CMSC 128: Introduction to Software Engineering

Software Architecture Document

SRO Management System (SMS)

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June 3, 2025

Revision History

Version	Description of Versions/Changes	Date
0.1.0	**Prototype 1** ● Designing the UI/UX ● Initialization of database and tables ● Login system with authentication ● Basic web pages creation	March 11, 2025
0.2.0	**Prototype 2** ● Improvement of existing user interface ● Integration of core functionalities: ○ Activity Request ○ Organization Recognition ○ Appointment booking ○ My Activities page ○ Appointment settings ○ Requesting for appeal ○ Approve/Reject activities ● Integrated third-party API ● Creation of dashboards	April 22, 2025
0.3.0	**Prototype 3** ● Further improvement of UI/UX ● Created functional activity calendars ● Added more core functionalities: ○ Activity Details ○ Approve/Reject organization application ○ Annual Report submission ● Completed dashboard components	May 2, 2025
1.0	**Final Version** ● Final optimizations ● Finalization of codes ● Error handling for existing forms ● Added certificate generation functionality ● Added activity cancellation	May 28, 2025

Table of Contents

Software Architecture Document

1. Introduction

This paper provides an in-depth documentation and description of the functionalities and design of SRO Management System (SMS).

The document presents a comprehensive overview of the architectural objectives, key use cases supported by the web application, selected architectural frameworks, and the functionalities requested by the Student Relations Office (SRO) of the University of the Philippines Baguio (UPB). It also provides a clear reasoning for the design and architectural decisions made throughout the project, from initial planning to the final prototype.

1.1. Purpose

A System Architecture Document (SAD) aims to provide a comprehensive overview of the project, outlining the fundamental design and structure decisions that comprise the architecture of the system. Specifically, it highlights the system architecture as viewed by the three primary user groups: student users, administrators, and super administrators. Additionally, it supports informed decision-making, facilitates consistent implementation, and provides a reference for future maintenance and scalability.

In this document, the use case and deployment view models are utilized to present the architecture of the web application from the three primary perspectives, describing both the static and dynamic aspects of the system as supported by the relevant diagrams and descriptions.

The use case view model provides insight into the system from the perspective of the end user, demonstrating how various user groups interact with the system to achieve their goals and responsibilities. It highlights user workflows, key features, and problem-solving processes. On the other hand, the deployment view model focuses on the physical distribution of the components of the system across servers and services, illustrating how processes, threads, and data are distributed across different nodes, including web servers, application servers, and databases.

1.2. Scope

This software architecture document prioritizes the discussion of the system components, behaviors, and user workflows that are fundamental to the proper utilization of the web application. As such, the scope of this document is limited to the extensive description of the architecture of the SRO Management System.

Furthermore, the fundamental aspects of the architecture refer to elements and behaviors that are essential for the implementation, deployment, maintenance. This is integral to provide a blueprint of the construction of the web application and to understand the system architecture.

It should be noted that stakeholders who require a technical understanding of the system are encouraged to refer to the project proposal prior to this system architecture document [PP, SAD].

1.3. Definitions, Acronyms, and Abbreviations

- **Admin** – The administrator of the web application and its database
- **API** – Application Programming Interface, allows developers to facilitate communication utilizing such microservices in different web applications
- **Cloud** – Global network of remote servers in purpose of processing and storing data and applications
- **CSS** – Cascading Style Sheets, used to style and design user interfaces
- **FAQs** – Frequently asked questions regarding the web application
- **GCP** – Google Cloud Platform
- **GitHub** – Cloud-based platform where software developers can share, store, and collaborate on codes
- **HTML** – Hypertext Markup Language, basic scripting language used for web development
- **JavaScript** – Programming language for web development
- **ODSA** – Office of the Director of Student Affairs
- **PDF** – A computer file that preserves the formatting of a document regardless of platform and device, and is commonly used for sharing documents
- **PostgreSQL** – Open-source object-relational database management system (ORDBMS)
- **SAD** – System Architecture Document
- **SRO** – Student Relations Office

- **SSO** – Single Sign-On, allows users to access multiple applications after signing in once without re-entering credentials
- **Supabase** – A platform that delivers a serverless backend solution, featuring a PostgreSQL database, user authentication, APIs, and other backend services
- **Ubuntu Linux** – A widely used, free, and open-source Linux (an operating system) distribution recognized for its ease of use and extensive software support
- **User** – An external actor that interacts with the web application to achieve their goal (e.g. User, Administrator, Superadmin)
- **Vercel** – Platform as a Service cloud platform for hosting and deploying websites
- **Vite** – Frontend build tool for developing web applications

1.4. References

[Semantic Versioning 2.0.0]: Summary, https://semver.org/

[PP]: Project Proposal

[SAD]: System Architecture Document

[Ayyang, Lucero, Sinco, and Uson]: Sample SAD, https://drive.google.com/file/d/1GWwirNbGHTrXjg0evzr_vhMO4dQmJRuE/view

[Visual Paradigm]: What is Use Case Diagram? https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-use-case-diagram/

[Visual Paradigm]: What is Deployment Diagram?, https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-deployment-diagram/

[Visual Paradigm]: What is Activity Diagram? https://www.visual-paradigm.com/guide/uml-unified-modeling-language/what-is-activity-diagram/

2. Architectural Goals and Constraints

The following are key requirements and constraints that have a significant impact on the system architecture:

1. Due to the nature of the system, it is needed for more than ten months or an equivalent of an academic year to aid with the organization recognition application process and submission of other documents and activity requests by organizations.

2. In line with the technologies used, the system will have a life expectancy of more than two years as it utilizes new technologies throughout the development of the system from the frontend to the database management system.

3. Users of the system will be able to access the web application using their assigned university email address for centralization, security, and ease of delegation of roles. Each user will automatically be assigned to their appropriate user role upon logging in.

4. The main objective of the system architecture is to centralize the functions and responsibilities of the SRO. This is accomplished by integrating the capabilities of processing submissions, reviewing annual reports, and generating activity slips and certificates of recognition. Similarly, the final approval of each submission will be accomplished by the ODSA through the web application.

5. The system will have a user interface that is easily navigated by a wide range of users as the web application aims to streamline the functions of the SRO. Thus, the web application is expected to cater to students and faculty members alike.

3. Use Case View

The use case view models how the end user interacts with the web application through a visual and textual representation. It specifies the expected behavior of the system for every user rather than how these functions were created. Thus, it provides experts and analysts an overview of the system context and system requirements to help guide through its implementation and establish test cases.

3.1. Use Case Views

Use case views illustrate every aspect of the system as modeled using diagrams. This section also demonstrates the different sequences of events that will trigger certain behaviors of the system.

3.1.1. Login Use Case Views

In this section, the use cases for the login process will be described and illustrated into a use case diagram.

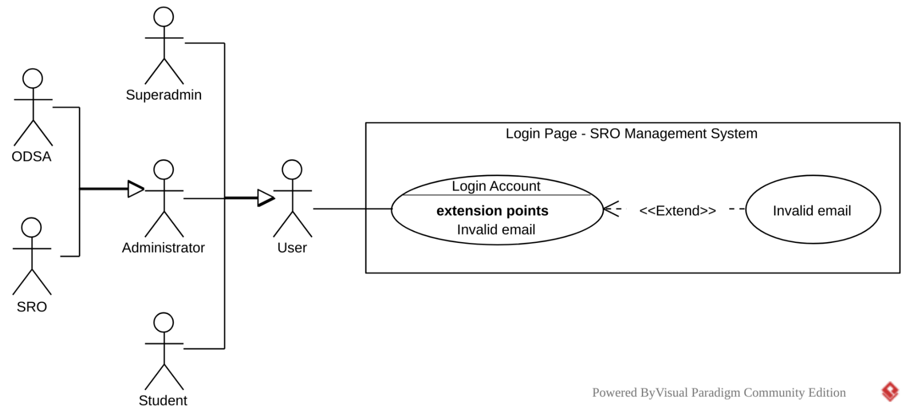

Figure 1.1. Use case diagram for the login page

3.1.1.1. Name and Description of Use Case View

This use case diagram illustrates the use cases involved in the login system. This highlights the login process including the possible exceptions that blocks the user from logging into the system.

3.1.1.2. Flow of Events of Use Case View

The main flow of this use case begins when the user visits the website without being logged in. The web application will display a page prompting the user to log in by clicking the “Login with UP

Mail” button. There are three possible outcomes for the login process, each representing an extension flow that will be discussed individually:

1. **No Google account signed in**

   This subflow starts when the user clicks on the button, redirecting them to Google to log into an account. If the user logs into a UP mail account, they will be redirected to their respective dashboard. Otherwise, they will be redirected to an error page where they can only log out.

2. **Only one Google account signed in**

   This subflow starts when the user clicks on the button. If the account signed into the browser is a UP mail account, the user will be redirected to their respective dashboard. Otherwise, they will be redirected to an error page where they can only log out.

3. **Multiple Google accounts signed in**

   This subflow starts when the user clicks on the button, redirecting them to Google to select an account. If the user selects a UP mail account, they will be redirected to their respective dashboard. Otherwise, they will be redirected to an error page where they can only log out.

3.1.1.3. Relationships Among Use Cases

This section elaborates on the relationship between the two use cases, as illustrated in the diagram. Both textual and visual representations have demonstrated that the login system serves as the primary flow of the page, while the invalid email scenario functions as an extension of the main use case. This structure enables the system to explicitly handle cases that represent potential exceptions to the primary flow.

3.1.2. Student Interface: Dashboard and Activities Calendar Use Case Views

In this section, the use cases for the student dashboard and activities calendar will be described and illustrated into a use case diagram. This will also be completely accessible to the superadmin for testing and debugging purposes.

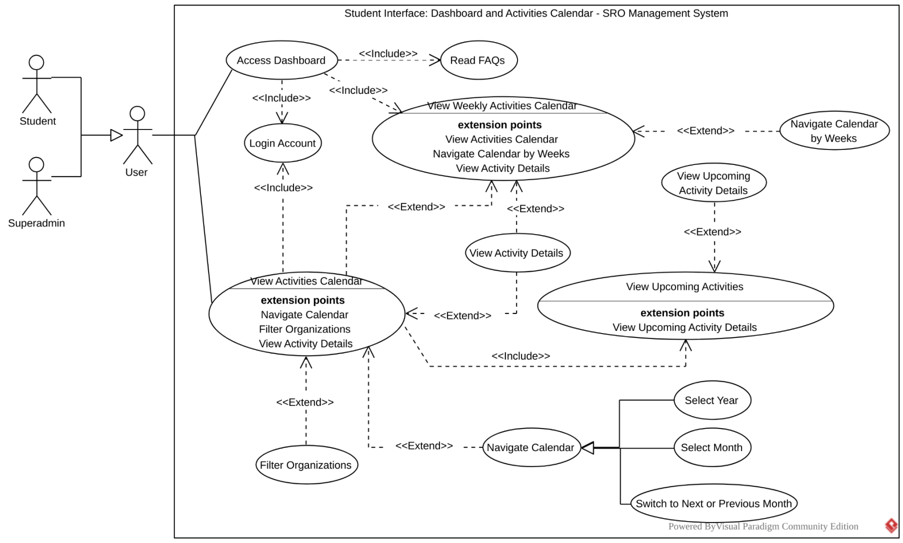

Figure 1.2. Use case diagram for the dashboard and activities calendar pages

3.1.2.1. Name and Description of Use Case View

This use case diagram illustrates the interactions of both students and superadmins with the Dashboard and Activities Calendar pages in the student user interface. It highlights the core functionalities available to users, such as accessing the dashboard, viewing FAQs, browsing the weekly activities calendar, and exploring upcoming activities. This discusses the main flow of the functionalities including the possible subflows that the user can access through these pages.

3.1.2.2. Flow of Events of Use Case View

Two flows will be considered for this use case view.

1. **Access Dashboard Use Case**

   The primary flow of this use case starts when the user accesses the dashboard. From there, the user can view (1) the frequently asked questions and (2) the weekly activities calendar, which contains the approved activity requests and their pertinent details. These subflows will be considered separately.

1.1. Read FAQs

This subflow starts when the user clicks on a question under the Frequently Asked Questions card, and the answer to the selected question will be displayed in a dropdown under the question. Clicking another question hides the previous dropdown and displays the answer to the selected question while clicking the same question hides its corresponding answer.

1.2. View Weekly Activities Calendar

This subflow starts when the user browses through the weekly activities calendar card. This card, located at the right hand side of the page, shows an overview of the activities occurring on the selected week. By default, the current week is selected. It displays exactly one activity only per day of the week. Hence, if there are multiple activities on the same day, only the earliest activity will be displayed with a clickable button showing the number of other activities on that day.

The user can then interact with the activities calendar to (1) navigate through the weekly calendar, (2) redirect to the Activities Calendar page, and (3) view activity details, creating three optional sub-subflows which will be discussed further below.

1.2.1. Navigate Calendar by Weeks

This sub-subflow starts when the user clicks on the chevron left or right buttons in the Activities Calendar card, switching to the previous week or next week, respectively. The approved activities scheduled on the selected week will be displayed in the calendar accordingly.

1.2.2. Redirect to Activities Calendar Page

Redirecting to the Activities Calendar page from the dashboard can be accomplished by clicking on the "See Activities Calendar" button at the bottom of the Activities Calendar card in the dashboard. However, if there are more than one activities in a day of the selected week, the button showing the number of other activities on that day can also be clicked to redirect to the "Activities Calendar" page.

1.2.3. View Activity Details

This sub-subflow starts when the user clicks on an activity card in the weekly activity calendar. This activity card contains the event name, hosting organization, schedule, and venue. When clicked, it displays a dialog containing important activity details including activity type, fee, venue, schedule, university partners, and sustainable development goals (SDGs).

2. View Activities Calendar Use Case

The main flow of this use case starts when the user visits the Activities Calendar page. The calendar will be displayed on the page, with dropdown menus at the top and the Upcoming Activities table at the bottom of the calendar. The calendar will select the current month by default, where all approved activities will be displayed for each day of the month. The user will then have the option to (1) navigate the calendar according to year, month, or by switching to the next or previous month, (2) view activity details, (3) filter displayed organizations, and (4) view upcoming activities. These four subflows will be considered separately.

2.1. Navigate Calendar

This subflow generalizes the three use cases to navigate the activity calendar: (1) selecting the year, (2) selecting the month, and (3) switching to the previous and next months. These use cases will be expounded further below.

1.1.1. Select Year

The subflow starts when the user clicks on the dropdown containing the year. They will then be able to select the desired year in the dropdown menu and the calendar will be updated automatically.

1.1.2. Select Month

The subflow starts when the user clicks on the dropdown containing the month. They will then be able to select the desired month in the dropdown menu and the calendar will be updated automatically.

1.1.3. Switch to Next or Previous Month

This subflow starts when the user clicks on the left or right chevron buttons, allowing the calendar to switch to the previous month or to the next month, respectively.

2.2. View Activity Details

This subflow starts when the user clicks on an activity card in the activity calendar. When clicked, it displays a dialog containing important activity details including activity type, fee, venue, schedule, university partners, and sustainable development goals (SDGs).

2.3. Filter Displayed Organizations

The subflow starts when the user clicks on the "Select Organization" dropdown. They will then be able to select the desired organization in the dropdown menu and the contents of the calendar will be automatically limited to the activities hosted by the selected organization only.

2.4. View Upcoming Activities

This subflow starts when the user browses the list of upcoming activities. This table will only contain the upcoming activities for the next 30 days, where they can click on each activity to view more details, creating a sub-subflow to be discussed below.

2.4.1. View Upcoming Activity Details

This sub-subflow starts when the user clicks on the desired activity. A dialog will then pop up, containing the pertinent details regarding the selected activity including activity type, fee, venue, schedule, university partners, and sustainable development goals (SDGs).

3.1.2.3. Relationships Among Use Cases

This section elaborates on the relationships between the specified use cases, as illustrated in the diagram. It can be seen in the use case diagram that both the student users and the superadmin users can access the "Access Dashboard" and the "View Activities Calendar" use cases, which represent two separate main flows.

Both textual and visual representations have shown that the "Access Dashboard" use case includes the functionality to read frequently asked questions and to browse the activities calendar in a weekly view. Viewing the said calendar also extends the capability to navigate through the calendar by weeks, to redirect to the separate Activities Calendar page, and to view activity details.

Similarly, visiting the activities calendar page allows the user to navigate through the calendar by year and months, filter the calendar by organization, view activity details, and view upcoming activities, which extends to the function of viewing the upcoming activity details.

3.1.2.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.1.3. Student Interface: Student Activities Panel Use Case Views

In this section, the use cases for the three remaining pages under the Student Activities panel within the student user interface will be described and illustrated into a use case diagram. This interface will also be equally accessible to the superadmin user for testing and debugging purposes.

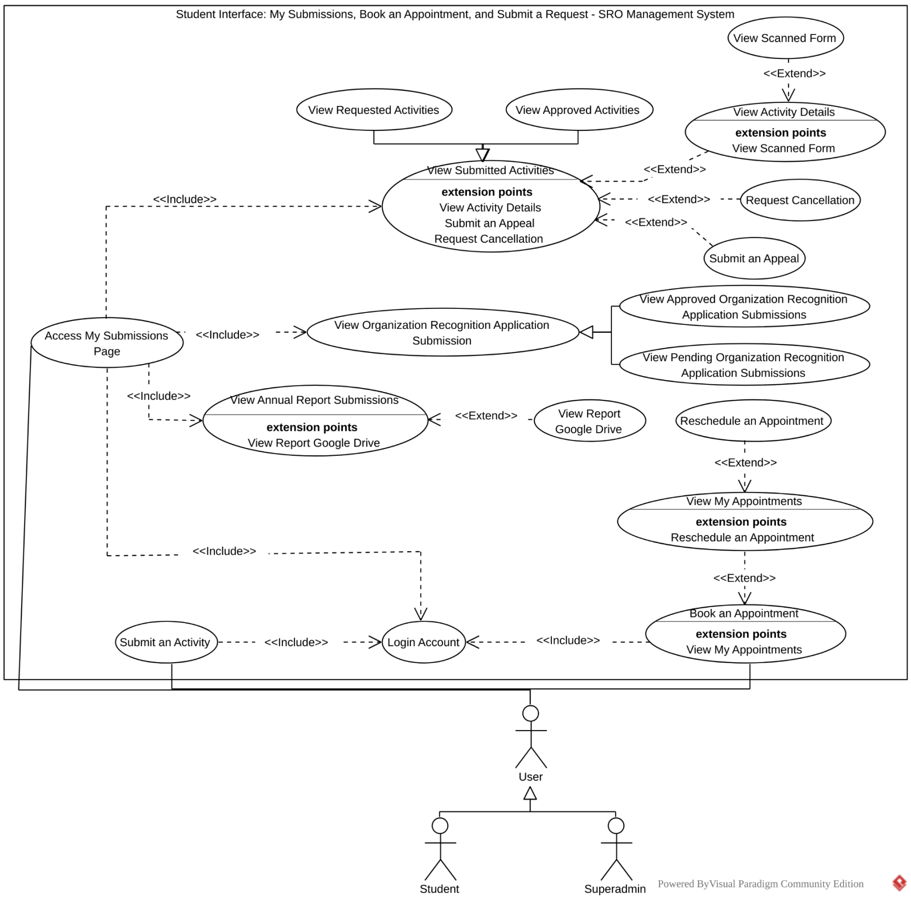

Figure 1.3. Use case diagram for accessing pages within the student panel in the student user interface

3.1.3.1. Name and Description of Use Case View

This use case diagram illustrates the interactions of students and superadmins with the My Submissions, Submit an Activity, and Book an Appointment pages within the Student Activities panel of the student user interface. This discusses the main flows of the functionalities including the possible subflows that the user can access through these pages.

3.1.3.2. Flow of Events of Use Case View

In the use case diagram, three main flows can be observed, which will all be considered separately.

1. **Access My Submissions Page**

The main flow of this use case begins when the user navigates to the "My Submissions" page. On this page, users can view their various submissions, including activity requests, organization recognition applications, and annual reports, organized into separate tables. Because of this, three subflows are included in this use case, which will all be discussed individually.

1.1. View Submitted Activities

This subflow is focused on the activity requests that the user submitted, which generalizes requested activities and approved activities. The submitted activities will be organized into two tables, separating them according to their status. This use case starts when the user browses through these two tables, where they can interact to view the activity details, submit an appeal, or request cancellation. These three nested subflows will be discussed further separately.

1.1.1. View Activity Details

This sub-subflow begins when the user clicks anywhere on an entry within the Requested Activities or Approved Activities table. A dialog will then be displayed, showing the activity details corresponding to the selected activity. Unlike viewing the activity details in the calendars, this dialog would contain all details including their submitted scanned form, which they can view in a separate nested sub-subflow.

1.1.1.1. View Scanned Form

This secondary sub-subflow starts when the user clicks on the “View Scanned Form” button at the bottom of the activity details dialog. The Google Drive link of their file submission will be opened in a new tab.

1.1.2. Submit an Appeal

This sub-subflow begins when the user clicks the pencil button at the rightmost column of their desired activity submission entry. The user will be prompted to write a reason for their appeal to enable the edit button. Once they submit their reason for appeal, they will be redirected to a page where they can edit the details of their submission and resubmit a scanned copy of their request form, wrapping up the appeal process.

1.1.3. Request Cancellation

This sub-subflow starts when the user clicks the cross mark (X) button at the rightmost column of their desired activity submission entry. They will be prompted to enter a reason for cancellation to enable the "Cancel Submission" button. Once clicked, the activity will be marked as "For Cancellation".

1.2. View Organization Recognition Application Submission

This subflow generalizes the capability of the user to view both the approved and the pending organization recognition application submissions. Separate tables corresponding to these two statuses are displayed in the page where the user can see the organization name, academic year, submission, and status of submission (for pending or rejected applications) or organization status (for approved applications).

1.3. View Annual Report Submissions

This subflow starts when the user browses the Annual Reports table in the page. Each entry in this table contains the organization name, academic year, submission date, and report ID of the annual reports they have submitted. These entries are clickable, creating a subflow that will be discussed below.

1.3.1. View Report Google Drive

This subflow starts when the user clicks anywhere on an entry in the Annual Reports table. The Google Drive folder containing the submitted scanned forms will be opened in a new tab.

2. Submit an Activity

The main flow of this use case starts when the user visits the Submit a Request page. If it is the first time the user accesses the page, they will be prompted to read and agree to the SRO Activity Request Guidelines. Once the user has already agreed, they will be able to access the request form, which is divided into four sections: (1) General Information, (2) Date Information, (3) Specifications, and (4) Submission.

Under the first section, the user will fill out the general information regarding their activity, such as the name of the organization, the contact details and the position within the organization of the submitting user, and the basic information regarding the activity. Here, the user has to specify if the organization has partners within the university in conducting the activity. Once the user has accomplished this section, they will be able to access the next section.

In the Date Information section, the user has to provide the information regarding the schedule of the activity. This includes specifying whether the activity is recurring or not, and the start date and the start and end time of the activity.

However, if the activity is recurring, the user will have to provide information regarding the end date and frequency of the activity before being able to access the next section.

The Specifications section consists of the details regarding the venue of the activity and the adviser of the organization. Moreover, if the user specified that the organization has partners within the university for the activity in the first section, they have to select all in-campus partners and provide a description of the roles of their partners. Lastly, they have to provide the name and contact information of the Green Campus monitor for their activity before being granted access to the last section.

In the last section, the user will upload a single PDF file compilation of the scanned copies of the required documents before clicking submit. The user has to confirm the submission in a pop up dialogue before being redirected back to the dashboard.

3. Book an Appointment

The main flow of this use case begins when the user accesses the Book an Appointment page, where the user will specify their reason for setting an appointment, mode of meeting, and contact information, and select the date of the appointment. Selecting a date will show both the booked and available slots for that date, where the user will choose their desired time slot. Once all required information has been entered, the user will be able to submit their booking using the “Book Appointment” button.

However, the user has an option to view their appointments, which is a subflow to be discussed further.

3.1. View My Appointments

This subflow starts when the user clicks the “My Appointments” button at the top of the “Book an Appointment” page. The scheduled appointments of the user will be displayed wherein the user will have the option to reschedule their desired appointment, creating a nested subflow that will also be considered separately.

3.1.1. Reschedule an Appointment

This nested subflow starts when the user clicks on the "Reschedule" button next to their desired appointment. A window will pop up, where the user can select a new date and time. The user will be required to enter a reason for rescheduling before being able to click the "Request Reschedule" button to finalize their request.

3.1.3.3. Relationships Among Use Cases

This section elaborates on the relationships between the specified use cases, as illustrated in the diagram. It can be seen in the use case diagram that the student users and the superadmin users are generalized into the "User" actor since they both have the same access to all the use cases in the diagram. Accessing the "My Submissions" page, submitting an activity, and booking an appointment are the three main flows for this diagram.

Both textual and visual representations have shown that the "Access My Submissions Page" use case includes the functionality to view submitted activities, organization recognition applications, and annual reports. "View Submitted Activities" generalizes the "View Requested Activities" and the "View Approved Activities" use cases. Further, this use case extends the capabilities of viewing activity details, submitting an appeal, and requesting cancellation.

Similarly, the "Book an Appointment" use case extends its functionality to view booked appointments, which then extends its functionality to reschedule an appointment.

These structures enable the system to explicitly handle cases that represent potential exceptions to the primary flow.

Lastly, “Submit an Activity” is a standalone main flow which does not extend to further functionalities.

3.1.3.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.1.4. Student Interface: Organizational Requirements Use Case Views

In this section, the use cases for the Organizational Requirements panel within the student user interface will be described and illustrated into a use case diagram. This interface will also be accessible to the superadmin user for testing and debugging purposes.

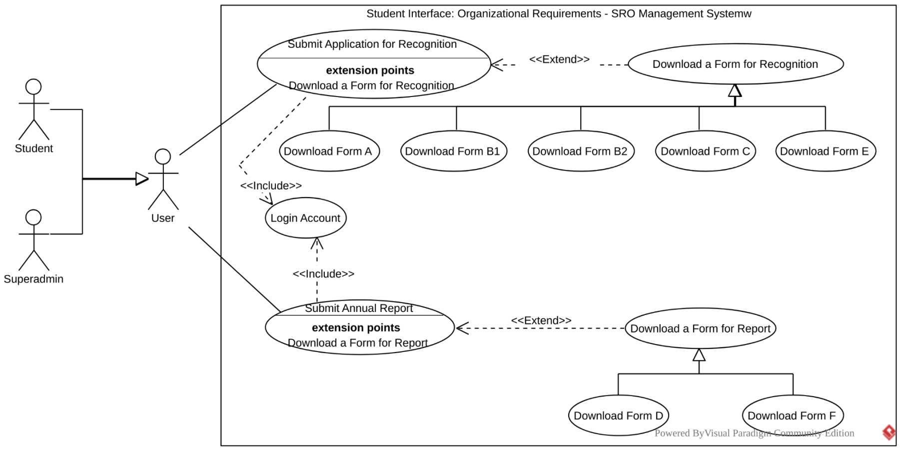

Figure 1.4. Use case diagram for accessing pages within the organizational requirements panel in the student user interface

3.1.4.1. Name and Description of Use Case View

This use case diagram illustrates the interactions of students and superadmins with the Application for Recognition and Annual Report pages under the Organizational Requirements panel of the student user interface. This discusses the main flows of the functionalities including the possible subflows that the user can access through these pages.

3.1.4.2. Flow of Events of Use Case View

There are two main flows for this use case diagram that will be discussed in detail separately.

1. Submit Application for Recognition

The main flow of this use case begins with the user accessing the “Application for Recognition” page. On the page, the user is required to enter the organization name and select the organization type from a dropdown list. Next, the user will select the academic year for the recognition and enter the name and contact details of the chairperson/president, adviser, and co-adviser, if applicable. Afterwards, the user can upload their scanned copies of the following documents in PDF format:

a) Revised OSA Form A
b) OSA Form B1
c) OSA Form B2
d) OSA Form C
e) Revised OSA Form E
f) Constitution and Bylaws

Once the user has uploaded the required documents, they will click “Submit Form” to finalize their submission. However, the user may also download a copy of the forms in items (a) to (e) via this page, which will be described in detail.

1.1. Download a Form for Recognition

This subflow begins when the user clicks the “Download” button next to the form that they need to download a copy. The Google Docs file of the chosen form will be opened in a new tab in read-only mode, wherein they can utilize the functionalities of Google Docs to download the file or make a copy. This can be done to any of the five required forms.

2. Submit Annual Report

The main flow of this use case begins with the user accessing the “Annual Report” page. On this page, the user will select their organization, enter the organization email, and select the academic year for their annual report. Afterwards, the user can upload their scanned copies of the following documents in PDF format:

a) Revised OSA Form D
b) Form F

Once the user has uploaded the required documents, they will click “Submit Form” to finalize their submission. However, the user may also download a copy of the forms via this page, which will also be described in detail.

2.1. Download a Form for Report

This subflow begins when the user clicks the “Download” button next to the form that they need to download a copy. The Google Docs file of the chosen form will be opened in a new tab in read-only mode, wherein they can utilize the functionalities of Google Docs to download the file or make a copy. This can be done to any of the required forms.

3.1.4.3. Relationships Among Use Cases

In this use case diagram, the two actors, student and superadmin, are generalized into the user actor since they both have the same access to all use cases. The two main use cases, “Submit Application for Recognition” and “Submit Annual Report”, both extend to functionalities to download the forms required for their submission, which is generalized for all forms as they all follow the same flow. This structure enables the system to explicitly handle cases that represent potential exceptions to the primary flow.

3.1.4.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.1.5. Administrator Interface: View Activity Details Use Case Views

In this section, the use case for viewing activity details within the administrator interface will be described and illustrated into a use case diagram. This interface will also be accessible to the superadmin user but with exceptions for testing and debugging purposes.

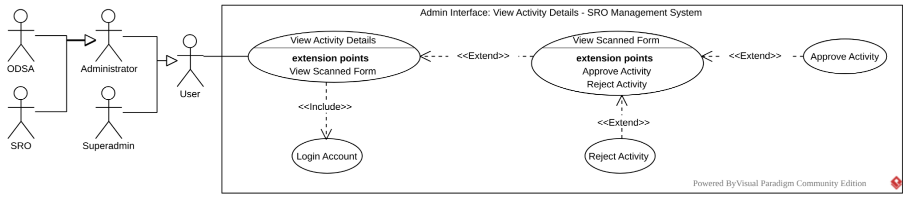

Figure 1.5. Use case view diagram for viewing the activity details in admin interface

3.1.5.1. Name and Description of Use Case View

This use case diagram shows the functionality to view activity details, a core functionality that is used in various pages within the administrator interface. This discusses the main flow of the functionality including the possible subflows that the user can access through this functionality depending on their specific role.

3.1.5.2. Flow of Events of Use Case View

The main flow of this use case starts when the user clicks on an activity request. A dialog containing all the details of the selected activity will be displayed. The user will have an option to open the scanned form for the activity, creating a subflow.

1. **View Scanned Form**

   This subflow starts when the user clicks “View Scanned Form” at the bottom of the dialog. The Google Drive file of the submitted scanned document will open in a new tab. This action will enable the approve and reject capabilities for that activity, but with limitations depending on the status of the activity request and the user role, which will all be discussed in detail below.

1.1. User is a superadmin

If the user is a superadmin, the approved and reject buttons will not be enabled as they do not have the capability to act on submissions.

1.2. User is an SRO staff

If the user is an SRO staff member, the approve and reject buttons will be enabled only if the request has not been approved by the SRO yet. Otherwise, it will be marked as “Waiting for ODSA approval” if it has not been approved by ODSA yet or “Approved” if it has already been approved by both administrators.

If these buttons are enabled, there will be two potential subflows. However, first, the user will have an option to enter their remarks regarding the activity request.

1.2.1. Approve activity

This subflow starts when the user clicks the “Approve” button. A confirmation dialog will pop up, where the user can click “Confirm” to proceed with the approval. Afterwards, the activity request will be marked as “Waiting for ODSA Approval.”

1.2.2. Reject activity

This subflow starts when the user clicks the “Reject” button. A confirmation dialog will pop up, where the user can click “Confirm” to proceed with the rejection. The activity request will then be marked as rejected and will not be forwarded to the ODSA.

1.3. User is an ODSA staff

If the user is an ODSA staff member, the activity request will only reflect if it has already been approved by the SRO. Thus, the approve and reject buttons will always be enabled after clicking “View Scanned Form” unless the activity was already marked as approved.

When these buttons are enabled, there will be two potential subflows. However, first, the user will have an option to enter their remarks regarding the activity request.

1.3.1. Approve activity

This subflow starts when the user clicks the “Approve” button. A confirmation dialog will pop up, where the user can click “Confirm” to proceed with the approval. Afterwards, the activity request will finally be marked as approved.

1.3.2. Reject activity

This subflow starts when the user clicks the “Reject” button. A confirmation dialog will pop up, where the user can click “Confirm” to proceed with the rejection. The activity request will then be marked as rejected.

3.1.5.3. Relationships Among Use Cases

In this use case diagram, the “ODSA” and “SRO” actors are generalized into the “Administrator” actor, which is generalized into the “User” actor along with the “Superadmin” actor. This is because they are all associated with the “View Activity Details” use case. This use case extends the capability to view scanned forms, which then extends to the functionality of approving or rejecting activity requests, with exceptions. This structure enables the system to explicitly handle cases that represent potential exceptions to the primary flow.

3.1.5.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.1.6. Administrator Interface: Dashboard Use Case Views

In this section, the use cases for the Admin Dashboard will be described and illustrated into a use case diagram. This will also be accessible to the superadmin, with limitations for testing and debugging purposes.

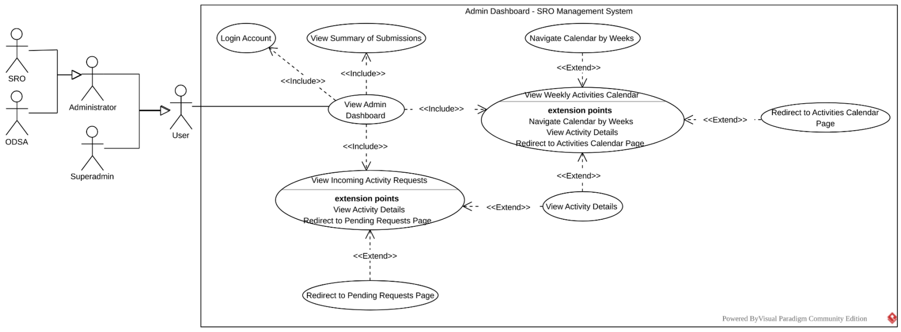

Figure 1.6. Use case diagram for the dashboard in administrator interface

3.1.6.1. Name and Description of Use Case View

This use case diagram illustrates the interactions of both administrators and superadmins with the Admin Dashboard page in the admin user interface. It highlights the core functionalities available to users, such as accessing the admin dashboard, browsing incoming activity requests, and browsing the weekly activities calendar. This discusses the main flow of the functionalities including the possible subflows that the user can access through these pages.

3.1.6.2. Flow of Events of Use Case View

There is only one main flow for this use case diagram, which starts when the user accesses the “Admin Dashboard” page. Through the dashboard, the user can view the summary of submissions at the top, weekly activities calendar at the right hand side, and incoming activity requests at the left hand side. These are the three subflows of this use case, which will be explained in more detail separately.

1. **View Summary of Submissions**

   This subflow does not require any interactions between the user and the web application. It merely provides the administrator an overview of the submissions by showing statistics at the top of the page that dynamically changes to reflect the values in real time. It shows the total number of submissions, pending and approved activity requests, pending and approved organization recognition applications, and number of annual reports submitted.

2. **View Weekly Activities Calendar**

   At the right hand side of the page, the weekly activity calendar card is displayed. It shows the user an overview of the activities happening on the selected week, with only a maximum of one activity displayed per day. Similar to the student interface, if there are more than one activity in a day, the number of other activities will be displayed in a button. With this, the user has the option to (1) navigate the calendar by weeks, (2) view activity details, or (3) redirect to activities calendar page, creating three subflows.

   2.1. Navigate Calendar by Weeks

   This subflow starts when the user clicks the chevron left or right button at the top of the card. The weekly calendar will then switch to the previous or the next week, respectively. The activities for the selected week will also be displayed accordingly.

   2.2. Redirect to Activities Calendar Page

   This subflow can be started by either clicking on the "View Activities Calendar" button at the bottom of the card or by clicking the button indicating the number of remaining activities in a day, which is only displayed when there are more than one activities in a day during the selected week. Upon clicking either of those buttons, the user will be redirected to the "Activities Calendar" page.

2.3. View Activity Details

This subflow starts when the user clicks on any activity card in the weekly activities calendar. It reuses the instance of the View Activity Details use case from Figure 1.5.

3. View Incoming Activity Requests

This main flow starts when the user browses through the Incoming Activity Requests card, where a table containing pertinent information of each incoming activity request is displayed. The user has the option to (1) view the details of an activity or to (2) redirect to the "Pending Requests" page. These two subflows will be considered individually.

3.1. View Activity Details

This subflow starts when the user clicks anywhere on a row containing an entry in the table. This also reuses the instance in the View Activity Details use case in Figure 1.5.

3.2. Redirect to Pending Requests Page

This subflow starts when the user clicks on the "See More" button at the bottom of the card, redirecting the user to the "Pending Requests" page.

3.1.6.3. Relationships Among Use Cases

As observed in both the textual and visual representations of the use case diagram, there are three actors for this use case: SRO, ODSA, and superadmin. "SRO" and "ODSA" are both generalized into the "Administrator" actor, while the "Administrator" and "Superadmin" actors are generalized into the "User" actor. This shows that these three actors share the same association with the “View Admin Dashboard” use case, albeit a few exceptions as mentioned in the Administrator Interface: View Activity Details Use Case View.

The main use case includes three use cases: “View Summary of Submissions”, “View Weekly Activities Calendar”, and “View Incoming Activity Requests”. With the exception of the first use case, these use cases extend to their own secondary use cases. This structure enables the system to explicitly handle cases that represent potential exceptions to the primary flow.

The “View Weekly Activities Calendar” use case extends to the functionality of navigating the calendar by weeks, viewing activity details, and redirecting to activities calendar page. On the other hand, the “View Incoming Activity Requests” use case only extends to the functionality of viewing activity details and redirecting to the “Pending Requests” page. It can be observed that these two use cases both extend to the “View Activity Details” use case.

3.1.6.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram. However, it also integrates with the “View Activity Details” use case as the administrators have the capability to view the details of any activity request within the system.

3.1.7. Administrator Interface: Activity Requests Use Case Views

In this section, the use cases that deal with activity requests in the administrator interface will be described and illustrated into a use case diagram. This will also be accessible to the superadmin with limitations for testing and debugging purposes.

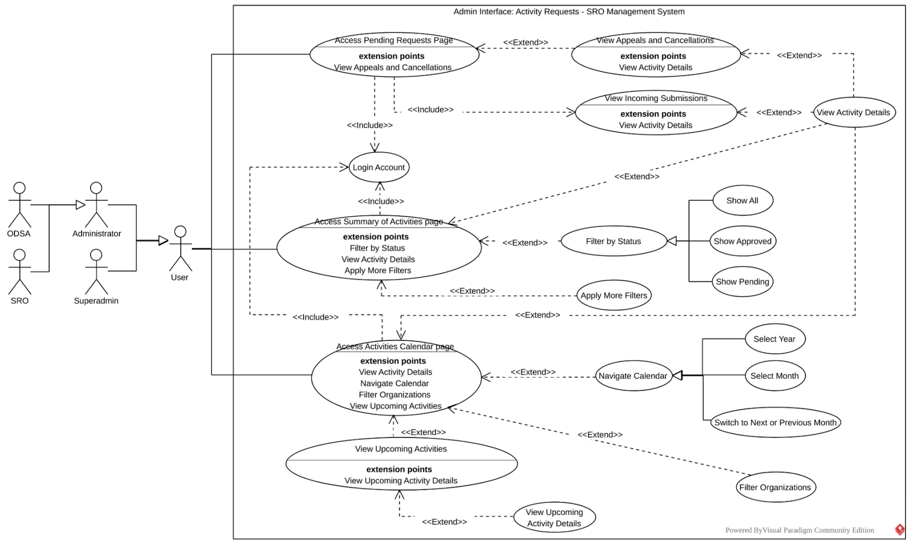

Figure 1.7. Use case diagram for the use cases involved in activity request in administrator interface

3.1.7.1. Name and Description of Use Case View

This use case diagram illustrates the interactions of both administrators and superadmins with the pages involved in processing activity requests in the administrator user interface. It highlights the core functionalities available to users, such as processing appeals and cancellations, processing activity requests, and summarizing activity requests. This discusses the main flow of the functionalities including the possible subflows that the user can access through these pages.

3.1.7.2. Flow of Events of Use Case View

This use case view has three main flows that will be considered separately.

1. **Access Pending Requests Page**

   The main flow of this use case starts with the user accessing the “Pending Requests” page. On this page the user will be able to see the list of incoming submissions, summarized into a table. Only the SRO admin will have the option to view appeals and cancellations, which will be discussed further below. However, both administrators can view the details of any activity visible to them.

1.1. View Appeals and Cancellations

This subflow starts when the SRO clicks on the "Appeals and Cancellations" tab in the selector above the table. This will trigger the webpage to switch to the Appeals and Cancellations table, where pending appeals and cancellation requests are summarized into a table. Switching back to the Incoming Submissions will only require clicking on its corresponding tab in the same selector.

1.2. View Activity Details

Clicking on any entry in both tables will reuse the instance in the View Activity Details use case in Figure 1.5.

2. Access Summary of Activities Page

This main flow starts when the user visits the "Summary of Activities" page. On this page, all activity requests are summarized into a table regardless of status. However, the user has an option to (1) filter the table according to its status and (2) apply more filters according to their preference. The user can then view the details of any activity in the table.

2.1. Filter by Status

This subflow starts when the user clicks on either the "Show All", "Approved", or the "Pending" tab in the selector above the table. The entries in the table will be filtered according to the selected tab.

2.2. Apply More Filters

The subflow to apply more filters to the table starts when the user clicks on the funnel button at the top right corner of the card. This will reveal the "Filter Activities" dialog where the user can select their preferred organization, activity category, month of implementation, and academic year of implementation in separate dropdown menus. Additionally, the user can limit the number of rows per page in the summary table within the same dialog.

2.3. View Activity Details

Similar to other pages, clicking on any row in the table will reuse the instance in the View Activity Details use case in Figure 1.5.

3. Access Activities Calendar Page

The main flow of this use case starts when the user visits the Activities Calendar page. The calendar will be displayed on the page, with dropdown menus at the top and the Upcoming Activities table at the bottom of the calendar. The calendar will select the current month by default, where all approved activities will be displayed for each day of the month. The user will then have the option to (1) navigate the calendar according to year, month, or by switching to the next or previous month, (2) view activity details, (3) filter displayed organizations, and (4) view upcoming activities. These four subflows will be considered separately.

2.5. Navigate Calendar

This subflow generalizes the three use cases to navigate the activity calendar: (1) selecting the year, (2) selecting the month, and (3) switching to the previous and next months. These use cases will be expounded further below.

1.1.4. Select Year

The subflow starts when the user clicks on the dropdown containing the year. They will then be able to select the desired year in the dropdown menu and the calendar will be updated automatically.

1.1.5. Select Month

The subflow starts when the user clicks on the dropdown containing the month. They will then be able to select the desired month in the dropdown menu and the calendar will be updated automatically.

1.1.6. Switch to Next or Previous Month

This subflow starts when the user clicks on the left or right chevron buttons, allowing the calendar to switch to the previous month or to the next month, respectively.

2.6. View Activity Details

This subflow starts when the user clicks on an activity card in the activity calendar. When clicked, it reuses the instance in the View Activity Details use case in Figure 1.5.

2.7. Filter Displayed Organizations

The subflow starts when the user clicks on the "Select Organization" dropdown. They will then be able to select the desired organization in the dropdown menu and the contents of the calendar will be automatically limited to the activities hosted by the selected organization only.

2.8. View Upcoming Activities

This subflow starts when the user browses the list of upcoming activities. This table will only contain the upcoming activities for the next 30 days, where they can click on each activity to view more details, creating a sub-subflow to be discussed below.

2.8.1. **View Upcoming Activity Details**

This sub-subflow starts when the user clicks on the desired activity. It then reuses the instance in the View Activity Details use case in Figure 1.5.

3.1.7.3. Relationships Among Use Cases

As seen in the visualization of the use case diagram, the three actors “ODSA”, “SRO”, and “Superadmin” are all generalized into the “User” actor, which is then associated with the three main use cases.

First, the “Access Pending Requests Page” use case includes the functionality to view incoming submissions while it only extends the functionality to view appeals and cancellations since it is limited to the SRO admin only. However, both secondary use cases extend the capability to view activity details.

Next, the “Access Summary of Activities Page” use case extends three use cases: “View Activity Details”, “Filter by Status”, and “Apply More Filters”. The “Filter by Status” use case is a generalization of the filter functionality so that either all activities or only the approved or pending activities are shown exclusively.

The last main use case also extends the capability to view activity details, navigate the calendar by selecting a year, month, or switching to next or previous month, filter the displayed organizations, and view upcoming activities, which extends so that the upcoming activity details can also be viewed.

3.1.7.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram. However, it also integrates with the “View Activity Details” use case as the administrators have the capability to view the details of any activity request within the system.

3.1.8. Administrator Interface: Organizational Recognition Application Use Case Views

This section outlines and illustrates the use cases for the organization recognition application through a use case diagram. Access to this section will also be granted to the superadmin, subject to certain limitations, for testing and debugging purposes.

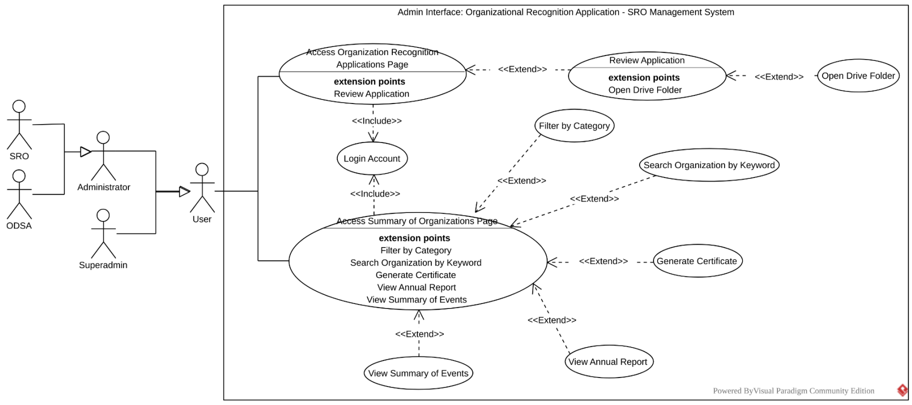

Figure 1.8. Use case diagram for the organizational recognition application in administrator interface

3.1.8.1. Name and Description of Use Case View

This use case diagram illustrates the interactions of both administrators and superadmins with the “Organization Applications” and “Summary of Organizations” pages in the admin user interface. This discusses the main flow of the functionalities including the possible subflows that the user can access through these pages.

3.1.8.2. Flow of Events of Use Case View

The user can access two main flows in this use case diagram.

1. **Access Organization Recognition Applications Page**

The primary flow of this use case begins when the user visits the “Organization Applications” page. On this page, the table summarizes the applications according to the information filled out by the requesting students. While the SRO can see all applications regardless of status, the ODSA can only see the applications that have already been approved by the SRO. Hence, rejected submissions are not visible to ODSA. Each entry can be clicked by both administrators to review the application.

1.1. Review Application

This subflow begins with the user clicking on any row in the table. A dialog will pop up where they will be able to see the organization name, name of the chairperson/president, name of adviser, organization type, academic year of application, and date of submission. In the same dialog, they can select "Yes" or "No" to signify their approval or rejection, respectively. Afterwards, the user will select the status of the organization before clicking "Confirm". Additionally, they can also view the Google Drive folder containing the scanned documents linked to the submission. This will be discussed further below.

1.1.1. Open Drive Folder

This subflow begins when the user clicks the "Drive Folder" button with a download icon. This will open the Google Drive folder containing the submitted scanned documents in a new tab. This Google Drive folder will contain the submissions under the selected application only, and not all applications.

2. Access Summary of Organizations Page

This main flow starts with the user accessing the "Summary of Organizations" page where they will be able to see all approved organizations, organized into separate cards that also contain their contact information. The user will have the option to (1) filter the organizations by category, (2) search organizations using keywords, (3) generate certificates, (4) view annual reports, and (5) view summary of events.

2.1. Filter by Category

This subflow begins when the user clicks on the "All Categories" dropdown, where they can select their desired category. Only the cards of the organizations falling into the selected category will be displayed.

2.2. Search Organization by Keyword

This subflow begins when the user clicks on the search bar and enters a keyword. Only the cards of the organizations with names matching the keyword will be displayed. The match can be in any part of the organization name.

2.3. Generate Certificate

This subflow begins when the user clicks on the "Generate Certificate" button in any organization card. A certificate generated for the selected organization will be opened in a new tab, where the print dialog will automatically be opened. In this dialog, the user can configure the print settings before printing the certificate.

2.4. View Annual Report

This subflow begins when the user clicks the "View Annual Report" button in any organization card. The Google Drive folder containing the scanned documents linked to the submission of the selected organization will be opened in a new tab.

2.5. View Summary of Events

This subflow starts when the user clicks the "Summary of Events" button in any organization card. The accomplished Revised ODSA Form D submitted by the organization will be opened in a new tab.

3.1.8.3. Relationships Among Use Cases

Three actors are generalized into the “User” actors in this use case diagram, meaning that the “SRO”, “ODSA”, and “Superadmin” are all associated with the two main use cases. The only limitation of the “Superadmin” actor will be their incapability to review organization applications.

The first main use case, “Access Organization Recognition Applications Page” use case, extends to the functionality of reviewing applications through which the user has an option to open the Drive Folder containing the submitted documents for the application.

The second use case, “Access Summary of Organizations Page” extends five functionalities: (1) filtering organizations by category, (2) searching organizations by keyword, (3) generating recognition certificates, (4) viewing annual reports, and (5) viewing summary of events for every organization.

3.1.8.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.1.9. Administrator Interface: Annual Reports Use Case Views

This section describes and illustrates the use case view for the annual report submissions in the administrator interface. This will also be completely accessible to the superadmin for testing and debugging purposes.

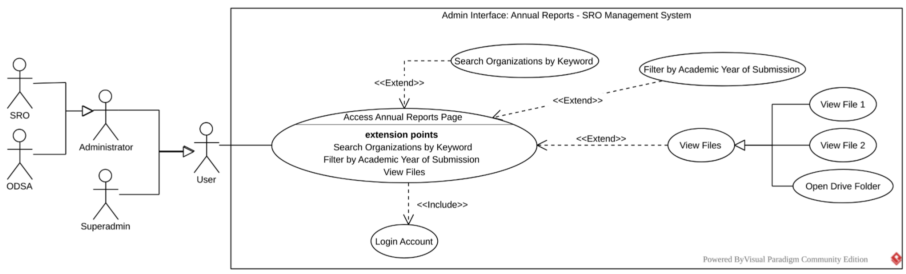

Figure 1.9. Use case diagram for the dashboard in administrator interface

3.1.9.1. Name and Description of Use Case View

This use case diagram illustrates the interactions between the user and the web application when viewing the annual report submissions in the administrator interface. It highlights the core functionalities available to users such as filtering the submissions, searching for organizations, and downloading the submitted files. This explores the primary flow of the functionalities including the possible subflows that the user can access through these pages.

3.1.9.2. Flow of Events of Use Case View

The main flow of this use case starts when the user visits the Annual Reports page in the administrator interface. The annual report submissions of each organization will be listed down in separate cards where the user can (1) view the files submitted separately or (2) open the Drive Folder containing the submissions for each submitting organization. The user can also opt to (1) search for organizations by keyword or (2) filter the submissions by academic year. In total, there are four subflows for this use case, which will be discussed further individually.

1. View Files

This use case generalizes the three subflows for the user to access the submitted files.

1.1. View Files Separately

This subflow starts when the user clicks on either the “View File 1” or “View File 2” button at the right end of the card containing the submission details of the annual report. The selected file will be opened in a new tab via Google Drive so that the user can utilize its functionalities to download the selected file.

1.2. Open Drive Folder

This subflow starts when the user clicks the “Open Drive Folder” button at the right end of the card containing the submission details of the annual report. The Google Drive folder containing the two files submitted by the organization will be opened in a new tab.

2. **Search Organizations by Keyword**

This subflow starts when the user enters a keyword in the search bar above the submission cards. Only the submissions with organization names containing the entered keywords will be displayed on the page.

3. **Filter Academic Year of Submission**

This subflow starts when the user clicks the academic year dropdown next to the search bar. This will allow the user to select the desired academic year to filter the submissions. Only the annual reports for the selected academic year will be displayed.

3.1.9.3. Relationships Among Use Cases

Three actors can access these use cases with no limitations. The "SRO" and "ODSA", generalized to be the "Administrator" actor, and the "Superadmin". They can access the main use case which extends to the three functionalities that they can opt to use, searching organizations by keywords, filtering by academic year, and viewing files. This structure enables the system to explicitly handle cases that represent potential exceptions to the primary flow.

3.1.9.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.1.10. SRO Interface Use Case Views

In this section, the use case view for the functionalities that can be accessed by the SRO only will be illustrated and visualized into a use case diagram.

This can also be accessed by the superadmin for testing and debugging purposes.

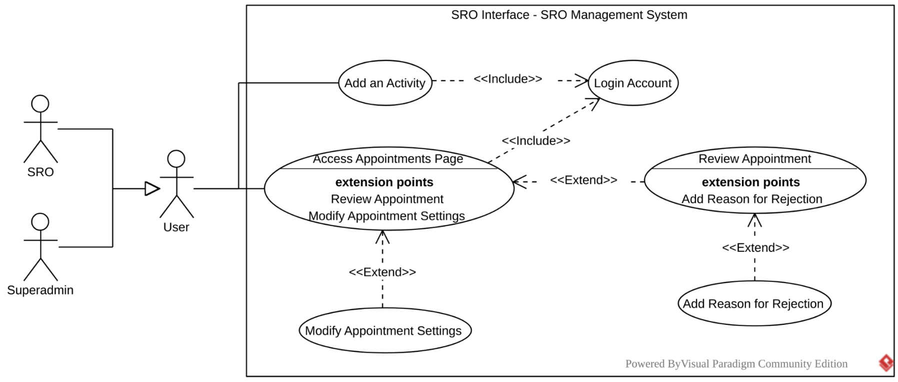

Figure 1.10. Use case diagram for the functionalities unique to the SRO Administrator

3.1.10.1. Name and Description of Use Case View

This use case diagram illustrates the interactions between the SRO administrator and the “Appointments” and “Add an Activity” pages. It highlights the core functionality of the user to add an approved activity, access the list of appointments booked by students, and modify the appointment settings. This discusses the main flow of the functionalities including the possible subflows that the user can access through these pages.

3.1.10.2. Flow of Events of Use Case View

Two main flows will be discussed in this use case view.

1. **Add an Activity**

   The main flow of this use case starts when the user visits the Add a Request page. If it is the first time the user accesses the page, they will be prompted to read and agree to the SRO Activity Request Guidelines. Once the user has already agreed, they will be able to access the form, which is divided into four sections: (1) General Information, (2) Date Information, (3) Specifications, and (4) Submission. The user will fill out all the details using the hardcopy submitted by the requesting organization.

Under the first section, the user will fill out the general information regarding the approved activity, such as the name of the organization, the contact details and the position within the organization of the submitting student, and the basic information regarding the activity. Here, the user has to specify if the organization has partners within the university in conducting the activity. Once the user has accomplished this section, they will be able to access the next section.

In the Date Information section, the user has to provide the information regarding the schedule of the activity. This includes specifying whether the activity is recurring or not, and the start date and the start and end time of the activity. However, if the activity is recurring, the user will have to provide information regarding the end date and frequency of the activity before being able to access the next section.

The Specifications section consists of the details regarding the venue of the activity and the adviser of the organization. Moreover, if the user specified that the organization has partners within the university for the activity in the first section, they have to select all in-campus partners and provide a description of the roles of their partners. Lastly, they have to provide the name and contact information of the Green Campus monitor for the activity before being granted access to the last section.

In the last section, the user will upload a single PDF file compilation of the scanned copies of the required documents before clicking submit. The user has to confirm the submission in a pop up dialogue before being redirected back to the dashboard.

2. Access Appointments Page

The main flow of this use case starts when the user visits the “Appointments” page, where the list of upcoming appointments booked by students will be displayed. These appointments can be approved and rejected by the SRO in addition to modifying the appointment settings, which will be discussed in the following subflows.

2.1. Review Appointment

This subflow starts when the user clicks on an appointment in the list. A dialog box containing the appointment details will be displayed. The user can enter their comments regarding the appointment before selecting the "Confirm" or "Reject" buttons. Once confirmed, an email will be automatically sent to the requesting user. However, rejecting the appointment will trigger a sub-subflow.

2.1.1. Add Reason for Rejection

This sub-subflow starts when the user clicks "Reject" in the "Appointment Details" dialog. The SRO will be prompted to add a reason before finalizing the rejection process. Once finalized, an email will be sent to the requesting user.

2.2. Modify Appointment Settings

This subflow begins with the user toggling the "Settings" tab above the list of upcoming appointments. In this page, the user can modify the start and end time of their consultation hours, the interval between appointments, and the dates and time slots that will be unavailable for booking.

3.1.10.3. Relationships Among Use Cases

Here, the relationship between the use cases will be elaborated. It can be seen in the diagram that the "SRO" and "Superadmin" actors can both access the two main use cases in the diagram. The "Add an Activity" use case is a standalone use case that does not extend to further functionalities. On the other hand, the "Access Appointments Page" use case extends to the functionality of reviewing appointments, which then extends to the functionality of adding a reason for rejection, and modifying appointment settings. This structure enables the system to explicitly handle cases that represent potential exceptions to the primary flow.

3.1.10.4. Related Use Cases

Since users must log in before accessing any page of the web application, the login use case is incorporated into this use case diagram.

3.2. Activity Diagram

An activity diagram is used to model the workflow or process logic within the system from the perspective of the system components: the user, the web application, and the web server. It illustrates the sequence of actions, decision points, parallel activities, and outcomes involved in a particular use case or feature. In the context of this software architecture, the activity diagrams make use of swimlane to help visualize how different components interact during specific processes, making it easier to analyze control flow, identify dependencies, and ensure proper handling of conditional logic or concurrent tasks.

3.2.1. Logging In

This activity diagram shows how the User, the Web Application, and the Web Server all work together to verify the validity of the user using their UP Mail account and direct them to the right dashboard based on their role.

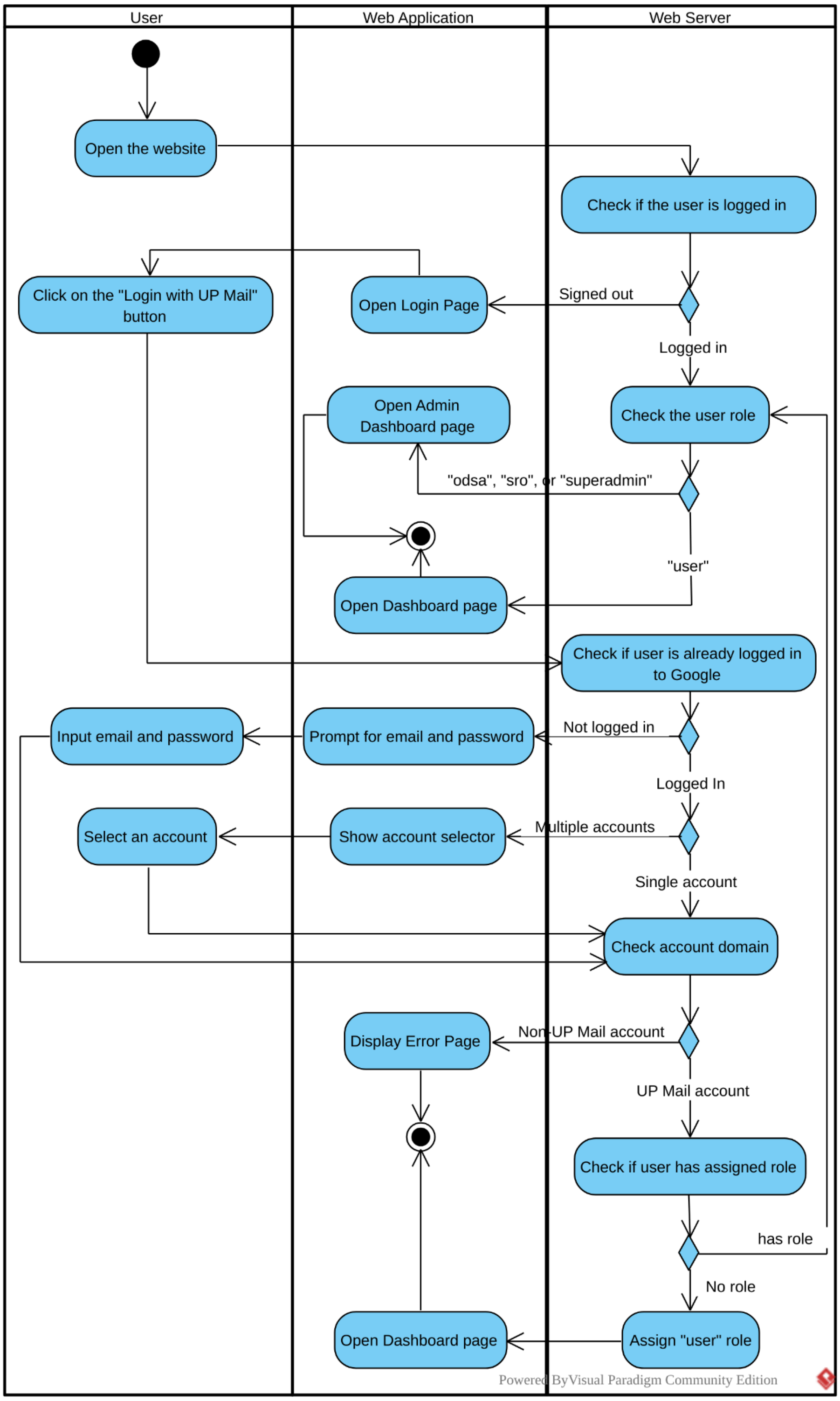

Figure 2.1. Activity flow diagram for logging into the web application

3.2.2. Student User Interface

In this section, various activities that can be performed by the student user are visualized into different activity diagrams to show the flow of interactions between the student, the web application, and the web server.

3.2.2.1. Activity requests

Under these subsections, the process of submitting an activity request and filing for an appeal are illustrated.

3.2.2.1.1. Submitting an activity request

This activity diagram illustrates the step-by-step process a user follows to submit a request through the web application. It outlines user interactions, system responses, and server-side validations across multiple form sections, including "Date Information," "Specifications," and "Submissions." Before moving forward with each section, the inputs are validated. The request is then added to the database after the necessary documents have been uploaded and the submission has been confirmed.

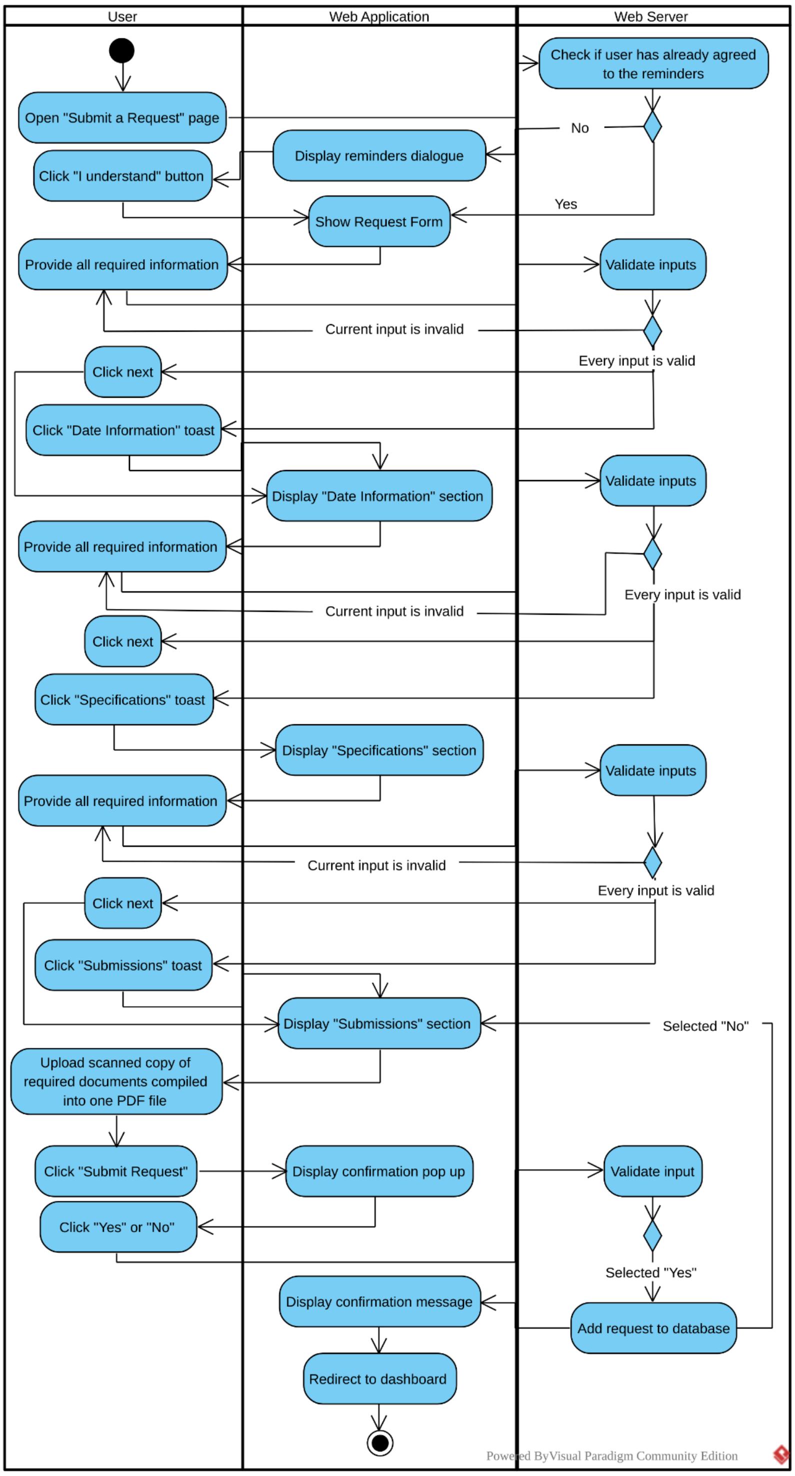

Figure 2.2.1.1. Activity flow diagram for submitting an activity request

3.2.2.1.2. Submitting an appeal

This activity diagram describes the flow of submitting an appeal in the student interface. The student is required to enter a reason for filing an appeal for the selected activity before editing their submission. The system then performs input-validation before enabling the submission of the edited request form. The server then updates the entry in the database.

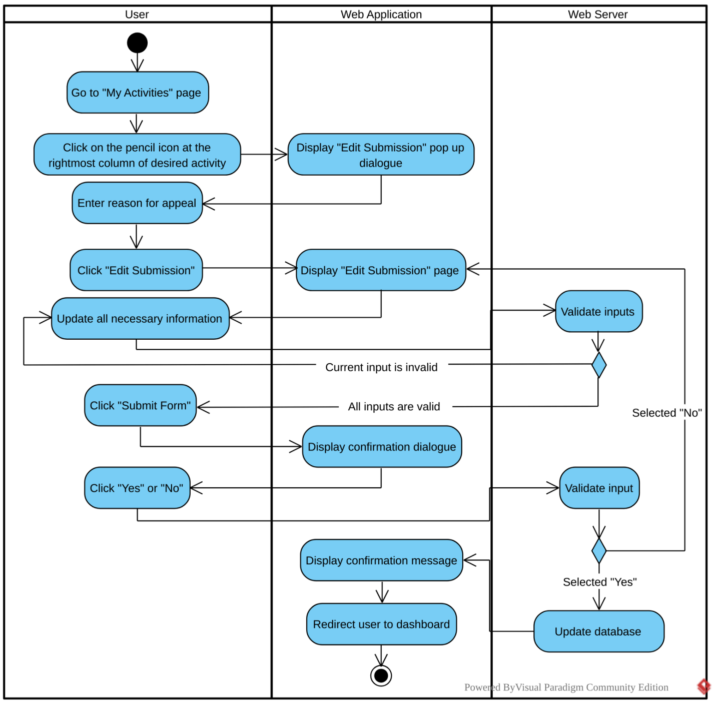

Figure 2.2.1.2. Activity flow diagram for submitting an appeal

3.2.2.2. Appointments

In this subsection, the process of booking and rescheduling an appointment by the student user is highlighted.

3.2.2.2.1. Booking an appointment

This activity diagram shows how users can arrange meetings whenever it is most convenient for them by using the appointment booking page. It helps users make well-informed decisions by giving them a clear view of both available and already-booked time slots.

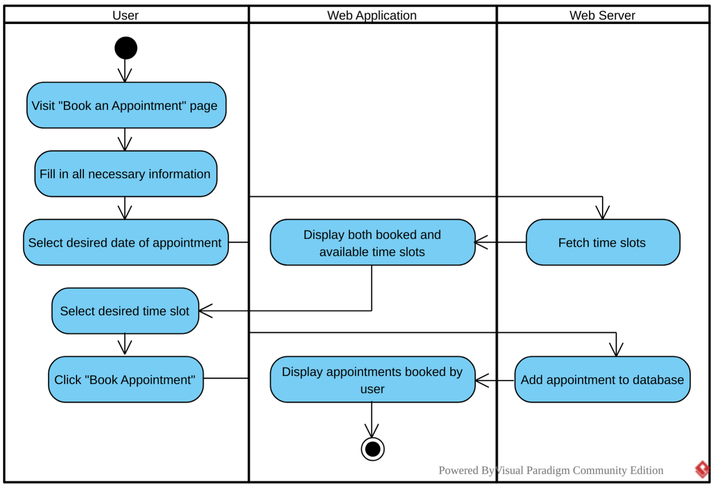

Figure 2.2.2.1. Activity flow diagram for booking an appointment with the SRO

3.2.2.2.2. Rescheduling an appointment

In this activity diagram, the step-by-step process of rescheduling an appointment is visualized. Users can choose to reschedule a particular time slot by choosing a different date and time from the dates shown on the calendar. The database is updated with the new appointment details but the student is required to add a reason for rescheduling.

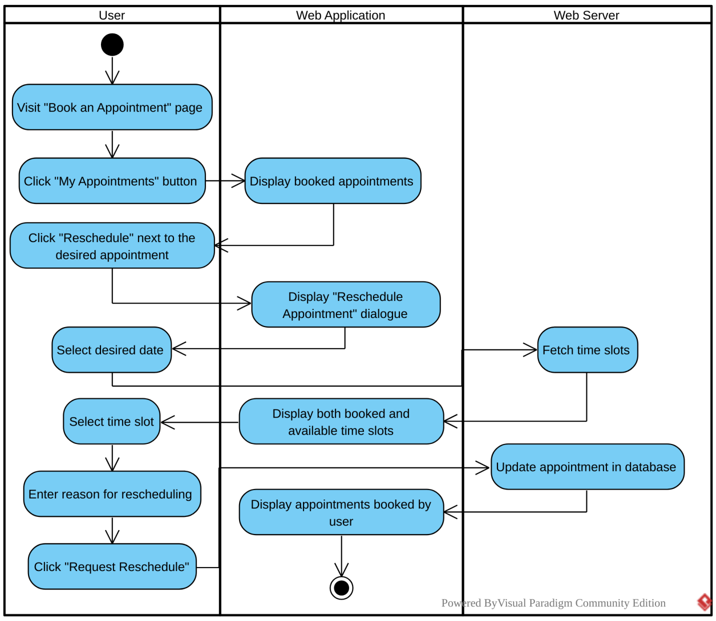

Figure 2.2.2.2. Activity flow diagram for rescheduling an appointment with the SRO

3.2.2.3. Submitting an application for recognition

This subsection focuses on the submission processes when filing an application for organization recognition. To submit an application for recognition, the user must fill out the needed information, and upload the required PDF documents. After confirmation, the files are uploaded to Google Drive and the application is added in the database. There is an optional appointment scheduling step at the end of the procedure.

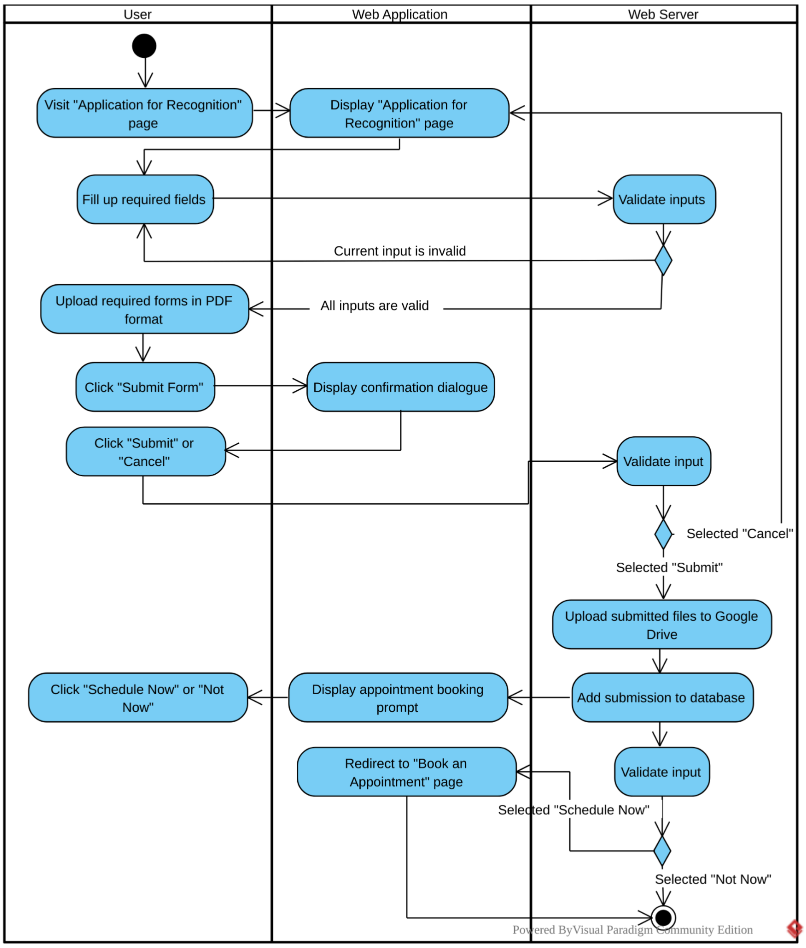

Figure 2.2.3. Activity flow diagram for submitting an organization recognition application

3.2.2.4. Submitting annual report

In this subsection, the activity diagram focuses on the process of submitting annual reports. The user must fill out the necessary information, and upload the required documents in PDF format. Following submission confirmation, the annual report will be added in the database and the papers are uploaded to Google Drive.

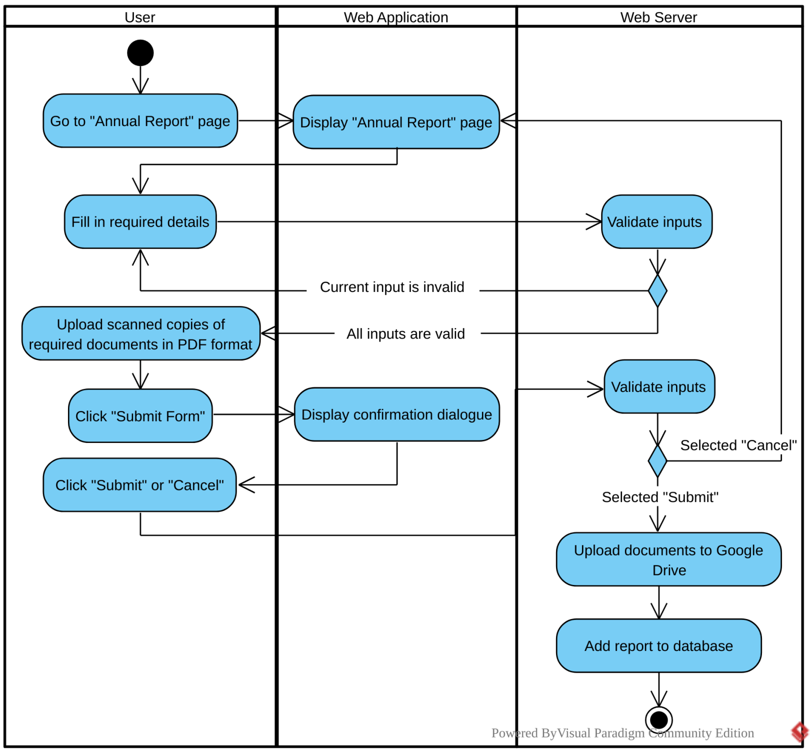

Figure 2.2.4. Activity flow diagram for submitting annual reports

3.2.3. Administrator User Interface

In this section, various activities that can be performed by the administrators are visualized into different activity diagrams to show the flow of interactions between the administrators, the web application, and the web server.

3.2.3.1. Activity Request

In this subsection, the step-by-step processes in approving and rejecting incoming activity requests and adding an approved activity request into the system will be visualized into different activity diagrams.

3.2.3.1.1. Approve incoming activity request

This activity diagram highlights the process of approving an incoming activity request from the SRO to the ODSA. Once an activity request has been approved by the SRO, it will be forwarded to the ODSA for final approval.

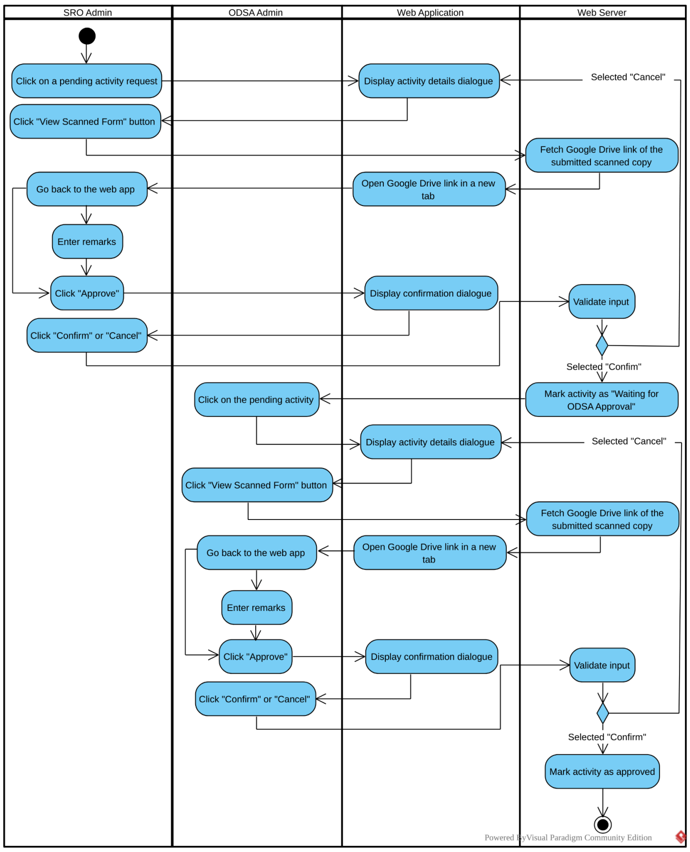

Figure 2.3.1.1. Activity flow diagram for approving an activity request

3.2.3.1.2. Reject incoming activity request

This activity diagram highlights the process of rejecting an incoming activity request. Since requests are not visible to the ODSA unless approved by the SRO, once the SRO rejects an activity request, it will already be marked as rejected.

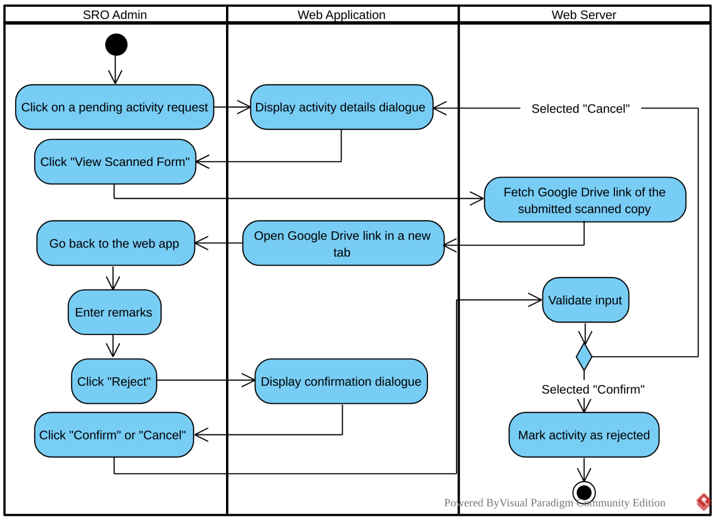

Figure 2.3.1.2. Activity flow diagram for rejecting an activity request

3.2.3.1.3. Add an approved activity request

The process for adding an approved activity request follows the same activity flow as user submission (see Figure 2.2.1), except that the activity would already be marked as approved upon submission. This functionality is limited to the SRO interface only.

3.2.3.2. Organization Recognition Applications

This subsection shows that coordinated involvement from the SRO and the ODSA is required for organization recognition applications. The web server verifies the inputs and updates the application status appropriately, designating it as rejected if either side chooses "No" or as accepted only if both parties agree.

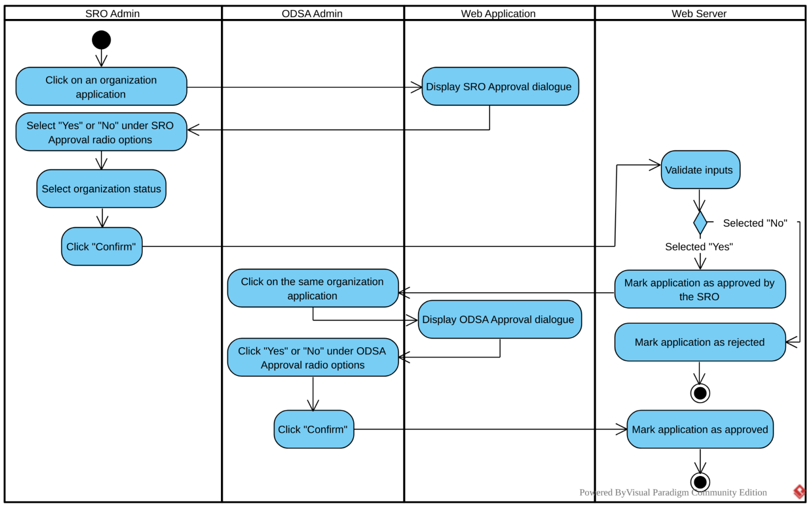

Figure 2.3.2. Activity flow diagram for acting on organization recognition applications

4. Deployment View

In the deployment of the web application, the SRO Management System (SMS) primarily utilizes free cloud hosting and other API services. The four roles (Superadmin, SRO, ODSA, and Student) are expanded into four, only for clarity purposes, and show all access of roles can be used in a standard web browser on any compatible device. The online web app is deployed and is going to be used exclusively with internet access.

Moving on, the frontend server is hosted using Vercel with deployment managed by GitHub and built using Vite. Also, the backend is hosted through Render, which enables the SMS to build and utilize API endpoints, including features like uploading files to cloud storage. For APIs, it uses Google Cloud Platform (GCP) for Gmail and Google Drive, allowing automated emails and automated file handling. Lastly, for the PostgreSQL database and secure Single Sign-On (SSO) authentication, the web app is using Supabase, providing stable and widely trusted solutions for database management and user authentication. There are still considerations ongoing to this web application as the developers are planning to seek a virtual machine (Operating System: Ubuntu Linux) provided by the UP Baguio Systems and Network Office university System Networks. This can effectively assist in removing free hosting constraints and add local file storage and utilize cloud storage as backup files.

The deployment specifics of the application are shown below:

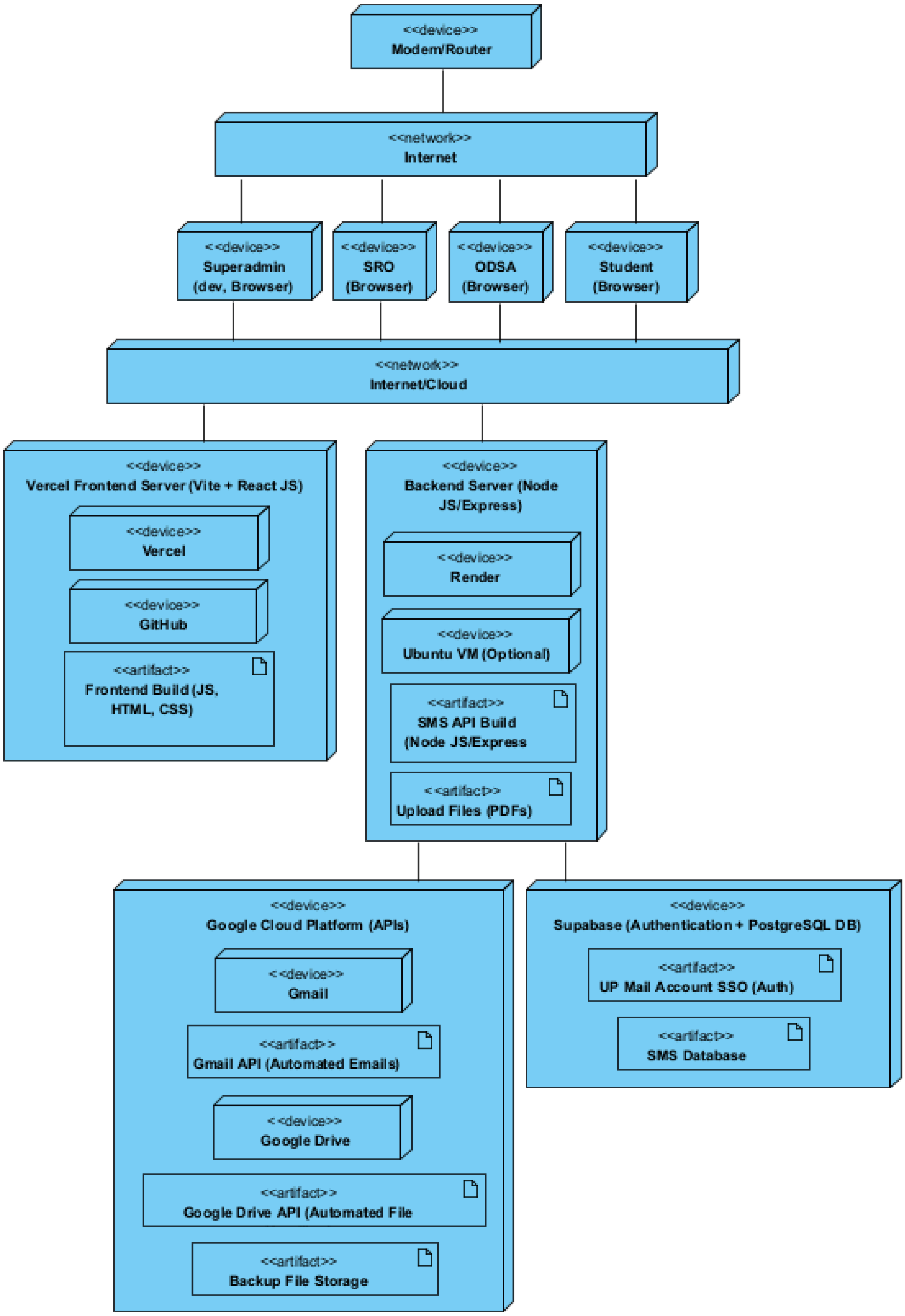

Figure 1. Deployment diagram of SRO Management System

5. Size and Performance

The chosen software architecture for the SRO Web App is designed to meet the anticipated size and performance requirements of the UPB Student Relations Office and its stakeholders:

1. The system can support concurrent access by at least 10 users, including all role access (superadmins, SRO/ODSA staff, and students), without degrading responsiveness, given the scalability of Vercel and Render cloud hosting. This limit is only the minimum given that the system has not yet been tested on a wide scale.
2. Within 2-3 minutes, routine transactions such as submitting activity requests, viewing organizational information, and others can be completed under good internet conditions.
3. The web application is hosted by cloud services, which require no significant disk space and memory on a device of a client. This would most likely require only the typical modern browser requirements, like Google Chrome, which is expected to require less than 500MB of RAM per session.
4. Backend tech dependencies such as Vercel, Render, Supabase, and GCP are handled by respective cloud providers that are meant to have auto-scaling based on demand, requiring minimal manual intervention.

The selected architecture works and follows the client-server model, with clients requiring only browser access and other logic and services handled in the cloud. There are minimal uses of hardware components on the user side; that is, the web applications enable support for vertical and horizontal scaling as user demand grows.

6. Quality

The software architecture supports the quality requirements:

- The user interface shall be compatible with any device with a working web browser installed.
- The user interface of the SRO Management System shall be designed for ease-of-use and shall be appropriate for a computer-literate user community with no additional training on the system.
- The software shall be accessible 24 hours a day, 7 days a week to eliminate the restrictions on processing submissions.

Appendices

This section provides supplementary information that supports the main content of the software architecture documentation. It includes snapshots of the web application, showcasing its functionalities for all users, to provide a more comprehensive understanding of the system. While not central to the architecture itself, these materials offer valuable context and clarification for developers, stakeholders, and maintainers.

Appendix A - CRUD Functionalities

In this subsection, the create, read, update, and delete (CRUD) functionalities will be highlighted and organized according to the interfaces where they can be accessed. These are essential for managing submissions and records within the system.

I. Student User Interface

Below are the CRUD functionalities within the student user interface.

A.1. Viewing Frequently Asked Questions

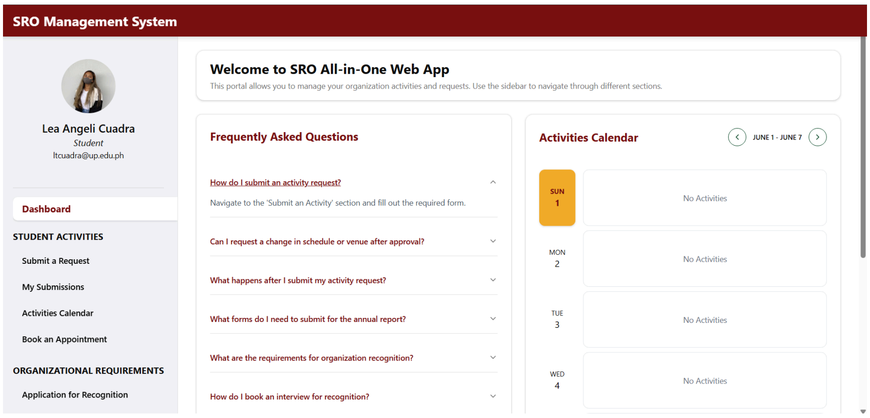

Figure 1. Answer to the selected FAQ

In the dashboard, click on the selected FAQ to reveal the answer as seen in Figure 1. Clicking on another question will hide the previous answer before displaying the answer for the selected question. Clicking on the same question will only hide the answer.

A.2. View Details of Upcoming Activities

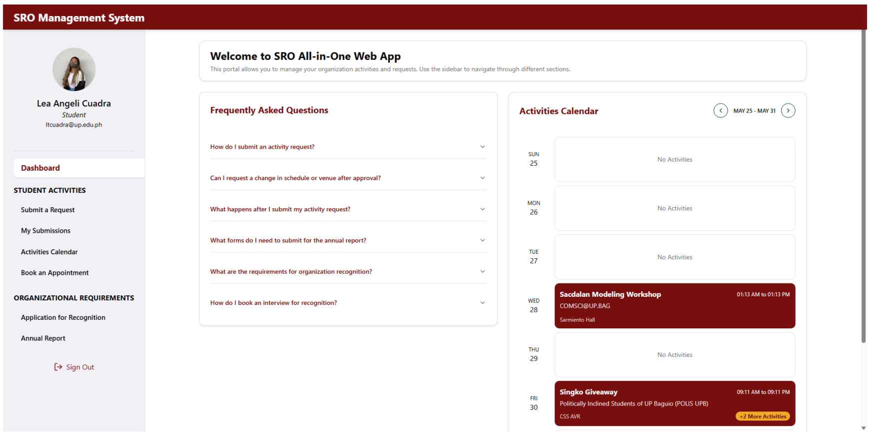

Figure 2. Dashboard view

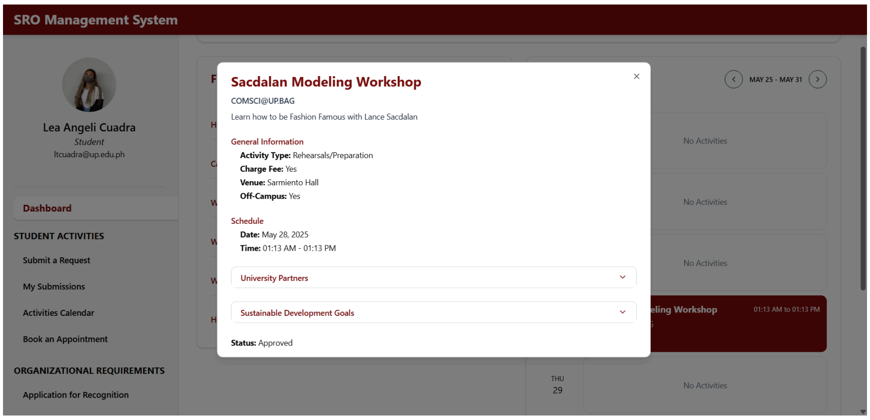

Figure 3. Various details regarding an activity in the weekly calendar

Click on an activity card in the Activities Calendar. The important details regarding the selected activity should be displayed in a dialog box as shown in Figure 3. This would also be the process when viewing the details of upcoming activities under the Activities Calendar page.

A.3. Submit an Activity Request

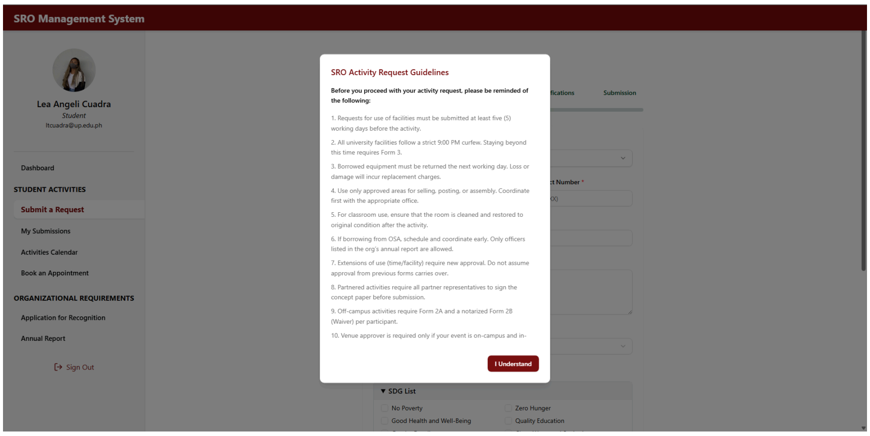

Figure 4. SRO Activity Request Guidelines

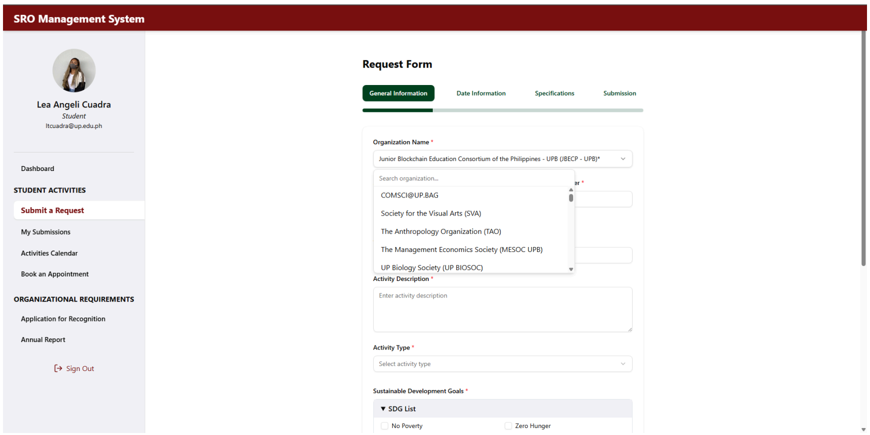

Figure 5. Submitting a request

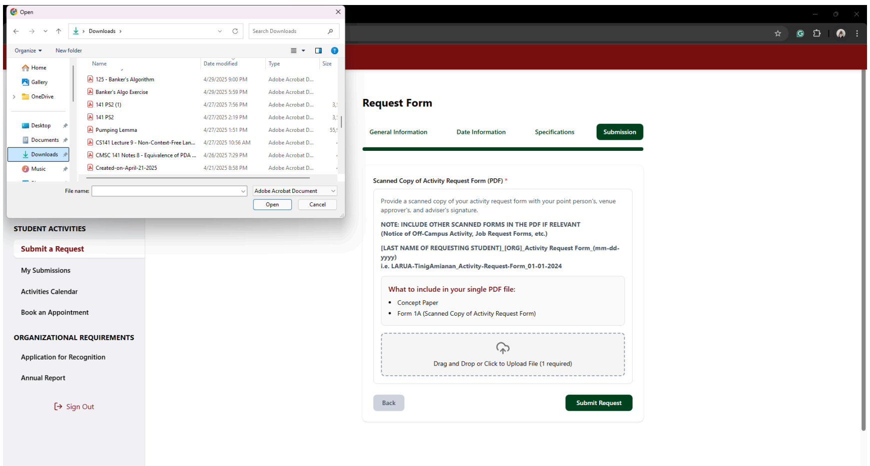

Figure 6. File selector in the Submission section

When accessing the Submit a Request page for the first time, read the guidelines first before proceeding by clicking "I Understand". Afterwards, the request form can already be accessed. Fill out all required fields and click "Next" at the bottom of the page for every section until the Submission section is reached. Upload the file containing the compilation of required scanned documents into the dropbox using drag-and-drop or the file selector as seen in Figure 6. Click “Submit a Request” once all details have been finalized. Click “Yes” in the confirmation dialog to submit the request.

A.4. View Details of My Activity Submissions

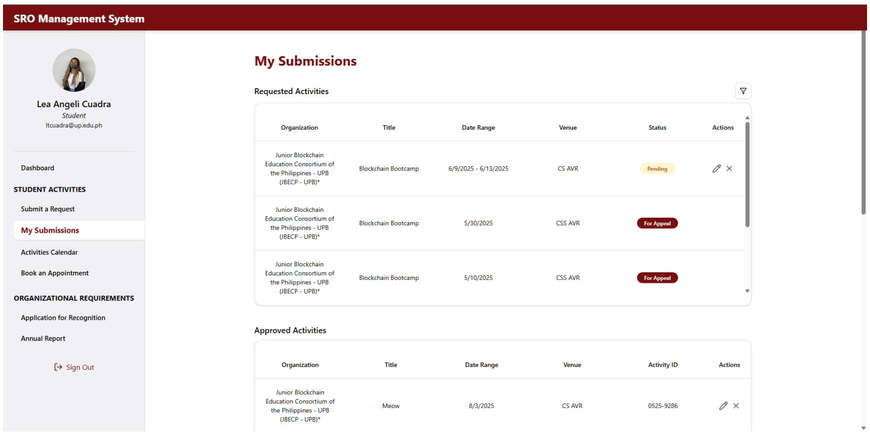

Figure 7. My Submissions page

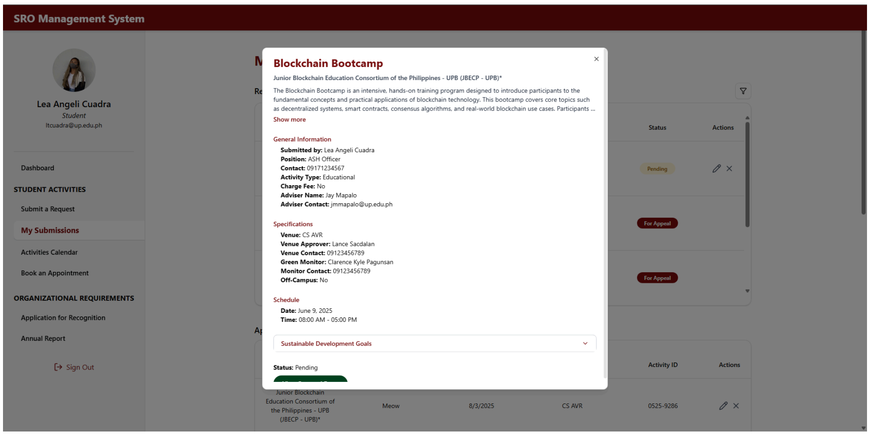

Figure 8. Complete details of submitted activity requests

In the My Submissions page, click anywhere on the row corresponding to the desired activity. Its complete details should be displayed in a dialog box as shown above. Click on the “View Scanned Form” button at the bottom to open the submitted file in a new tab.

A.5. Submit an Appeal

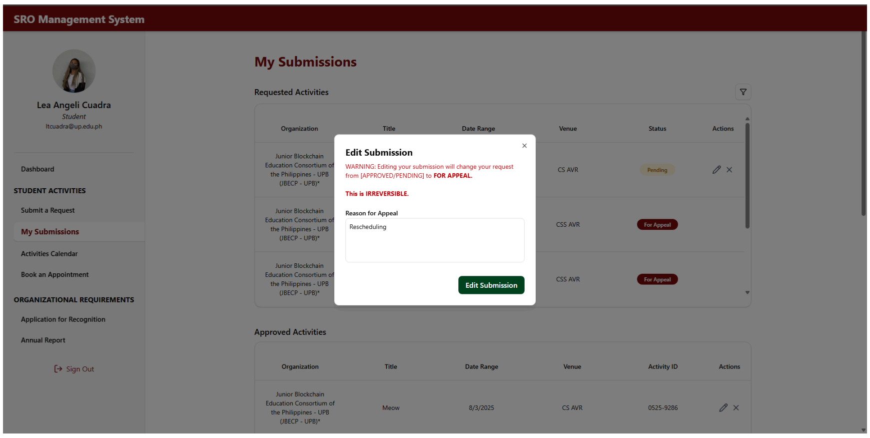

Figure 9. Edit Submission dialog box

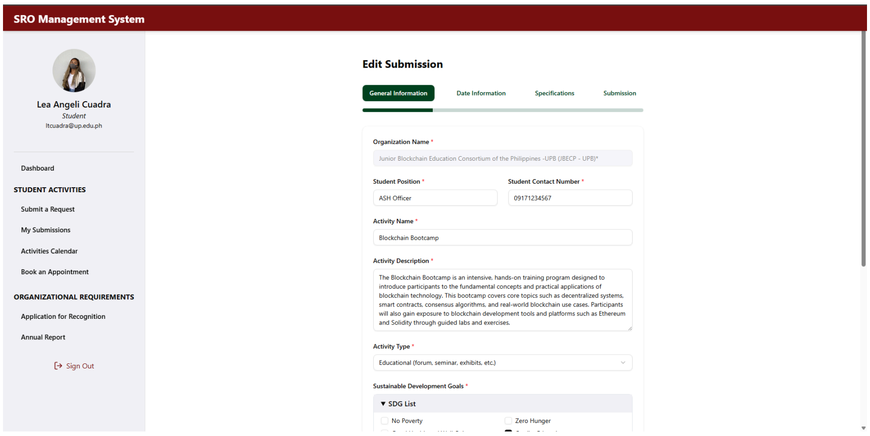

Figure 10. Edit Submission form

In My Submissions page, click on the pencil icon in the rightmost column of the row corresponding to the desired activity request. A dialog box should pop up where the reason for requesting an appeal can be entered. Click “Edit Submission,” and the web application should redirect to the Edit Submission form. Update the necessary details and click “Submit Form” in the Submission section. Click “Yes” in the confirmation dialog to submit the appeal request, and the activity will be marked as “For Appeal”.

A.6. Request Cancellation of Activities

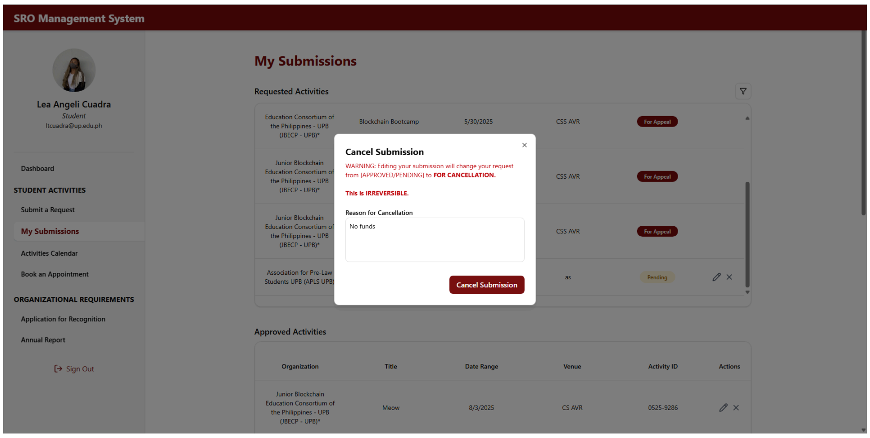

Figure 11. Cancel Submission dialog box

In My Submissions page, click the cross mark (X). A dialog box should be displayed where the reason for cancellation will be entered. Click "Cancel Submission" to mark the request as "For Cancellation".

A.7. Open Submitted Annual Report

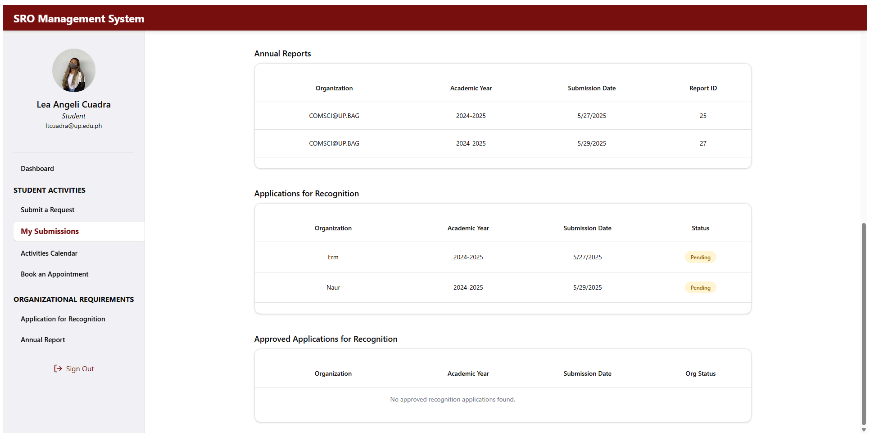

Figure 12. Annual report and organization application summary

In My Submissions page, scroll down below the tables for the submitted activities. In the Annual Reports table, click on a row corresponding to an annual report submission. The Google Drive folder containing the submitted scanned documents should open in a new tab.

A.8. View Activities Calendar

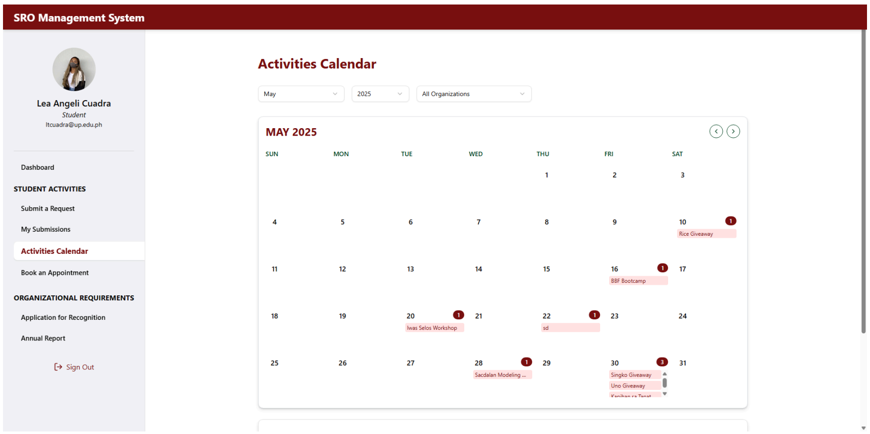

Figure 13. Activities Calendar page

The calendar of upcoming activities can be viewed on the Activities Calendar page. Activity cards should be displayed on the day of their schedules. Below, the list of upcoming activities for the next 30 days should also be displayed.

A.9. Book an Appointment

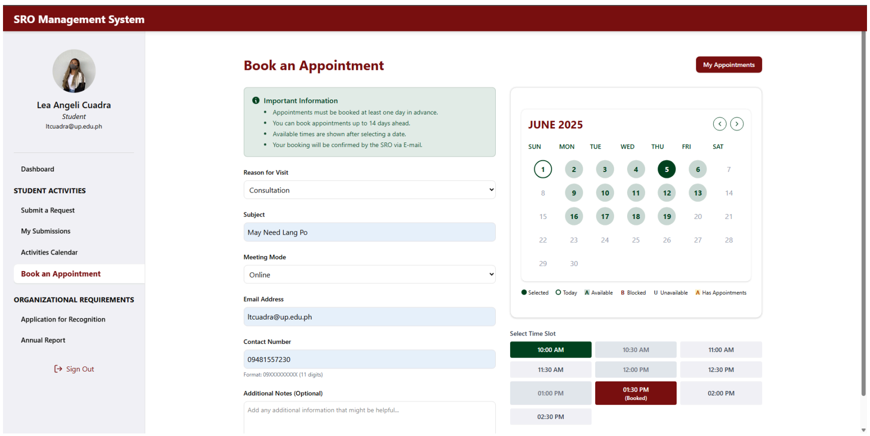

Figure 14. Booking an appointment

In the Book an Appointment page, fill up the required fields on the left half of the page. Afterwards, select a date for the appointment, and the available and booked time slots for the selected date should be displayed below. Select the desired time slot and click "Book an Appointment" at the bottom of the page.

A.10. Reschedule an Appointment

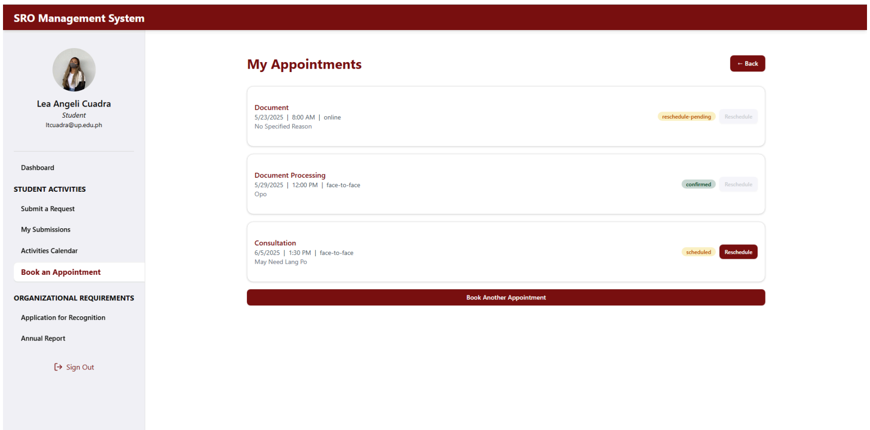

Figure 15. My Appointments page

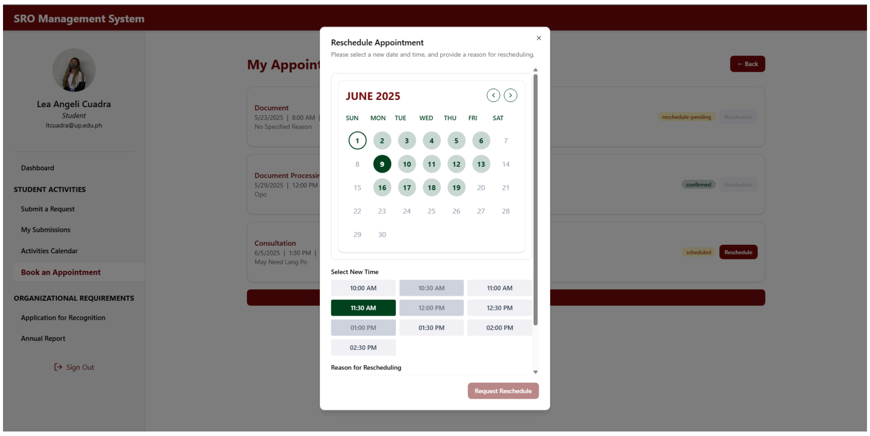

Figure 16. Rescheduling an appointment

In the Appointments page, click the "My Appointments" button at the top right of the page. The booked appointments should be listed on different cards. The "Reschedule" button should be enabled for the appointments that have not yet been confirmed by the SRO. Click the "Reschedule" button corresponding to the desired appointment, and the "Reschedule Appointment" dialog box should be displayed. Select the desired date, and the available time slots should be displayed similar to booking an appointment. Select the desired time slot, enter the reason for rescheduling, and click "Request Reschedule" to finalize the appointment.

A.11. Submit Organization Application for Recognition

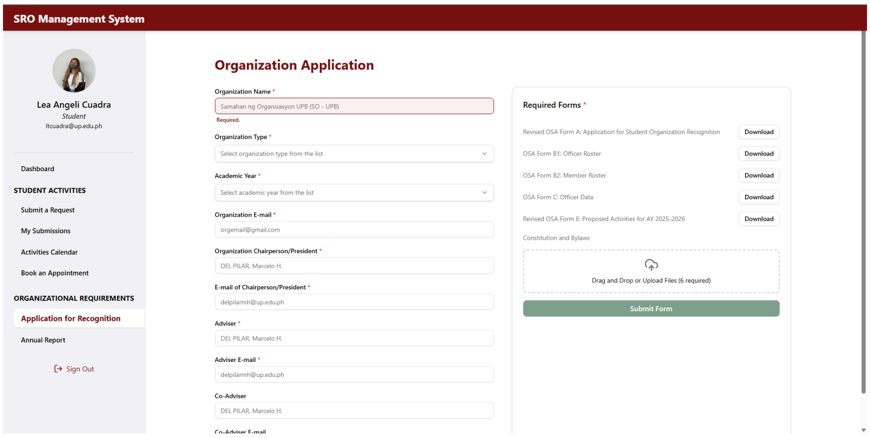

Figure 17. Submitting an organization application for recognition

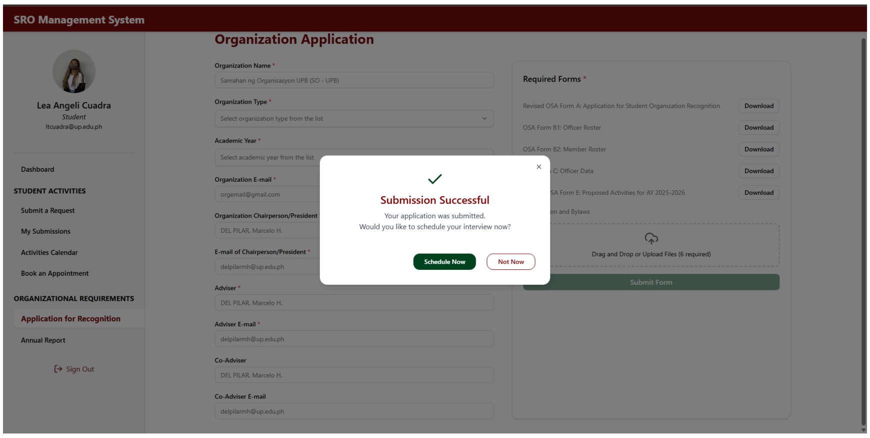

Figure 16. Prompting to schedule an appointment

In the “Application for Recognition” page, fill up the required details on the left half of the page. In case a blank copy of one of the required forms is needed, click the “Download” button next to the form name to open the file in Google Docs and download or make a copy. Upload the required forms into the dropbox on the right-hand side using drag-and-drop or the file selector, similar to Figure 6. Once all details are finalized, click “Submit Form”. A confirmation dialog box should appear where “Submit” should be clicked to finalize the submission. When the submission has been processed into the database successfully, another dialog box will be displayed to prompt appointment scheduling.

A.12. Submit Annual Report

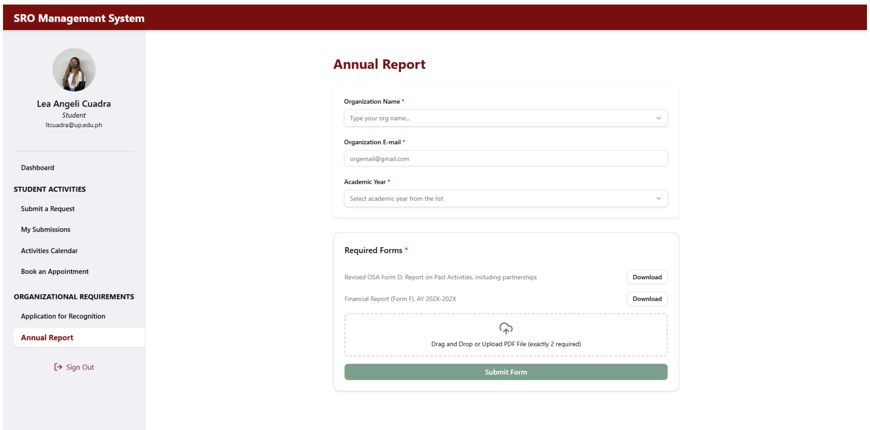

Figure 18. Submitting an annual report

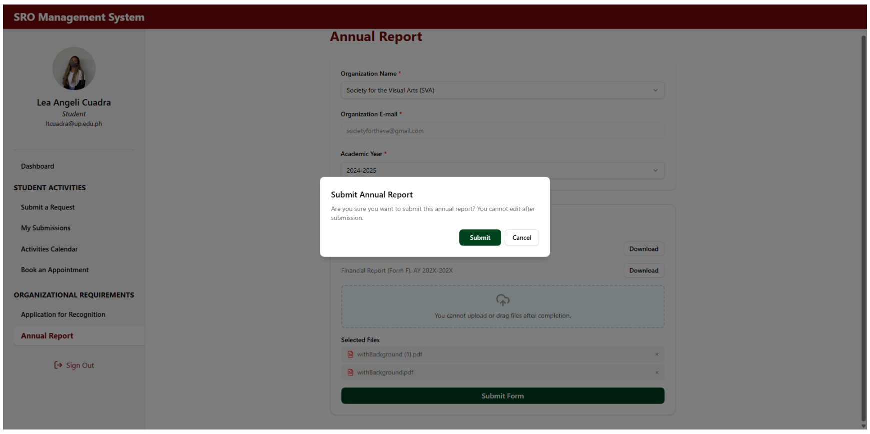

Figure 19. Confirmation dialog box

In the "Annual Report" page, fill up the required fields. In case a blank copy of one of the forms is also needed, click the "Download" button next to the form name to open the file in Google Docs and download or make a copy. Upload the scanned forms into the dropbox using drag-and-drop or the file selector and click "Submit Form". In the confirmation dialog box, click "Submit" to finalize the submission.

II. Administrator User Interface

The CRUD functionalities within the user interface of the administrator will be organized according to who can access them.

Shared Functionalities

Under this subsection, the functionalities available to both administrators will be explored.

A.13. View Activity Details

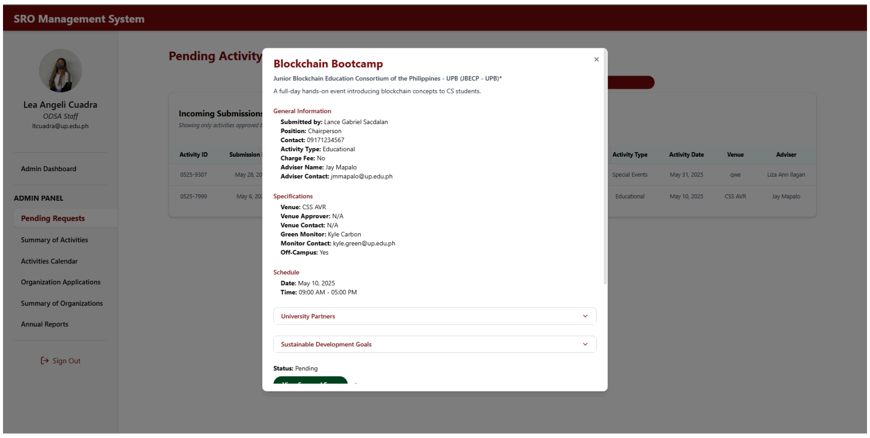

Figure 20. Activity details dialog

Click on an activity request. A dialog box containing the complete details of the request will be displayed. At the bottom of the dialog box, click "View Scanned Form," and the document submitted by the requesting user should be opened in a new tab via Google Drive.

A.14. Approve/Reject Activity Request

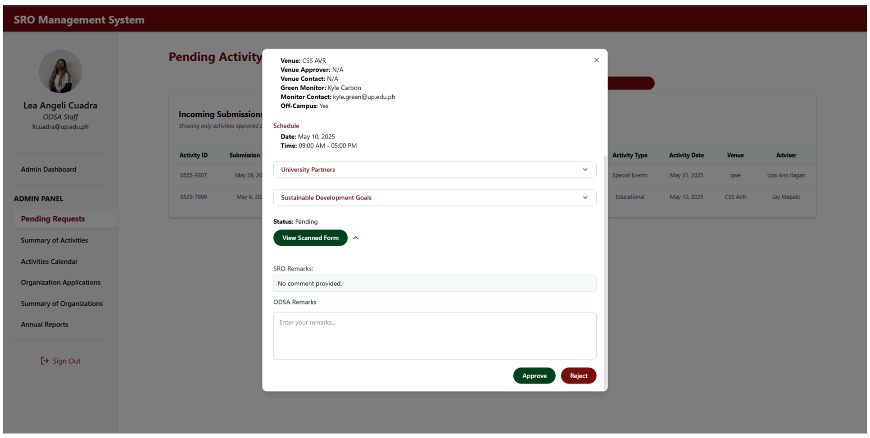

Figure 21. Approving/Rejecting Activity Request

In the activity details dialog, the Remarks box, along with the "Approve" and "Reject" buttons, should be enabled after the "View Scanned Form" button has been clicked. Enter desired remarks and select "Approve" or "Reject" to approve or reject the request, respectively. Click "Confirm" in the confirmation dialog that will pop up. The process will be the same for appeals and cancellations.

A.15. View Activities Calendar

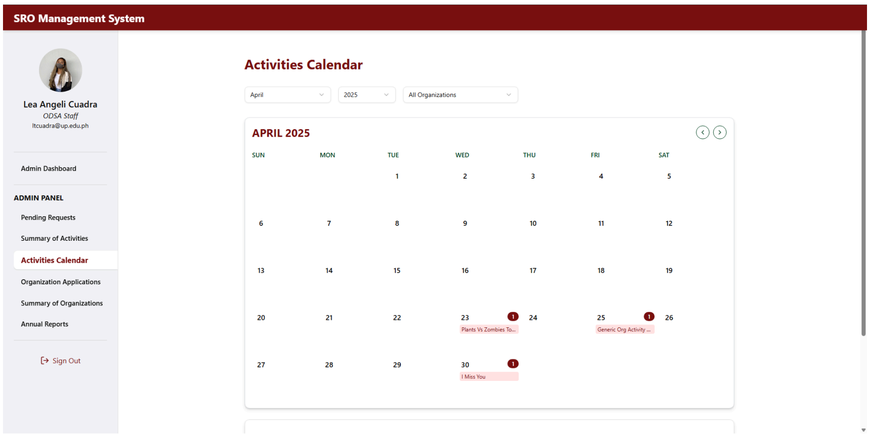

Figure 22. Activities Calendar page

The calendar of upcoming activities can be viewed on the Activities Calendar page. Activity cards should be displayed on the day of their schedules. Below, the list of upcoming activities for the next 30 days should also be displayed.

A.16. View Summary of Activities

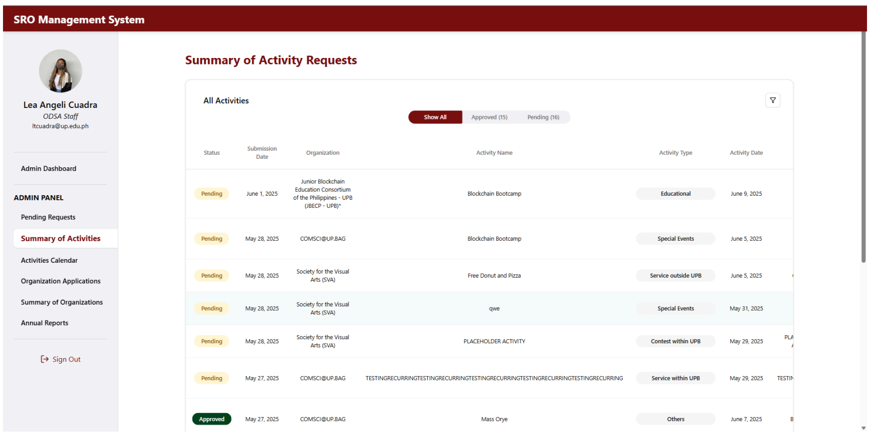

Figure 23. Summary of Activity Requests page

In the Summary of Activities page, all the submitted activity requests, regardless of status, are tabulated into one table.

A.17. View Pending Requests Page

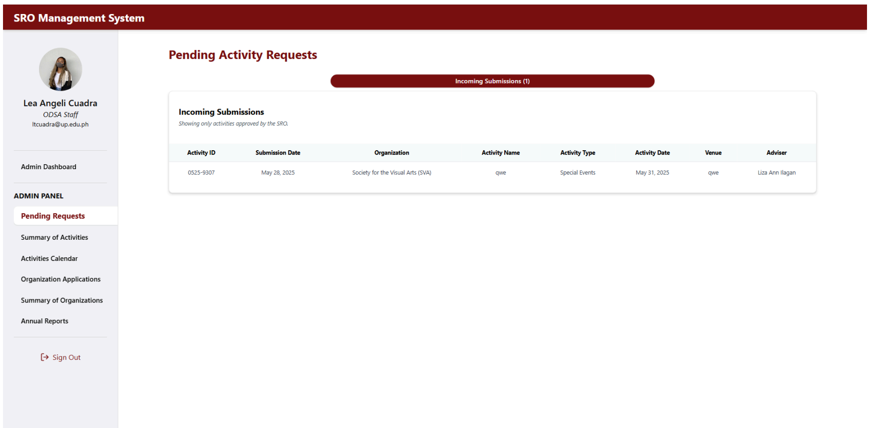

Figure 24. Pending Activity Requests page

In the Pending Request page, the incoming activity request submissions are tabulated with their important details.

A.18. Review Organization Applications for Recognition

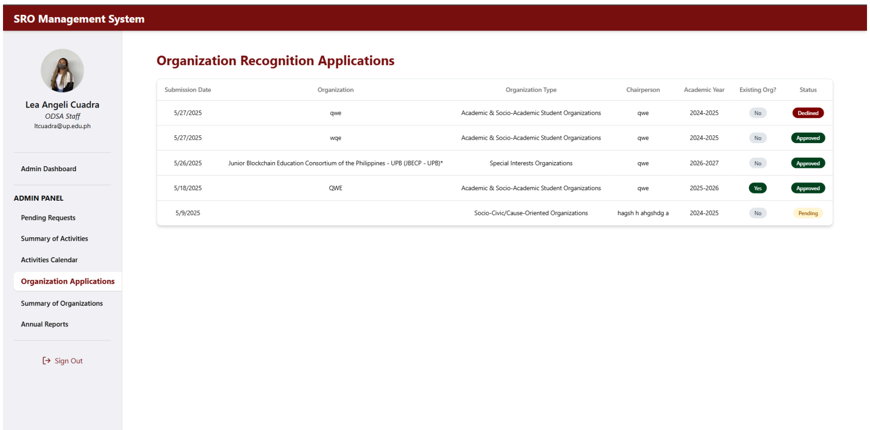

Figure 25. Organization Recognition Applications page

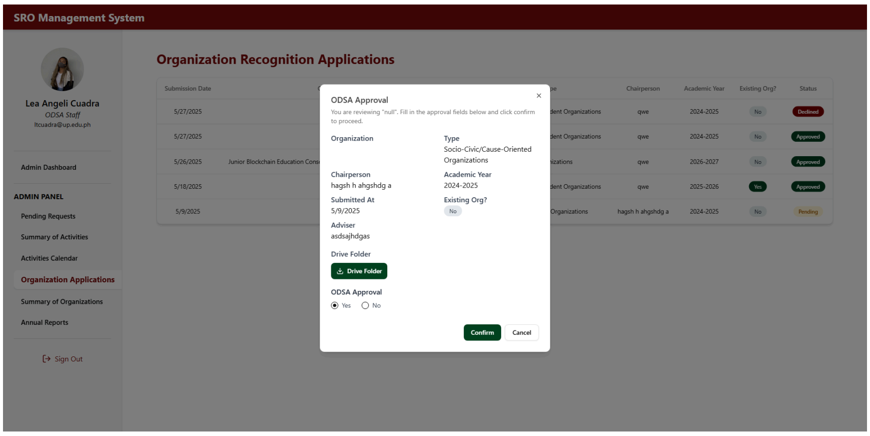

Figure 26. Approval dialog box

All the submitted organization recognition applications are tabulated into one table displayed on the Organization Recogntion Applications table. Click on a row corresponding to the desired application to open the dialog box containing the details required to review the application. Click the “Drive Folder” button to open the Google Drive folder containing the forms submitted by the applying organization. Review and approve or reject the selected application as seen in Figure 26. Click “Confirm” once finished.

A.19. View Summary of Organizations

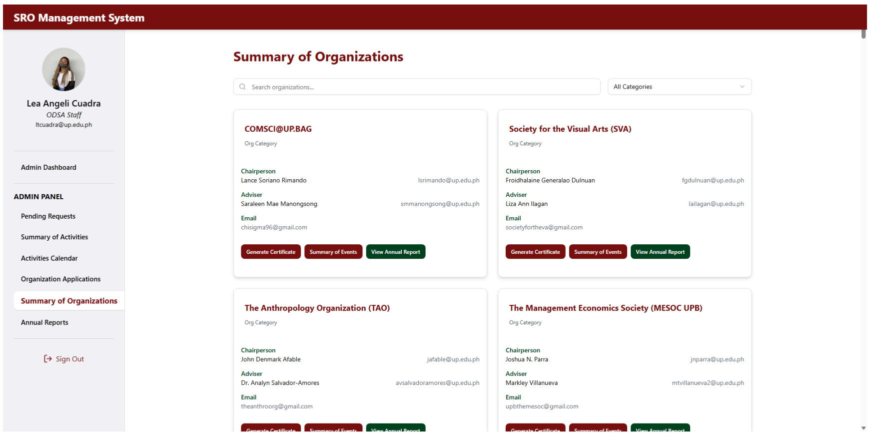

Figure 27. Summary of Organizations page

In the Summary of Organizations page, all the approved organizations are listed in separate cards containing the contact information of the organization, the chairperson, and the adviser. Here, click “Summary of Events” to open the Form D submitted by the organization in a Google Docs view in a new tab and “View Annual Report” to open the Google Drive folder containing the forms submitted by the organization as part of their annual report in another tab.

A.20. View Annual Reports

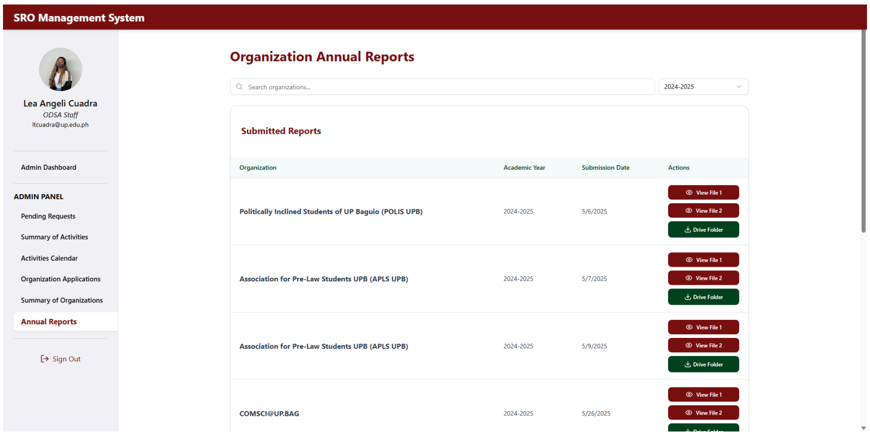

Figure 28. Annual Reports page

In the Annual Reports page, all the submitted annual reports by all organizations are listed. Each file can be viewed via Google Drive in a separate tab by clicking "View File 1" or "View File 2". To open the Google Drive folder containing both forms submitted by the organization, click the "Drive Folder" button.

SRO-only Functionalities

In this subsection, the CRUD functionalities unique to the SRO will be explored.

A.21. View Appeals and Cancellations

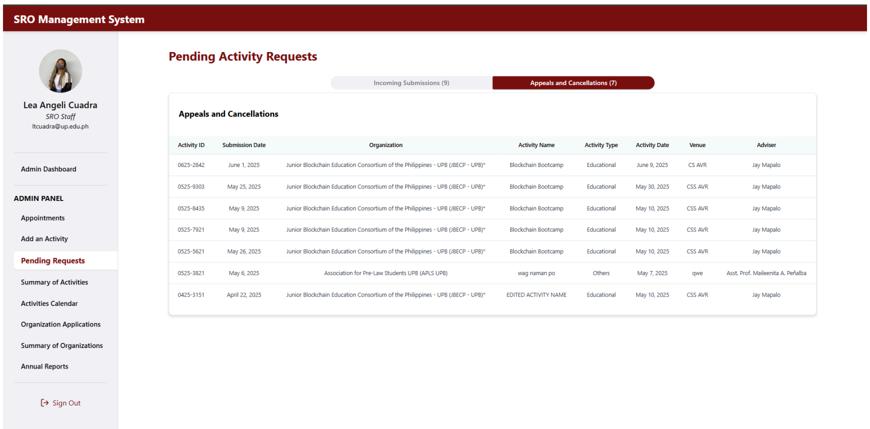

Figure 29. Viewing appeals and cancellations

In the Pending Requests page, toggle the Appeals and Cancellations tab above the table to view the list of appeals and cancellation requests.

A.22. Review Appointments

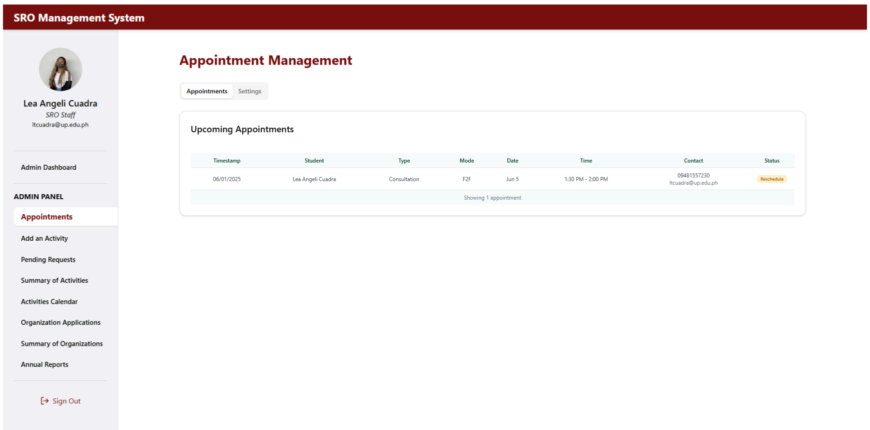

Figure 30. Appointments page

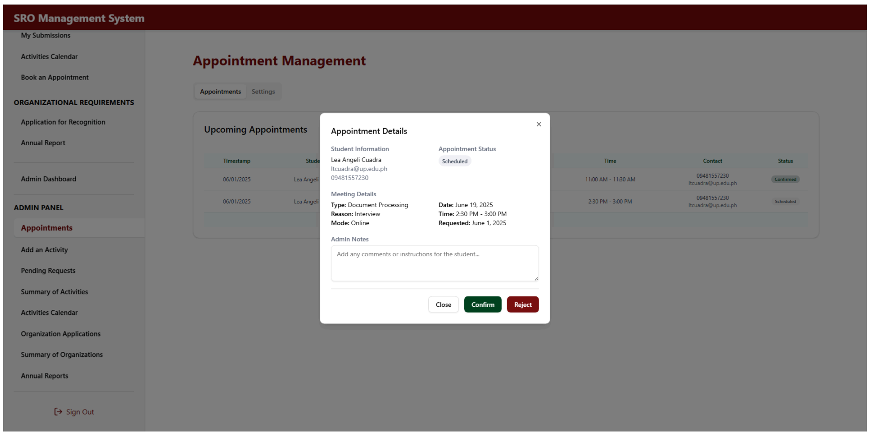

Figure 31. Appointment Details dialog for scheduled appointments

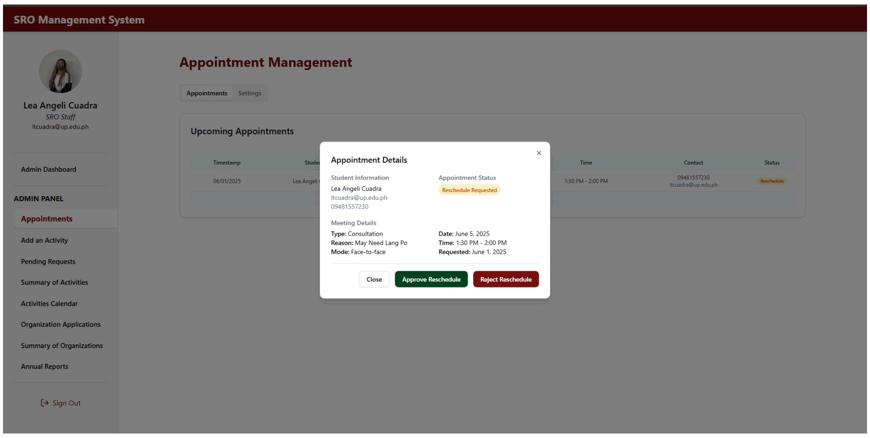

Figure 32. Appointment Details dialog for rescheduling requests

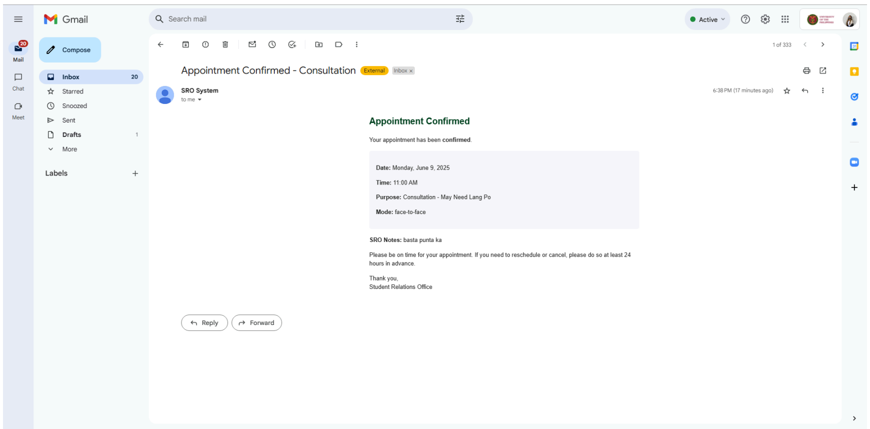

Figure 33. Email notification sent to requesting student

In the Appointments page, the list of upcoming appointments booked by students are displayed in a table. Click on a row corresponding to the desired appointment. The Appointment Details dialog should be displayed. If the status of the selected appointment is "Scheduled", the dialog in Figure 31 should be displayed, then input notes to be sent to the student and click "Confirm" or "Reject" to confirm or reject the appointment. A corresponding email should be sent to the student accordingly as seen in Figure 33. However, if the status of the selected appointment is "Pending Reschedule", the dialog box in Figure 32 should be displayed instead. Here, click "Approve Reschedule" or "Reject Reschedule" to approve or reject the requested schedule to change the status of the appointment back to "Scheduled".

A.23. Modify Appointment Settings

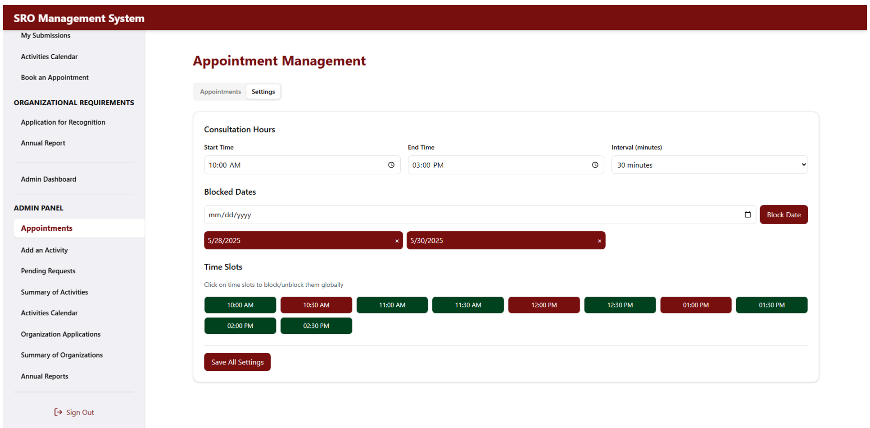

Figure 34. Modifying appointment settings

In the Appointments page, click the Settings tab to modify appointment settings. Select the desired start and end time and interval of appointments, then select a date to block and click "Block Date" to block students from scheduling appointments on that date. Click on time slots to block/unblock them. Red time slots are blocked while green time slots are available. Click "Save All Settings" to save changes.

A.24. Add an Activity

The process for adding an approved activity into the system is similar to how a student would submit an activity request except that it would already be marked as approved upon submission. Refer to item A.3. for more details on this process.

Appendix B - Helper Functionalities

This section outlines the auxiliary or supporting features within the system that enhance user experience and streamline core processes. These functionalities, while not part of the main workflows, contribute to usability, efficiency, and overall system interaction.

B.1. Filter in Activities Calendar

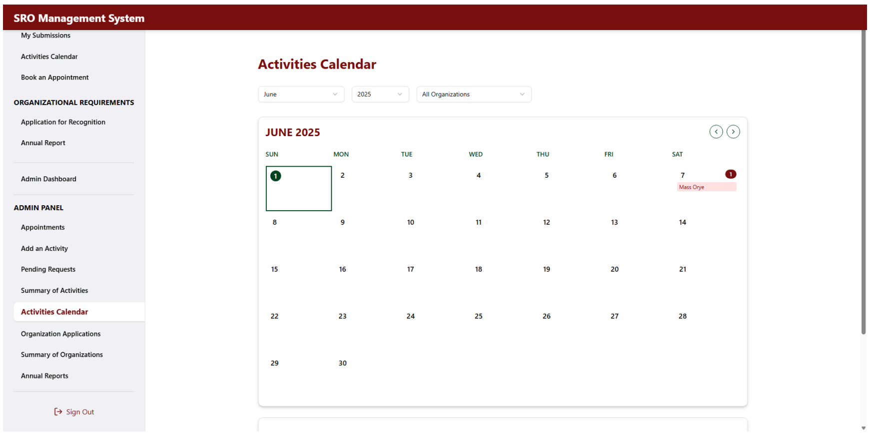

Figure 35. Filtering the activities calendar

Click on the month and year dropdowns above the calendar to quickly navigate to the preferred month and year in the calendar. Click on the "All Organizations" dropdown to filter the activities in the calendar to those that are hosted by a specific organization only. Additionally, click the chevron left or right buttons to navigate to the previous or the next month, respectively.

B.2. Filter in Summary of Activity Requests

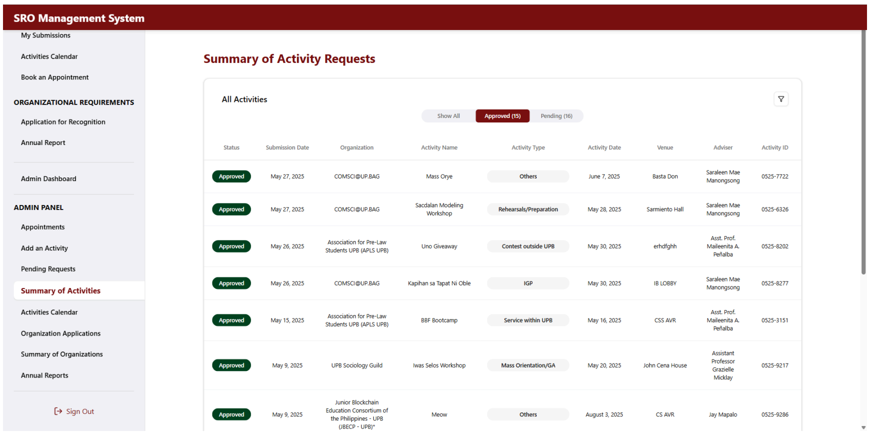

Figure 36. Filter activities by status

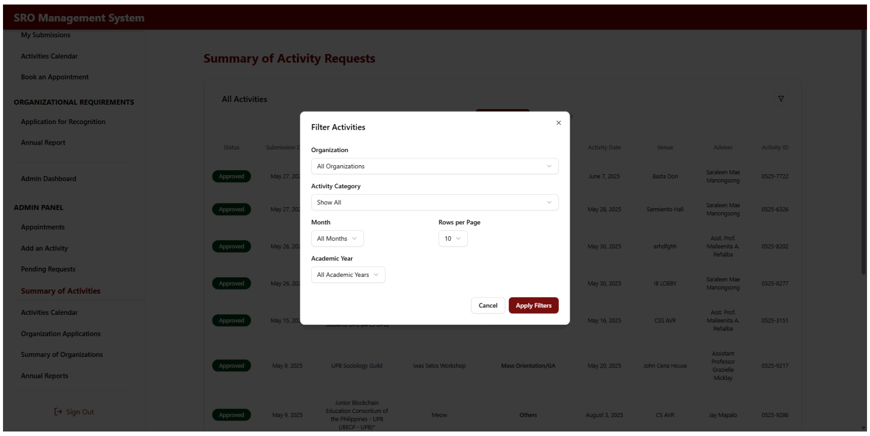

Figure 37. More filter settings

Toggle the "Approved" or the "Pending" tab above the table to limit the activities displayed to the approved activities or the pending activities only, respectively. Further, click the funnel button at the top right corner to view and add more filters. Click on any dropdown and choose preferred filters. Click "Apply Filters" to apply filter settings.

B.3. Filter in Summary of Organizations

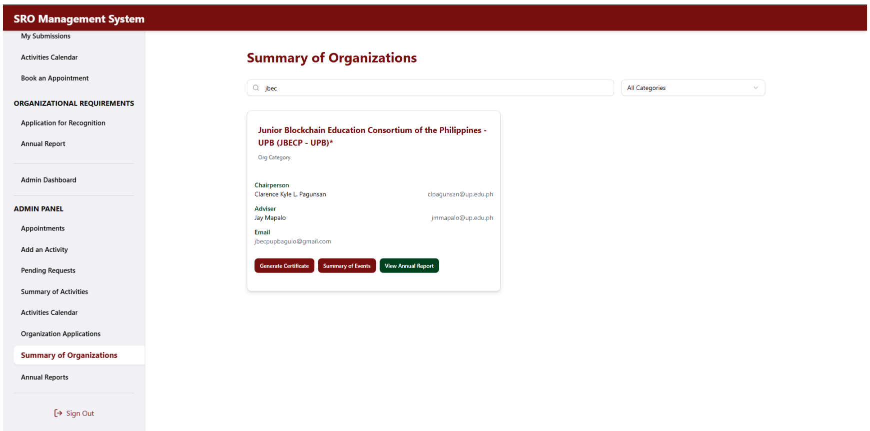

Figure 38. Searching for an organization

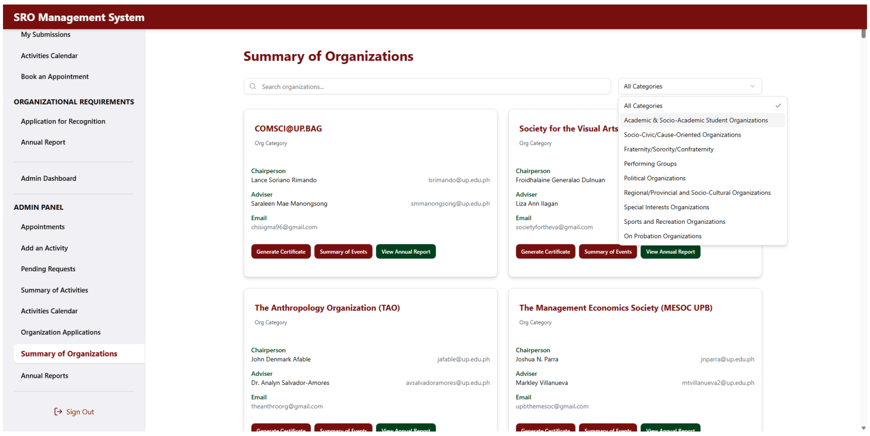

Figure 39. Category dropdown

Enter any keyword in the search bar to look for a specific organization. Only organization names matching with the entered keyword will be displayed. Further, click on the “All Categories” dropdown to select a category. Only organizations under the selected category will be displayed.

B.4. Filter in Annual Reports

Figure 40. Searching for organizations and filtering by academic year

Similar to the search functionality in Summary of Organizations, enter a keyword to display only the organizations with names that match. Click on the dropdown to select an academic year to filter the annual report submissions.

Appendix C - Export Functionalities

This section expounds on the capabilities of the system related to exporting files for external use. Export functionalities allow users to download or generate documents.

C.1. Generate Certificate

Figure 41. Generating a certificate of recognition

In Summary of Organizations page, click "Generate Certificate" in the organization card. The print functionality that is built in to the browser will be utilized to print or export the certificate.

C.2. Download Required Forms

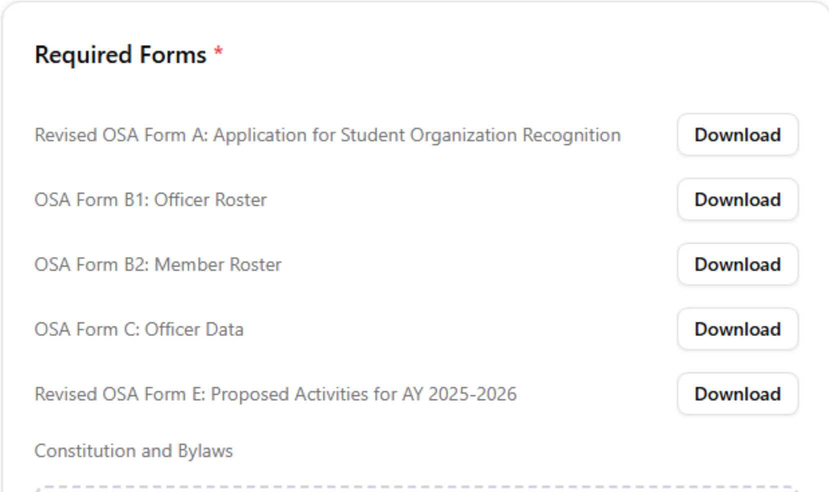

Figure 42. Download forms for organization recognition application

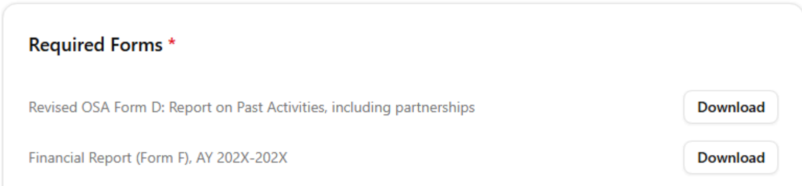

Figure 43. Download forms for annual report

In the Organization Application and Annual Report pages, click the download button next to the desired form to open the selected file via Google Docs in a new tab and download the file using its functionality.