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SOFTWARE ENGINEERING

(CSE3001)

(SCOPE)

WINTER SEMESTER (2020-21)

J COMPONENT REPORT

VERSION CONTROL LIKE GITHUB

Submitted by

ADITYA ROHILLA (18BCE0929)

D VENKATA RAJESWARA ADITYA (18BCE0949)

Submitted to

Prof. SWATHI J.N

IN

B.Tech. Computer Science Engineering

ACKNOWLEDGEMENT

Presentation inspiration and motivation have always played a key role in the success of any Project

The deepest gratitude and sincere thanks to **Prof. SWATHI J.N** for helping us complete our Project with several learning outcomes. We are Immensely obliged for her elevating inspiration, encouraging guidance, and kind supervision in the completion of our Project

We feel deeply obliged to thank the SCOPE (School of Computer Science and Engineering) Department and the VIT University for their services rendered and for giving us an opportunity to carry out our studies at the University.

(ADITYA ROHILLA)

REG NO. 18BCE0929

(D VENKATA RAJESWARA ADITYA)

REG NO. 18BCE0949

EXECUTIVE SUMMARY

This document describes the entirety of the software in a few pages. This will likely be the only document a prospective investor reads initially, and hence brevity, conciseness, and clarity are of the utmost importance. This document is designed to guide you through the Prohub software which is made to provide software developers with easier project management and version control solutions .

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INTRODUCTION

One of the biggest challenges faced while developing a large-scale project is managing the project files and versions efficiently. Hence the Version Control System was introduced as one of the most efficient solutions to the above-mentioned problem. In this project, we attempt to create our own Project management and version control system named Prohub. Our software serves as a repository for developers to store their code in and as a learning platform for young developers to view and publicly contribute to other developer's code.

Prohub also provides an in-app code editor to view the code and make quick changes on the go.

AIM

To develop a web-based application for version control along with project and file management features.

OBJECTIVE

- To implement an online database for storing and downloading project files.
- To implement version control features like committing, forking, and branching.
- To develop a simple web-based editor so that developers can make last-minute changes to their project files.
- To implement Timestamp features which will log all activities performed with date and time.
- To implement different sections where developers can discuss their issues, share references, check pull requests, insights and read the wiki.
- To implement a reader where developers can have a live preview of the project files like code and documentation.

MOTIVATION

The motivation behind this project is to help developers to manage their project-related work in one place with ease, different project members can work on the same project/code and can contribute to the pre-existing work.

PROJECT DESCRIPTION

2.1 Product Perspective

The Prohub software that is to be developed by us is a complete code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere. Good planning is the bedrock of every successful software development project. Our product's aim is to provide effective software to create and collaborate for projects in the form of an easy-to-use and user-friendly web application that fulfills the requirements given in the Table of Shall Requirement in section 2.2.

2.2 Product Functions

The following is a table of the requirements that the system SHALL meet. The list of requirements was produced from the initial project documentation provided by the requirements expert.

ID	**Origin**	**Shall Requirement**
1	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be able to upload/download their project files.
2	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be able to edit the files in live editor

3	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be able to commit new changes to project using CLI or Web GUI
4	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	A Developer SHALL be able to modify the visibility permissions of his own project
5	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be able to fork and branch from other projects.
6	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be able to update and edit their profile as they please.
7	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be to post comments and discuss project issues with other developers
8	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	The developer SHALL be able to share his/organization's project license.

Table 1: Requirements that system shall meet

2.3 User Characteristics

The following table identifies and describes the different users of the Prohub software. The information gathered about the different users of the system helped define what the software needs to do. Also, these users are referenced in the requirements and diagrams.

User	**Description**
Developer	*The developer is someone who uploads and contributes to the projects on the system. Developer is an advanced user who understands all the functionalities provided by the system and can use commands for fully utilizing version control.*
Student	*A student usually downloads or views the existing projects for his own reference purposes, but a student can also be a developer.*
Employer	*Employers have a sole purpose in this system that is, to look for and hire the developers and students based on their projects. They only look at the code and the details of submission and profile details of the candidate/developer.*
Administrator	*The Administrator user will be computer literate and technically competent in performing administration on their system.*

Table 2: User characteristics

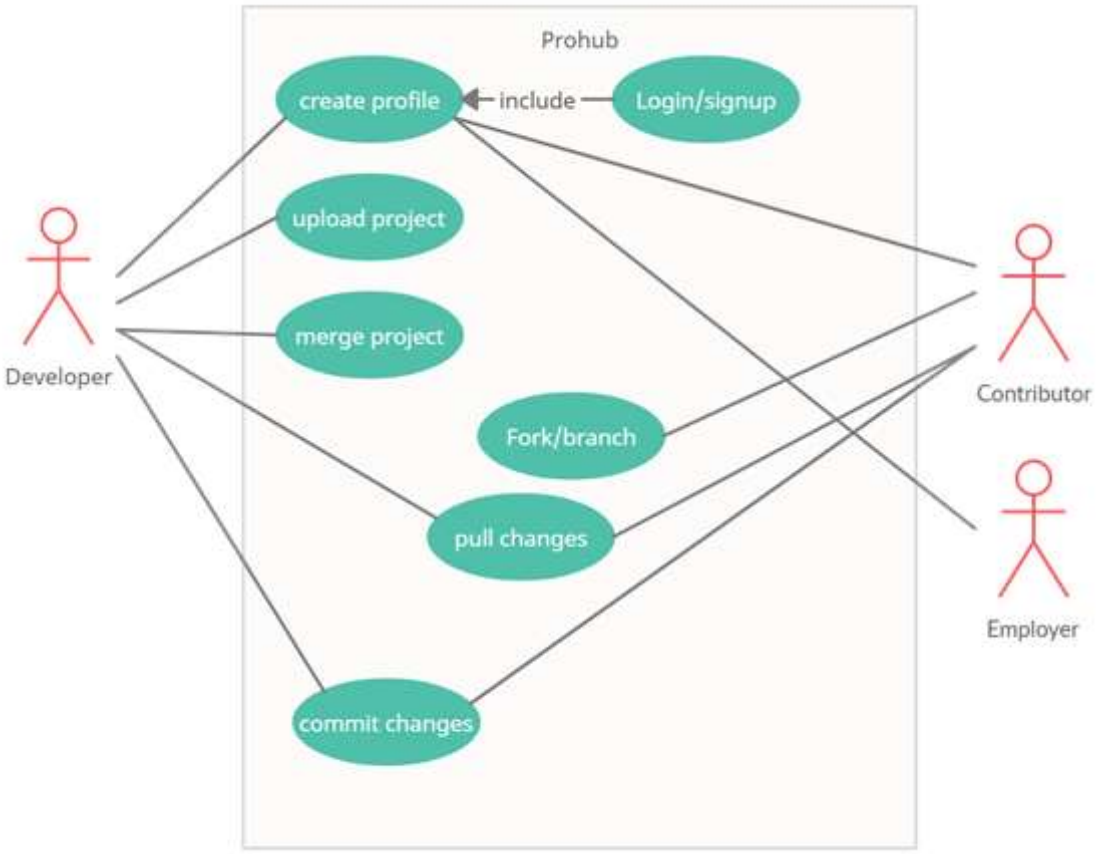

Figure 1: Use case diagram

TECHNICAL SPECIFICATION

Figure 2: Xampp app icon

Apache Friends created XAMPP, an open-source program. The Apache distributions for Apache server, MariaDB, PHP, and Perl are all included in the XAMPP software package. And it's essentially a local host or server. This local server runs on your own computer, whether it's a desktop or a laptop.

We need a Xampp Server to host our Website on localhost.XAMPP is used to test clients or websites before publishing them to a remote web server. On a local computer, the XAMPP server software provides a suitable environment for testing MYSQL, PHP, Apache, and Perl projects.

We used Apache and PHP servers for hosting the website.

1. **APACHE:-** The open-source web server Apache is the most widely used server worldwide for the delivery of web content. The server application is made available as free software by the Apache Software Foundation.
2. **PHP:** The server-side programming language PHP enables users to create dynamic websites or applications. PHP can be installed on all platforms and supports a number of diverse database systems.

DOWNLOAD LINK:- https://www.apachefriends.org/download.html

Steps to run the Code file for hosting the Prohub website on APACHE SERVER:-

Step-1 Download and install the Xampp server on your system.

Step-2 Start Apache and PHP server on Xampp

Step-3 Move all the PHP code files to the htdocs folder under the Xampp folder in the C drive.

Step-4 Host the website in the browser using localhost/filename.php URL

DESIGN APPROACH

4.1 Design Approach and Details

4.1.1 Architecture and Control Method

We have used the standard repository architecture for this software and preferred the use of a call-return control model as all the modules of our system depend on the responsiveness of the central server. The rigid and restricted nature of this model is a strength of our system because it is relatively simple to analyze control flows and work out how the system will respond to particular inputs.

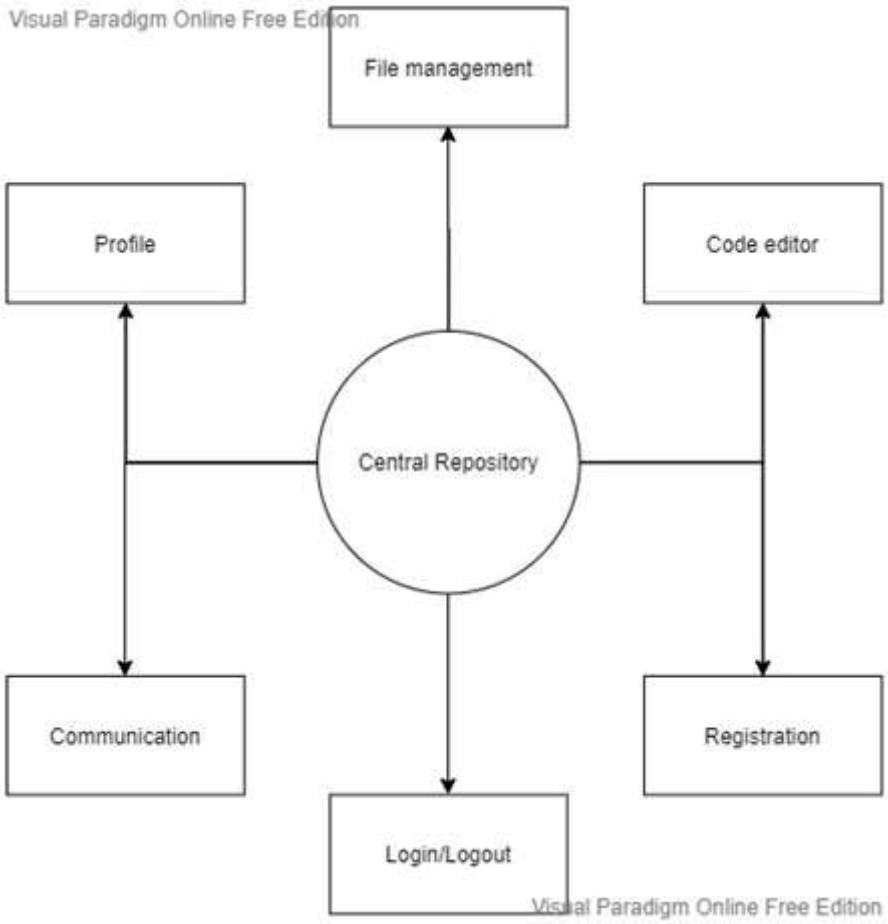

Figure 3: Architecture diagram

4.1.2 Dependency Description

4.1.2.1 Independent Modules

The following modules are independent and do not rely on any other modules to initiate them or to provide data.

● Profile Module: This module collects data from the user to uniquely identify everyone on the platform

● Editor Module: This module is used to edit the project files that the user has uploaded on the platform if the user needs to change something.

● File Manager Module: This module manages all the file i/o operations like upload and download etc.

4.1.2.2 Dependent Modules

The following modules are dependent on one another for their functioning.

● Authentication Module: This module authenticates users to access their respective repositories. It also enables users to manage their profile/identity on the platform.Depends on the data received from profile module.

● Version Control Module: This module receives vcs commands and executes requested operations. Depends on the file management module.

● Communication Module: This module manages the discussions and wiki comments section.Depends on profile and file management module

4.1.3 Data Dependencies

The following figures represent the data flow diagrams of the Prohub software. The first data flow diagram is the user data flow. This is followed by the more detailed data flows for each function.

Figure 4: Data flow for Login/Register

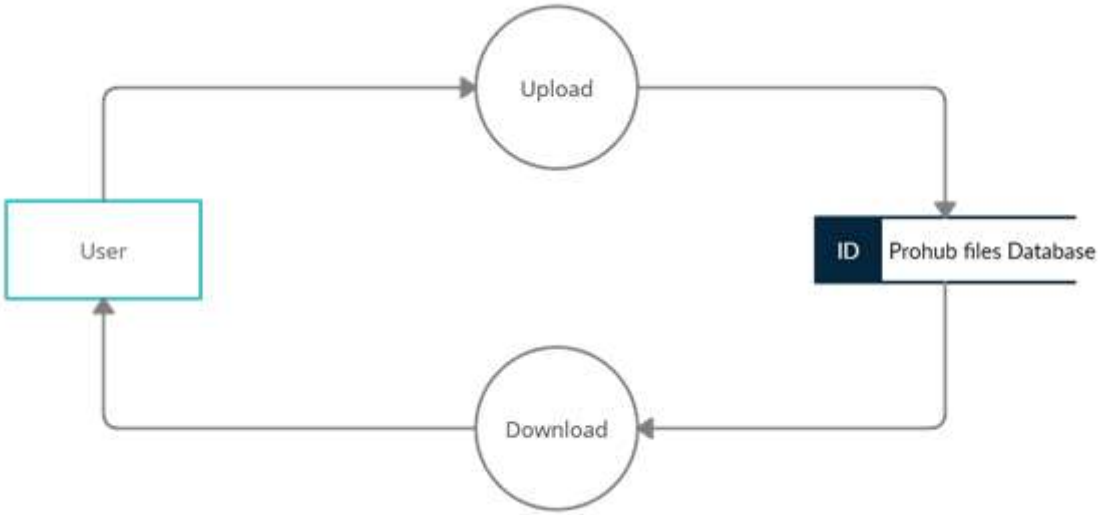

Figure 5: Data flow for Upload/Download

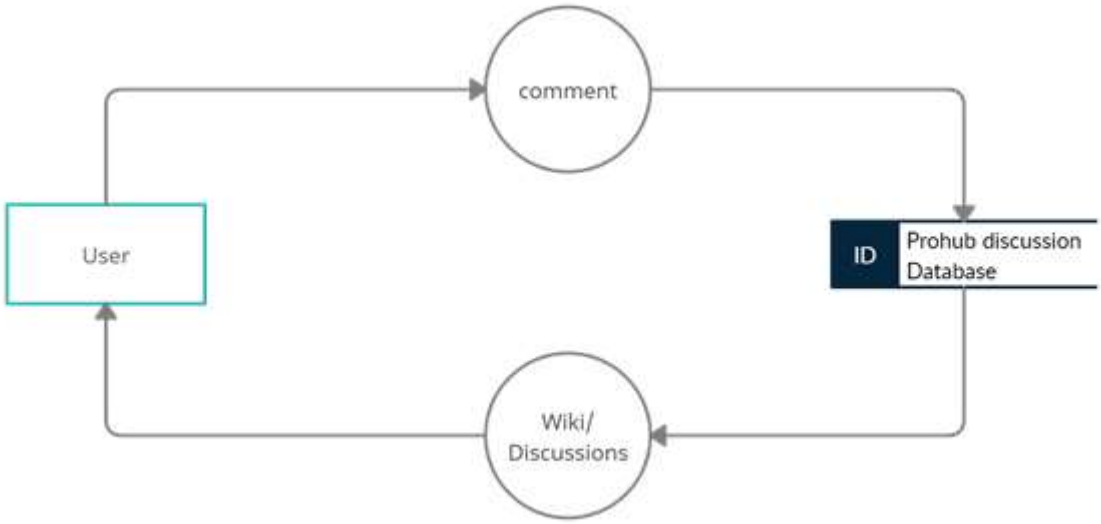

Figure 6: Data flow for Comments

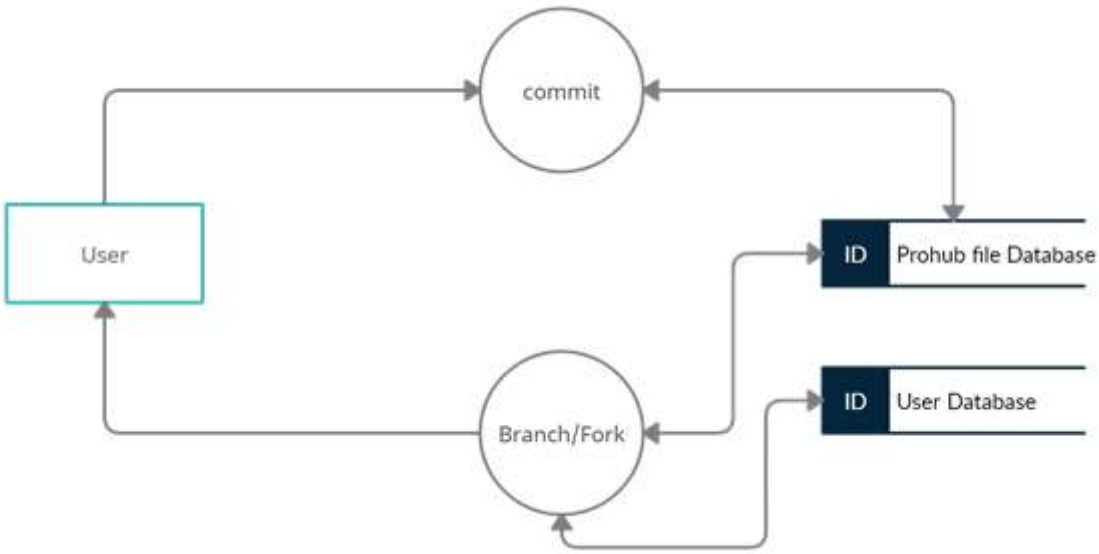

Figure 7: Data flow for version control

4.1.4 Module-Wise Detailed Design

4.1.4.1 Authentication Module

The Prohub Authentication module needs a special design diagram so as to give access to the authorized User only. User's data should be safe and can be accessed only by the user itself. Login credentials entered by the user will be verified with the user's credentials that exist in the database and the access to the account will be granted if the credentials matches with the existing user's profile database.

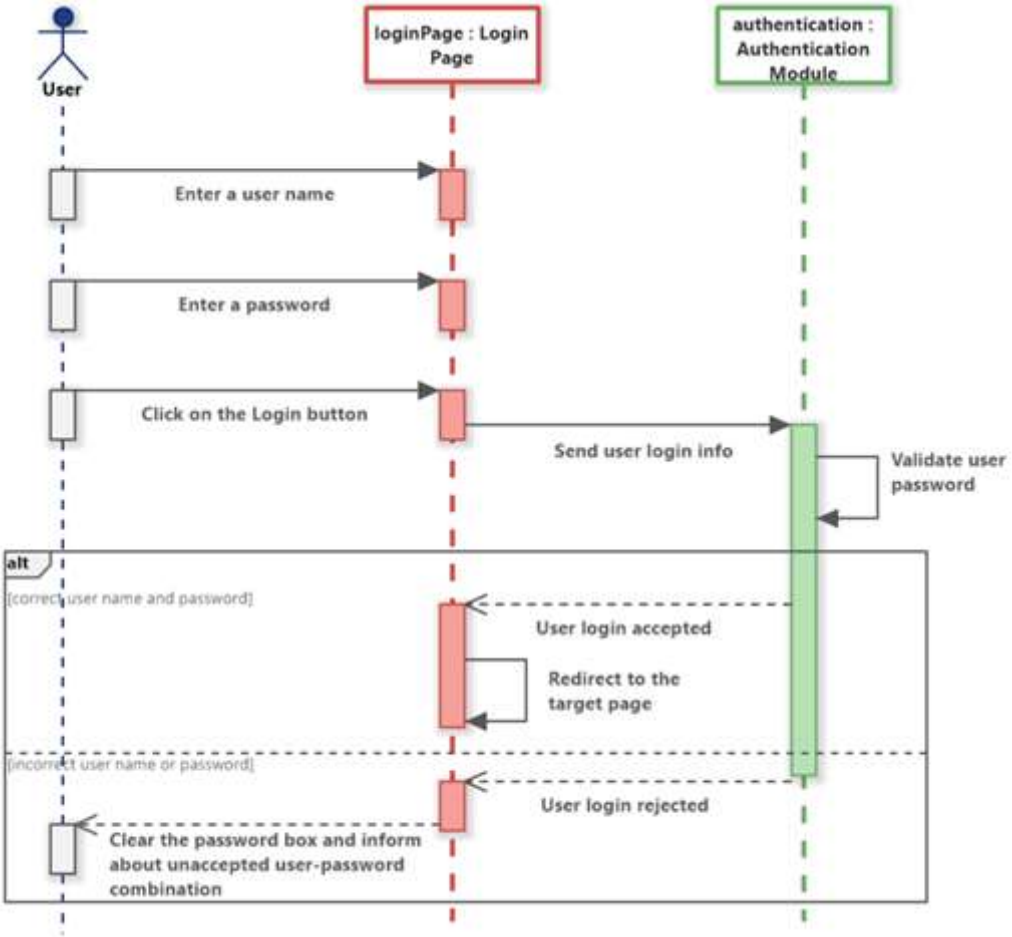

Figure 8: Sequence diagram for the authentication module

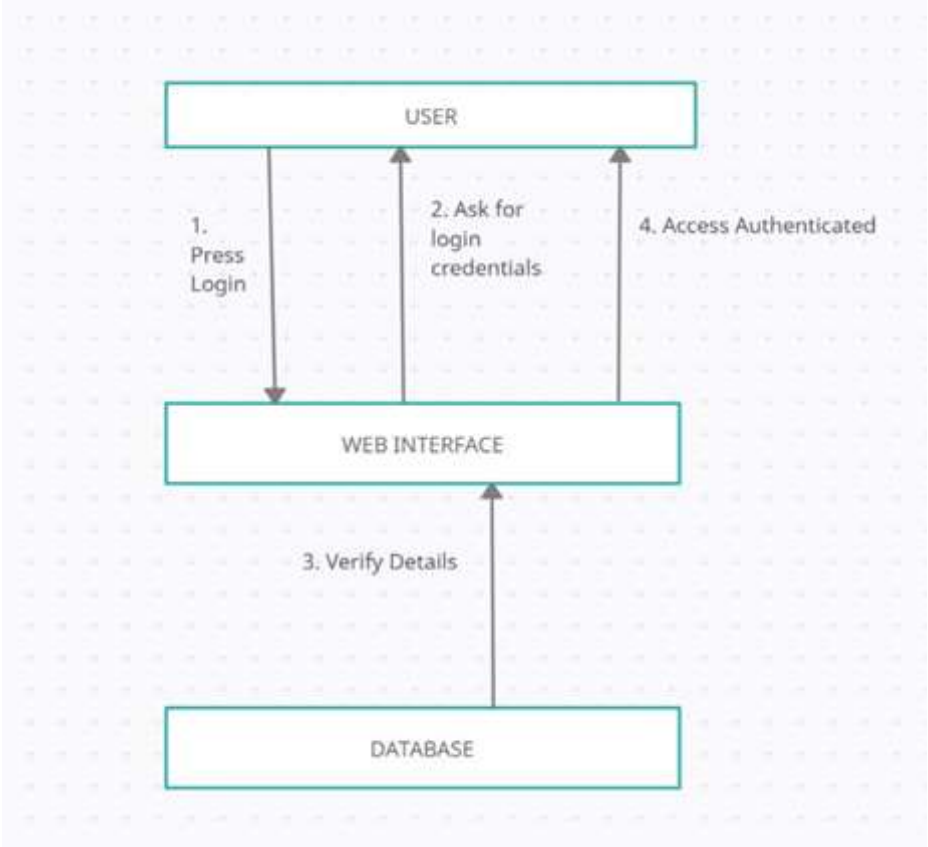

Figure 9: Collaboration diagram for the authentication module

4.1.4.2 Profile Module

The Prohub Profile module needs a special design diagram so as to create new user profiles by asking information like username, email, password, Experience, skills etc. User's data should be safe and should be managed in a systematic manner so that all the user's project and important work can be managed in a single place in the database.

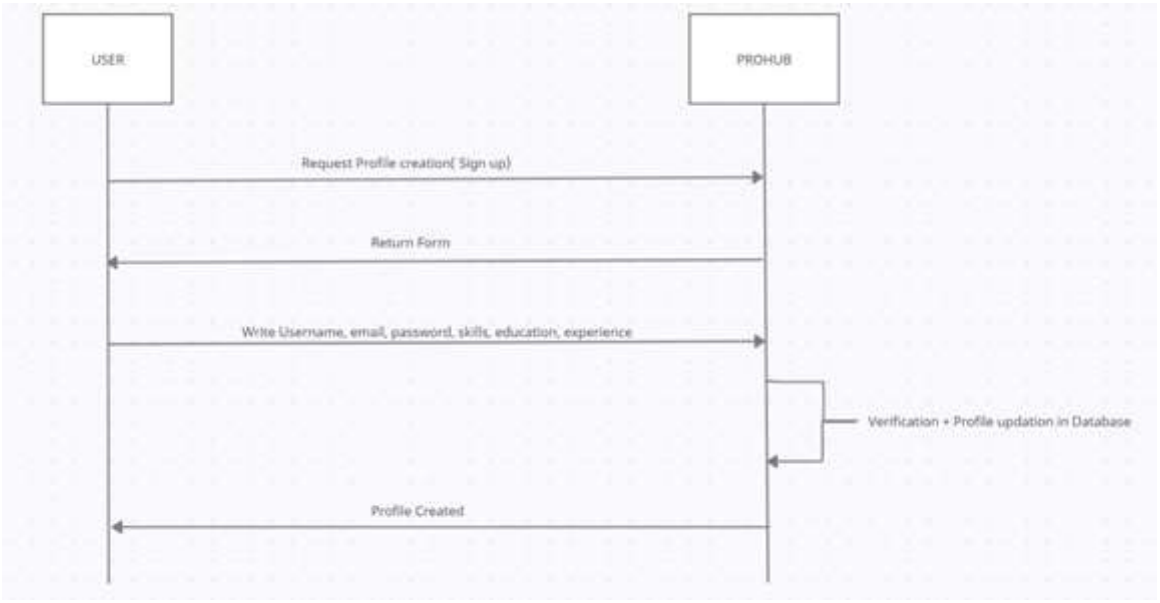

Figure 10: Sequence diagram for profile module

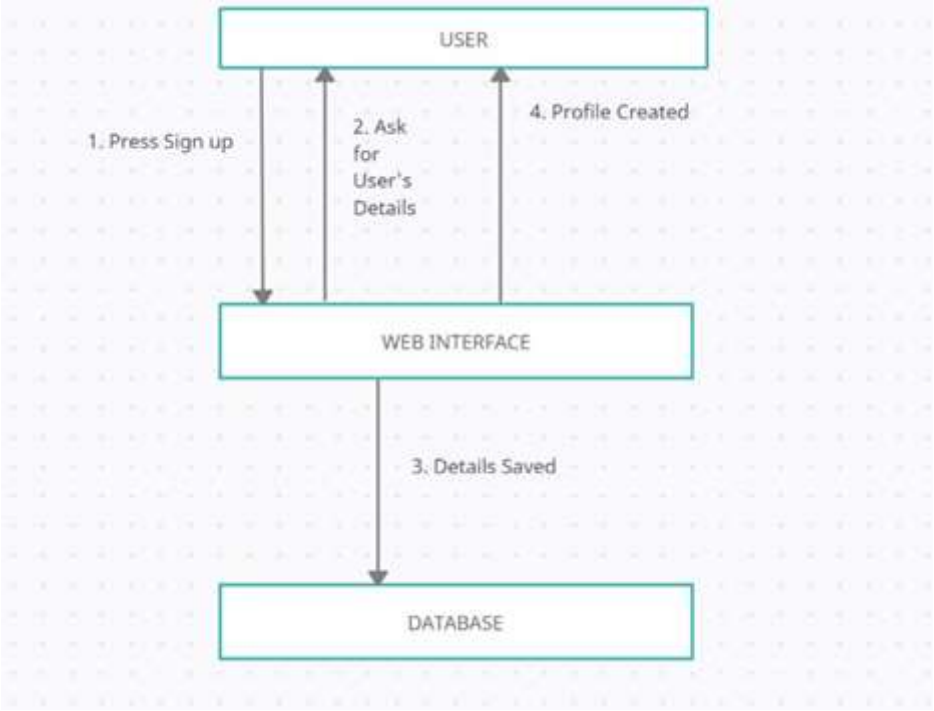

Figure 11: Collaboration diagram for profile module

4.1.4.3 File Management Module

The Prohub File management module needs a special design diagram so as to manage all the User's project work . All the Project files should be safe and should be managed in a systematic manner so that all the user's project and important work can be managed in a single place in the database. The user can download his existing projects if lost somehow. The user can also download the project after some other user's contribution. Other than that, the user can keep on uploading as many projects as he wants.

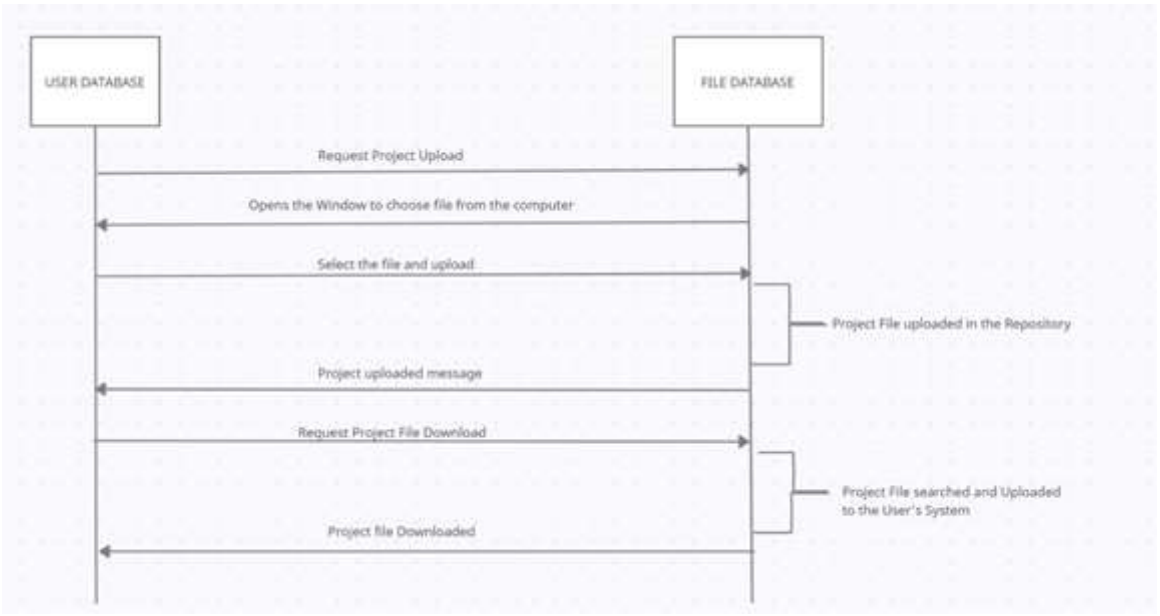

Figure 12: Sequence diagram for file management module

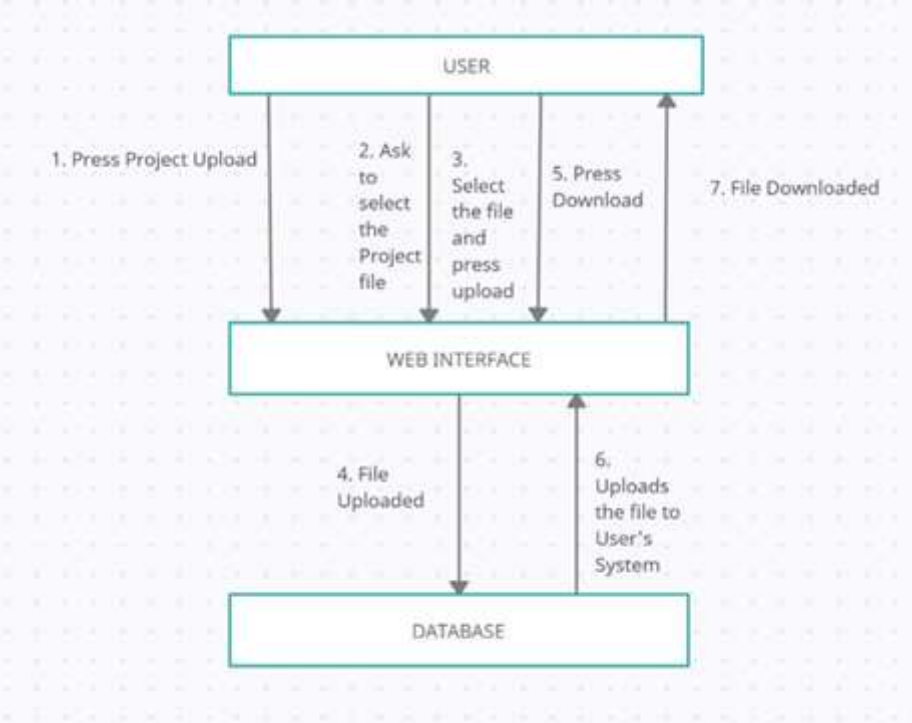

Figure 13: Collaboration diagram file management module

4.2 Constraints

The following is a table of the design constraints that the system SHALL meet. The list of constraints was produced from the initial project documentation provided by the requirements expert.

ID	**Origin**	***Shall Requirement***
1	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not allow any user to edit another user's source code without permission.*

2	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not require any plagiarism checking functionality.The purpose of system is only to share projects*
3	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL clearly mention the license holder of the project.The system is not liable for any cases of copyright infringement or misuse of project.*
4	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not provide any bias to any user based monetary gains. The system relies on open source community to thrive*
5	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL be requiring all users to have an account before accessing any files*
6	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL use the existing Internet FTP transport protocol.*
7	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not highlight or provide colorful syntax representation of any programming/scripting language.*
8	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not hide individual project files. The system may only hide the project as a whole.*
9	*SOFTWARE PROJECT*	*The system SHALL not rely on the honesty of the user's profile details.*

	MANAGEMENT DOCUMENT	
10	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not restrict the content of the project..*
11	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not restrict the discussions of any users*
12	*SOFTWARE PROJECT MANAGEMENT DOCUMENT*	*The system SHALL not provide security against file viruses or any malicious code scripts.*

Table 3: Constraints

4.3 Swimlane Diagram

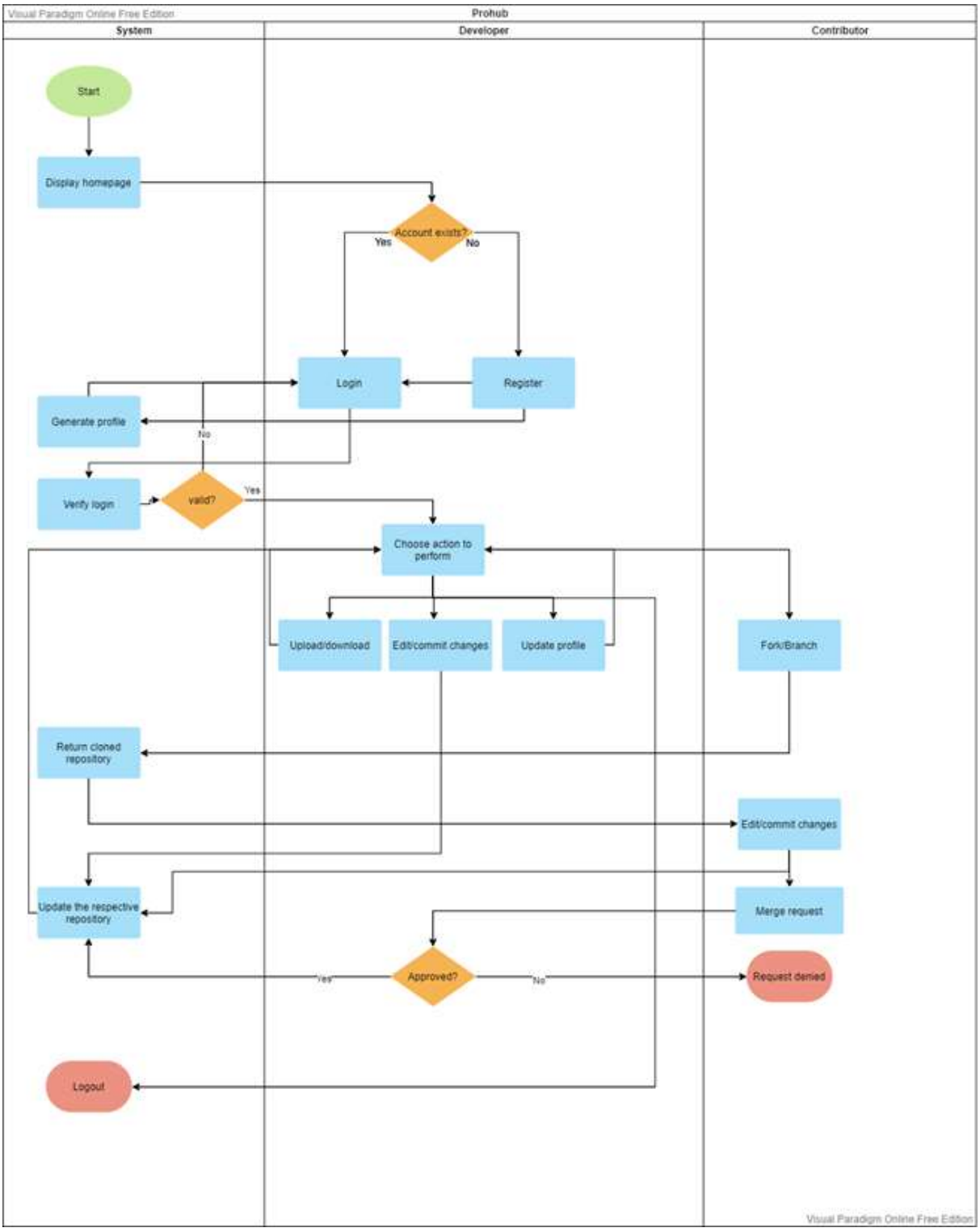

Figure 14: Swimlane Diagram

4.4 Class Diagram

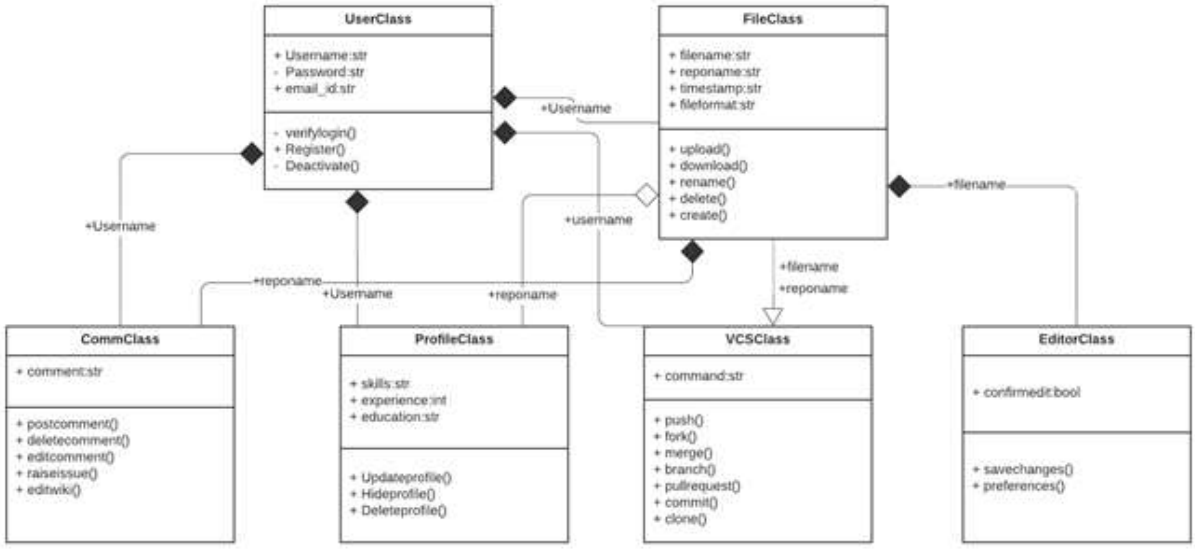

Figure 15: Class Diagram

SCHEDULE, TASKS AND MILESTONES

5.1 Gantt Chart

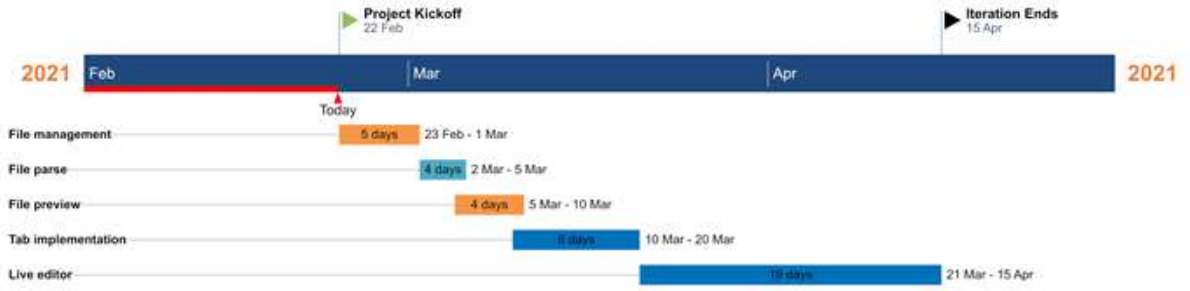

Figure 16: Gantt chart for iteration 1

Figure 17: Gantt chart for iteration 2

5.2 Activity Network

TASK	LABEL	PRECESSOR	START DATE	FINISH DATE	ESTIMATED TIME
Create Website Template	A		22 Feb 2021	23 Feb 2021	1 Day
File management	B	A	23 Feb 2021	01 Mar 2021	7 Days
File parse	C	A,B	02 Mar 2021	05 Mar 2021	4 Days
File preview	D	A,B,C	05 Mar 2021	10 Mar 2021	6 Days

Tab Implementation	E	A	10 Mar 2021	20 Mar 2021	11 Days
Live Editor	F	A,E	21 Mar 2021	15 Apr 202	26 Days

Table 4: Activity Network iteration 1

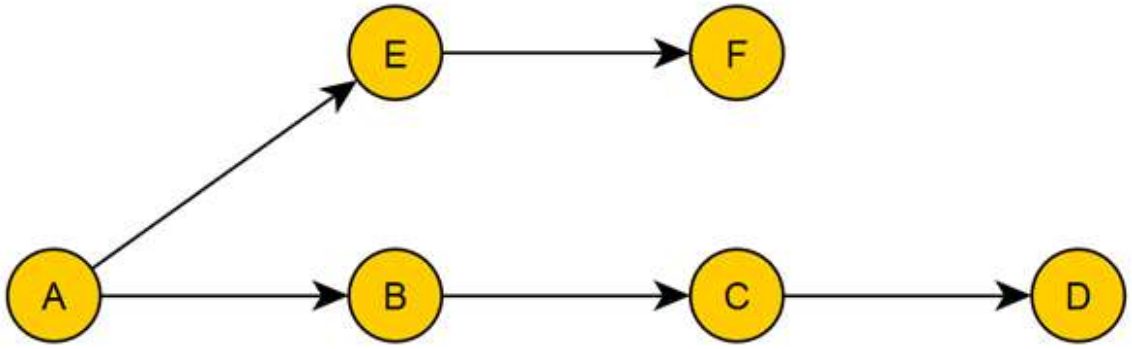

Figure 18: Activity diagram for iteration 1

TASK	LABEL	PRECESSOR	START DATE	FINISH DATE	ESTIMATED TIME
Define commands	A		16 Apr 2021	17 Apr 2021	1 Day
Commit Functionality	B	A	18 Apr 2021	19 Apr 2021	1 Days

Branch Functionality	C	A,B	19 Apr 2021	21 Apr 2021	3 Days
Fork Functionality	D	A,B	22 Apr 2021	24 Apr 2021	3 Days
Other VCS features	E	A	25 Apr 2021	29 Apr 2021	5 Days

Table 5: Activity Network iteration 2

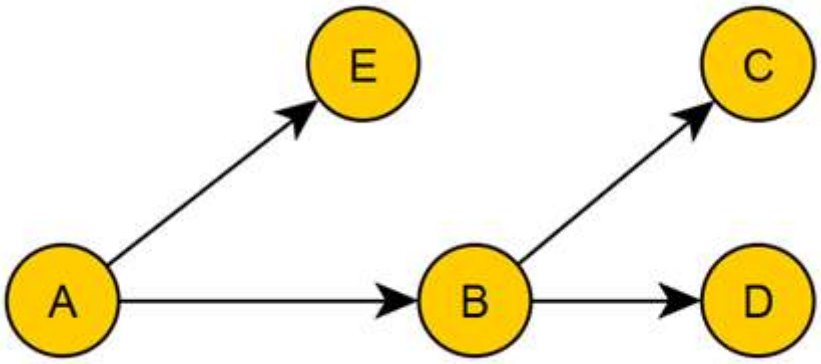

Figure 19: Activity diagram for iteration 2

5.3 Timeline Chart

Figure 20: Timeline Chart

PROJECT DEMONSTRATION

Users can browse through the folders in their repository or search it directly with the help of the search bar provided in the top right. The User may also create a new file/folder using the new item button. The User can also edit their project files with the use of a text editor. The text editor cannot recognize any syntaxes in text yet. However, the support for syntax recognition will be ready by the next review.

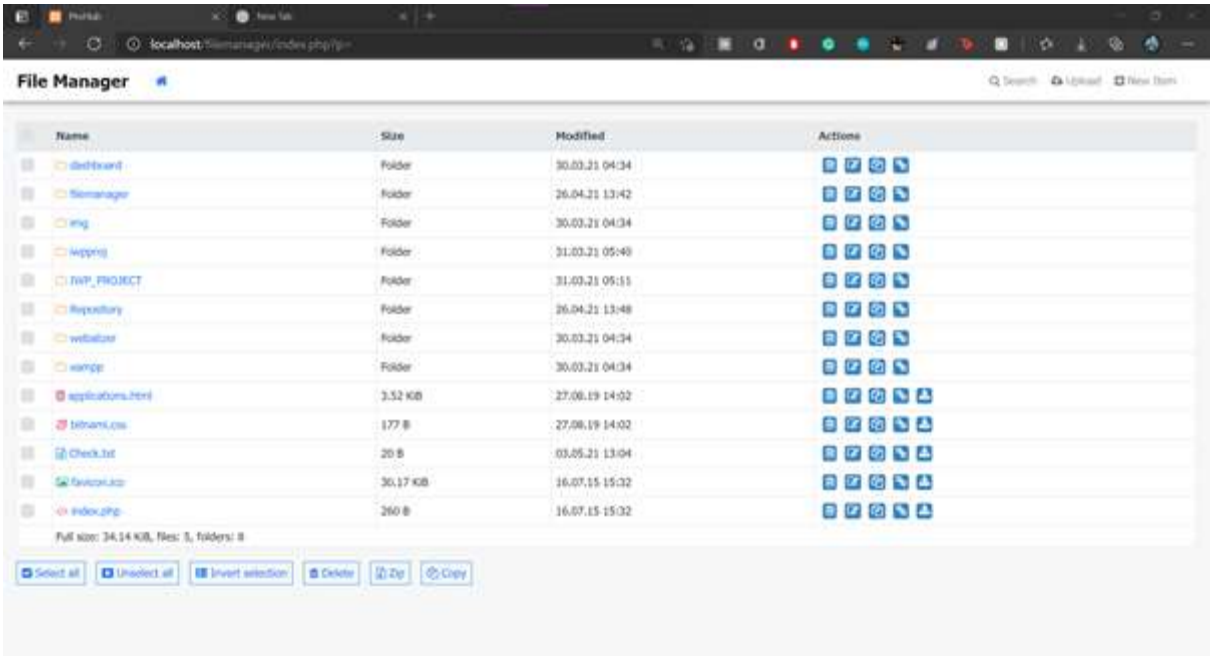

Figure 21: Prohub Homepage

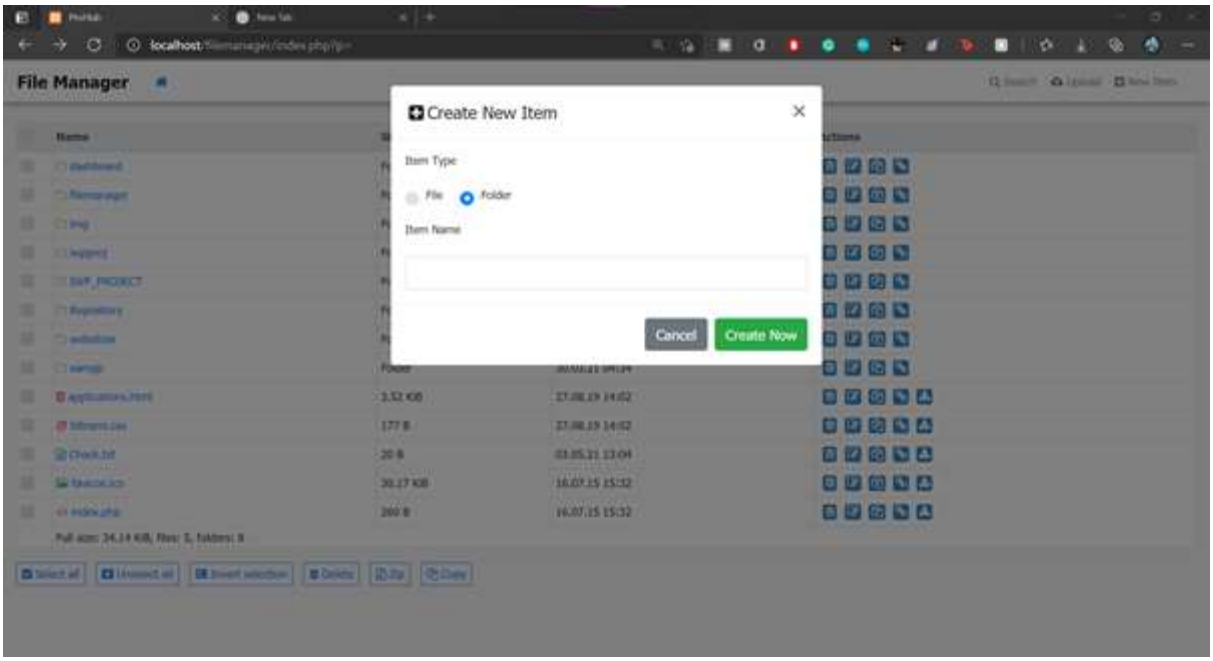

Figure 22: Creating new item

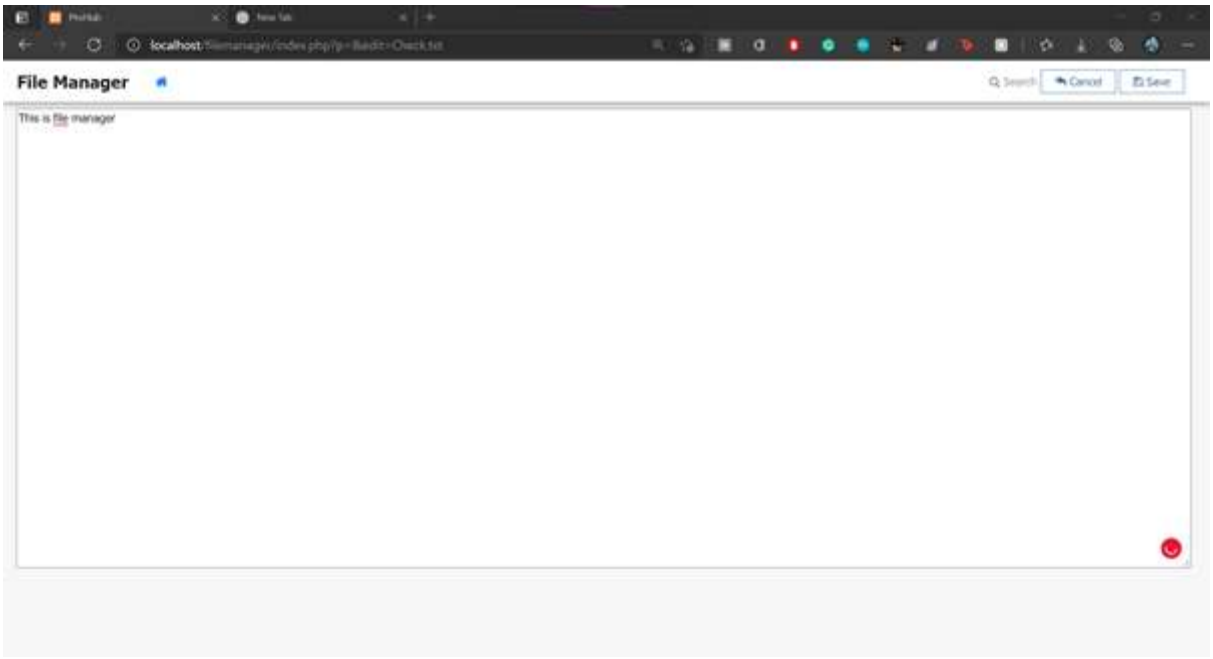

Figure 23: Prohub Editor

Here are some relevant Code snippets related to the home page of the project.

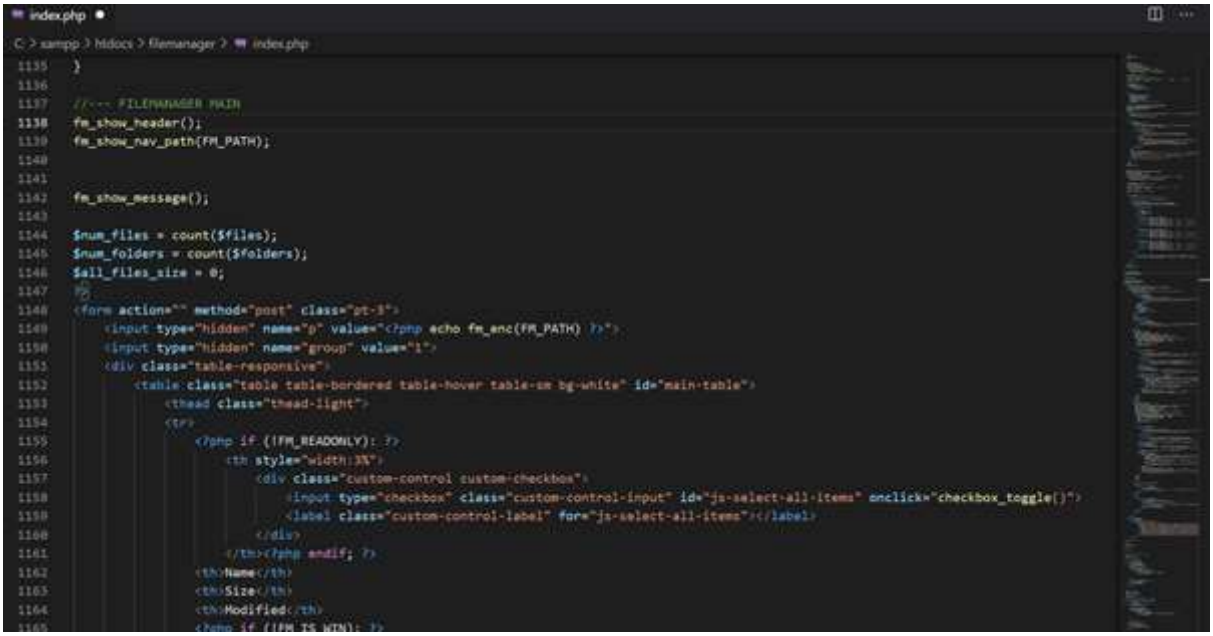

Figure 24: Code snippet pt.1

Figure 25: Code snippet pt.2

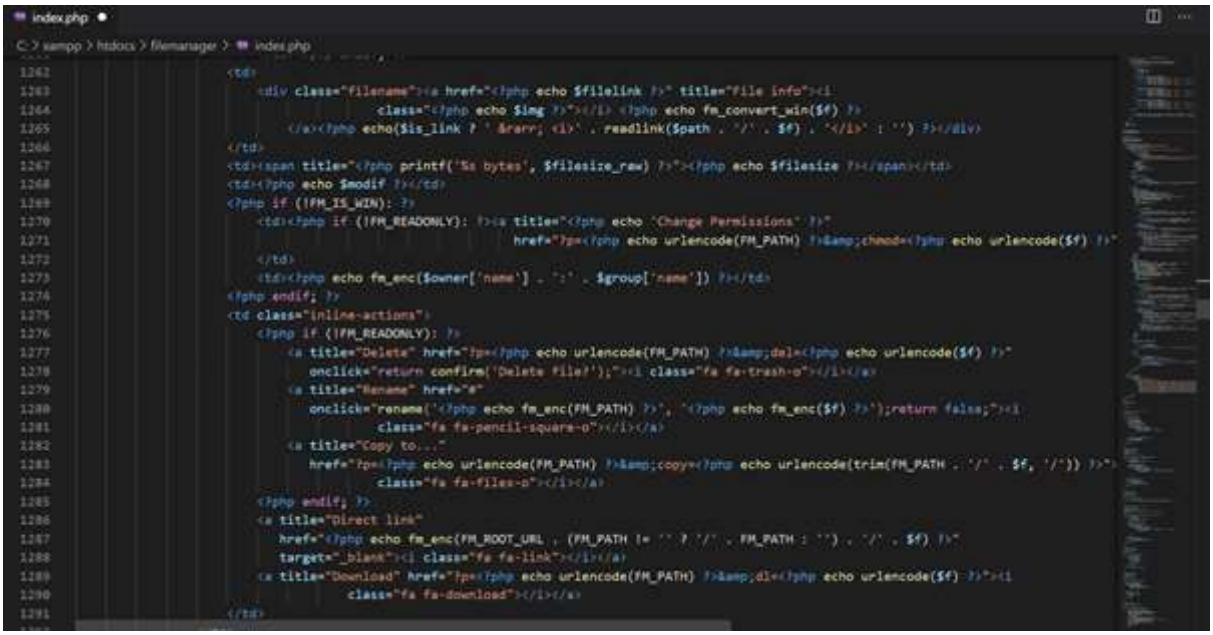

Figure 26: Code snippet pt.3

Figure 27: Code snippet pt.4

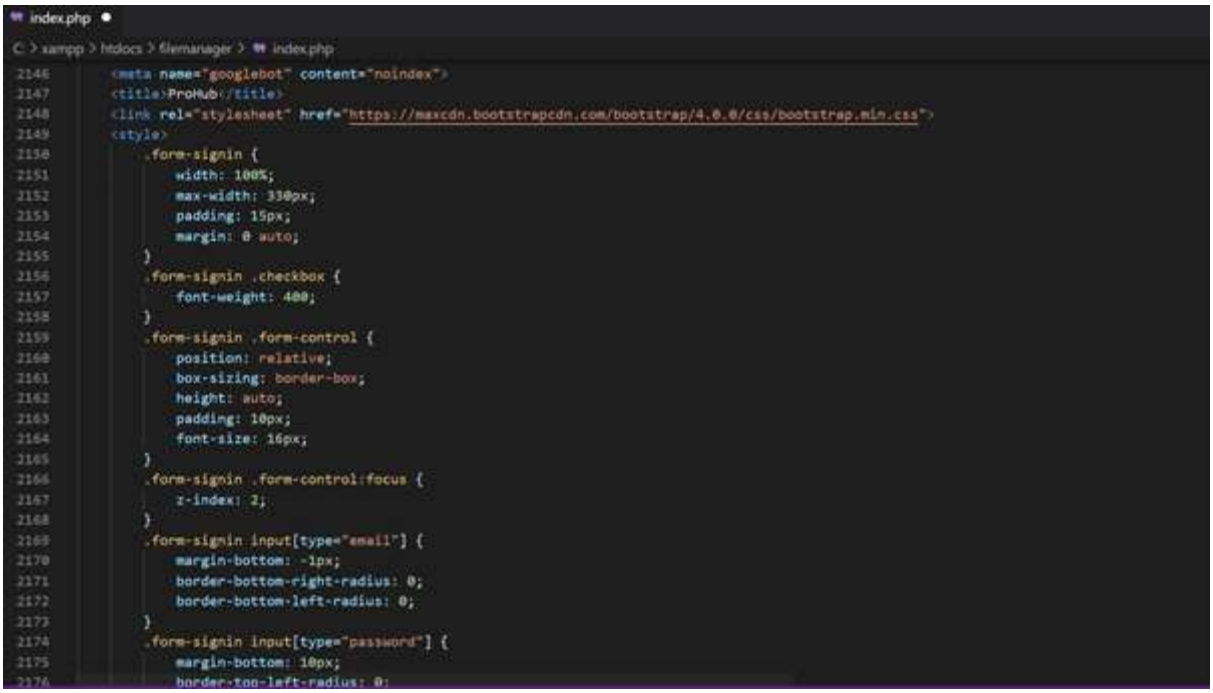

Figure 28: Code snippet pt.5

COST ANALYSIS

TOOLS USED	OPEN SOURCE/COST
1. Creatly	Open Source (FREE)
2. Visual Paradigm	Open Source (FREE)
3. StarUML	Open Source (FREE)
4. Xampp	Open Source (FREE)

Table 6: Cost analysis

Since All the tools used are Open Source therefore they are free of cost to use. So the total Project cost is free.

For hosting the website for the public domain we need to take the services of Hostinger/Godaddy which cost around 79/mo - 599/mo

RESULTS

We were able to create a File management platform for developers with all the Functionalities. We also hosted and tested the Beta version in localhost for testing all the functionalities.

FUTURE WORKS

We will work more on the Front-end part for making the Prohub Application as a finished web application and host it for the public domain by purchasing the web hosting domain on Godaddy. Also, we will be working on adding the version control functionalities and testing them before launching the final website.