Software Proposal Document for Co-working space

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Table 1: Document version history

Proposal Version	Date	Reason for Change
1.0	5-Mar-2023	Proposal First version's specifications are defined
1.1	9-Mar-2023	System description updated

GitHub: https://github.com/Mazen421/Software-Engineering-Project

Abstract

This proposal outlines the development of a website for GeeksHub, a co-working space. The proposed solution is a replacement for the current manual registration of customers and all their data.

The website will allow customers to digitally check-in and check-out, purchase monthly subscriptions, book private rooms, and search for their data.

Staff members will be able to manage monthly subscriptions, calculate salaries depending on shifts, and issue warnings or blacklist customers.

The development process will involve using a combination of React.js and Node.js frameworks, with a focus on agile development methodologies and test-driven development.

The key expected outcome of the project is an efficient and effective co-working space management system that provides a seamless user experience for customers and staff members. This project is timely and relevant to the market as the demand for co-working spaces is rapidly increasing.The website will also allow customers to book private rooms, which can be viewed and managed by staff through a secure login.

Staff will have the ability to issue warnings or blacklist customers who violate the co-working space's policies, and will be able to view detailed reports on customer check-in/out times, subscription purchases, and other data.

The project will be developed using agile methodologies, with a focus on frequent testing and feedback from both customers and staff to ensure that the final product meets their needs and expectations.The expected outcome of the project is a user-friendly and efficient web application that streamlines the customer registration process and improves the overall experience for both customers and staff at GeeksHub co-working space. The system will increase efficiency, improve accuracy, reduce human error and help the co-working space increase its revenue stream.

1 Introduction

1.1 Background

GeeksHub is a coworking space that provides an innovative and collaborative environment for students, researchers, and academics. GeeksHub has been operating for several years and has established itself as a supportive environment for the tech savvy in the local community. However, GeeksHub has been facing challenges with their current subscription and registration systems, which are manual and time-consuming. This has resulted in delays and errors in the registration process, leading to a decrease in the customer experience. To address this issue, GeeksHub is proposing a new web-based system for their subscription and registration process.

1.2 Problem Statement

GeeksHub is facing significant challenges in their subscription and registration process due to their manual and paper-based system. Managing paper documents and Excel sheets has become time-consuming and error-prone, resulting in a poor customer experience. GeeksHub recognizes the need to modernize their subscription and registration process and proposes a new web-based system that will eliminate the need for paper documents and Excel sheets.

1.3 Motivation

GeeksHub's manual and paper-based subscription and registration system is an interesting problem because it is a common challenge faced by many businesses that rely on paper documents and manual processes. It is an interesting problem because it has a direct impact on the customer experience, which is essential for the success of any business.

The problem occurs every time a new customer wants to register for GeeksHub's coworking space. The current system is time-consuming, and could lead to poor customer experience over misplaced documents and inaccurate data entry.

Currently, GeeksHub has not implemented any digital solutions and continues to use a manual system. So in an effort to modernize, they entrusted us to use time-proven concepts to develop a custom webpage to forgo the manual process and lead to a better user experience.

The software will be designed to meet the specific needs of GeeksHub's registration process, integrate the software with their existing systems, and be intuitive enough to require little to no training. Additionally, the new system should be user-friendly, secure, and scalable to accommodate future growth. By implementing a new web-based system, GeeksHub can eliminate the need for paper documents and Excel sheets, streamline the registration process, and enhance the overall customer experience.

2 Project Description

The project aims to create a web application that allows users to book a space for a number of hours and view upfront how much they should pay at the desk.

The main features of the application will be as follows:

Registration and Login: Users can create an account by providing their details, including name, email address, and password. Users will need to verify their email address before they can access the application. Once registered, users can log in to the application using their email and password.

Space Booking: Users can view the available spaces and select the one they want to book. They can choose the date, time and duration of their booking. The application will display the total cost of the booking based on the selected parameters. Staff members can register for users, and adjust the per hour price to allow for evolution / promotional sales.

User Management: The application will store user data in a database. The staff can access this data to issue warnings or blacklist certain users if necessary. (eg. unpaid booking, disruptive behavior, etc ...)

The application will be built using a modern web framework and will use a combination of HTML, CSS, and JavaScript for the front-end. The back-end will be implemented using a server-side programming language, such as React or Node.js. The database will be implemented using a popular database management system like firebase.

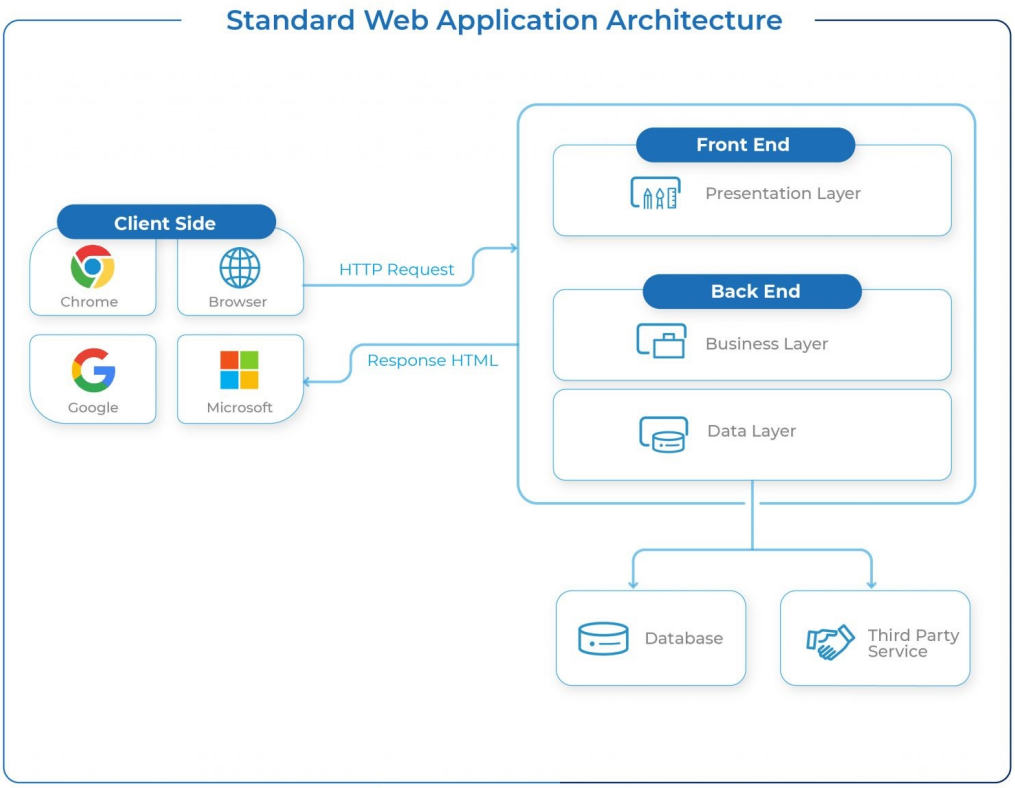

Figure 1: web application architecture

2.1 Objectives

Conduct a stakeholder analysis to identify the needs and requirements of Geekshub and its target audience, and use this information to develop the SRS within 2 weeks.

Develop the SDD, outlining the website's features, functionality, and design elements, based on the SRS and industry best practices, within 3 weeks.

Design the website layout and create mockups for approval by stakeholders, based on the SDD and user feedback, within 4 weeks.

Develop the website's frontend, ensuring that it is responsive and mobile-friendly, based on the SDD and best practices.

Develop a backend using Node.js and Firebase, as outlined in the SDD, to store user data securely and enable features such as user authentication.

2.2 Stakeholder

2.2.1 Internal

Team Leader: Omar Ahmed
Responsibilities: Overall project management and coordination.

Team Member 1: Mazen Ahmed
Responsibilities: Software development and programming.

Team Member 2: Kareem Ahmed
Responsibilities: Front-end development and Design of system architecture.

Team Member 3: Ahmed Mohammed
Responsibilities: Back-end development and database management.

Team Member 4: Youssef Mohammed
Responsibilities: Testing and Documentation and reporting.

2.2.2 External

End Users:
Customers of the co-working space who will use the website to manage their check-in and check-out time and subscriptions.

Clients & Staff:
The co-working space management, who requested the project to be developed.
The staff that oversees co-working spaces that may have specific requirements for the website for the management of customer data and salaries.

3 Similar System

3.1 Academic

1. Link for the paper:
   https://ieeexplore.ieee.org/document/8358954/keywordscitations

2. The main problem statement of the work:
   The paper addresses the problem of managing co-working spaces efficiently, which requires keeping track of several factors such as occupancy, subscription management, and staff management. The researchers propose a framework for a crowdsourcing-based co-working space management system that utilizes the power of the crowd to overcome some of the limitations of traditional systems.

3. How the researchers contributed to solve the problem:
   The researchers developed a framework that combines the use of mobile crowdsourcing with data analytics and machine learning techniques to provide real-time occupancy monitoring and analysis, subscription management, and staff management. The framework enables co-working spaces to improve their operational efficiency, increase revenue, and provide better services to their customers.

4. The dataset used by the researchers:
   The paper does not mention a specific dataset used by the researchers. Instead, they describe a simulation environment used to evaluate the proposed framework.

5. What main results the researchers reached:
   The researchers conducted a simulation experiment to evaluate the proposed framework and compared it with a traditional co-working space management system. The results show that the proposed framework outperforms the traditional system in terms of accuracy, efficiency, and scalability. The framework can also provide real-time insights into the occupancy trends and patterns, which can help co-working spaces to optimize their services and improve their revenue.

6. Criticism on the paper:
   One potential criticism of the paper is that it does not provide a detailed explanation of the machine learning and data analytics techniques used in the framework. The paper also does not provide a detailed description of the simulation environment and the assumptions made during the evaluation process.

7. Figure/s of the work (if available):
   The paper includes several figures that illustrate the proposed framework and the results of the simulation experiment. One figure shows the architecture of the framework, while another figure shows the real-time occupancy monitoring dashboard.

3.2 Business Applications

There are many business applications available in the market today. Here are a few examples with accompanying figures:

Salesforce:
Salesforce is a cloud-based CRM platform that helps businesses manage their customer data and relationships. It offers a wide range of tools and features to help businesses track and analyze customer interactions, manage sales leads, and automate workflows. Salesforce interface

QuickBooks:
QuickBooks is a popular accounting software that helps businesses manage their finances. It offers tools for invoicing, expense tracking, payroll, and more. QuickBooks can be accessed through a desktop application or a web-based platform. QuickBooks interface

Trello:
Trello is a project management tool that helps businesses organize and prioritize their tasks. It offers a visual interface that allows users to create boards, lists, and cards to track their work. Trello interface

Asana:
Asana is another project management tool that helps businesses track and manage their tasks. It offers features for team collaboration, task assignments, and progress tracking. Asana interface

Slack:
Slack is a popular team communication platform that allows users to send messages, share files, and collaborate in real-time. It offers a wide range of integrations with other business applications to streamline workflows and increase productivity. Slack interface

These are just a few examples of the many business applications available in the market today. Each application has its own unique set of features and benefits, so it's important to carefully evaluate your business needs before selecting an application to use.

4 Project Management and Deliverables

4.1 Deliverables

- The deliverables of the project include:

  Software Requirements Specification (SRS) Document: This document outlines the requirements, functionalities, and specifications of the Co-Working Space Management System.

  Design Document: This document will provide a detailed technical design of the system, including system architecture, data model, and user interface design.

  Software code: The software code for the Co-Working Space Management System will be developed using programming languages such as HTML, CSS, JavaScript, and PHP.

  Testing Report: This report will document the results of the testing of the Co-Working Space Management System to ensure that it meets the requirements and specifications outlined in the SRS document.

  User Manual: This document will provide a guide for the end-users on how to use the Co-Working Space Management System, including step-by-step instructions and screenshots.

4.2 Tasks and Time Plan

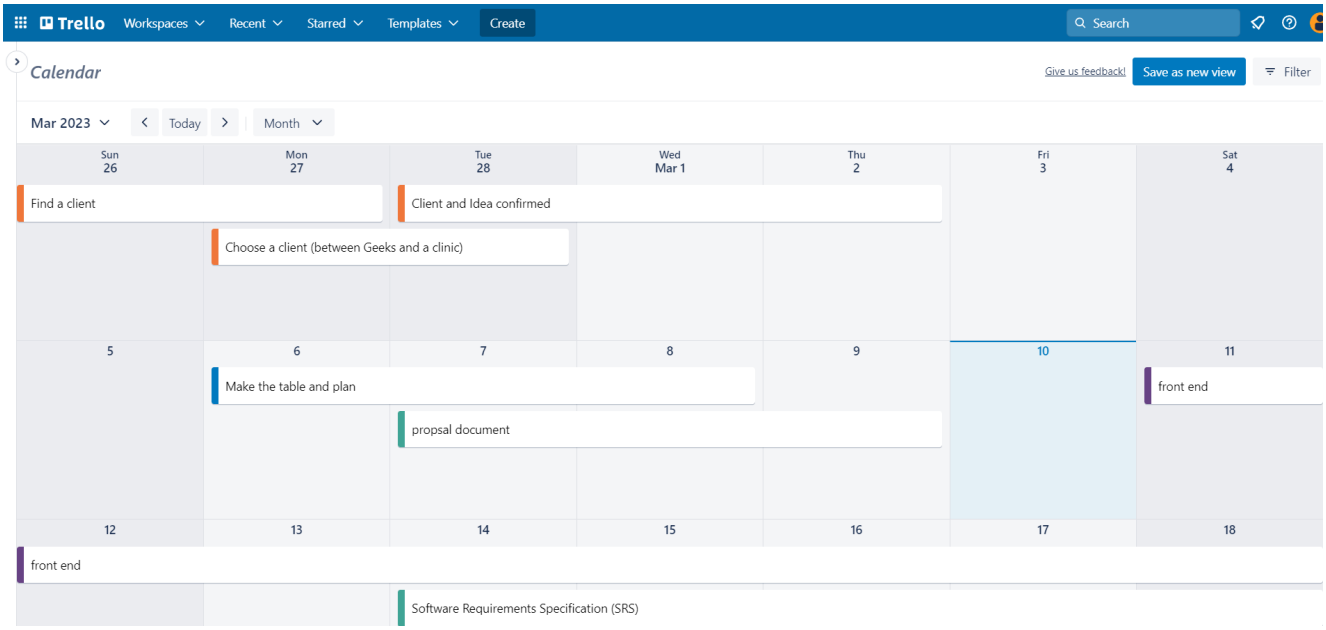

Figure 2: Initial phase timeline

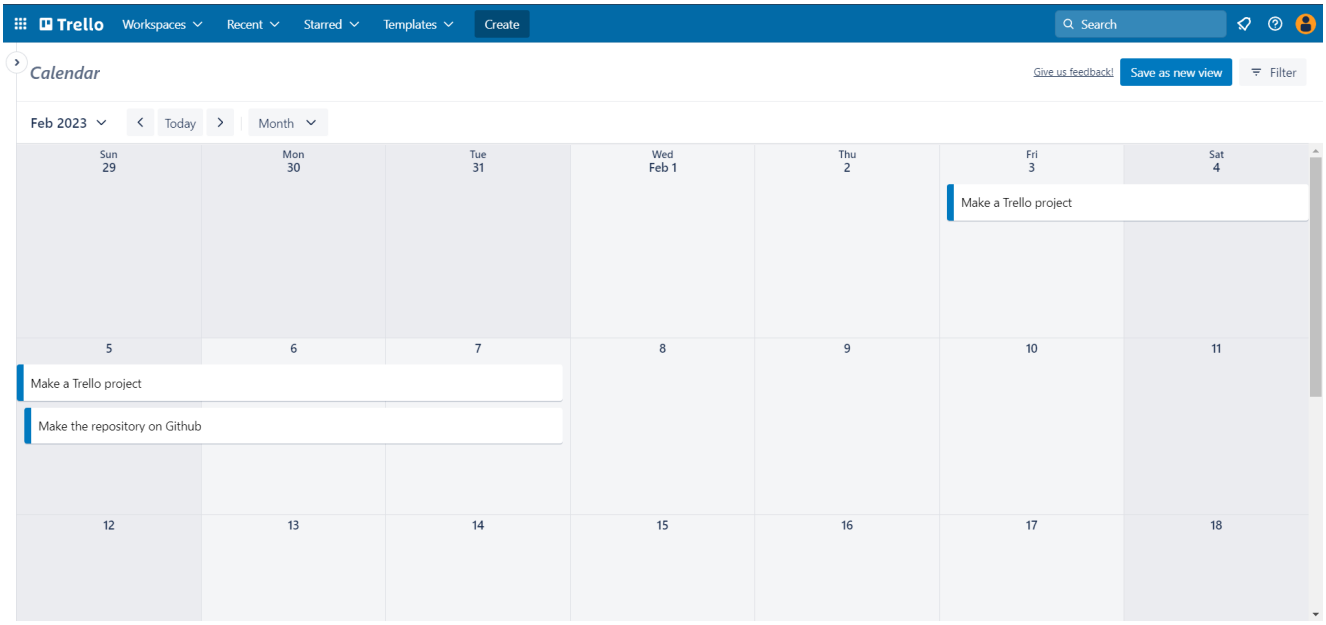

Figure 3: Trello & GitHub timeline

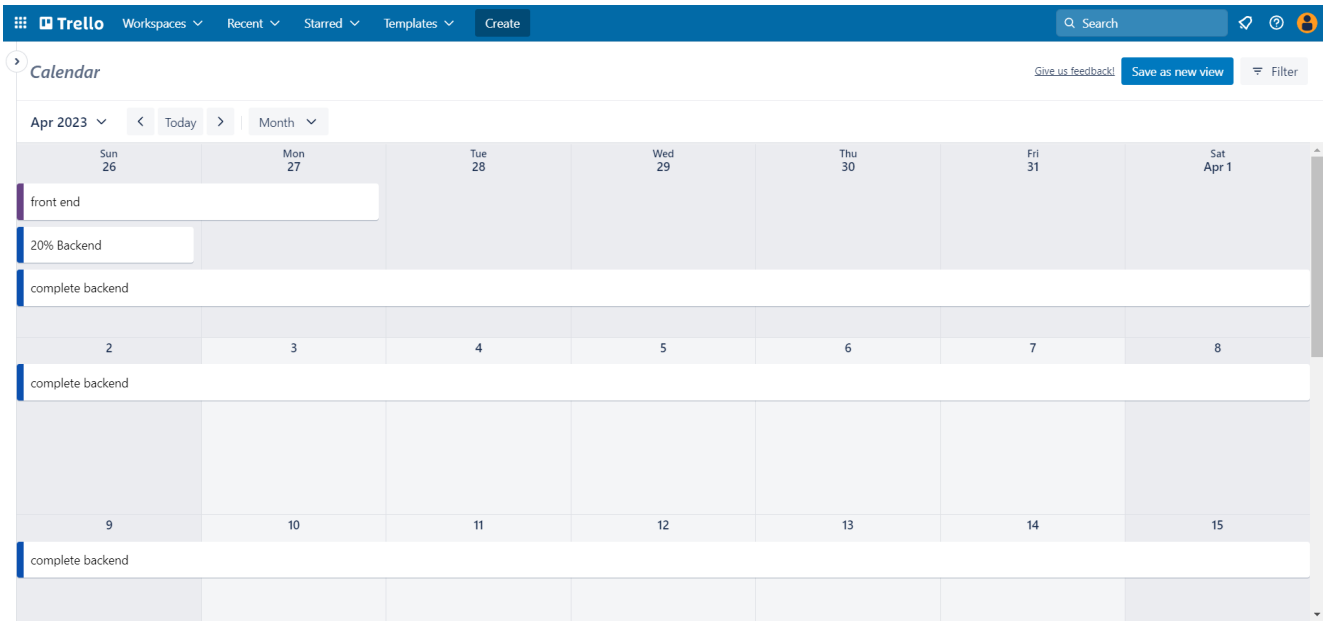

Figure 4: Back-end & Front-end timeline

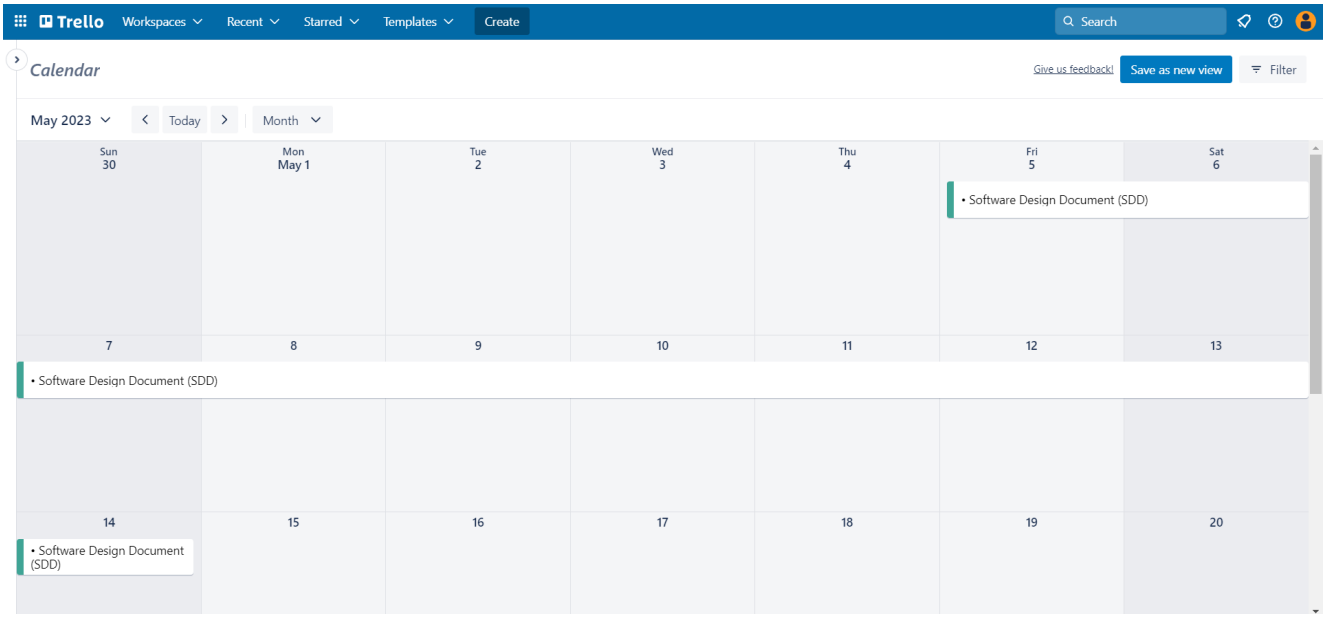

Figure 5: Documentation timeline

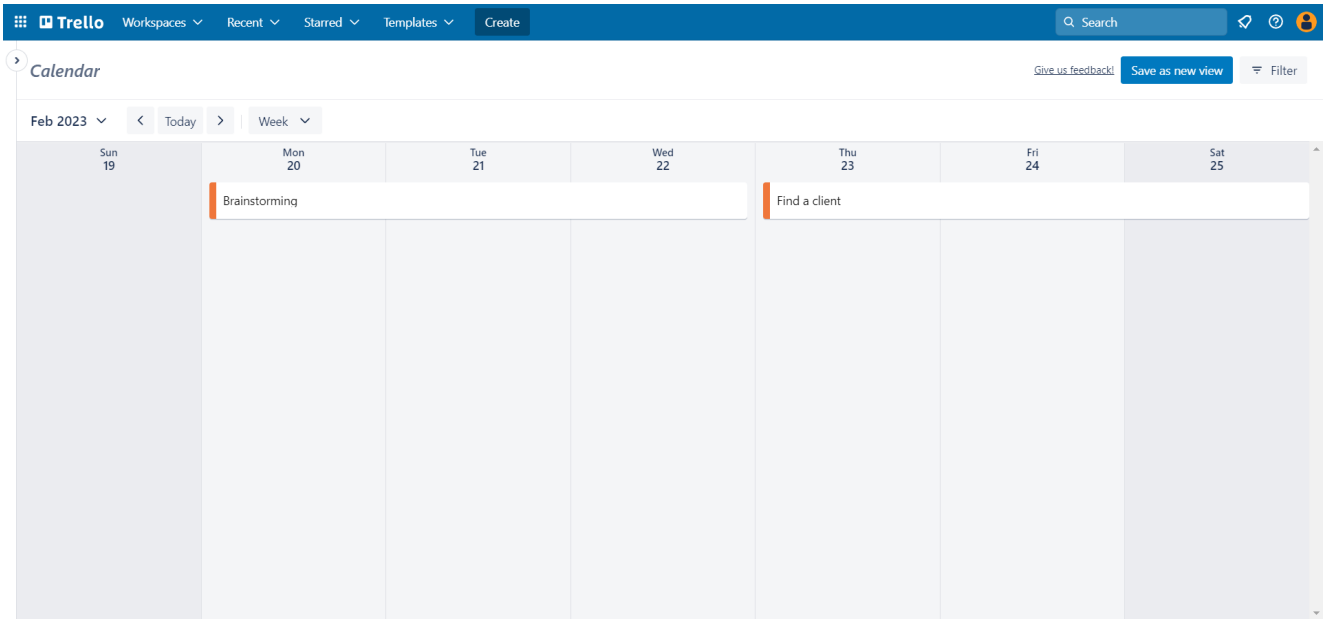

Figure 6: Brainstorming timeline

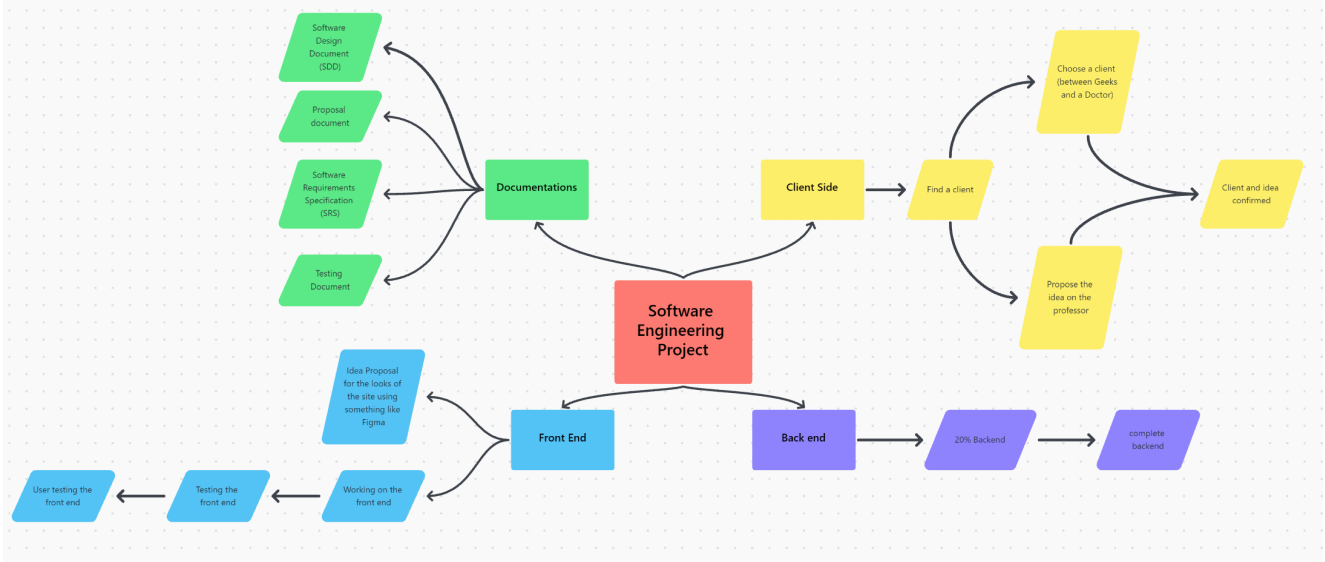

Figure 7: Roadmap