Node.js is a cross-platform, open source JavaScript runtime environment that can run on any operating system by executing JavaScript code outside of a web browser, such as a server.*
React	*React.js is an open source front-end JavaScript library that allows users to develop single page, mobile, or server-rendered applications with frameworks, such as React Router.*
LocalHost	*In computer networking, localhost is essentially a hostname that refers to a local computer that is being used to access something, such as a website.*

Appendix B – Tables and Figures

Include descriptions of technical terms, abbreviations and acronyms