LONDON METROPOLITAN UNIVERSITY

islington college
(इस्लिङ्टन कलेज)

Module Code & Module Title

CS6P05NI Final Year Project

Assessment Weightage & Type

40% FYP Final Report

Semester

2023-24 Autumn

PROJECT TITLE:

Student Name: Arjov Maharjan

London Met ID: 22015657

College ID: NP01CP4S220111

Internal Supervisor: Subin Chitrakar

External Supervisor: rubek Joshi

Assignment Due Date: April 24th, 2024

Assignment Submission Date: April 24th, 2024

Word Count (Where Required):

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

Table of Contents

Table of Figures

1. Introduction

1.1 Project description

This project is being done to create a student portal system for Caspian Valley College. This project aims to create an extensive and user-friendly online platform that centralizes several academic and administrative tasks. The project seeks to fulfill the demand of the client. The student portal system will have features such as grade tracking, administrative functions, user authentication, and course enrollment, all included in the Student Portal System.

1.2 Current scenario

Nepal has been progressively using digital technologies in several areas, including education. Student portal systems have been implemented by numerous educational institutions, including colleges and universities, to simplify administrative procedures. During the pandemic period most of the college and universities had switched to online learning and Nepal struggled to provide the required resources to move forward while the aboard countries kept on moving on ahead. So, to be ready in case another situation arise we should be ready to switch to online class. Features like online course registration, access to grades and academic transcripts, online assignment submission, and access to educational resources like e-books, lecture notes, and research materials are all commonly provided by these student portal systems.

1.3 Problem statement

According to the interview with the representative of Caspian Valley College (Amrit Rai), they are facing the problems of recording the attendance of the student physically by calling out their checking and writing down the student's name into a register book. Another problem they are facing is handing out the physical paper bill. The parents don't know how their children are doing in the academics, they are can only find out by going to the college and booking a appointment with the classroom teachers.

1.4 Project as a solution

In the research many government and private colleges in Nepal have been taking the attendance of students physically through writing down the names of the students that are present in a register by the classroom teacher before the first 2 class is started. The project solves the problem by integrating a platform where the teachers can note write down that the students are present digital. The parents can only find out who their children are doing academical by booking an appointment with their classroom teacher, this project solves that problem by providing a platform for tracking all tests and exams the students have taken and how they have performed in those exams.

1.5 Aims and Objectives

This project aims to provide a portal system for the students and teachers where the teacher will be able to provide study materials and the students will be able to view their marks sheets, bill and attendance record. The objectives of the project are to:

a) To provide students with study material and e-books through the website.
   - Specific: Organize study materials into groups according to subjects, courses, and academic levels to make finding them easier.

- Measurable: To make finding study materials easier, group them according to subjects, courses, and academic levels.
- Achievable: Work together with teachers to gather and arrange study materials.
- Relevant: Make sure the offered resources are relevant and helpful by aligning them with the curriculum.
- Time-Bound: Update and add to the collection often with the goal of having 500 e-books overall by the end of the upcoming semester.

b) To provide students with grade tracking and GPA calculating.
   - Specific: Provide a function that calculates your GPA dynamically depending on your course credits and grades.
   - Measurable: Make sure that the portal makes it simple for students to check and track their grades for each subject.
   - Achievable: Work together with academic departments to ensure that grading information is correct and delivered on time.
   - Relevant: Better GPA calculations let students keep an accurate track on their academic progress.
   - Time-Bound: Before the current academic semester ends, evaluate the functionality and accuracy with users.

c) To provide teachers with a notice board where they can keep the students updated.
   - Specific: Allow teachers to provide announcements, notes, and important information about their courses on their posts.
   - Measurable: Build a notification system with a 95% notification delivery rate to inform students of any new notices.
   - Achievable: Teach teachers through workshops or training sessions so they are comfortable using the new notice board feature.
   - Relevant: It gives educators a consolidated platform to give students relevant and timely updates.

- Time-Bound: By the start of the following academic term, a completely rollout will have taken place following a pilot phase for teacher feedback and changes.

d) To provide students with financial system.
   - Specific: Provide options to check fees and keep track of fee and payment transactions.
   - Measurable: Aim for a 95% accuracy rate in displaying financial transactions while developing transaction tracking technology.
   - Achievable: Provide simple and safe user interfaces so that students can see and understand their financial information.
   - Relevant: It offers students a centralized platform where they can get all their financial information in one location.

Time-Bound: Before the new academic term begins, make sure functionality and accuracy have been achieved through user testing and feedback sessions.

2. Background

2.1 Technology Used

2.1.1 Wireframe

Balsamiq Wireframes is a simple graphical tool used to create user interfaces for desktop, mobile, and online apps. With a simple tool that helps you stay focused on structure rather than colours and icons, we concentrate on the brainstorming stage. Balsamiq makes it simple to communicate and receive comments on your wireframes, and it offers enough interaction to mostly replace prototypes.

Figure 1: Balsamiq

2.1.2 Programming Languages

A) React

React is a JavaScript package used to create user interfaces. React is a tool for creating one-page apps. We can make reusable user interface components with React. One tool for creating UI components is React. (w3school, 2024)

B) Python

Python is a popular computer programming language used for creating software and websites, task automation, and data analysis. Python is a general-purpose language, which means it isn't tailored for any particular issue and may be used to develop a wide range of programs. Its adaptability and ease of use for beginners have made it one of the most popular programming languages available today. (Coursera Staff , 2023)

2.1.3 Framework

A) Django

A high-level Python web framework called Django promotes efficient development and simple, straightforward design. It handles a lot of the

bothersome aspects of web development and was built by seasoned developers, allowing you to concentrate on developing your app instead of having to start from scratch. It is open source and free. (django project, 2024)

B) Django REST framework

The popular and feature-rich Django REST Framework (DRF) is an API framework for creating RESTful Django applications. Fundamentally, DRF works with the models, views, and URLs that are the foundation of Django, which makes building a RESTful API easy and smooth. (Giacomelli, 2023)

2.1.4 Database

A) Pgadmin

For PostgreSQL, the most packed with features Open Source database available, pgAdmin is the most widely used and feature-rich development and management tool. If pgAdmin is configured to operate in server mode, it may be made available as a web application. To learn how to execute pgAdmin in server mode, see server deployment. We'll talk about managing the pgAdmin users in server mode in this blog post. (Toshniwal, 2023)

2.2 Literate review

2.2.1 Current Situation of Students' Portal and Their needs: A Case Study in Saudi Arabia Universities: Students Perspective

Author- Salem Alatawi, Norris Syed Abdullah, Suraya Miskon, Drfahad Ghabban

Date- October 2020

The study showed that the technologies that advance the learning process are always improving; yet, altering the content of the portal may help in the advancement of the technologies offered within it. By making the site's material better, they investigate how often students use the library portal. The outcomes demonstrated that the simplicity of use is one of the most crucial factors in evaluating portal utilization. (Salem Alatawi, 2022)

2.2.2 The Use of Knowledge Portal: Literature Review

Author- Nur Atiqah binti Abdul Latif

Date- 2nd April 2022

In this study they realised that Students spend most of their time using technology in this day and age for entertainment, knowledge, and other things. These days, students are more likely to use internet portals for information retrieval than they are traditional printed sources. The knowledge portal's readily available resources and information make it easier for anyone, including students, to retrieve and share knowledge. (Latif, 2022)

2.2.3 Student Portal of College

Author- Rupal More, Neha Chavan, Nisarg Kendre, Prof. Arti Devmane

Date- 15th April 2022

The student portal's usefulness is discussed in this study. The effectiveness of management software or interactive systems, such as student academic portals, is largely dependent on their usability. Because of the growing number of users utilizing a portal, a more precise and efficient usability evaluation approach is needed to identify usability issues so that the academic process may benefit from improved management services. (Rupal More, 2022)

2.3 Similar projects

2.3.1 My second teacher

On April 22, My Second Teacher was launched with the intention of digitizing education in Nepal. The platform was created by Cambridge School Singapore and is being used in 18 countries this year, including Nepal. This year, it will be applied in 50 nations. (Lamichhane, 2021)

2.3.2 Google Classroom

Google Classroom is an online toolkit that enables teachers to offer homework, receive assignments from students, mark assignments, and receive papers back that have been marked. It was developed to enable digital learning and get rid of paper in the classroom. It was originally intended to be used with Chromebooks and other computers in schools to provide more effective information and assignment sharing between teachers and students. (Edwards, 2022)

2.3.3 TalentLMS

TalentLMS is a cloud-based learning management system that users can quickly install on any connected device and submit their course materials to. You get a personal domain with TalentLMS that you can fully personalize with your brand and aesthetic. (Gryshuk, 2023)

2.3.4 Comparison table

Features	Caspian Classroom	Google Classroom	My Second teacher	Talent LMS
Viewing grades	Yes	No	No	No
Notice board	Yes	No	Yes	No
Submitting Assignments	No	Yes	Yes	Yes
Viewing Bill of the students	Yes	No	No	Yes
Is it free to use	Yes	Yes	Yes	No

3. Development

3.1 Considered methodologies

The Agile method is a flexible, iterative approach to project management that divides the work up into smaller chunks and places a priority on continuous improvement and collaboration. Teams operate in cycles of preparation, execution, and evaluation. Cross-functional teams, stakeholders, and end users must regularly work together to adapt to changing requirements. Continuous delivery, customer satisfaction, and quick feedback response are all highly valued aspects of agile. (Atlassian, 2024)It allows adjustments to be made at any stage of the development process in response to shifting needs. In order to make sure that the final product meets their demands, it encourages continuous engagement with end users. At the end of each iteration, it delivers functional project increments, which provides demonstrable results early in the development process.

Figure 2: Agile Methodology

The waterfall project management method follows a sequential and linear process, requiring completion of each phase prior to moving on to the next. It works well with projects that have defined needs and little expected modifications. Every phase often includes specific deliverables and milestones. Although there are many kinds of project management methods, Waterfall is a good fit for projects with well-defined goals from the start. (leeron Hoory, 2022). It provides a detailed

structure along with a set of development techniques. Additionally, it emphasizes documentation at every stage, which makes risk assessment and progress monitoring easier. Anticipating the project timetable is much easier when all needs are known ahead of time. These were among the approaches that it intended to work on.

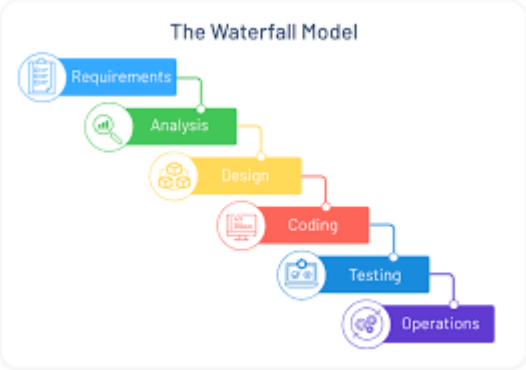

Figure 3: waterfall Methodology

3.2 Selected Methodology

Scrum is an agile development methodology that makes software development easier by employing progressive and iterative techniques. Because Scrum is adaptable, agile, and effective, it offers clients a steady flow of value throughout a project. Scrum aims to meet customer demands by encouraging open communication and shared accountability for ongoing growth. Scrum is an agile development methodology that makes software development easier by employing progressive and iterative techniques. Because Scrum is adaptable, agile, and effective, it offers clients a steady flow of value throughout a project. Scrum aims to meet customer demands by encouraging open communication and shared accountability for ongoing growth. In the end, the goal of Scrum is to satisfy client demands by means of open and honest communication, joint accountability, and a dedication to continuous development. It starts with a high-level project concept

and then refines it into a feature list that is prioritized and in line with the goals of the product owner. In the field of software development, this agile methodology has established itself as a mainstay, fostering both client happiness and innovation. (S, 2023)

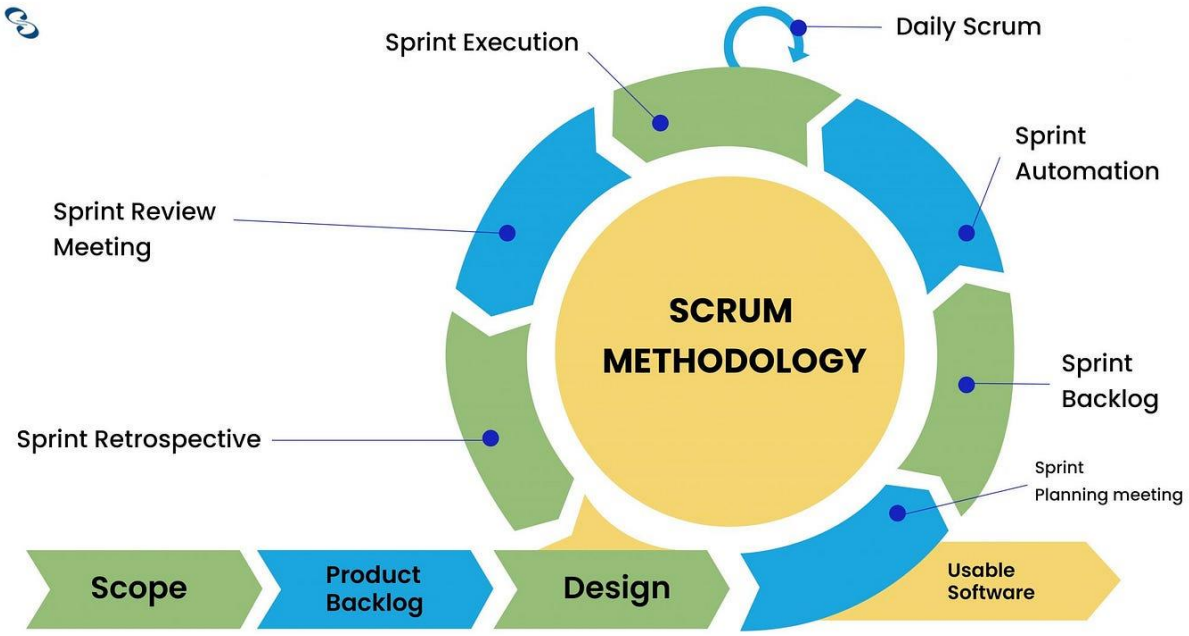

Figure 4: Scrum Methodology

4. Testing and analysis

5. Conclusion

5.1 LEGAL, SOCIAL AND ETHICAL ISSUES

5.1.1 **Data Privacy and Security**:

- Legal Requirement: Adherence to local data protection legislation and data protection laws, such as GDPR (where applicable).
- Social Impact: Preserving the system's credibility requires safeguarding students' private information against misuse or illegal access.
- Ethical Concerns: Preventing privacy abuses by ensuring that private student data is safely stored and accessible only to authorized people.

5.1.2 **User Authentication and Access Control**:

- Legal requirement: Ensuring strong user authentication procedures to stop illegal access to student records.
- Social Impact: Giving parents and students safe access to student information promotes confidence and trust.
- Ethical Concerns: Preserving usability by eliminating overbearing restrictions that could impede access while striking a balance between the necessity for security and the ease of use for authorized users.

5.1.3 **Intellectual Property Rights**:

- Legal Requirement: When sharing educational resources and content on the portal, attention to intellectual property rights is required.
- Social Impact: Encouraging teachers and students to respect intellectual property rights.
- Ethical Concerns: Making sure that instructional resources are properly cited and comply with copyright laws or standards of academic honesty.

5.1.4 **Ethical Use of Data Analytics**:

- Legal Requirement: Compliance with regulations controlling the use of data analytics in education, including making sure that the results of data analysis don't result in unfair practices.
- Social Impact: Improving student support services and educational outcomes through data analytics.
- Ethical Concerns: Preserving student autonomy and privacy while utilizing data analytics to improve learning environments and steering clear of choices that can unjustly harm particular student groups.

5.1.5 **Social and Cultural Sensitivity**:

- Legal Requirement: Stay away from any language or information that might offend or discriminate against any social or cultural group.
- Social Impact: Encouraging students from various backgrounds to study online in a courteous and welcoming environment.
- Ethical Concerns: Encouraging polite interactions and dialogue on the portal, as well as fostering cultural sensitivity and knowledge among students and professors.

5.2 Advantages:

- Centralized Information Access: The portal gives teachers, staff, and administrators one place to go to get all the information they need for academic and administrative purposes, including announcements, course schedules, grades, and campus news. By eliminating the need to switch between various systems or rely on paper-based procedures, this improves efficiency.

- Improved Communication: With tools like chat, discussion boards, and announcements, the portal makes it easier for staff, students, and administrators to communicate with one other. This increases overall engagement and happiness by promoting cooperation, the sharing of feedback, and the prompt distribution of information.

- Better Student Experience: The portal makes learning easier for students by providing easy access to grades, course materials, and support resources. Because they can monitor their academic progress, sign up for classes, and access learning materials from anywhere at any time, students are more satisfied and retain more information.

- Simplified Administrative Procedures: The portal simplifies several administrative steps, including the registration of courses, the management of grades, and the maintenance of student records. This results in less errors, less manual labor for administrators, and better data accuracy, all of which help the college run more smoothly and save money.

- Flexibility and Scalability: The portal's design can be made to grow and change in response to the college's and its users' changing needs. Long-term sustainability and relevance are ensured by the ease with which new features and functionalities may be added to meet evolving educational needs, future growth, and technology developments.

5.3 Limitations

- Technical Problems: The portal may experience technical problems including sluggish loading times, outages, or incompatibilities with specific hardware or browsers. These technological difficulties may impede the availability of crucial information and detract from the user experience.

- Data Security Risks: There is a chance that private student data stored online will be compromised by hackers, data breaches, or illegal access. Strong cybersecurity safeguards are necessary to preserve student privacy and stop possible hacks that can expose private information.

- User Adoption and Training: To fully comprehend the portal's features, certain administrators, teachers, and students may be not interested to use it or may need training. Promoting the system's broad acceptance and use requires overcoming reluctance to change as well as offering sufficient training and assistance.

- Updating and Maintenance: To keep the portal functioning properly and take care of any problems or defects that might develop over time, it needs constant upkeep, updates, and assistance. It is imperative to maintain sufficient resources and support infrastructure in order to ensure the system's long-term viability.

- Privacy Concerns: The gathering and archiving of student data on the portal gives rise to privacy concerns, especially in light of the data's intended use and distribution to outside parties. It is imperative to establish unambiguous policies and procedures that safeguard students' privacy rights and guarantee adherence to pertinent regulations.

5.4 Future Work

- Advanced Analytics: Putting advanced data analytics skills to use to gain a deeper understanding of learning outcomes, engagement trends, and student performance. Predictive analytics to identify students who are at danger and tailored suggestions for academic support may be part of this.

- Mobile Application: To improve accessibility and convenience for users who prefer to access information on their smartphones or tablets, a dedicated mobile application for the student portal system is being developed. The mobile application may include streamlined features designed to meet the demands of consumers on the go.

- Integration with Learning Management Systems (LMS): To enable easy access to course materials, homework, quizzes, and other learning tools, the student portal system should be integrated with the current LMS. An integrated platform for academic and administrative uses would be provided by this integration.

- Enhancements in accessibility: Constantly making the portal system more user-friendly so that it can accommodate all users' demands, including those of people with impairments. This could include carrying out accessibility checks, putting design improvements into practice, and offering other information formats.

- Personalization and Customization: Providing users with choices for customization and individualized experiences according to their learning objectives, interests, and academic background. Recommendation engines, customizable dashboards, and adaptive learning technologies may be involved in this.

- User Feedback and Iterative Enhancements: asking users for feedback on a regular basis in order to pinpoint areas that need work and set priorities for upcoming development projects. utilizing an iterative development process to improve the student portal system over time in response to user feedback and shifting needs.

6. References

Atlassian. (2024, January 2). *what is agile metjodology?* Retrieved from atlassian: https://www.atlassian.com/agile#:~:text=What%20is%20the%20Agile%20methodology,planning%2C%20executing%2C%20and%20evaluating.

Coursera Staff . (2023, November 21). *What Is Python Used For? A Beginner's Guide*. Retrieved from coursera: https://www.coursera.org/articles/what-is-python-used-for-a-beginners-guide-to-using-python

django project. (2024, January 2). *meet django*. Retrieved from django project: https://www.djangoproject.com/

Edwards, L. (2022, April 5). *What is Google Classroom?* Retrieved from tech and learning: https://www.techlearning.com/features/what-is-google-classroom

Giacomelli, Š. (2023, April 14). *Django REST Framework Basics*. Retrieved from testdriven: https://testdriven.io/blog/drf-basics/

Gnatt. (2024, January 2). *What is a Gantt Chart?* Retrieved from Gantt: https://www.gantt.com/

Gryshuk, R. (2023, November 10). *10 Great Google Classroom Alternatives (2024): Weighing the Pros and Cons*. Retrieved from Educateme: https://www.educate-me.co/blog/google-classroom-alternatives#2-talentlms

Lamichhane, R. S. (2021, June 4). *What is my second teacher? How to use*. Retrieved from Rabinsxp: https://www.rabinsxp.com/article/what-is-my-second-teacher-how-to-use-with-video/

Latif, N. A. (2022). *The Use of Knowledge Portal: Literature Review.*

leeron Hoory, C. B. (2022, March 25). *What Is Waterfall Methodology? Here's How It Can Help Your Project Management Strategy*. Retrieved from Forbes advisor: https://www.forbes.com/advisor/business/what-is-waterfall-methodology/

Rupal More, N. C. (2022, April 15). *Student Portal of College*. Retrieved from ijraset: https://www.ijraset.com/research-paper/student-portal-of-college

S, B. (2023, November 23). *What is scrum?* Retrieved from nimblework: https://www.nimblework.com/agile/scrum-methodology/

Salem Alatawi, N. S. (2022, Octuber 2). *Current Situation of Students' Portal and Their needs: A Case Study in Saudi Arabia Universities: Students Perspective*. Retrieved from reseacrh gate: https://www.researchgate.net/publication/351496569_Current_Situation_of_Students'_Portal_and_Their_needs_A_Case_Study_in_Saudi_Arabia_Universities_Students_Perspective

Toshniwal, A. (2023, August). *pgAdmin*. Retrieved from pgAdmin: https://www.pgadmin.org/

w3school. (2024, January 2). *react tutorial*. Retrieved from w3school: https://www.w3schools.com/REACT/default.asp

work breakdown structure. (2024, January 2). *What is a Work Breakdown Structure?* Retrieved from Work Breakdown Structure: https://www.workbreakdownstructure.com/

7. Appendix

7.1 Sample code

7.1.1 Sample Code of the UI

```
import { useState,useEffect } from "react"
import api from "../api"
    import Note from "../components/Note"
    import "../styles/Home.css"

    function Home() {
        const [notes, setNotes] = useState([]);
        const [content, setContent] = useState("");
        const [title, setTitle] = useState("");

        useEffect(() => {
            getNote();
        }, []);

        const getNote = () => {
            api.get("/api/notes/")
            .then((res) => res.data)
            .then((data) => {setNotes(data); console.log(data)}
)
            .catch((err) => console(err));
        }

        const deleteNote = (id) => {
            api.delete(`/api/notes/${id}/`).then((res) => {
                if (res.status === 204) alert("Note deleted
successfully");
                else alert("Error deleting note")
                getNotes()
            }).catch((err) => alert.log(err));

        };

        const createNote = (e) => {
```

```
            e.preventDefault()
            api.post("/api/notes/",{content, title}).then((res) => {
                if (res.status === 200) alert ("Note created successfully");
                else alert("Error creating note");
            }).catch((err) => alert.log(err))
            getNotes();

        }

        return <div>

        <div>
            <h1>Notes</h1>
            {notes.map((note) => (
                <Note
                  note={note}
                  onDelete={deleteNote}
                  key={note.id}
                />
            ))}
        </div>

        <h2>Add a notificatication!</h2>
        <form onSubmit={createNote}>
        <label htmlFor="title">Title:</label>
                    <br />
                    <input
                        type="text"
                        id="title"
                        name="title"
                        required
                        onChange={(e) => setTitle(e.target.value)}
                        value={title}
                    />
                    <label htmlFor="content">Content:</label>
                    <br />
```

```
                    <textarea
                        id="content"
                        name="content"
                        required
                        value={content}
                        onChange={(e) =>
  setContent(e.target.value)}
                    ></textarea>
                    <br />
                    <input type="submit" value="Submit"></input>
        </form>

            <div className="home">

    <p>Science Classes</p>
    <div className="cards" >
      <div className="card" >
        <img src="..." className="card-img-top" alt="..." />
        <div className="card-body">
          <h5 className="card-title">Physics</h5>
          <a href="/Physics" className="btn btn-primary"
  role='button'>
          Ready to Learn
          </a>
        </div>
      </div>

        <div class="card" >
            <img src="..." class="card-img-top" alt="..."/>
            <div class="card-body">
                <h5 class="card-title">Chemistry</h5>
                <a href="/Chemistry" class="btn btn-
  primary">Ready to Learn</a>
            </div>
        </div>

        <div class="card" >
            <img src="..." class="card-img-top" alt="..."/>
            <div class="card-body">
```

```
111.                <h5 class="card-title">Mathematics</h5>
112.                <a href="/maths" class="btn btn-primary">Ready
    to Learn</a>
113.            </div>
114.        </div>
115.
116.        <div class="card" >
117.            <img src="..." class="card-img-top" alt="..."/>
118.            <div class="card-body">
119.                <h5 class="card-title">English</h5>
120.                <a href="/English" class="btn btn-primary">Ready
    to Learn</a>
121.            </div>
122.        </div>
123.
124.        <div class="card">
125.            <img src="..." class="card-img-top" alt="..."/>
126.            <div class="card-body">
127.                <h5 class="card-title">Nepali</h5>
128.                <a href="/nepali" class="btn btn-primary">Ready
    to Learn</a>
129.            </div>
130.        </div>
131.
132.        <div class="card" >
133.            <img src="..." class="card-img-top" alt="..."/>
134.            <div class="card-body">
135.                <h5 class="card-title">Computer Science</h5>
136.                <a href="/comp" class="btn btn-primary">Ready to
    Learn</a>
137.            </div>
138.        </div>
139.
140.        <div class="card" >
141.            <img src="..." class="card-img-top" alt="..."/>
142.            <div class="card-body">
143.                <h5 class="card-title">Biology</h5>
144.                <a href="/biology" class="btn btn-primary">Ready
    to Learn</a>
```

```
145.            </div>
146.        </div>
147.
148.    </div>
149.
150.    <p>Management Classes</p>
151.    <div className="cards" >
152.      <div className="card" >
153.        <img src="..." className="card-img-top" alt="..." />
154.        <div className="card-body">
155.          <h5 className="card-title">Accountancy</h5>
156.          <a href="/Acct" className="btn btn-primary"
  role='button'>
157.            Ready to Learn
158.          </a>
159.        </div>
160.      </div>
161.
162.        <div class="card" >
163.            <img src="..." class="card-img-top" alt="..."/>
164.            <div class="card-body">
165.                <h5 class="card-title">Economics</h5>
166.                <a href="/Econ" class="btn btn-primary">Ready to
  Learn</a>
167.            </div>
168.        </div>
169.
170.        <div class="card" >
171.            <img src="..." class="card-img-top" alt="..."/>
172.            <div class="card-body">
173.                <h5 class="card-title">Business Studies</h5>
174.                <a href="/Bustd" class="btn btn-primary">Ready
  to Learn</a>
175.            </div>
176.        </div>
177.
178.        <div class="card" >
179.            <img src="..." class="card-img-top" alt="..."/>
180.            <div class="card-body">
```

```
181.                <h5 class="card-title">English</h5>
182.                <a href="/English" class="btn btn-primary">Ready
   to Learn</a>
183.            </div>
184.        </div>
185.
186.        <div class="card">
187.            <img src="..." class="card-img-top" alt="..."/>
188.            <div class="card-body">
189.                <h5 class="card-title">Nepali</h5>
190.                <a href="/Nepali" class="btn btn-primary">Ready
   to Learn</a>
191.            </div>
192.        </div>
193.
194.        <div class="card" >
195.            <img src="..." class="card-img-top" alt="..."/>
196.            <div class="card-body">
197.                <h5 class="card-title">Computer Science</h5>
198.                <a href="/Compsc" class="btn btn-primary">Ready
   to Learn</a>
199.            </div>
200.        </div>
201.    </div>
202.    </div>
203.        </div>
204.    }
205.
206.    export default Home
```

206.1 Designs

206.1.1 Gnatt Chart

A Gantt chart, which is extensively used in project management, is one of the most popular and useful tools for plotting activities (tasks or events) against time. On the left side of the chart is a list of the activities, and at the top is the appropriate time scale. Each action is represented by a bar, and the start, middle, and end dates of the activity are indicated by the bar's position and length. (Gnatt, 2024)

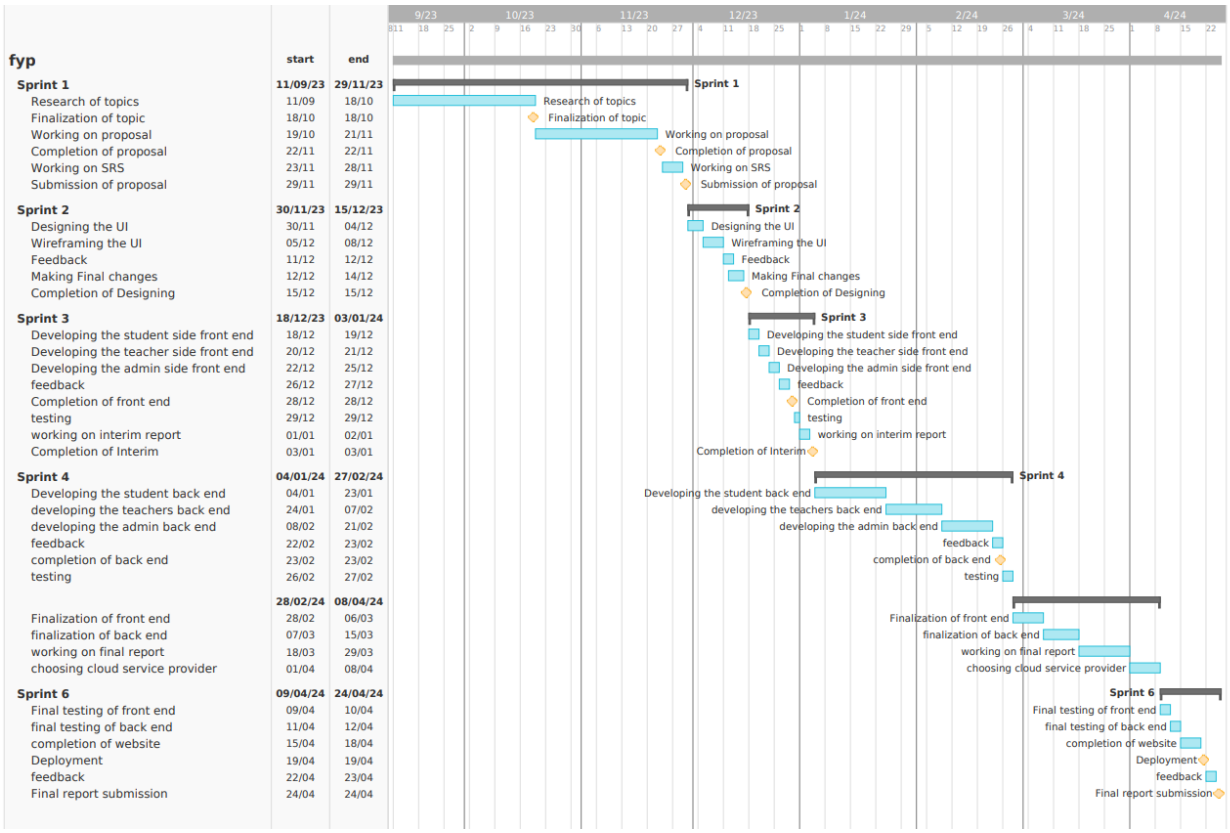

Figure 5: Gnatt Chart

206.1.2 Work Breakdown Structure

A work breakdown structure, or WBS, is a hierarchical organization of a project into phases, deliverables, and work packages. It helps define and organize the entire scope of the project. (work breakdown structure, 2024)

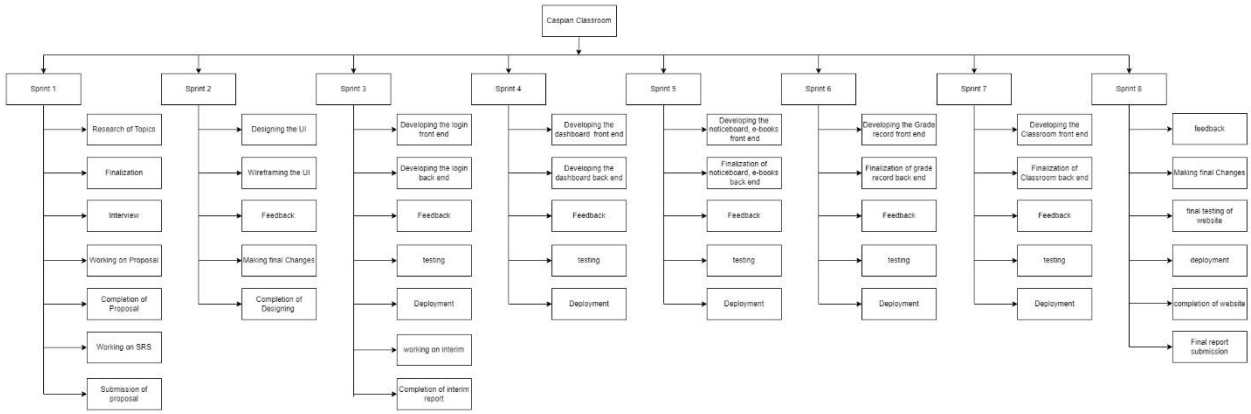

Figure 6: Work breakdown Structure

206.1.3 ERD

Unf

- Identification of repeating groups
- Assign primary key

course(course no.(pk),course name,{subject(subject no., subject name,{teacher(teacher no, teacher name),{student(student no, student name,date of birth, gender,bill record)}}})

1nf

- Removing Repeating groups
- Identification of existance of composite primary key

course(course no.(pk),course name)

subject(subject no.(pk), subject name,course no.(fk))

teacher(teacher no(pk), teacher name,course no.(fk),subject no.(fk),)

student(student no(pk), student name,date of birth, gender,fee bill record, academic record,course no.(fk),subject no.(fk),teacher no.(fk))

2nf

- Remove partial dependency

course(course no.(pk),course name)

subject(subject no.(pk), subject name)

subject-course(course no(fk),subject no(fk))

teacher(teacher no(pk), teacher name)

teacher-course-subject(teacher no.(fk),course no.(fk),subject no.(fk))

student id->student name,date of birth, gender => partial dependency

student id, teacher no->

student id, course no, subject no->academic report=> full fuctional

student id, course no->bill record=> full fuctional

student(student no(pk)**, student name,date of birth, course no.(fk)**,gender)

student-teacher(student no,teacher no.)

bill (bill no(pk), student no(fk)**, fee,Course no.(fk)**)

academics(subject no.(fk)**, academic record,stubject no.(fk)**, student no(fk)**)

3nf

- Removing transitives

course(course no.(pk),course name,teacher no (fk), subject no.(fk))

teacher(teacher no (pk), teacher name)

teacher-course-subject(teacher no.(fk),course no.(fk),subject no.(fk))

subject(subject no.(pk), subject name)

subject-course(course no(fk),subject no(fk))

student(student no(pk)**, student name, date of birth ,gender)

bill (bill no(pk), student no(fk)**, bill record, course no.(pk),)

academics(subject no.(fk)**, course no.(fk)**, academic record, student no(fk)**)

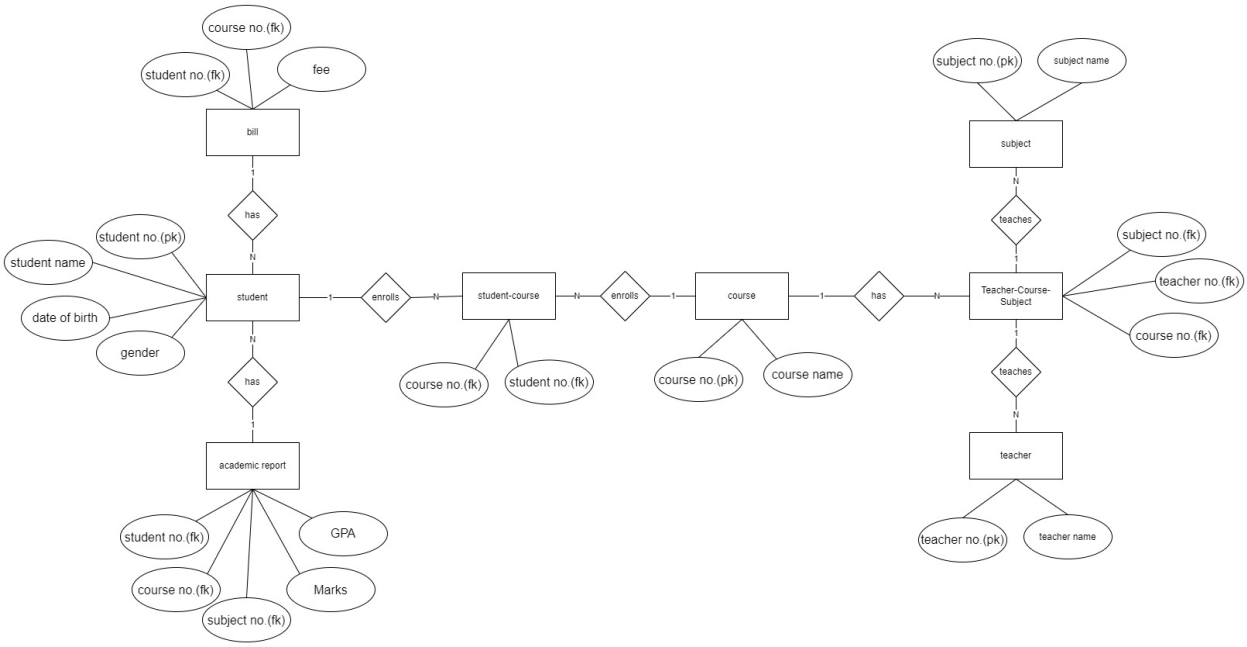

Figure 7: ER diagram

206.1.4 Wireframes

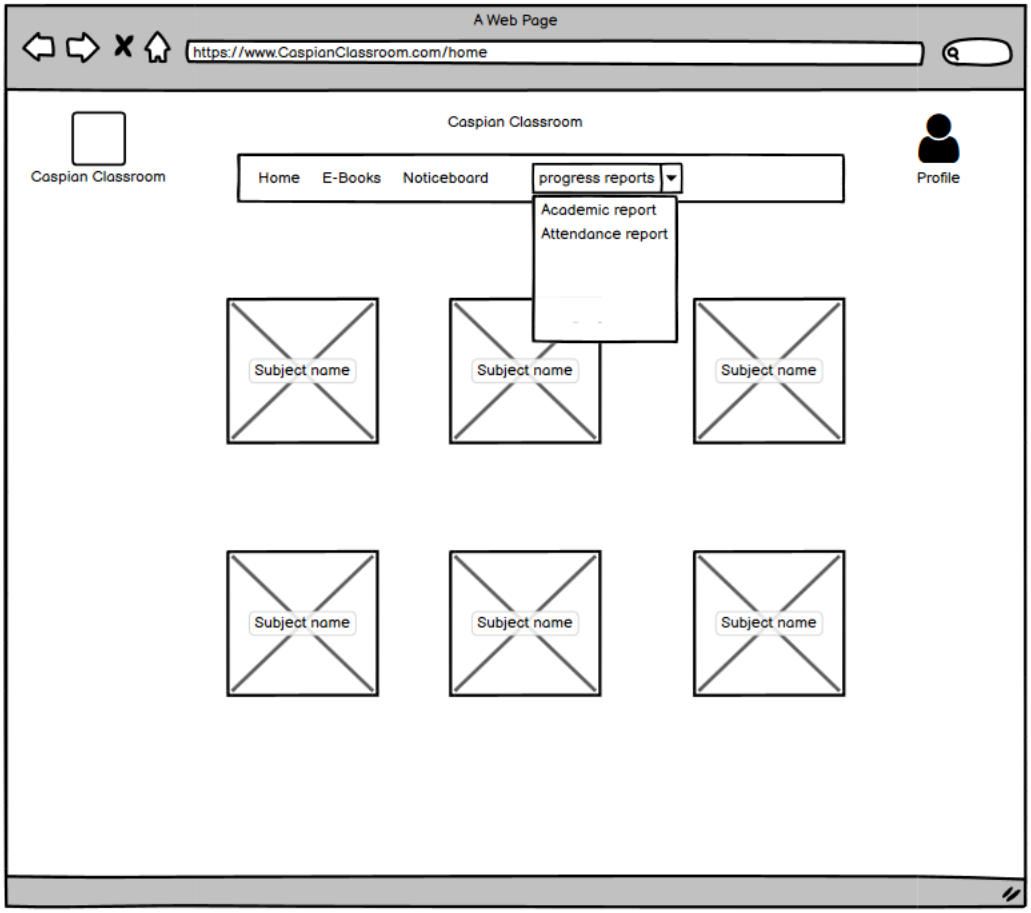

Figure 8: wireframe of dashboard

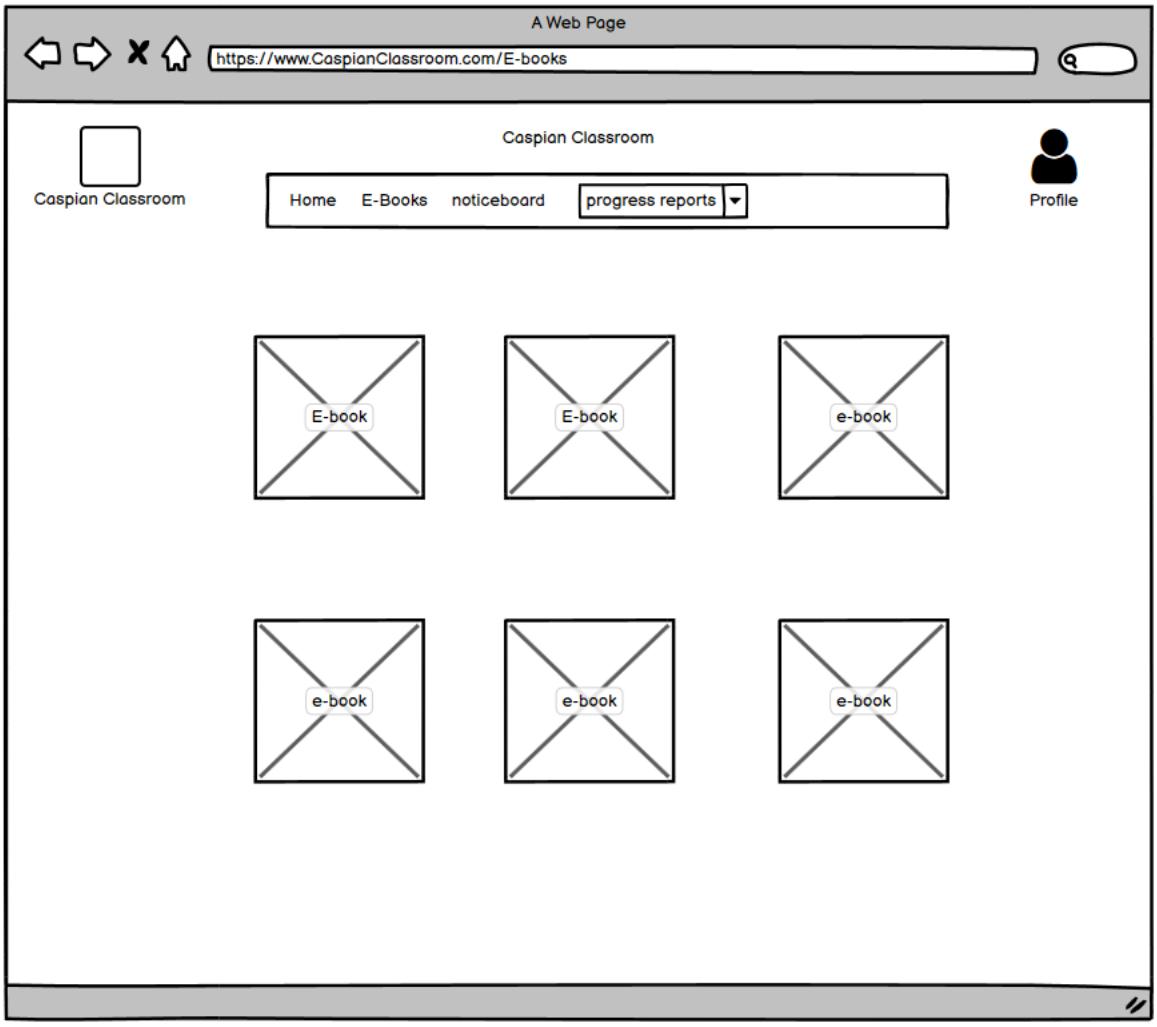

Figure 9: wireframing of e-books page

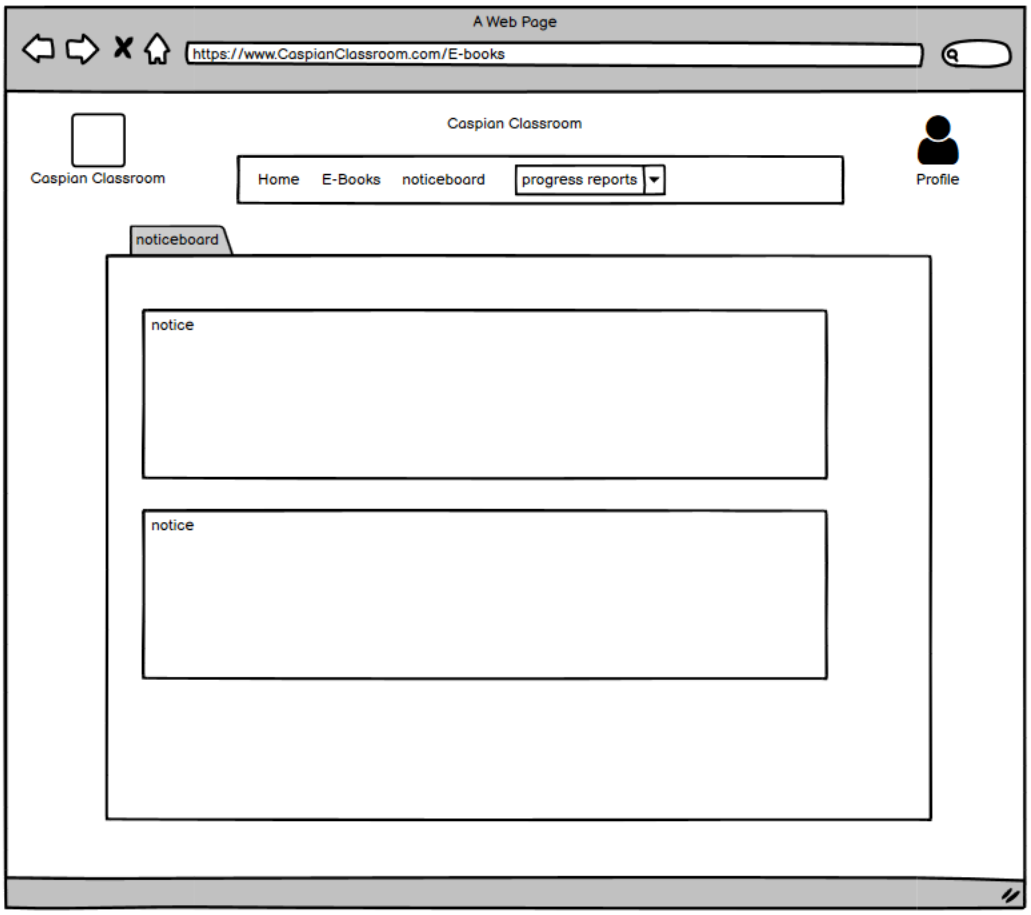

Figure 10: Wireframe of notice board

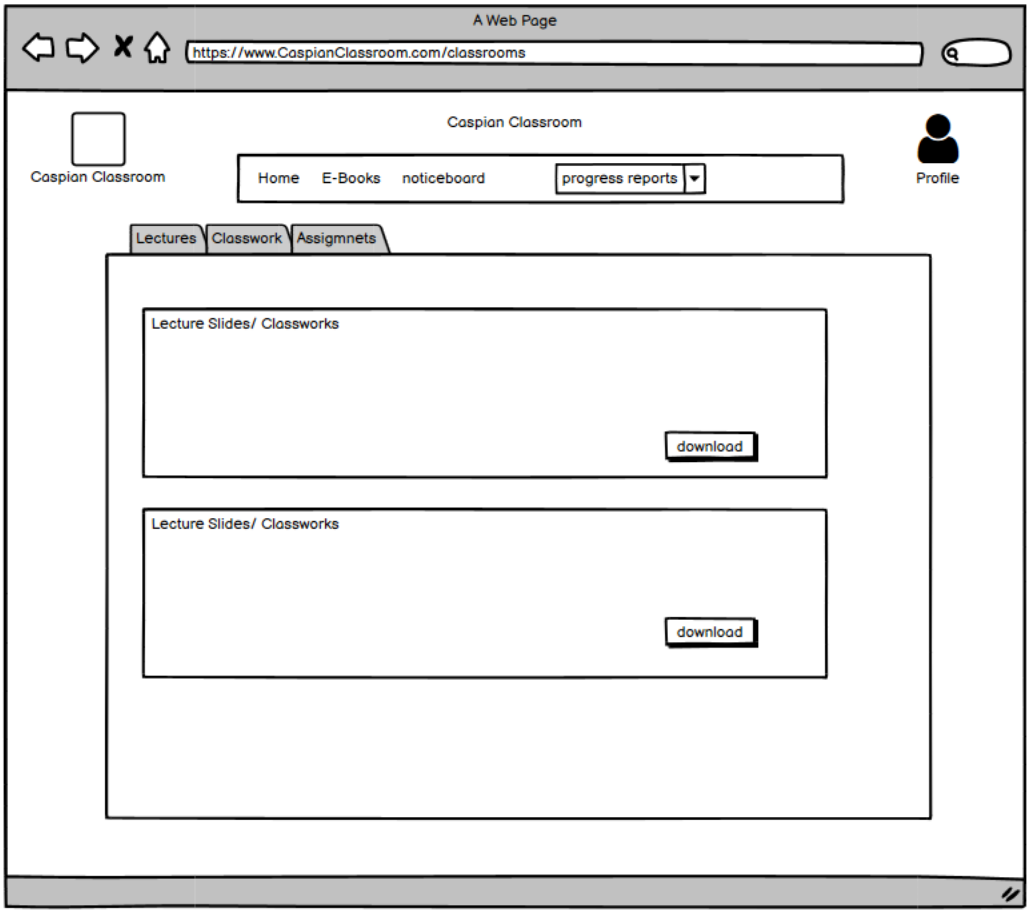

Figure 11: wireframe of classroom

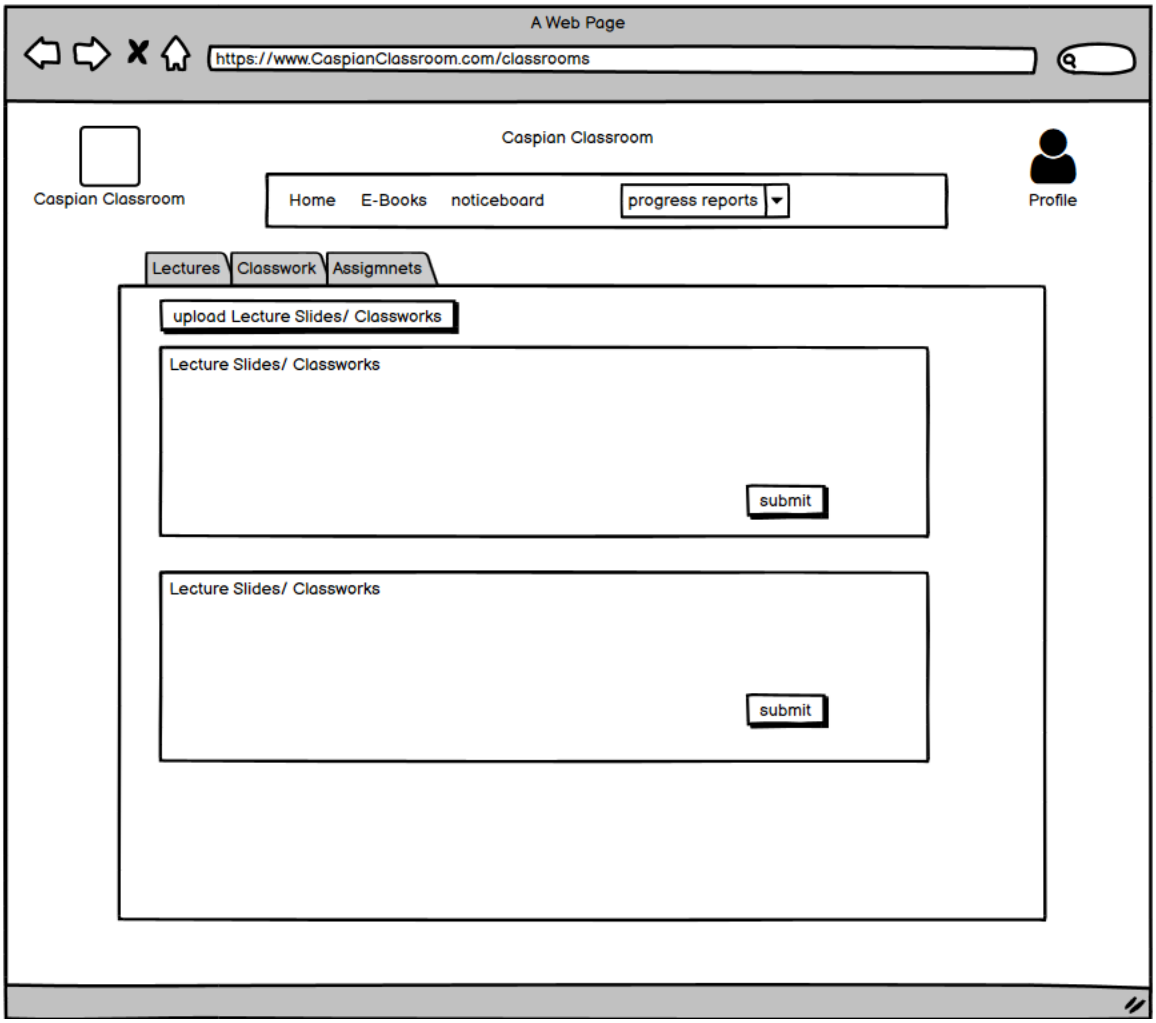

Figure 12: wireframe of teacher classroom

206.2 Future works

- Advanced Analytics: Putting advanced data analytics skills to use to gain a deeper understanding of learning outcomes, engagement trends, and student performance. Predictive analytics to identify students who are at danger and tailored suggestions for academic support may be part of this.

- Mobile Application: To improve accessibility and convenience for users who prefer to access information on their smartphones or tablets, a dedicated mobile application for the student portal system is being developed. The mobile application may include streamlined features designed to meet the demands of consumers on the go.

- Integration with Learning Management Systems (LMS): To enable easy access to course materials, homework, quizzes, and other learning tools, the student portal system should be integrated with the current LMS. An integrated platform for academic and administrative uses would be provided by this integration.

- Enhancements in accessibility: Constantly making the portal system more user-friendly so that it can accommodate all users' demands, including those of people with impairments. This could include carrying out accessibility checks, putting design improvements into practice, and offering other information formats.

- Personalization and Customization: Providing users with choices for customization and individualized experiences according to their learning objectives, interests, and academic background. Recommendation engines, customizable dashboards, and adaptive learning technologies may be involved in this.

- Enhanced Communication Features: For better real-time interactions between students, teachers, and administrators, more communication tools like chatbots, video conferencing, and virtual office hours should be added. These characteristics could promote involvement, cooperation, and support among college students.

- Gamification Components: Adding gamification components to the student portal system will improve engagement, motivation, and academic results. Badges, leaderboards, and achievement levels are examples of gamified elements that could encourage student participation and foster a sense of achievement.

- Enhancements in accessibility: Constantly making the portal system more user-friendly so that it can accommodate all users' demands, including those of people with impairments. This could entail carrying out accessibility audits, putting design improvements into practice, and offering other information formats.