

A Mini Project Report

On

KanBan Board Website

Submitted in partial fulfilment of the requirement of

University of Mumbai

For the Degree of

Bachelor of Engineering (TE)

in

COMPUTER ENGINEERING

Submitted by

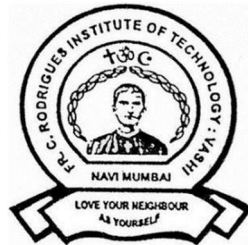
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“KanBan Board Website”

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Declaration

We declare that this written submission for T.E. Mini Project entitled “**KanBan Board Website**” represent our ideas in our own words and where others’ ideas or words have been included. We have adequately cited and referenced the original sources. We also declared that we have adhere to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any ideas / data / fact / source in our submission. We understand that any violation of the above will cause for disciplinary action by institute and also evoke penal action from the sources which have thus not been properly cited or from whom paper permission have not been taken when needed.

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Abstract

The workflow of a project plays a very crucial role in the development of a project. We aim to create a user-friendly website that utilizes the Kanban board to manage ongoing projects. The website will visually represent work, enabling teams to track projects and tasks, identify inefficiencies, and workflow issues. The website will be having login and sign-in system with use of popular platforms such as Google and GitHub, with an advanced authentication system for security and privacy. Work items will be represented as rows and columns, with each column depicting a stage of the work process. Tasks can be easily moved using the drag and drop feature. Columns can be as simple as “To-Do”, “In-progress”, “Testing”, “Done”. Our website's interface will be designed to be user-friendly, allowing users to quickly add, delete, and edit tasks on the Kanban board. Additionally, our project will include a dashboard for scheduling meetings and an administration panel for managing users and projects. Our Kanban board, dashboard, and administration panel will provide users with a comprehensive set of tools for managing workflow, ensuring that projects are completed on time and within budget. Furthermore, our website will be designed with responsiveness in mind, ensuring that it can be easily accessed and used on both desktop and mobile devices. This will enable users to manage their workflow and stay up-to-date on project progress even when on the go.

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Chapter 1

Introduction

1.1 Background

Kanban is a widely adopted framework for software development, known for its emphasis on real-time communication of capacity and full transparency of work. In this framework, work items are visually represented on a kanban board, enabling team members to easily monitor the status of every task. While kanban has become a staple for agile and DevOps software teams, the methodology of work has been in practice for over 50 years. In the late 1940s, Toyota began optimizing its engineering processes based on the same model used by supermarkets to stock their shelves. While the fundamental principles of the framework are timeless and applicable to almost any industry, software development teams have achieved remarkable success with the agile practice. Unlike physical implementations of kanban in a factory setting, which often involve substantial changes to existing processes and the addition of materials, software teams only require a virtual board and cards to adopt the framework. Website will leverage the power of Kanban to provide users with a visual representation of their workflow, allowing them to easily manage and organize their tasks and projects. By using a Kanban board, users can see the status of every task at any given time, which helps to promote transparency and collaboration within teams.

1.2 Motivation

Our motivation for this project stemmed from our interest in the Kanban methodology and our desire to expand its potential beyond physical boards. We recognized that traditional Kanban boards were limited in their ability to collaborate on larger projects with teams working from different locations. Therefore, we saw an opportunity to develop a user-friendly website that can utilize Kanban's principles to manage and control workflow for ongoing projects. By creating a digital Kanban board, we aim to enhance the accessibility of the methodology and make it possible for multiple team members to work on the same project from different locations with ease. This will increase collaboration, communication, and efficiency, thereby complementing the Kanban model and streamlining project management for teams of all sizes.

1.3 Aim and Objective

The primary aim of this project is to develop a user-friendly and interactive website that utilizes the Kanban board to manage and control workflow for ongoing projects. The website will provide a visual representation of work, helping users gain a better understanding of their workflow and enabling more efficient organization and management. The objective is to create a platform that can accommodate different teams, projects, and tasks, allowing for easy collaboration and communication. Additionally, the website will incorporate a login and sign-in system through popular platforms such as Google and GitHub, as well as an advanced authentication system for security and privacy. This will ensure that only authorized team members can access and modify the Kanban board, keeping the project data secure.

Another objective is to create a user-friendly website that utilizes the Kanban board to manage ongoing projects, providing users with a powerful tool for managing and organizing workflow. The website will include a comprehensive dashboard for scheduling meetings and an administration panel for managing users and projects. This will give admins complete control over the project and its users, ensuring efficient management. By creating a virtual Kanban board, teams can collaborate effectively and work on multiple tasks simultaneously, resulting in increased productivity and efficiency. Overall, the project aims to ensure that projects are completed on time and within budget by providing users with the necessary tools to manage tasks and projects with ease.

1.4 Report Outline

This report will provide an in-depth analysis of the development of a user-friendly and interactive website that utilizes the Kanban board to manage and control workflow for ongoing projects. The report will provide background information on the Kanban methodology and use in software development. It will discuss the motivation and objectives of the project, followed by the development process, including technologies used, features implemented, and challenges faced. The website's interface and functionality will be demonstrated through screenshots and a walkthrough. The report will then conclude by discussing the project's success, impact on productivity and efficiency, and potential areas for future improvements.

Chapter 2

Study Of the System

2.1 Literature Review

2.1.1 Software Project Management Systems Using Kanban Method in the CV. Primavisi Globalindo System.

¹Muhammad Aliyya Ilmi, ²Fajar Pradana, ³Widhy Hayuhardhika Nugraha Putra

Idea mentioned in the paper: To build a system in the form of a web-based project management application by applying the Kanban chart scheduling method.

Tools Required: HTML, CSS, Bootstrap framework, Javascript, CodeIgniter Framework, PHP.

2.1.2 Implementing Scrum and Kanban Approaches for E-Commerce Web Application: An Agile Framework.

P. Sahithi¹, M. Pradeep Kumar²

Idea mentioned in the paper: By implementing scrum and Kanban models, the time and cost taken for completion of process is less compared to other.

Scrum – teaming and organized work.

Kanban- visualize and manage workflow, JIT work.

Tools Required: No tool required.

2.1.3 Utilizing of the Trello API Within the Development of a Monitoring Information System Recording of Project Activities Using a Website-Based Kanban System

Rayhan Alya Chaerul¹, Widhy Hayuhardhika Nugraha Putra², Buce Trias Hanggara³

Idea mentioned in the paper: Author has proposed a system development process using the prototyping method which is implemented on a website basis by utilizing the Kanban system. Trello API is used to retrieve project data and data security.

Tools Required: HTML, CSS, Javascript, Bootstrap and Laravel framework.

2.1.4 Lean Manufacturing Case Study with Kanban System Implementation

Nor Azian Abdul Rahman a *, Sariwati Mohd Sharif b*, Mashitah Mohamed Esa c*

Idea mentioned in the paper: In this paper, the authors aim to investigate how the Kanban system works effectively in multinational organizations and the factors affecting Malaysian SMEs (Small and Medium Enterprises) from implementing Kanban.

Tools Required: No tool/software used.

Sr. No	Paper Name	Advantages	Disadvantages
1.	Software Project Management Systems Using Kanban Method in the CV. Primavisi Globalindo System.	-Increased collaboration and communication. -Streamlined project delivery. -Increased productivity and efficiency.	-Limited scalability -Lack of standardization. -Difficulty in managing complex projects.
2.	Implementing Scrum and Kanban Approaches for E-Commerce Web Application: An Agile Framework.	-Increased collaboration and flexibility. -Continuous improvement. -Enhanced Quality.	-Lack of structure. -Team Member availability. -Lack of documentation.
3.	Utilizing of the Trello API Within the Development of a Monitoring Information System Recording of Project Activities Using a Website-Based Kanban System	-Automation. -Integration. -Customization. -Scalability. -Collaboration.	-Complexity. -Limited. Functionality. -Cost. -Dependencies on third party applications.
4.	Lean Manufacturing Case Study with Kanban System Implementation	-creates a pull system to reduce excess inventory. -improves communication and coordination.	-difficult to manage and maintain.

Table 2.1 Literature Survey Table

2.2 Existing System

2.2.1 Jira Software:

It provides your team with a project overview and ready-to-use work flows that are also customizable and repeatable for future similar projects. It also facilitates smooth project management.

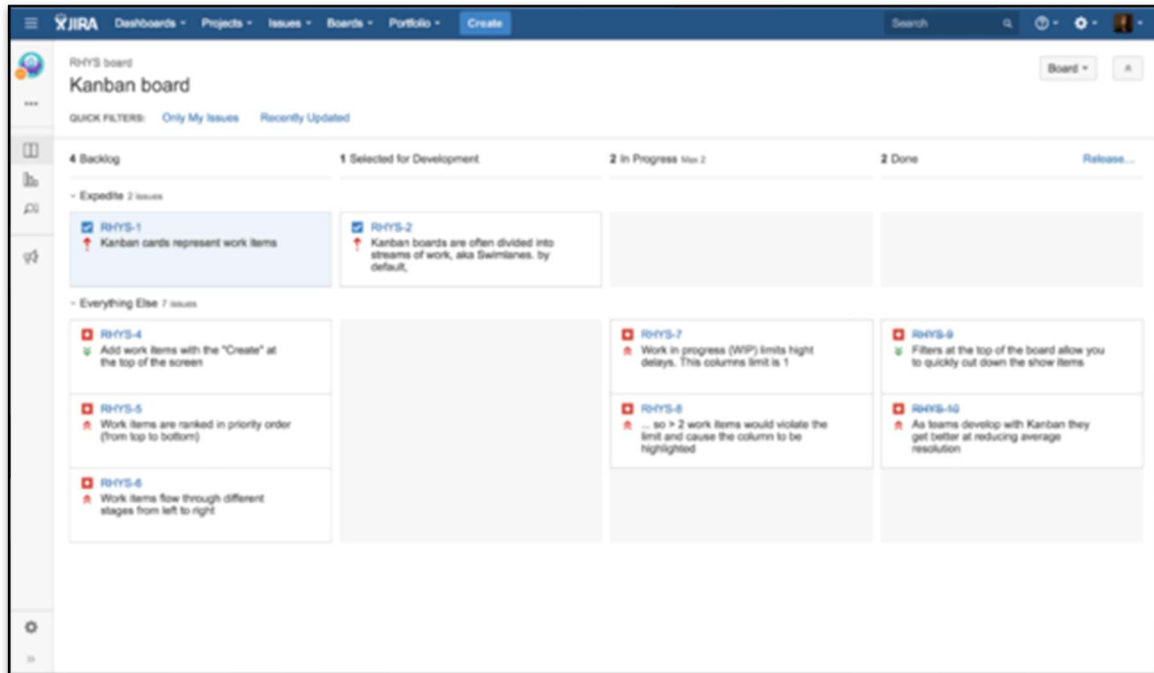


Fig 2.2.1: Jira software [1]

Drawbacks: There is no timeline to track the project and user interface of Jira software is also very complicated. Even, Jira does not provide the collaboration features to communicate with team.

2.2.2 Stack field:

It allows custom workflows and collaboration feature among team members and information is also end-to-end encrypted.

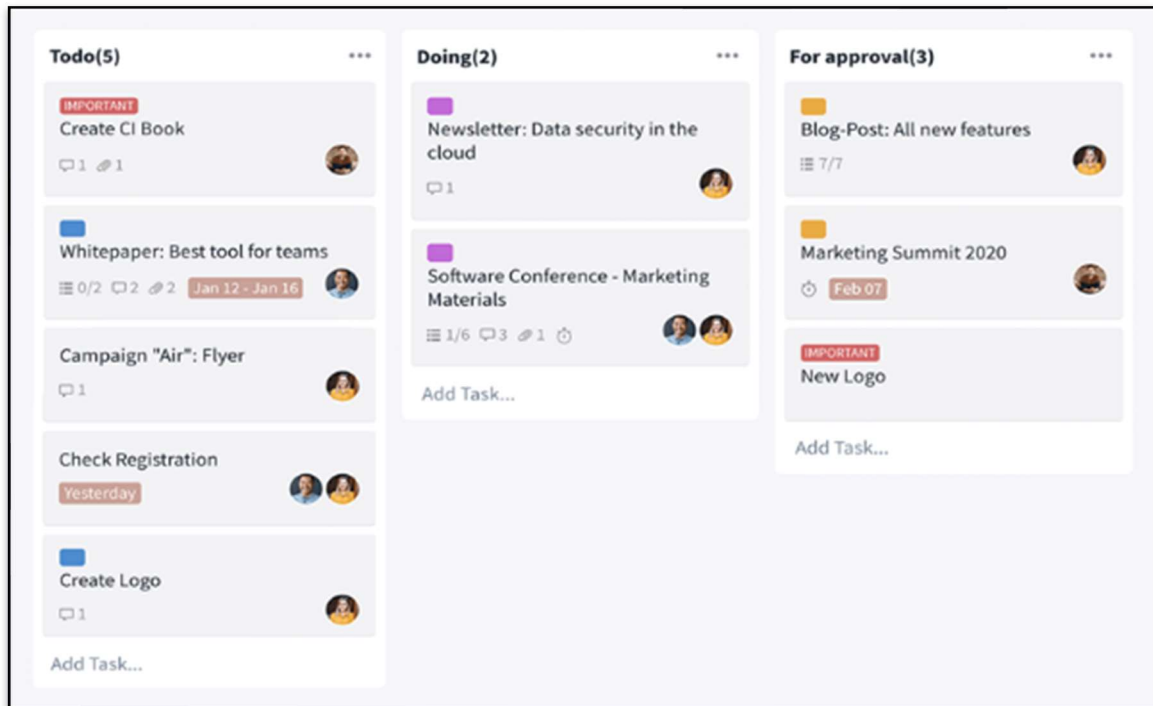


Fig 2.2.2: Stack field software [2]

Drawback: There is no third-party integrations with the popular communication applications.

2.2.3 WeKan:

It has built-in rules which allows you to set up triggers when taking actions on cards, checklists, and labels.

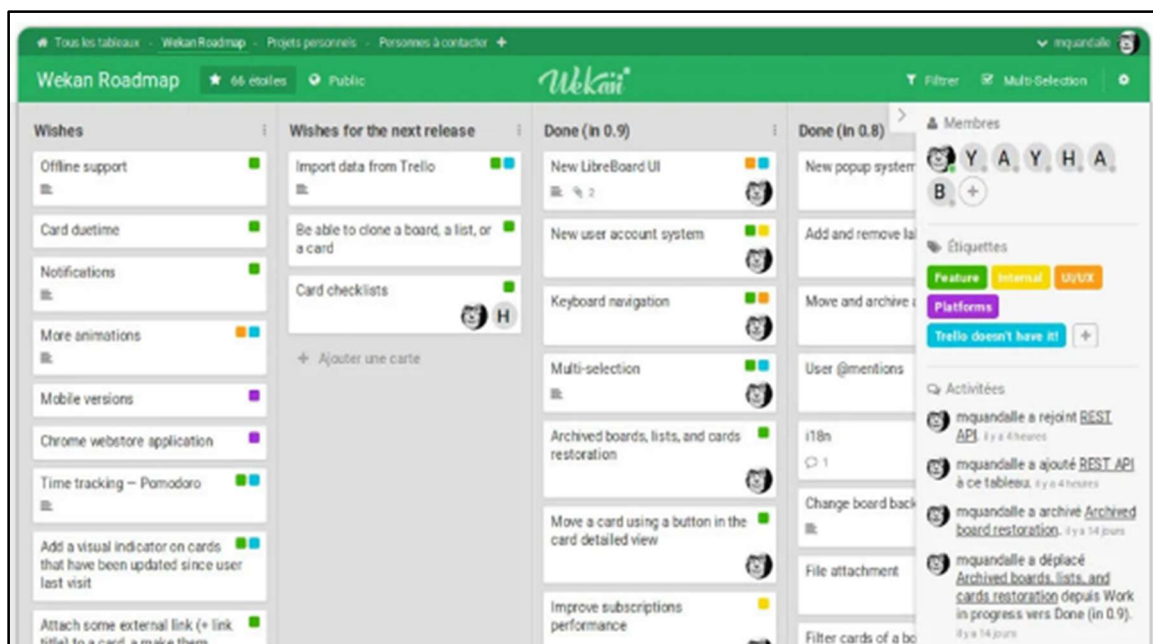


Fig 2.2.3: WeKan software [3]

Drawback: There are only limited features as it is open source. UI aren't as aesthetic as of competitors. An unattractive or poorly designed UI can impact the user experience, making it difficult for users to navigate or understand the software. This can lead to frustration and lower adoption rates.

2.2.4 Asana:

It has very good UI and communication platform for team members. It can share project status with clients and easy to use on desktop and mobile.

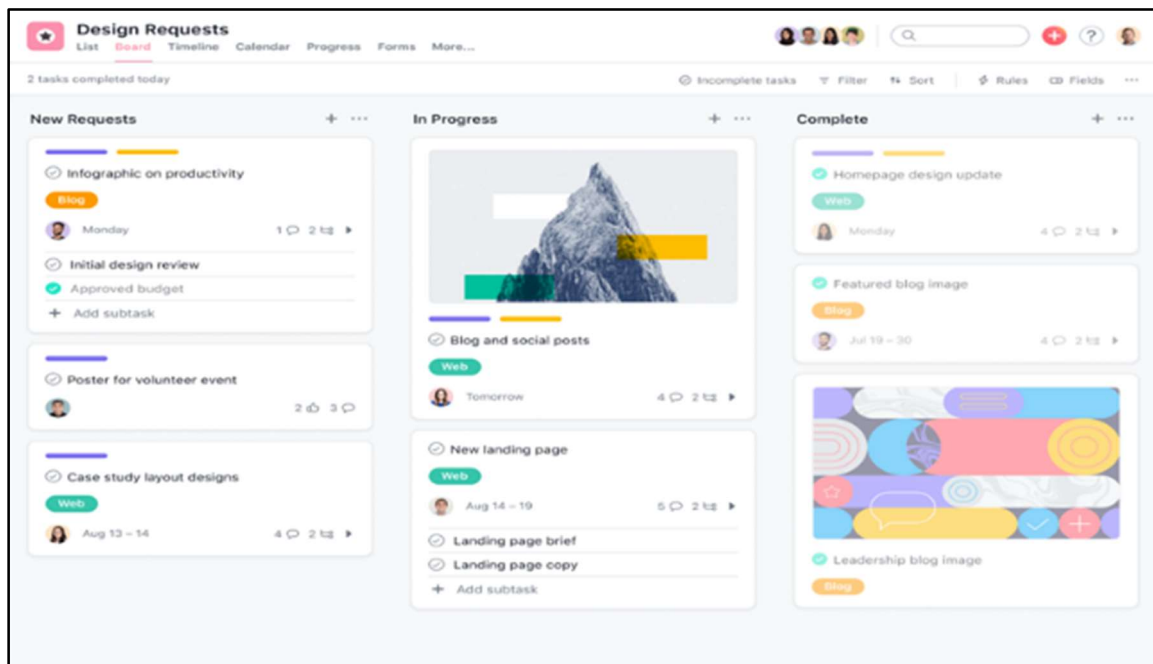


Fig 2.2.4: Asana software [4]

Drawback: It is not user friendly to create project and cannot assign task to multiple people and cannot create private projects.

Sr. No	Title	Idea	Drawback
1.	Jira	To facilitate smooth project management.	<ul style="list-style-type: none">• No Timeline to track the project.• Complicated UI.• No collaboration features.
2.	Stack field	It allows custom workflows and collaboration feature among team members.	<ul style="list-style-type: none">• No third-party integrations with the popular communication applications
3.	WeKan	It has built-in rules which allows you to set up triggers when taking actions on cards, checklists, and labels.	<ul style="list-style-type: none">• Limited features• UI aren't as aesthetic as of competitors
4.	Asana	It has very good UI and communication platform for team members	<ul style="list-style-type: none">• Not user friendly to create projects and cannot create private projects.

Table 2.2: Existing System Table

Chapter 3

Proposed System

3.1 Problem Statement:

The proposed system is a Kanban Board Website aimed at addressing the challenge of managing workflow effectively in software development projects. The current manual approach of using physical Kanban boards limits collaboration and communication among team members, resulting in delays and errors. Our project seeks to create a digital Kanban board that enhances project management by providing a visual representation of tasks, enabling team members to collaborate in real-time and track progress. The Kanban board will be divided into columns representing different stages of the product development process, and tasks will move through the columns until they are completed. Our system will include a date section for task completion and a drag-and-drop feature to facilitate task movement. The website will have three types of users: admins, team members, and clients, with varying levels of access and permissions. Our objective is to create a user-friendly and interactive website that streamlines project management, improves collaboration, and enhances productivity.

Our proposed system will have following advantages:

- User friendly interface
- Drag and Drop feature
- Database Connectivity

3.2 Scope:

- We can use this website to manage the workflow of the project. To assign task to the team members and view daily progress of the project.
- Using Kanban board managing the workflow of the project can be done easily with better user interface.
- To track the progress of the project.

3.3 Hardware Requirements:

- A PC with Intel i3/i5 Processor with 4GB Ram and 256GB Storage
- Windows XP, Windows 7 (32/64 bit) or higher.
- 10 GB available space on the hard disk

3.4 Hardware Requirements:

- React v 18.0
- Redux v 4.2.0 with DirectX: Version 10
- Tailwind CSS, DaisyUI
- Firebase, Auth
- React testing library v 13.4.0
- Visual Studio Code IDE (1.61.1)

Chapter 4

Design Of the System

4.1 Approach:

4.1.1 Use Case Diagram:

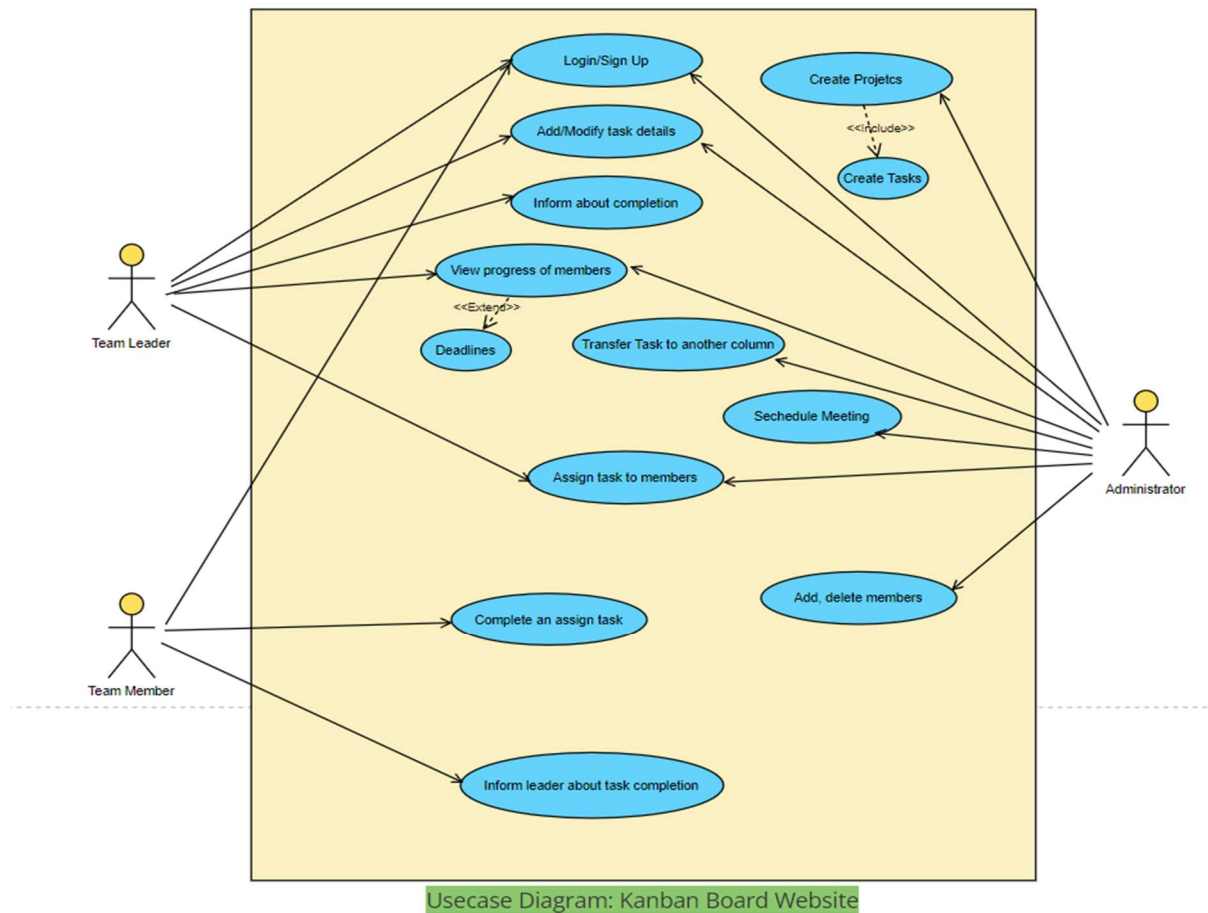


Fig 4.1.1: Use Case Diagram

There will be three types of users in our website:

Team Member: Can see the assigned task, Inform team leader about task completion.

Team Leader: Create/View project, View the progress of the task assigned to the team members, Add/delete task and add/delete members on task, Move task from one column to another column

Admin: Can do all activities of Team Leader and schedule team meeting and can set column attribute.

4.1.2 Sequence Diagram:

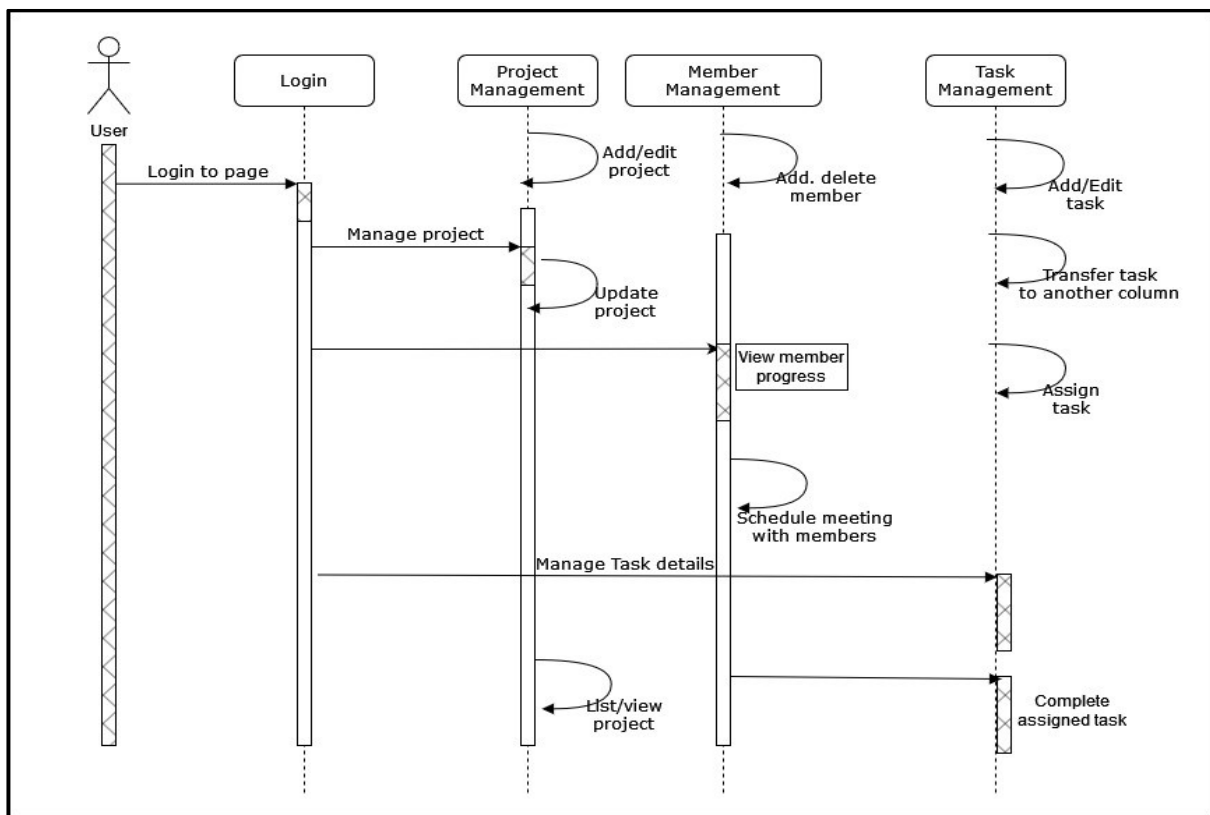


Fig 4.1.2: Sequence Diagram

The complete login and completion of the task done by the user follows a sequence of flow which is represented in the sequence diagram above. Admin can also assign task to members and also add new members.

4.1.3 Activity Diagram:

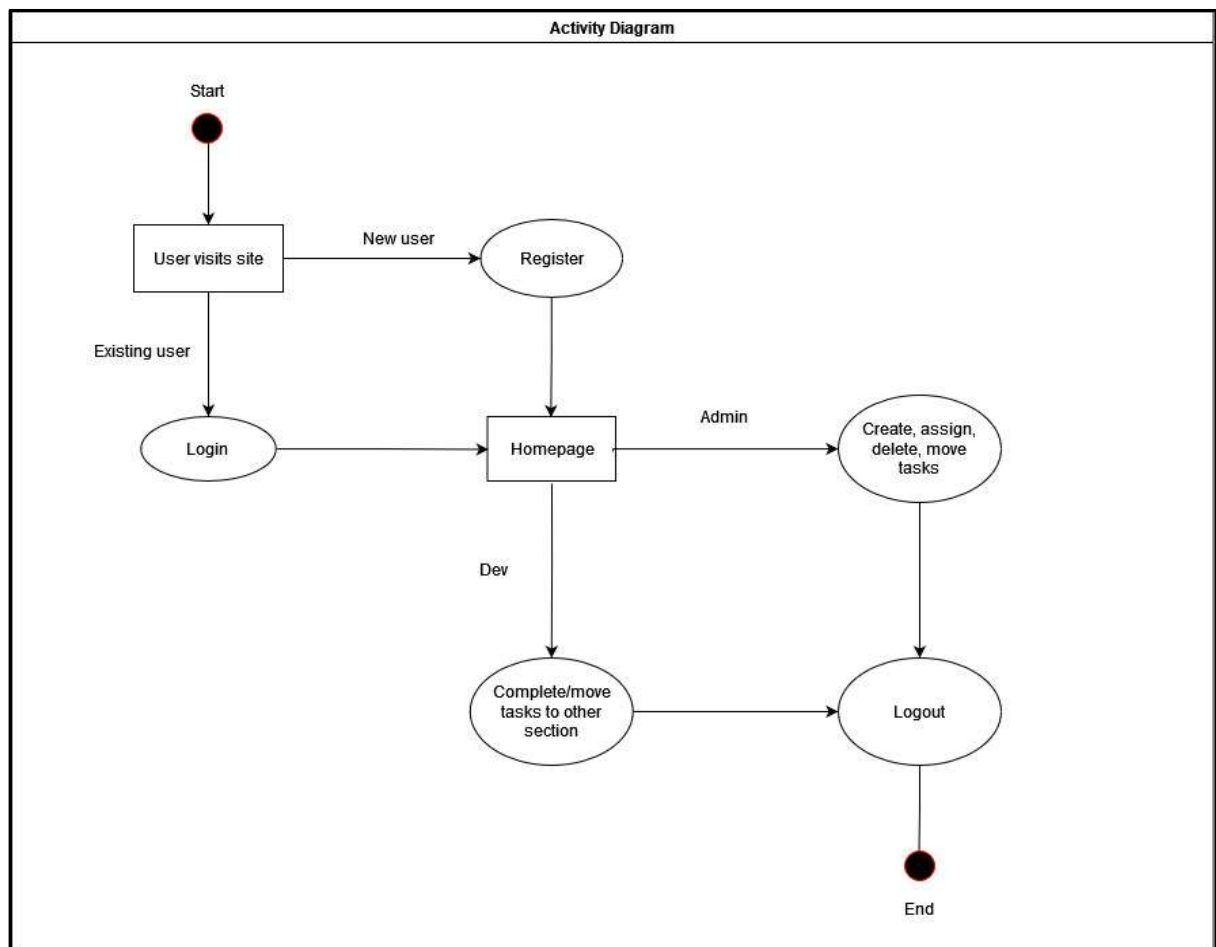


Fig 4.1.3: Activity Diagram

At first user register or sign in the website, after successful sign in user will be redirected to the homepage where he can see the task assigned to him and complete the task.

4.2 Technology Stack

4.2.1 Front End

- Html
- React v 18.0
- Redux v 4.2.0 with DirectX: Version 10
- Tailwind CSS, DaisyUI

4.2.2 Back End:

- Firebase and Auth

4.3 System Architecture:

4.3.1 Block Diagram:

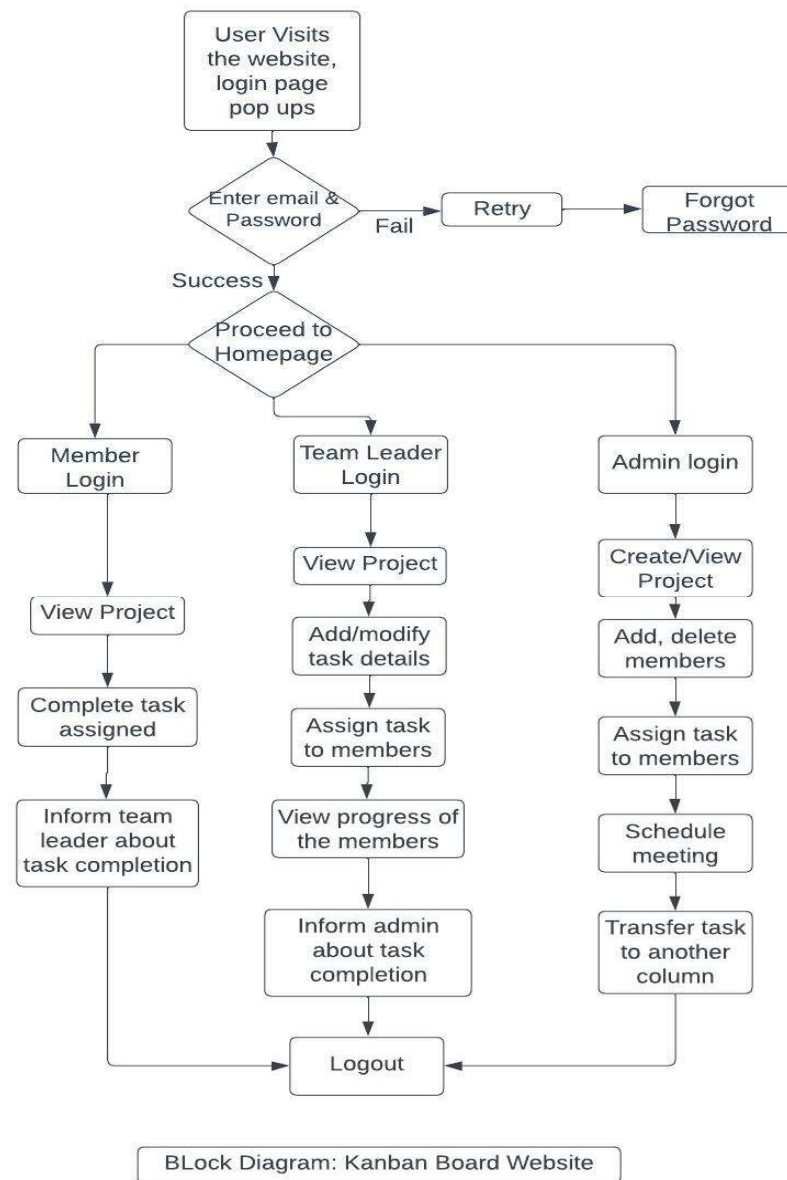


Fig 4.3.1: Block Diagram

At first user visit the website if user already have an account, he can login else user can sign up in our website. User can view the project complete the task assign to him/her, inform admin about task completion. Admin can add or delete members in the project he can also create new projects and assign new task to members.

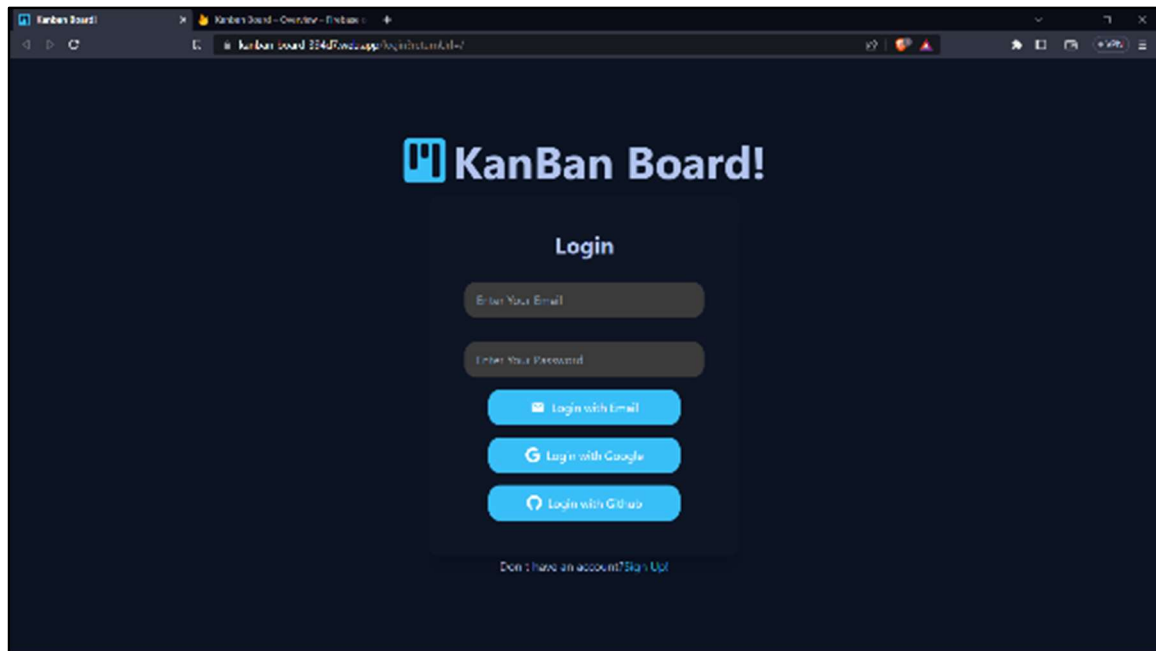
Chapter 5

Result and Discussion

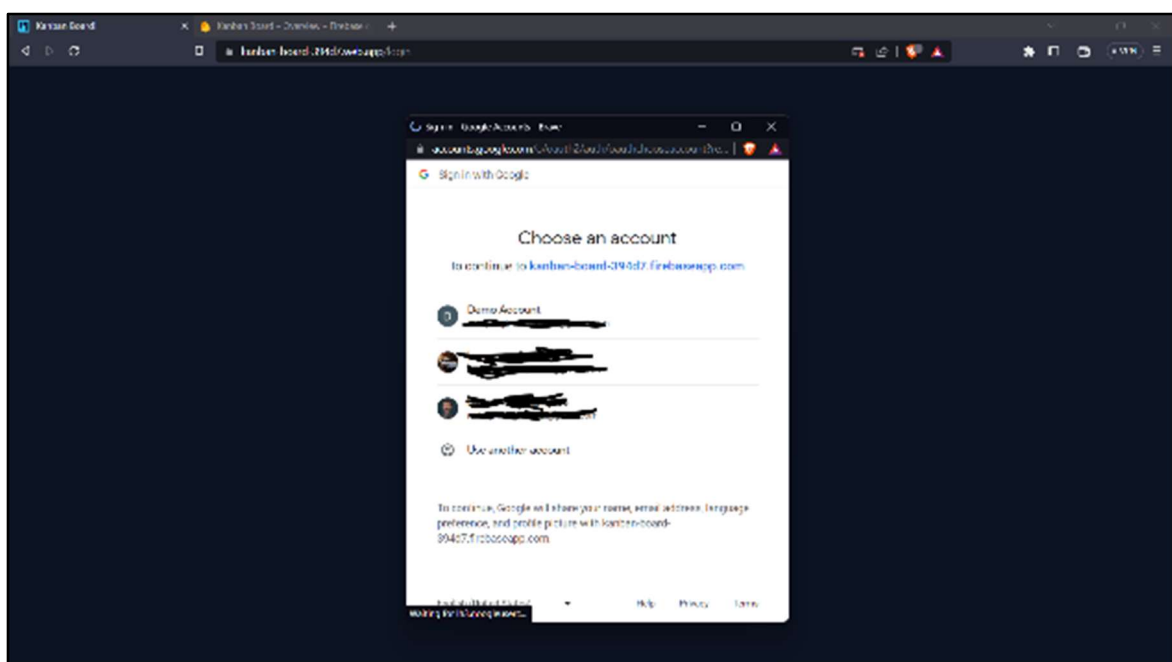
5.1 Step by Step working:

5.1.1 Registration and Login:

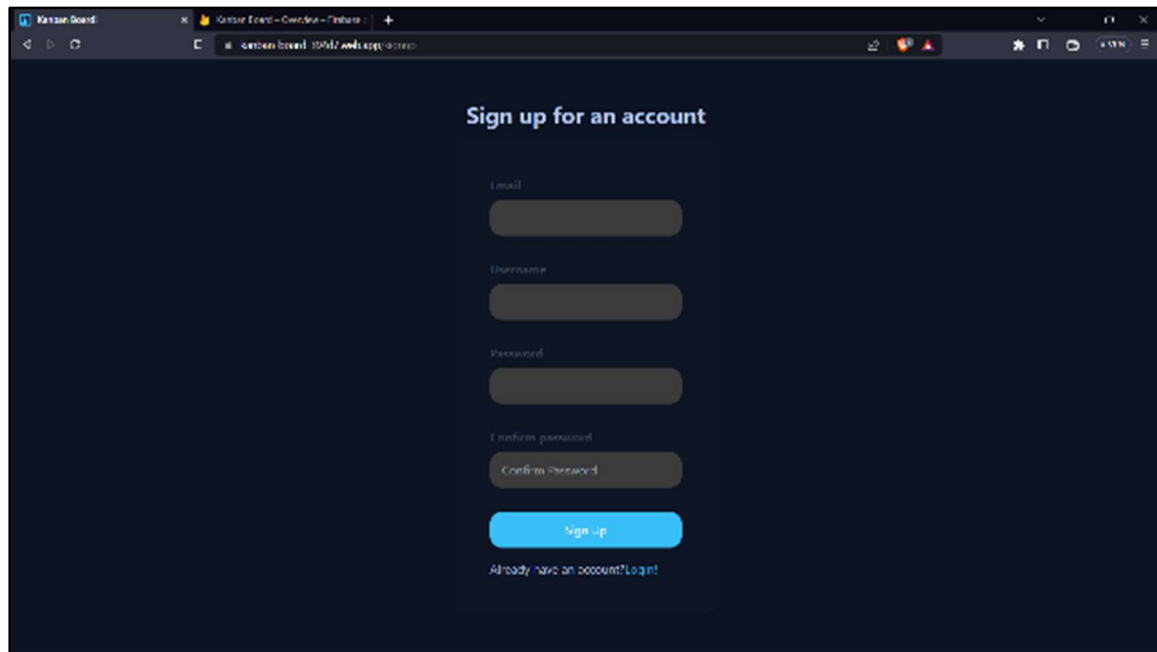
- 1) User can login into his account using his registered email and password or user can login with his google or github account.



- 2) Select Google account for sign in.



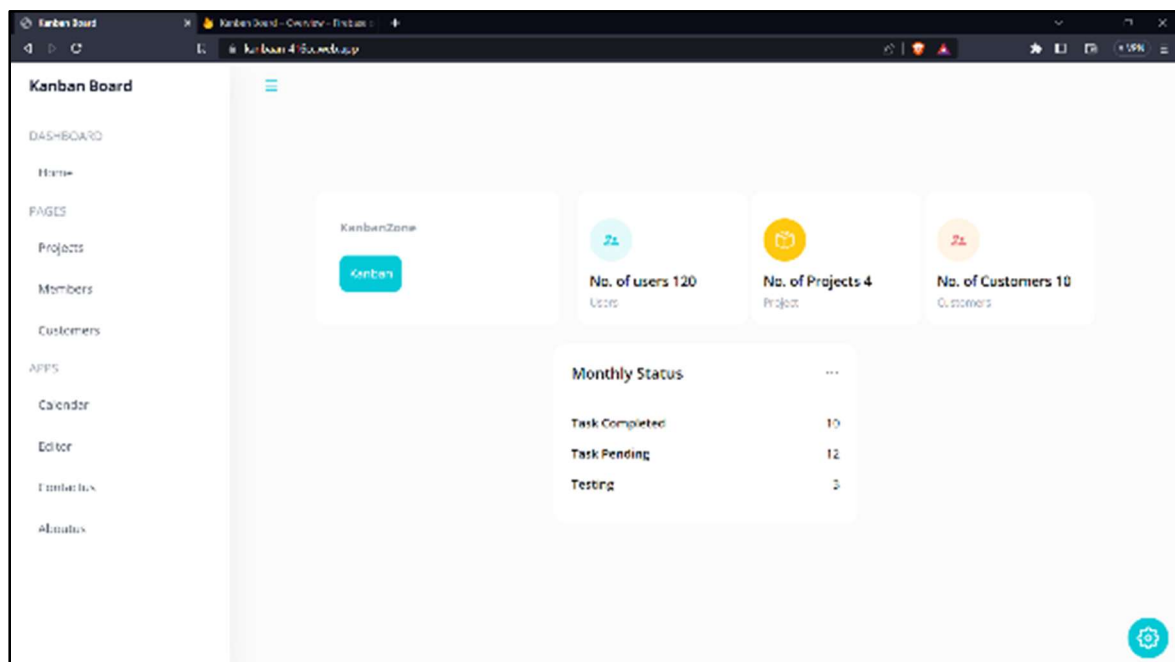
3) Register onto the website by entering Username password email.



The screenshot shows a web browser window with the URL 'kanban-board-199d12.web.app'. The page has a dark blue background and is titled 'Sign up for an account'. It contains a registration form with the following fields and elements:

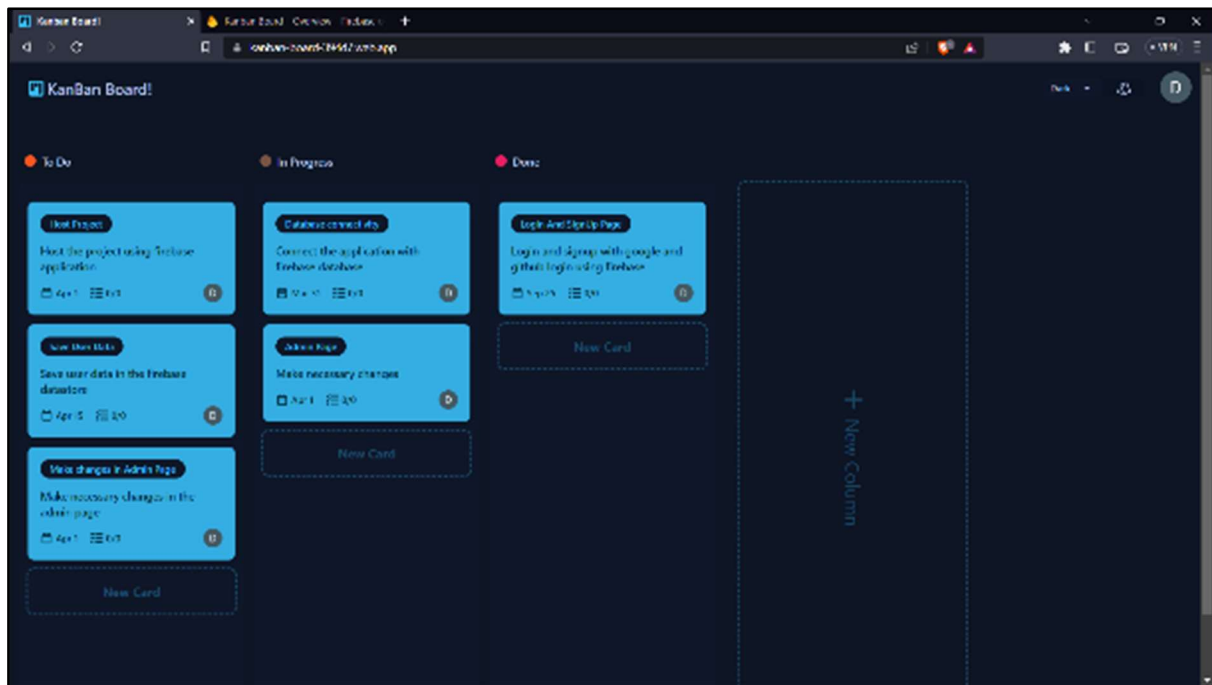
- Email:** A text input field.
- Username:** A text input field.
- Password:** A text input field.
- Confirm password:** A text input field.
- Confirm Password:** A button to validate the password.
- Sign up:** A prominent blue button to create the account.
- Already have an account? Login!** A link to the login page.

4) Homepage

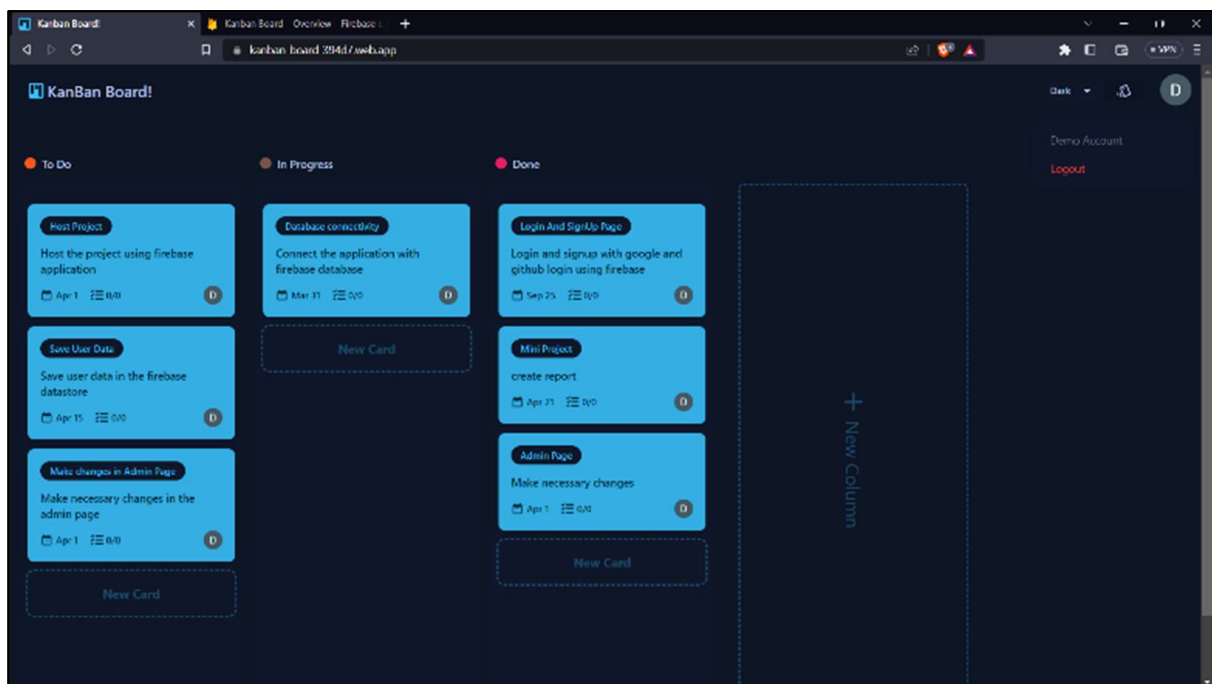


5.1.2 Implementation:

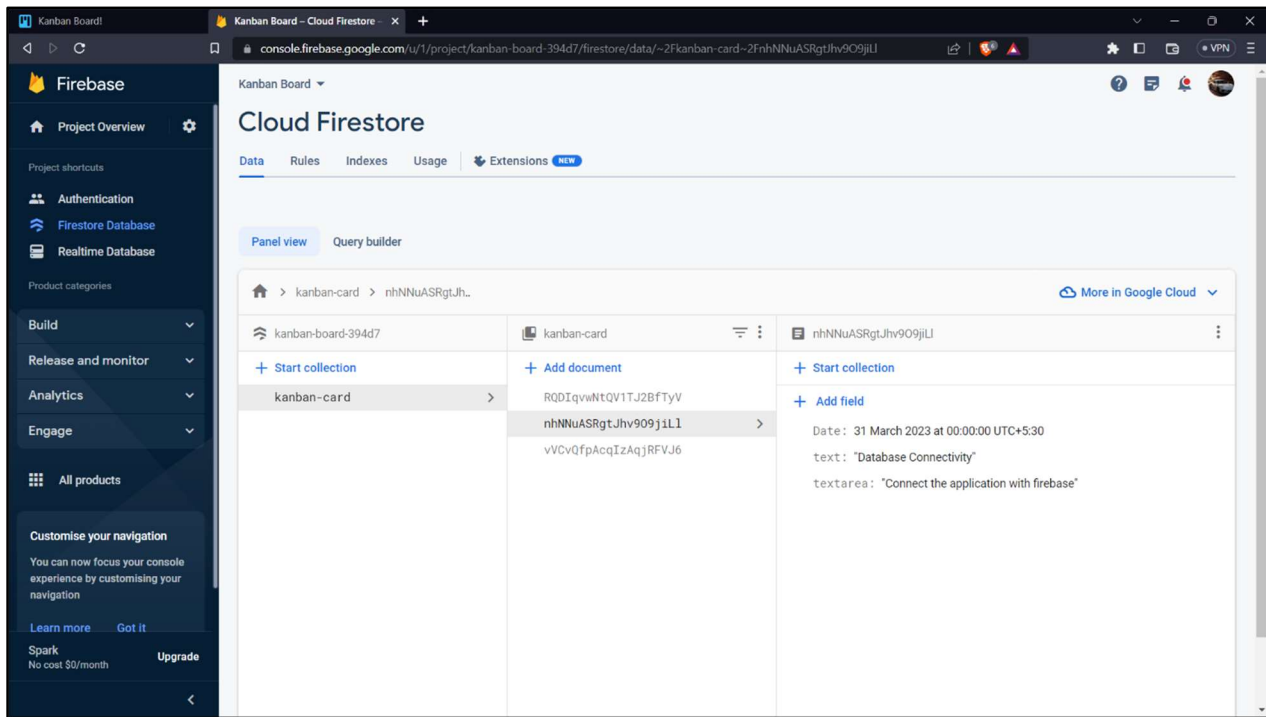
1) Add task to the field.



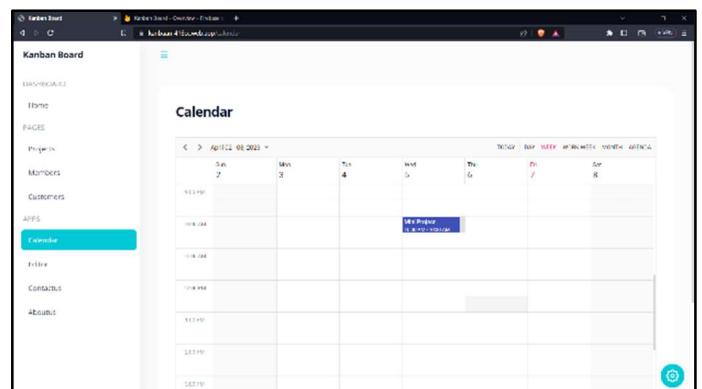
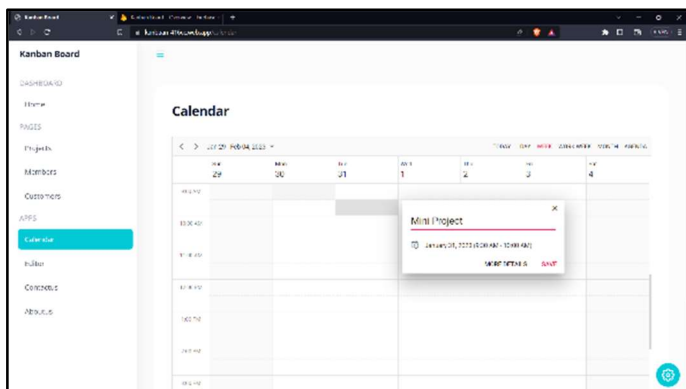
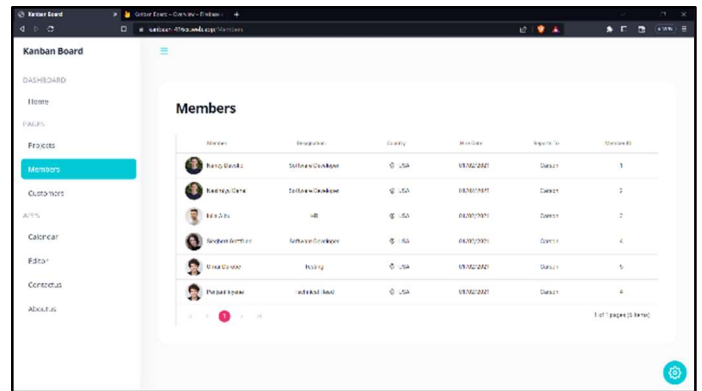
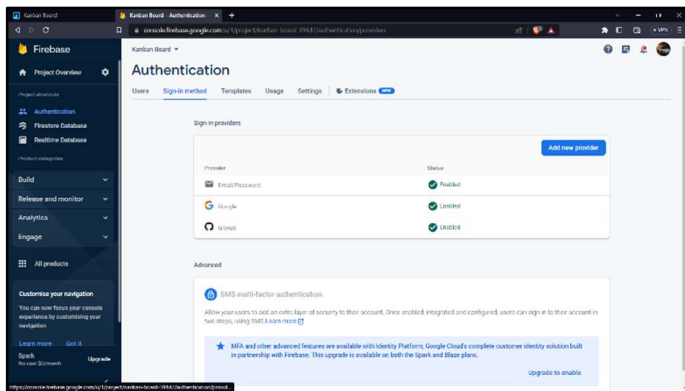
2) Move task from one stage to another.



3) Data added to the database.



4) Other Screenshots.



5.2 Important Code Snippets:

Kanban Card Code:

```
import React, { useContext } from 'react';
import { FaTasks } from 'react-icons/fa';
import { AuthContext } from '../config/Context/auth';
const Card = ({ data }) => {
  const { currentUser } = useContext(AuthContext);
  return (
    <div
      className="relative shadow-lg flex flex-col items-start p-4 mt-3 bg-primary rounded-lg cursor-pointer
      bg-opacity-90 group hover:bg-opacity-100"
      draggable="true"
    >
      <span className="flex items-center h-6 px-3 text-xs font-semibold text-primary bg-base-100 rounded-
      full">
        {data.title.charAt(0).toUpperCase() + data.title.slice(1)}
      </span>
      <h4 className="mt-3 text-sm font-medium text-primary-content">
        {data.description.slice(0, 100)}
      </h4>
      <div className="flex items-center w-full gap-4 mt-3 text-xs font-medium text-primary-content">
        <div className="flex items-center ">
          <MdDateRange className="w-4 h-4" />
          <span className="ml-1 leading-none">
            {moment(data.date).format('MMM D ')}
          </span>
        </div>
        <div className="flex items-center">
          <FaTasks className="w-4 h-4" />
          <span className="ml-1 leading-none">
            {data.tasks?.filter((task) => task.completed).length }
            {data.tasks?.length }
          </span>
        </div>
        <img
          alt="user-avatar"
          className="w-6 h-6 ml-auto rounded-full"
          src={currentUser.image}
        />
      </div>
    </div>
  );
};

export default Card;
```


Firestore Code:

```
// Import the functions you need from the SDKs you need
import { initializeApp, getApp, getApps } from 'firebase/app';
import {
  getAuth,
  GithubAuthProvider,
  GoogleAuthProvider,
  createUserWithEmailAndPassword,
  signInWithEmailAndPassword,
  signInWithPopup,
} from 'firebase/auth';
import { getFirestore } from 'firebase/firestore';
const firebaseConfig = {
  apiKey: '#####',
  authDomain: '#####',
  projectId: '#####',
};
//Initialize Firebase
const app = !getApps().length ? initializeApp(firebaseConfig) : getApp();
export const auth = getAuth(app);
const googleProvider = new GoogleAuthProvider();
const githubProvider = new GithubAuthProvider();
export const db = getFirestore(app);
export const signInWithGoogle = () => signInWithPopup(auth, googleProvider);
export const signInWithGithub = () => signInWithPopup(auth, githubProvider);
export const signUpWithEmail = (email, pass) => createUserWithEmailAndPassword(auth, email, pass);
export const signInWithEmail = (email, pass) => signInWithEmailAndPassword(auth, email, pass);
```

Project data Code:

```
import React, { useState } from 'react';
import { GridComponent, ColumnsDirective, ColumnDirective, Resize, Sort, ContextMenu, Filter, Page,
ExcelExport, PdfExport, Edit, Inject } from '@syncfusion/ej2-react-grids';
const Projects = () => {
const editing = { allowDeleting: true, allowEditing: true };
const [data, setData] = useState(ProjectsData);
const addOrder = () => {
const order = {
OrderID: data.length + 1,
CustomerID: 'ALFKI',
OrderDate: new Date(),
ShipName: 'Around the Horn',
Freight: 32.38,
};
setData([...data, order]);
};
const deleteOrder = (args) => {
const selectedRecords = args.data;
const deleteIds = selectedRecords.map((record) => record.OrderID);
const updatedData = data.filter((record) => !deleteIds.includes(record.OrderID));
};
return (
<div className="m-2 md:m-10 mt-24 p-2 md:p-10 bg-white rounded-3xl">
<Header title="Projects" />
<button type="button" className="bg-blue-500 hover:bg-blue-700 text-white font-bold py-2 px-4
rounded mb-4" onClick={addOrder}>Add Order</button>
<GridComponent
id="gridcomp"
dataSource={data}
allowPaging
contextMenuItems={contextMenuItems}
editSettings={editing}
toolbar={['Delete']}
toolbarClick={deleteOrder}
>
<ColumnsDirective>
{/* eslint-disable-next-line react/jsx-props-no-spreading */}
{ProjectsGrid.map((item, index) => <ColumnDirective key={index} {...item} />)}
</ColumnsDirective>
<Inject services={[Resize, Sort, ContextMenu, Filter, Page, ExcelExport, Edit, PdfExport]} />
</GridComponent>
</div>
);
};

export default Projects;
```

Chapter 6

Conclusion and Future Scope

Future Scope:

In the future, the website could be enhanced with additional features such as integration with third-party project management tools, analytics and reporting, and chat/messaging functionality. The website could also be made available as a mobile application to increase accessibility. Integration with voice assistants and artificial intelligence could also be explored to further simplify task management and increase productivity. In addition, the website could be expanded to support multiple languages, allowing users from different countries and regions to use the platform easily.

Conclusion:

In conclusion, the proposed Kanban board website is a valuable tool for managing projects and tasks efficiently. By providing an easy-to-use interface and enabling effective collaboration among team members, the website helps to improve productivity and ensure timely completion of projects. The website's comprehensive dashboard makes it an ideal choice for teams of all sizes and industries. With the addition of future enhancements, the website has the potential to become a leading project management tool in the market. The Kanban board website is a testament to the power of digital technology in facilitating effective project management, and it is poised to help teams achieve their goals in a more efficient and streamlined manner.

References

References:

- [1] Muhammad Aliyya Ilmi, Fajar Pradana, Widhy Hayuhardhika Nugraha Putra “Software Project Management Systems Using Kanban Method in the CV. Primavisi Globalindo System”, ResearchGate, 2020.
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Appendix A: Timeline Chart



