Dress Code Violation (DCV) Management System: Innovating Asia Pacific College's Discipline Office Process for Dress Code Violation

Project Documentation Submitted to the Faculty of the

School of Computing and Information Technologies

Asia Pacific College

In Partial Fulfillment of the Requirements for

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SNTSDEV

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Executive Summary

The project’s purpose is to automate the manual process within the school system, in doing so can improve efficiency, reduce manual errors, while ensuring communication to violators and Disciplinary Office (DO). This automated system aims to simplify processes, while enhancing experiences for both sides. On the incoming academic years, project implementation is done in phases such as, initial planning, data gathering, prototypes, and quality testing for deployment reasons. By utilizing existing subscriptions to Amazon Web Services (AWS), it can help reduce costs for hosting web portals.

The primary user will be the Disciplinary Office (DO) Head, who will utilize our web portal to manage, and review issued slips, with functionalities tailored to their needs. The guards will utilize the application with their phones for issuing blue slips. Employing Agile methodology, the project will focus on gathering feedback from users to apply it to future updates. This helps the system adapt to concerns that need addressing. The system should expect reduced procedure times, quicker blue slip response, and valuable data for identifying behavior trends, fostering a more disciplined school environment.

The next steps involve completing the development phase, followed by thorough testing, and feedback management to continuously improve the system based on user input. Key stakeholders include school administration, IT staff, and end-users, with regular updates and feedback sessions. By implementing this automated system, we aim to simplify while maintaining the effectiveness of our school's disciplinary processes, benefiting students, staff, and the overall school environment.

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I. Introduction

1.1 Project Context

The developers' client is Ms. Bernadette Sison, the Head of the Discipline Office (DO). The DO oversees implementing the school policies and rules in Asia Pacific College (APC) and bestows proper actions and consequences for not adhering to the policies. Ms. Sison is requesting a system to improve and digitalize the blue slip issuance process in APC because of the inefficiency of the current system. Blue slips are dress code violation slips given to students who fail to adhere to the proper dress code given by the school.

The current blue slip system in APC is done manually, from the writing of credentials of the students to the delivering of the blue slips to the DO. The process of the current system is done by, first, writing the credentials of the students, along with the dress code violation of said student. The prior process is done by the student while the latter is written by the security guard. The student will, then, sign the blue slip to recognize the violation slip being given. Lastly, the security guard will go to the DO and give it to the Head of the Discipline Office, which is Ms. Sison, for proper logging of the records. The manual process of the current system is time-consuming and inefficient, which leads to problems such as taking up too much time recording collected blue slips and queues building up in the entrance when numerous students are given blue slips at the same time.

The developers' proposed system is an automated blue slip issuance system that, on the security guard's side, will utilize the existing Quick Response (QR) codes on the students' IDs in getting the needed credentials by scanning, and simply choosing from the options of violations based on what dress code violation the student violated before being submitted to the DO. On the DO's side, a portal will be utilized to view submitted blue slips, with functions to approve or cancel the blue slips depending on whether the appeal is valid or not. The portal will also display analytics regarding the existing data from the system to provide insights that will be helpful in the decision-making process of the DO when deciding on what action to do accordingly.

The developers are initiating this project to achieve our goal in helping improve one of the current systems within APC by reducing the use of paper within APC, as well as reducing the time spent by our client and customers when issuing and recording blue slips.

1.2 Statement of the Problem

The paper-based method of encoding blue slips at APC presents significant challenges in efficiency and integrity. This method requires the guard and student to have written copies of the blue slip, which will then go to the DO at some point in the day. This makes the process time-consuming and can risk failed submissions.

The inefficiency results in queues at the entrance, causing unnecessary inconvenience, particularly for students adhering to the dress code. Lastly, record keeping, in a paper-based method it's difficult to store, retrieve, and manage information when these slips pile up overtime, hindering accurate tracking and reporting of dress code violations.

By automating the blue slip process from the manual paper-based system to a streamlined digital solution, we aim to resolve the following issues:

1. **Inefficiency:**
    - **Manual Process.** The manual issuance of blue slips can be slow due to factors such as guards and students filling out forms by hand. This process is further delayed if students do not remember their ID details, consuming significant time for all involved, including students, staff, and visitors.
2. **Integrity Issues:**
    - **Human Errors.** The system is highly susceptible to problems. Human errors during the process can lead to inaccuracies in the records. This was brought up by our client when we asked about some problems she encountered during the encoding process. Moreover, paper slips can be easily lost or altered, compromising the reliability of data. This lack of integrity affects accuracy and the fairness of the process.
3. **Formation of Queues:**
    - **Entrance Delays.** Due to the inefficiencies of the current method, queues can often form at the entrance according to our client when we had our first meeting about the project. She mentioned that this sometimes happen when multiple students are issued a blue slip, or when students don't have a pen ready when filling out the blue slip. This is especially inconvenient for students complying with the dress-code policy and needing to enter the school premises.
4. **Poor Record-Keeping:**
    - **Disorganized Storage.** Storing large volumes of paper can lead to clutter over time. Paper records can become disorganized, making it difficult to maintain accurate records of dress-code violations and other related incidents. This poor record-keeping increases the time required for the encoding part of the issuance process.

5. **Environmental Impact:**
    - **Paper Waste.** The heavy reliance on paper contributes to inefficiency and has significant environmental implications. This also makes the process unsustainable. Using and disposing of paper can result in waste. Moving to a digital solution is a step towards more sustainable practices, reducing ecological impact.

By automating the blue slip process from the manual paper-based system to a streamlined digital solution, we aim to resolve these issues and create a more efficient, accurate, and environmentally friendly process.

1.3 Objectives

The objectives of the Automation of Blue Slips are multifaceted and aim to address key challenges faced by APC and the DO. Specifically, the project seeks to:

1. **Develop a Mobile Application for the Security Guards to use and Web Portal System for the Students and Discipline Office Head to utilize.** To improve the blue slip issuance and recording process. This project aims to transition current manual systems to a digitalized solution. By doing so, the developers aim to enhance the overall management process, and a more reliable experience for both staff and students. The new system will address existing inefficiencies and provide a modernized approach to outdated processes. The automation process includes:

    1.1 **Enable quick retrieval of student information (name, section, year level) via QR code scanning.** With QR code scanning, security guards can quickly access essential student details such as name, section, and year level stored within the system.

    1.2 **Provide options for specifying the violation within the platform**. The platform will then include an interface where security guards can select from predefined options to specify the nature of the dress code violation committed by the student. By providing predefined options, the process becomes standardized and ensures consistency in record violation.

    1.3 **Implement automatic input of student information upon scanning their ID**. Upon scanning a student's ID using the QR code feature, the platform will automatically populate relevant fields with the student's information. This automation eliminates the need for manual data entry by security guards, reducing the risk of errors and expediting the issuance of blue slips.

    1.4 **Ensure seamless submission of information to the Discipline Office for processing**. Once a blue slip is issued and submitted within the platform, the system will seamlessly transmit the relevant information to the Discipline Office (DO). This ensures

that the discipline records are promptly logged and accessible to Ms. Sison for her to review and take further action.

1.5 **Transition to a paper-free system.** The developers plan to implement a paper-free system for blue slip issuance. This process involves replacing the current manual paper-based process with an efficient, automated system. By transitioning to a paper-free system, gathering and processing information will be quicker, and the process will be more sustainable.

1.6. **Record-Keeping Quality.** Enhance the accuracy and organization of recorded dress code violations. By transitioning from manual to digital methods, the system reduces errors and ensures that all records are securely stored and easily accessible.

1.7 **Appeal Process Management.** By providing a platform for submitting appeals, with functions to attach reasoning and supporting images, the system ensures that every appeal is reviewed and resolved fairly

1.8 **Analytics and Insights.** The system includes advanced analytical capabilities, allowing administrators to generate detailed reports on dress code violations. Data analysis helps in formulating more effective policies and actions to address recurring issues.

2. AI Technology

The AI technology in the system is designed to detect and identify dress code violations among students. Through image recognition algorithms, the AI analyzes the attire of students to determine whether it complies with the school’s dress code policy. This functionality clears the need for manual assessment, ensuring consistent and unbiased enforcement of the rules. Aligning with modern technological standards, this feature supports the institution's objective of creating an efficient and user-friendly workflow, improving the overall management of dress code violations.

By achieving these objectives, the proposed automated blue slip issuance system will streamline the process and address the inefficiencies of the current manual system.

1.4 Significance of the Project

This study is significant as it can improve the efficiency and effectiveness of the Discipline Office (DO) and Asia Pacific College (APC) in handling and processing blue slips.

The current manual process of issuing blue slips, which records dress code violations, is time-consuming, labor-intensive, and subject to errors. The inefficiency generates delays for students, affects the staff, and leads to congestion and dissatisfaction. Thus, this research is significant for the following sectors:

Discipline Office. The proposed automated blue slip system aims to streamline the entire process of issuing and managing blue slips, primarily benefiting the DO. This research aims to significantly enhance the efficiency and effectiveness of handling and processing blue slips, which are issued for dress code violations. It has the potential to transform the current manual process into a more efficient, accurate, and user-friendly system, thereby improving operational efficiency, reducing administrative burdens and offering satisfactory experience to both staff and students.

Asia Pacific College. This research aims to contribute significantly to the academic environment at APC by promoting a more efficient, responsive, and environmentally friendly administrative process. The insights gained from this research may also serve as a model for other academic institutions facing similar challenges, thus broadening the impact of the proposed solution beyond APC.

Security Guards. The automation will reduce the time security guards spend on manually creating dress code violations, enabling quicker processing, reducing queues, and focusing on their responsibilities and duties especially at the entrance of the school. It will also help the security guards accurately and efficiently obtain the necessary data scanned through the QR Code.

Students. The proposed automated blue slip system will significantly reduce the waiting time for students when blue slips are issued, as the process will be faster and more efficient. This will help in minimizing disruptions to their schedules. The digital portal will offer students a clear and transparent process for handling blue slips, including the ability to appeal against slips. This can enhance the perception of fairness and reduce dissatisfaction among students.

Future Researchers. This project may be used as a model for other academic institutions, which implies that future researchers can build on this study. Future research can explore broader applications and longer-term impacts, using the proposed solution as a reference point for further innovations in administrative processes.

1.5 Scope and Limitations

The scope of this study focuses on developing and implementing an automated blue slip system to improve APC's manual process for handling and distributing blue slips. The primary stakeholders in this system include the discipline office personnel, led by Ms. Sison, security guards, and students.

However, the study is subject to several limitations that might have an impact on how effectively and efficiently its findings can be applied and interpreted. First, the implementation and evaluation are limited to APC, which would restrict the results from being generalized to other institutions. Second, the system is currently designed to address dress code violations and may not be appropriate for other types of infractions within the school for its first

implementation. Although, the developers plan to expand the scope to include other violations in the future.

By addressing the scope of and acknowledging its limitations, this study aims to provide a detailed understanding of the potential benefits and challenges related to automating the blue slip issuance process at APC.

II. Review of Related Literature and Systems

"Nice Going" Paper Slips and Unacceptable Behavior Slips (UBS)

A study conducted on an urban elementary school in Western Washington used two types of slips: the "Nice Going" slips and the UBS. These slips were given to uphold the school guidelines and encourage students into adhering to it.

The "Nice Going" slips were given to students who follow the school guidelines. The slip contains the school guidelines, and the staff write a brief description of what guidelines the student adhered to before giving it. According to Feuerborn and Tyre [1], when the criteria is met by a specific class, the class is given rewards such as special lunches, reading activity days, pajama days, and game time, which encourages students to adhere to the guidelines. The UBS, on the other hand, are given when students violate some school guidelines. When given to students, they are told of the consequences and the family are informed regarding the incident. If the student has been issued by a UBS four times within a grading period, actions such as a principal-student conference, school detention, a family support team meeting, and the development of a behavior management plan are done according to Feuerborn and Tyre [1].

The study is like our current research because it also addresses school guidelines and a proper implementation for it because there are also consequences when receiving blue slips in Asia Pacific College (APC) three times. One consequence is forfeiting the chance of getting awards such as Latin honors.

Digital Tools for Real-Time Data Collection in Education

With technologies slowly adopting to the online side of processing. Having access to real-time data can be critical in tracking performance, and for addressing learning crisis. Students and families can use these updates to advocate student needs.

According to Wright, Osborne, and Aggarwal [2], collecting real-time information can be challenging, specifically for paper-based systems. In this format, data collection can be slow because of factors that revolve around the process, such as human error and the manual process itself. With digitalization, it could offer a more efficient collection and analysis of data, additionally, it gives way to the flexibility of how we can access this information. This information should be useable for a wide variety of purposes, in this case it can be used for classroom assessments, where administrators that handle this type of situation can use these kinds of data for keeping track of students efficiently. The focus revolves around data management leading to data-informed decisions.

This relates to our research as it addresses our client's concern with the current data collection of how blue slips are issued. Time-consuming, integrity and efficiency are the kinds of issues the Discipline Office (DO) is currently facing with the manual process. As said in the reference, digitalization can give way to accessibility and accuracy of information.

Feasibility of using Quick Response (QR) code for registration & evaluation of training and its ability to increase response rate – The learners' perception.

A study conducted within a healthcare setting involving various professional backgrounds such as registered nurses, allied health professionals, and healthcare support workers. The use of QR codes is being distributed to the learners to evaluate them on the teaching quality.

In the research discussed in the article [3], QR codes were utilized for enrolling in courses and providing feedback. Students found using QR codes to be convenient, effective, simple, and easy to understand. According to the study most participants believed that QR codes were a user-friendly method, for signing up for courses and submitting evaluations at the course's conclusion. Moreover, scanning the QR code after completing a course encouraged participants to submit feedback from any location and at any time leading to engagement and response rates. The adoption of QR codes was seen as budget friendly and in line with promoting practices worldwide.

This study relates to our research since it also addresses the use of QR codes and its benefits. Although it is said in the study that it is utilized for enrolling in courses and providing feedback, we plan to use it on a tap in function that acts as an attendance as well.

Radio Frequency Identification (RFID) Toll Gate System

The developers have found systems that function like the group's planned project. One of the related systems that the developers were able to find I the RFID toll gate system in the Philippines. Specifically, the EasyTrip RFID system.

The RFID toll gate system utilizes an electronic sticker that is found on a vehicle's windshield. When entering a toll gate, the electronic sticker is simply scanned to check for the vehicle's current load balance [4]. If the vehicle has a sufficient load amount in their account, the toll gate will open and let the vehicle pass through the said toll gate. This allows for a seamless and fast transaction to avoid building up queues in the toll gate.

This system is like our project because the developers will be utilizing the Quick Response (QR) codes on students' ID and check for their credentials and have it inputted in our system just by scanning the QR code. This will provide a faster process compared to the current manual writing of credentials.

ClassDojo Application

ClassDojo, an educational platform for communication and behavior management, the app shares some key similarities with the project we are proposing for Ms. Sison. Like ClassDojo, our objective is to completely remove the need for paper-based systems to make way for a digital solution.

ClassDojo [5] is a platform designed to enhance communication between teachers, students, and parents. It serves as a management tool that helps teachers encourage positive student behavior and to foster a positive classroom environment. Functionalities such as accessibility and mainly students record management.

Like our project, we aim to digitalize the process of issuance, in turn this can also answer most of our client's needs. Other than efficiency and faster encoding process, this allows for more accurate data collection and data management of each student's records if an issue is to be recorded.

Clockify Application

Clockify [6], a renowned time tracking application, could serve as a significant asset for our proposed project, which involves the digitalization of student records within the Discipline Office (DO) at Asia Pacific College. The application's robust features, such as time tracking and timesheet management, can be leveraged to monitor and record data with a high degree of accuracy and efficiency. This can streamline the process of managing student records, making it more effective and less time-consuming.

As a free time-tracking application, Clockify is designed to assist both individuals and teams in tracking their various projects and tasks. It offers a multitude of features that are designed to ensure accurate and efficient time tracking. These include timers, which can be started and stopped as needed to accurately record time spent on tasks, and timesheets, which provide a detailed overview of time spent on different tasks over a specified period. The application also includes an idle detection feature, which can detect periods of inactivity and ensure that time tracking is as accurate as possible.

By integrating a tool like Clockify into our proposed project, we can significantly enhance the process of digitizing student records within the DO. This can lead to a more efficient and effective discipline process at the college, as it will be easier to track and manage student records. This, in turn, can lead to improved outcomes in terms of student discipline and overall school management.

Automated Discipline Office Process

A study conducted in Asia Pacific College planned to digitalize the Discipline Office (DO) Process by creating a system that will enable guards, professors, and the Discipline Office Head to create and submit violations, which is received by the student with a notification about the details of violation [7].

This project offers functionalities to better the current process of the Discipline Office. Their system is a web portal wherein guards, professors, and the DO head can create violation reports about dress code violations and send it to the Discipline Office. The system also houses a dashboard for the side of the DO Head that shows all the violations that are reported. The dashboard also has a function to send a Short Message Service (SMS) or call the parent ff a student if the student is reported to have committed a major violation. The system also shows descriptive statistics about the received violation reports. The students, then, receives the

violation reports through email or SMS. The students can contest the violation by giving a valid reason as to why it is not the case.

The study is very similar to our current project because it also deals with the dress code violation process of the DO in Asia Pacific College (APC). Although very similar, we have proposed new innovations and new functionalities in our proposed system.

III. Current Systems

3.1 Current System

After the student arrives at the school, the process will begin at the entry. Before a student can pass through, they must get clearance from the guards during the inspection process. This inspection involves verifying the student's identity, clothing, and the contents in their bag. ensuring they meet all necessary requirements to enter the premises. The guards are responsible for checking any violations that may prevent the student from entering.

If the student has violated dress policies, such as missing ID or issues regarding clothing, they will receive a blue slip. The contents of this blue slip will have details such as student credentials, time of issuance, type of violation, and the student’s signature. This paper-based system ensures that student violations are recorded by the guard having an exact copy of the blue slip and allowing for integrity in addressing issues. At the end of working hours, blue slips are then submitted to the Discipline Office (DO), which is responsible for addressing these kinds of issues.

Our client, Ms. Sison, utilizes Microsoft Excel to manage and organize information that contains a detailed log of each violation recorded. This digitalized record-keeping allows for student tracking and follow-up in case of repeated violations. This ensures that all students entering the school maintain order and discipline within the environment.

3.2 Technical Background

A paper-based system relies on physical materials such as paper, in which blue slips are produced by using a printer. Each blue slip is printed with the necessary details about contents relating to issuance. This ensures that there is a record of the issue that can be handed to the student and to the Discipline Office (DO).

On the DO side, the primary tool used in the workspace is a computer. Our client relies on the computer to encode and organize the blue slips she receives. She uses an application, Microsoft Excel, to record each violation for the issued student. This computer system allows for data entry, storage, and retrieval, enabling features that relate to managing student records.

Both paper and digital systems highlight the current hybrid approach to managing student discipline. However, this reliance on both paper and computer can introduce challenges, such as the need for consistent data entry or possibilities for discrepancies between the physical and digital records.

3.3 List of Processes

Table 1 contains the list of current processes for blue slip issuance if the student does not appeal the blue slip.

TABLE I
BLUE SLIP ISSUANCE PROCESS WITHOUT APPEAL

Process ID	Process Name	Process Details
P001	Dress Code Violation Notice	Guard notices a student's dress code violation.
P002	Issue Blue Slip	Guard gives a blue slip and asks student to write credentials.
P003	Document Violation	Guard writes the violation to the same blue slip.
P004	Request Student Signature	Guard asks student to sign the blue slip.
P005	Distribute Blue Slip Copy	Guard gives student a copy of the blue slip.
P006	Submit to Discipline Office	The Guard gives all the blue slips to the Discipline Office at the end of working hours.
P007	Record Blue Slip	The Discipline Office records the blue slip.

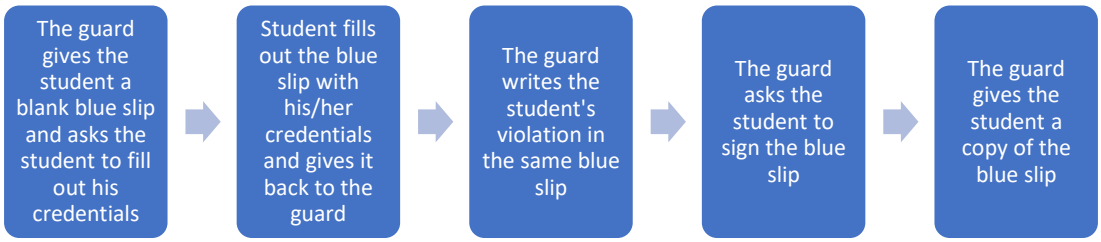

Fig.1. Filling Out Process of Blue Slip

Figure 1 describes the process of filling out a blue slip. The pain point of the client is dealing with blue slips manually, especially the repetitive and time-consuming task of completing each one for dress code violations.

Table 2 contains the list of current processes for blue slip issuance if the student does appeal the blue slip.

TABLE II
BLUE SLIP ISSUANCE PROCESS WITH APPEAL

Process ID	Process Name	Process Details
P001	Dress Code Observation	The guard observes a student's dress code violation.
P002	Blue Slip Issuance and Credentials Request	The guard issues a blue slip and asks the student to provide their credentials.
P003	Documentation of Violation on Blue Slip	The guard documents the violation on the same blue slip.
P004	Signature Request	The guard requests the student to sign the blue slip.
P005	Blue Slip Copy Distribution	The guard hands the student a copy of the blue slip.
P006	Appeal Submission	The student goes to the Discipline Office to appeal the blue slip.
P007	Blue Slip Appeal Review	The student explains their reasons for appealing the blue slip.
P008	Blue Slip Voiding	The Discipline Office voids the blue slip.
P009	Non-Recording of Blue Slip	The blue slip will not be recorded by the Discipline Office.

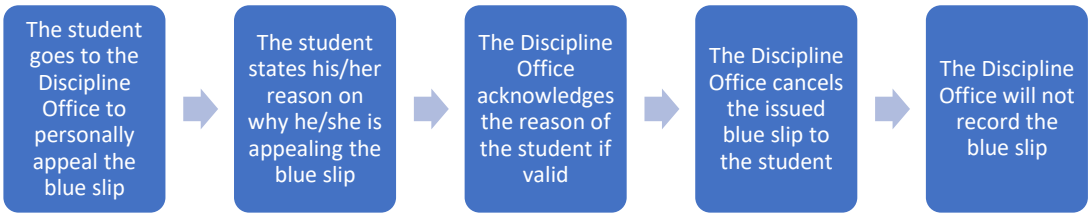

Fig.2. Appealing Process of Blue Slip

Figure 2 describes the process of appealing a blue slip. The client faces difficulty appealing for blue slips as it requires visual confirmation of the student's attire, particularly when they wish to contest the violation.

Table 3 contains the list of current processes for blue slip issuance if the student is issued a blue slip because the student has no ID.

TABLE III
BLUE SLIP ISSUANCE PROCESS FOR STUDENTS WITH NO ID

Process ID	Process Name	Process Details
P001	Student ID Observation	The guard observes that a student lacks an ID.
P002	Blue Slip Issuance and Credential Request	The guard issues a blue slip and requests the student to provide their credentials.
P003	Recording of Violation	The guard records the violation on the same blue slip.
P004	Request of Signature	The guard requests the student to sign the blue slip.
P005	Blue Slip Provision	The guard provides the student with the blue slip.
P006	Temporary ID Issuance	The blue slip serves as a temporary ID for the student.
P007	Non-Violation Status of Blue Slip	The blue slip will not be considered as a violation.

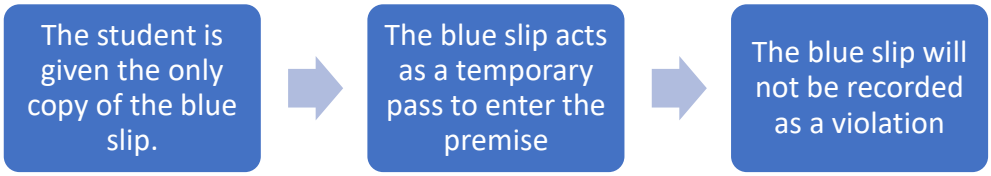

Fig.3. Issuing Process of Blue Slip for Students with No ID

Figure 3 describes the process of issuing a blue slip for students with no ID. The client faces a challenge when students don't have their IDs and don't know their student ID numbers, which are needed for filling out blue slips. This makes it difficult for the Discipline Office to input the information accurately because they're missing important details.

Table 4 contains the list of current processes for blue slip issuance if the student has accumulated three dress code violations in a single term.

TABLE IV
BLUE SLIP PROCESS FOR ACCUMULATING THREE BLUE SLIPS

Process ID	Process Name	Process Details
P001	Student Notified by the Discipline Office	The Discipline Office sends an email notification to the student.
P002	Consultation Meeting	The Discipline Office schedules a consultation meeting with the student.
P003	Warning on Dress Code Violation	The Discipline Office advises the student that accruing three dress code violations results in a major offense.
P004	Parent Notified by the Discipline Office	The Discipline Office notifies the parents of the incident via email.

Fig.4. Consultation Process for Students Who Accumulated Three or More Blue Slips

Figure 4 describes the process of consulting the student when he/she accumulates three or more blue slips in a single term. A significant challenge is the uncertainty of a student's presence, which directly impacts the effectiveness of the discipline process. If a student doesn't show up, the violation they've committed remains unaddressed. The lack of guaranteed attendance hinders the prompt resolution of discipline issues.

3.4 Gap Analysis

Fishbone Diagram

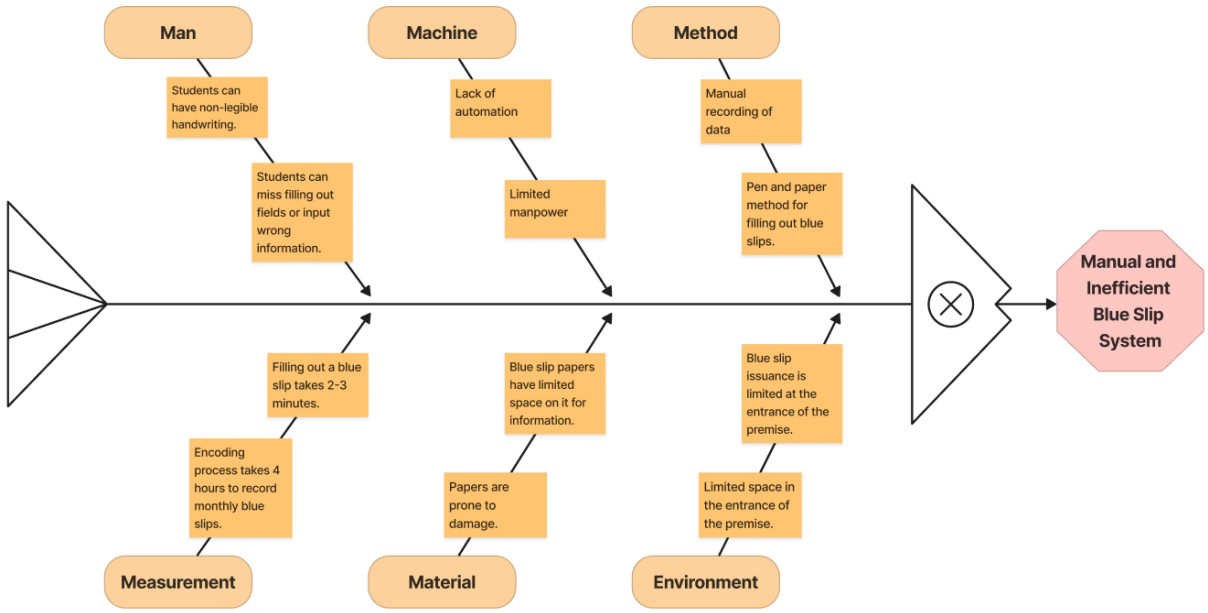

Fig.5. Fishbone Diagram

SWOT Analysis

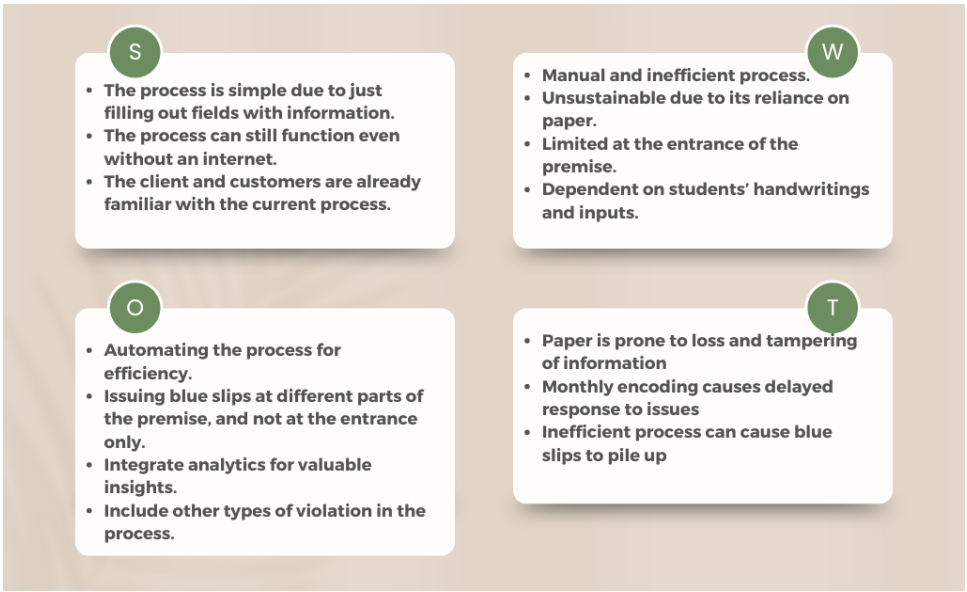

Fig.6. SWOT Analysis

Gap Analysis

TABLE V
GAP ANALYSIS

Current State	Desired State	Impact
Guard gives blue slip and asks student to write credentials	The student taps the QR code on his ID to the scanner to enter credentials to the system.	This will lessen the time needed to complete the first part of the blue slip
Guard writes the violation to the same blue slip	The guard selects the violation from the list of options in the system.	This will make it easier for the guard to write the violation and save time.
The Guard gives all the blue slips to the Discipline Office at the end of working hours.	The blue slip will be sent automatically to the Discipline Office after pressing submit.	This will make it easier for the Discipline Office to receive the blue slips in real-time and save the guard the hassle of going to the Discipline Office.
Guard gives student a copy of the blue slip	The student receives a digital copy of the blue slip after it is submitted to the Discipline Office	This will make the system paper-free and save money that would be spent on the paper and printing.
Student goes to the Discipline Office to appeal the blue slip	The student uses the system to appeal by taking a picture of his/her current attire.	This will make it easier for the students to appeal their blue slip and save them the time of going to the Discipline Office.
The Discipline Office records the blue slip in Microsoft Excel for statistics	The system will utilize analytics and provide reports about the records.	This will make it easier for the Discipline Office to check analytical reports and gain insights regarding the data.

IV. Proposed Solution

4.2 Lean Canvas

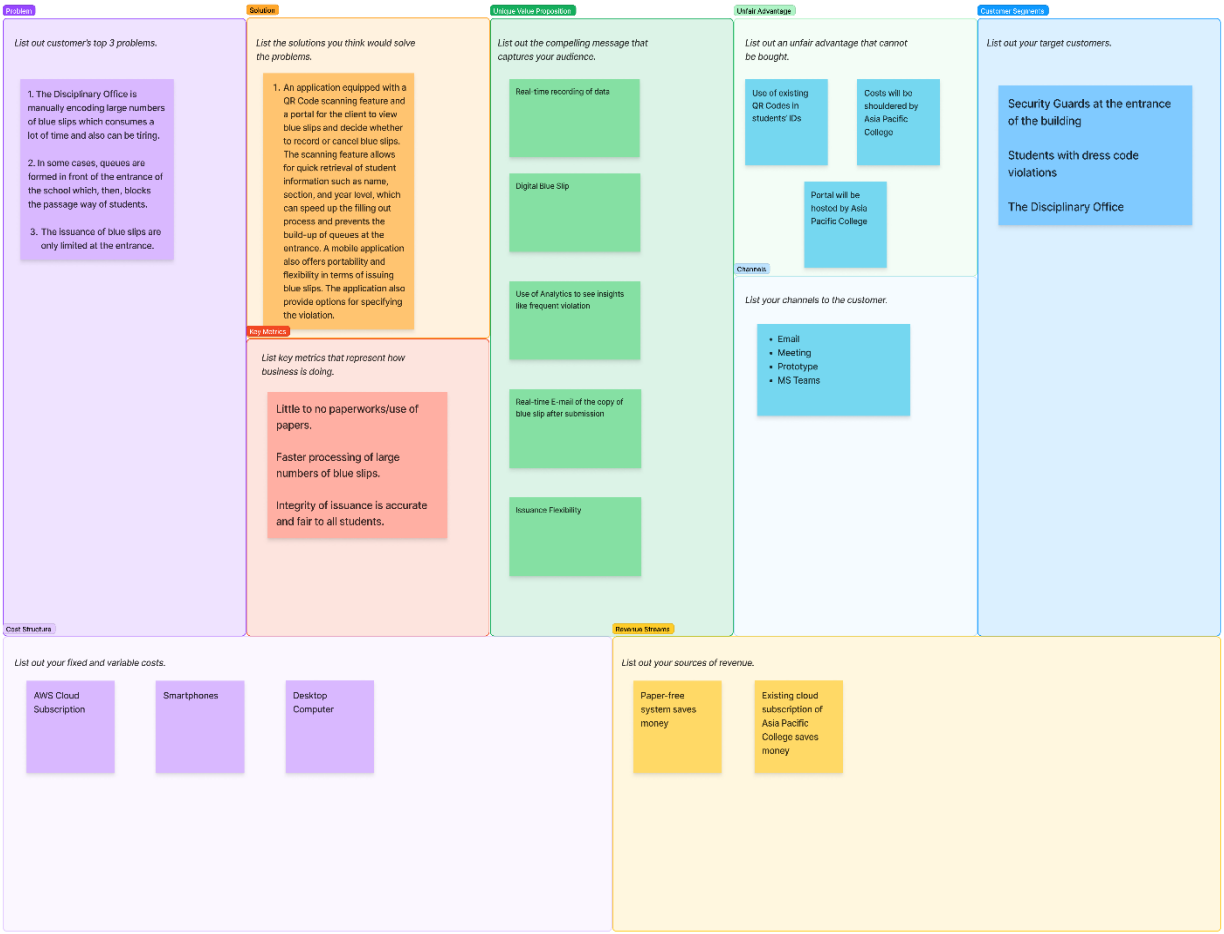

Fig.7. Lean Canvas

4.3 Product Vision

TABLE VI
PRODUCT VISION FOR THE DISCIPLINE OFFICE

For	the Discipline Office
Who	Has a problem for managing and manually issuing dress code violation slips.
The	DCV Management System is an automated system for managing and issuing dress code violation slips
That	allows the DO to manage blue slips, review submitted blue slips, distribute digital dress code violation slips, and gain insights from the analytical reports of the system.
Unlike	the current system that still utilizes the manual writing and recording of information,
Our	product will provide a streamlined process in the creation of blue slips, managing and recording data from the blue slips, and generating analytical reports based on the recorded data.

4.4 Technology Specifications

The proposed system aims to digitize and automate the current manual process of issuing blue slips in the discipline office. It will be a web-based portal integrated with a QR code scanner. Each student's ID will contain a unique QR code, and scanning this QR code will automatically record the student's attendance and provide the option to issue a blue slip, if necessary, with the following options such as appealing the blue slip. The system will be hosted on Amazon Web Services (AWS) Cloud, which provides a reliable and scalable platform for the system's server and database needs. The server, hosted on AWS, will process requests from the web portal, such as validating the scanned QR codes, updating the attendance records, and issuing blue slips.

The system will utilize a database to store crucial data, including student information, QR codes, attendance records, and blue slip records. The database will be designed for efficient data storage and retrieval. The system will be compatible with standard PCs, as there are no specific hardware requirements for the process, which is currently being managed through Microsoft Excel. The web portal with an interface for a QR code scanner. Two types of scanners have been considered, and the final choice will depend on compatibility with the system's requirements. When a student's QR code is scanned, the system will automatically update the attendance and provide an option to issue a blue slip if necessary. While there will be costs associated with using AWS Cloud services, as well as potentially acquiring QR code scanners, these expenses will be fully financed by the school. The school acknowledges the benefits of this system, including improved efficiency, accuracy, and record-keeping in the discipline office's operations. As the primary beneficiary of these improvements, the school is committed to covering the costs associated with implementing this system.

4.5 Feasibility

4.5.1 Operational Feasibility

Head of the Discipline Office, Ms. Sison, endorsed the project acknowledging its potential to streamline the process and reduce the administrative burden. While the new system will change operational procedures—such as how blue slips are issued and recorded—it will enhance data accessibility and processing speed, and provide integrity, offering overall organizational benefits that outweigh individual adjustments. The system is designed to improve efficiency without compromising user performance or customer experience. Users will be involved in planning and deployment, enhancing data accessibility and processing speed. The system promises improved efficiency, user satisfaction, and sustainability, with no adverse effects on students or faculty, and aligns with APC's priorities and ethical standards.

4.5.2 Economic Feasibility

In terms of technical requirements, the system necessitates the acquisition of smartphones with Quick Response (QR) code scanner capabilities for security guards, while the Discipline Office (DO) already possesses computers for accessing the portal. We consulted with ITRO regarding any necessary software and the availability of Amazon Web Services (AWS) in which the ITRO already have a subscription plan readily available. The initial investment also includes software development expenses for implementing AWS, which will manage data processing and communication with repeat offenders. Since this is a project that involves one of the offices of Asia Pacific College, the cost of the software and other necessities will be handled by APC. By streamlining the blue slip issuance process, it reduces paper consumption and minimizes administrative time for both staff and students. This operational efficiency leads to tangible cost savings as manual tasks are automated. Moreover, the system improves data accuracy and accessibility, facilitating informed decision-making within the DO through analytics.

4.5.3 Technical Feasibility

Since the project relies on the application and the DO that connects to it, the required technical devices will need guards to have a smartphone for the system to be accessed with, along with a QR code scanner feature embedded within the app itself. Then, a computer which is already a given in the workspace of our client, where it can give her direct access to the portal associated with the application.

4.4.4 Schedule Feasibility

Applying agile methodology as the progression plan can give the group a timeframe of five terms in the academic calendar to develop the project. This would consist of cycles where features and designs are then reviewed by our client in case of changes. This approach allows for continuous feedback and enables the group to adjust and ensure the final product meets requirements, while maintaining flexibility to plans throughout the process.

V. Requirements Analysis

5.1 Product Backlog / User Stories

TABLE VII
USER STORIES

USER STORIES						
ID	As A…	I want to be able to…	So that…	Priority	Sprint	Status
1	Student	Enter my credentials faster	I can save more of my time	Must		To be started
2	Student	Receive a copy of my blue slip	I can check how many blue slips I was issued.	Must		To be started
3	Student	Enter my credentials with confidentiality	My personal information is only viewed by guards and the DO.	Must		To be started
4	Security Guard	Enter violations quickly	I can spare more time for other task	Must		To be started
5	Security Guard	Issue blue slips no matter where I am	I can issue it to other students when necessary	Should		To be started
6	Discipline Office Head	See all submitted blue slips	I can review each of it before approving	Must		In Progress
7	Discipline Office Head	Manage submitted blue slips violation	I can approve or cancel it if necessary	Must		In Progress
8	Discipline Office Head	Get analytical reports	I can gain insights and make adjustment if necessary	Must		In Progress
9	Discipline Office Head	Notify students about their blue slip	I can inform them of their status	Should		In Progress
10	Discipline Office Head	Archive submitted blue slip every end of the school year	I can monitor records for insight	Could		In Progress

5.2 Use Case Diagram

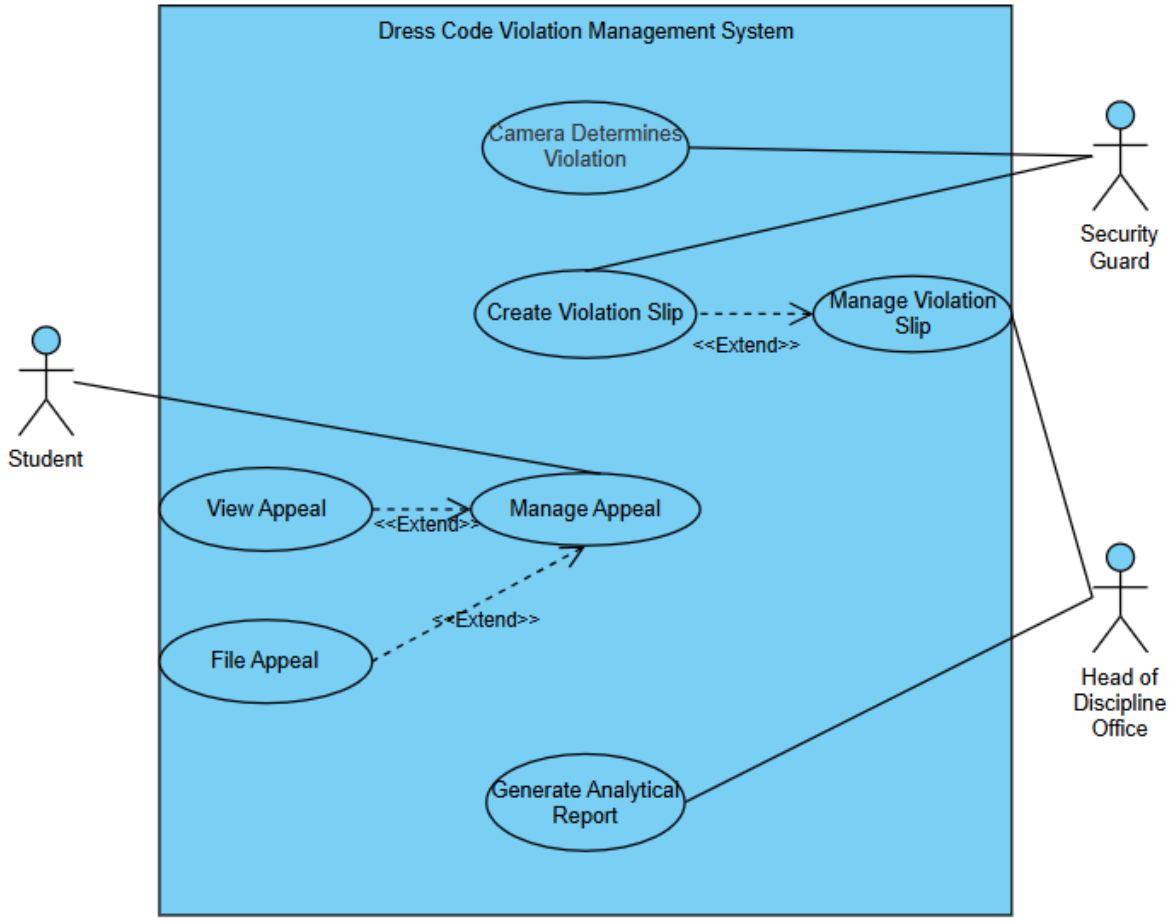

Fig.8 Use Case Diagram

5.3 User Classes and Characteristics

TABLE VIII
USER CLASSES AND CHARACTERISTICS

Roles	*Description*
Students	*When this user commits a dress code violation, the violation is to be recorded via the Dress Code Violation (DCV) Management System by the security guard through the scanning of the student's QR code for their credentials. They are also notified about their blue slips through their E-mails.*
Security Guards	*This user confirms the dress code that is violated and creates a blue slip using the DCV system and facilitates the data input from it.*
The Head of Discipline Office	*This is our system's main user. This user has a portal wherein she can approve or cancel digital blue slips that they receive from the system and send notifications to the students regarding the blue slips. They also analyze the analytical reports and make decisions based on insights taken from it.*

5.4 Data Flow Diagrams

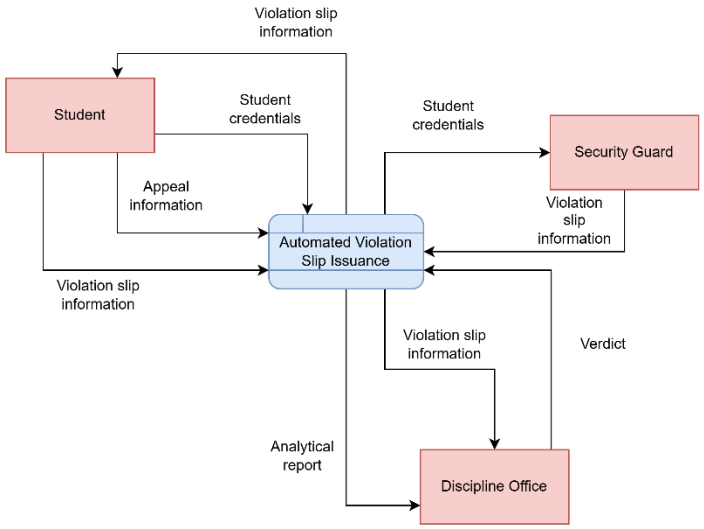

Fig.9 Data Flow Diagram Level 0

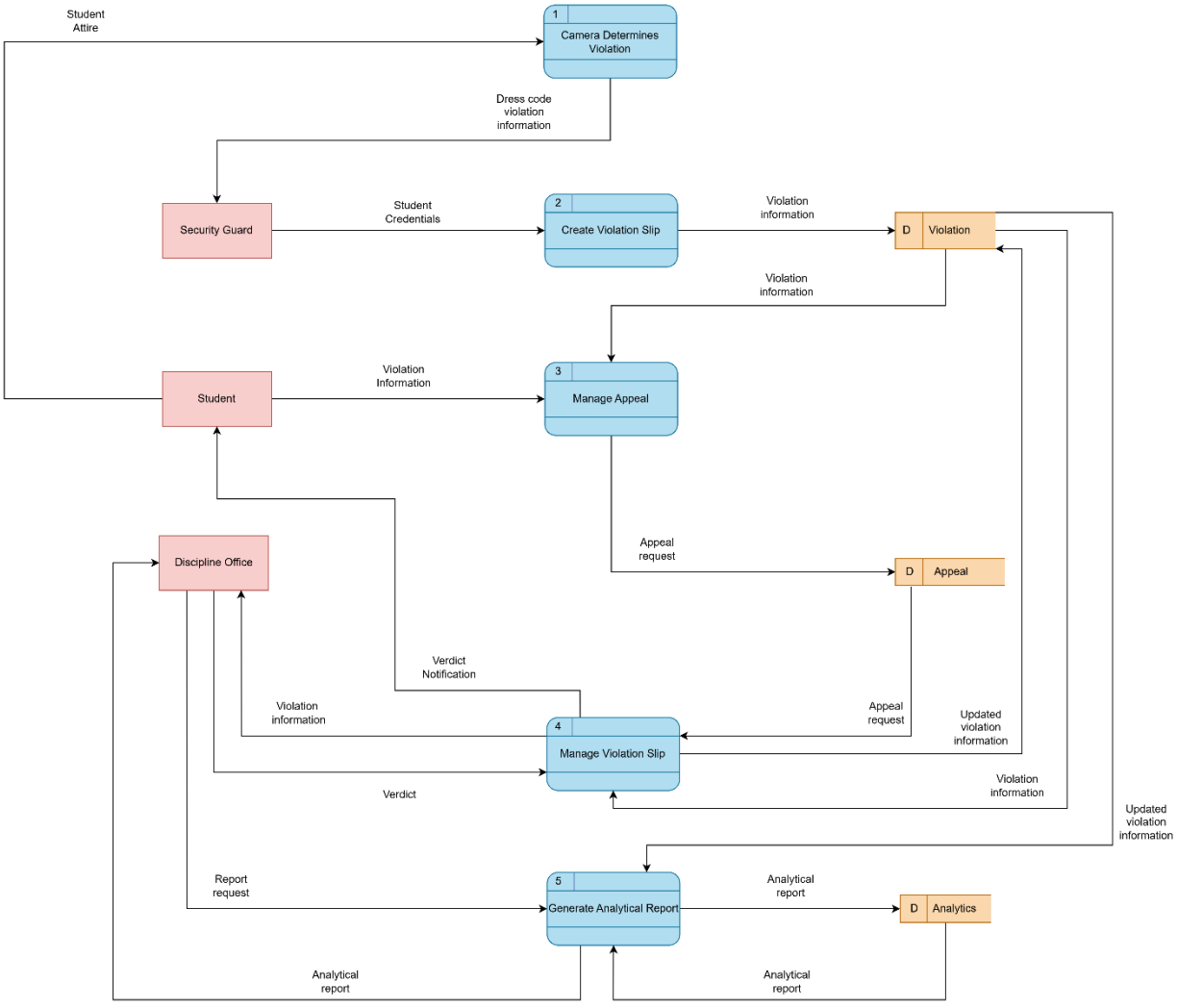

Fig.10 Data Flow Diagram Level 1

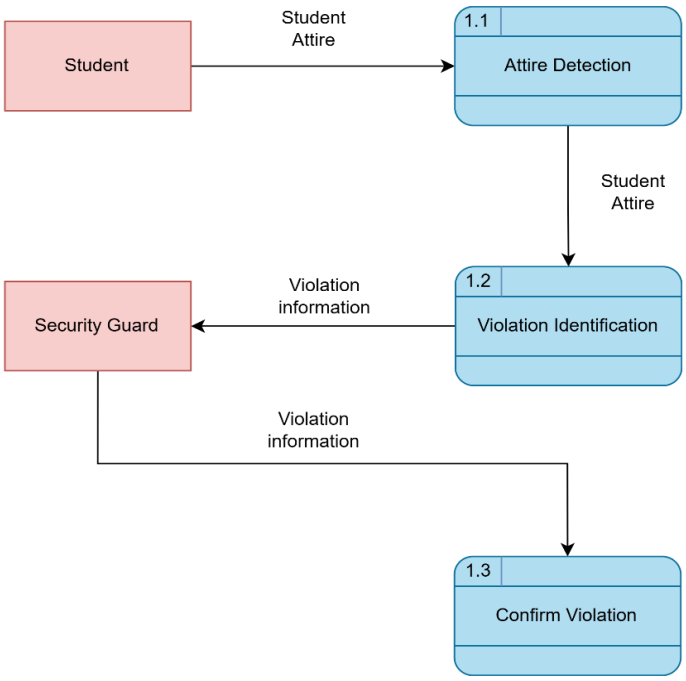

Fig.11 Data Flow Diagram Level 2 (1 of 5)

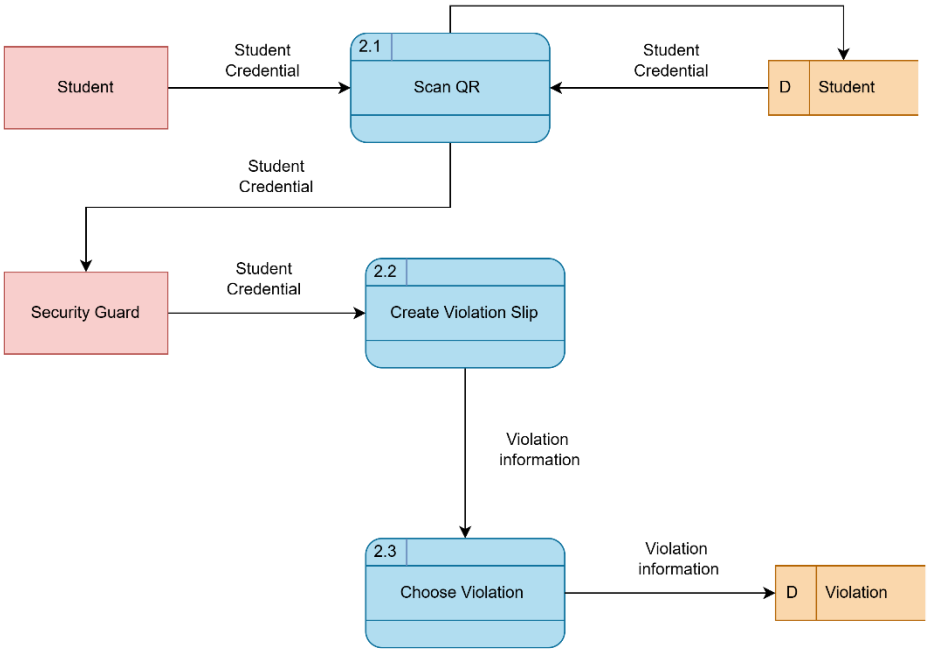

Fig.12 Data Flow Diagram Level 2 (2 of 5)

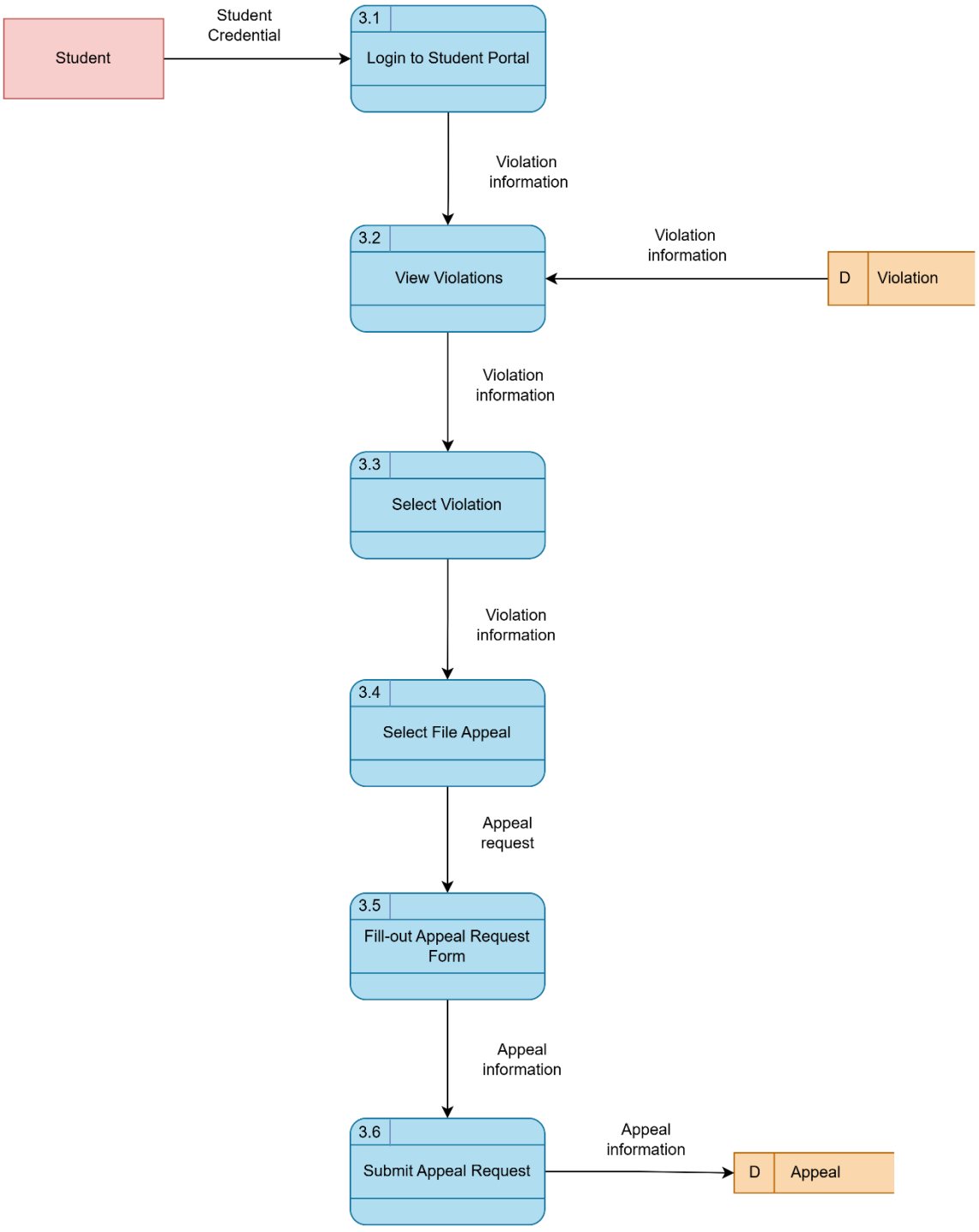

Fig.13 Data Flow Diagram Level 2 (3 of 5)

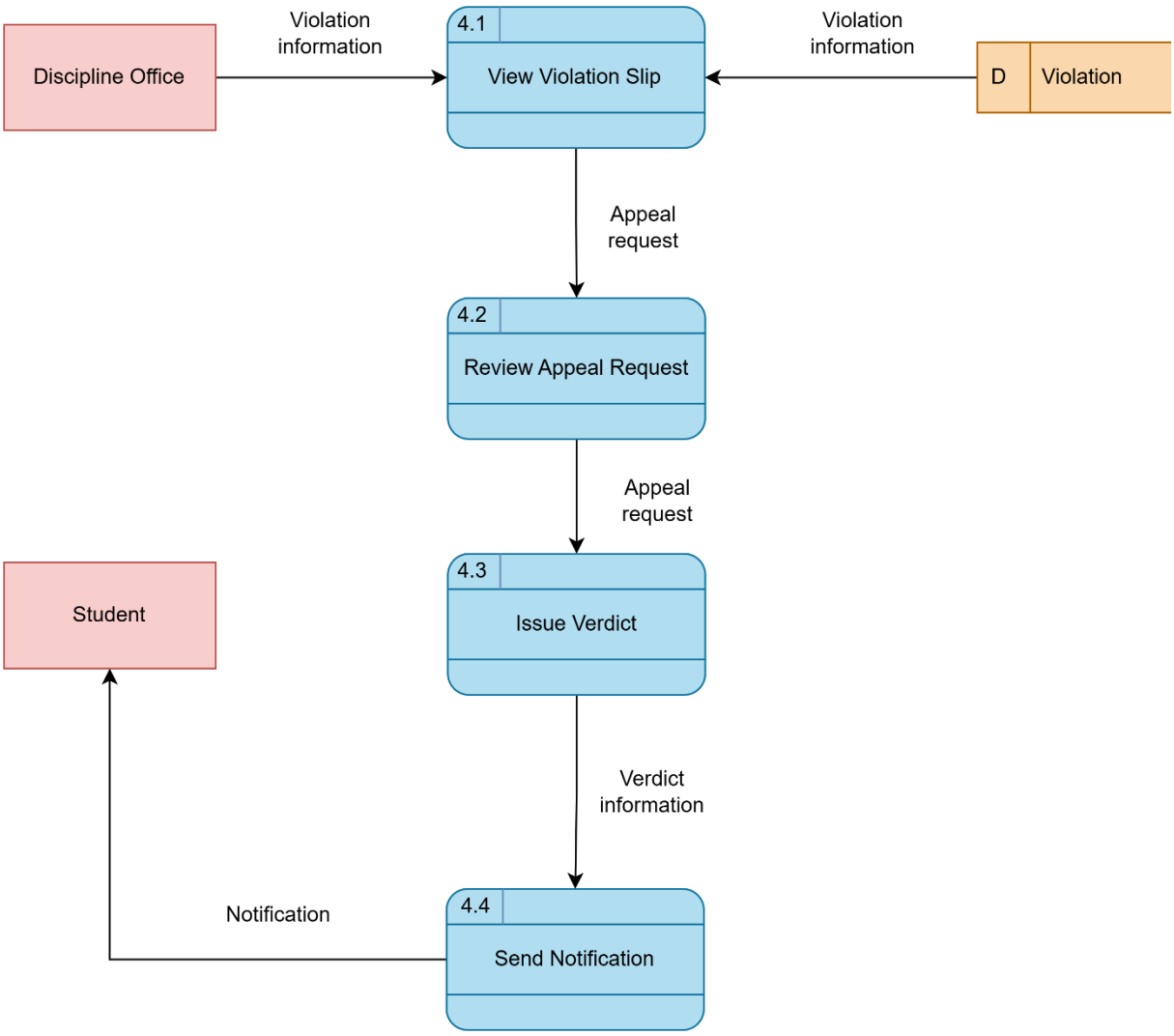

Fig.14 Data Flow Diagram Level 2 (4 of 5)

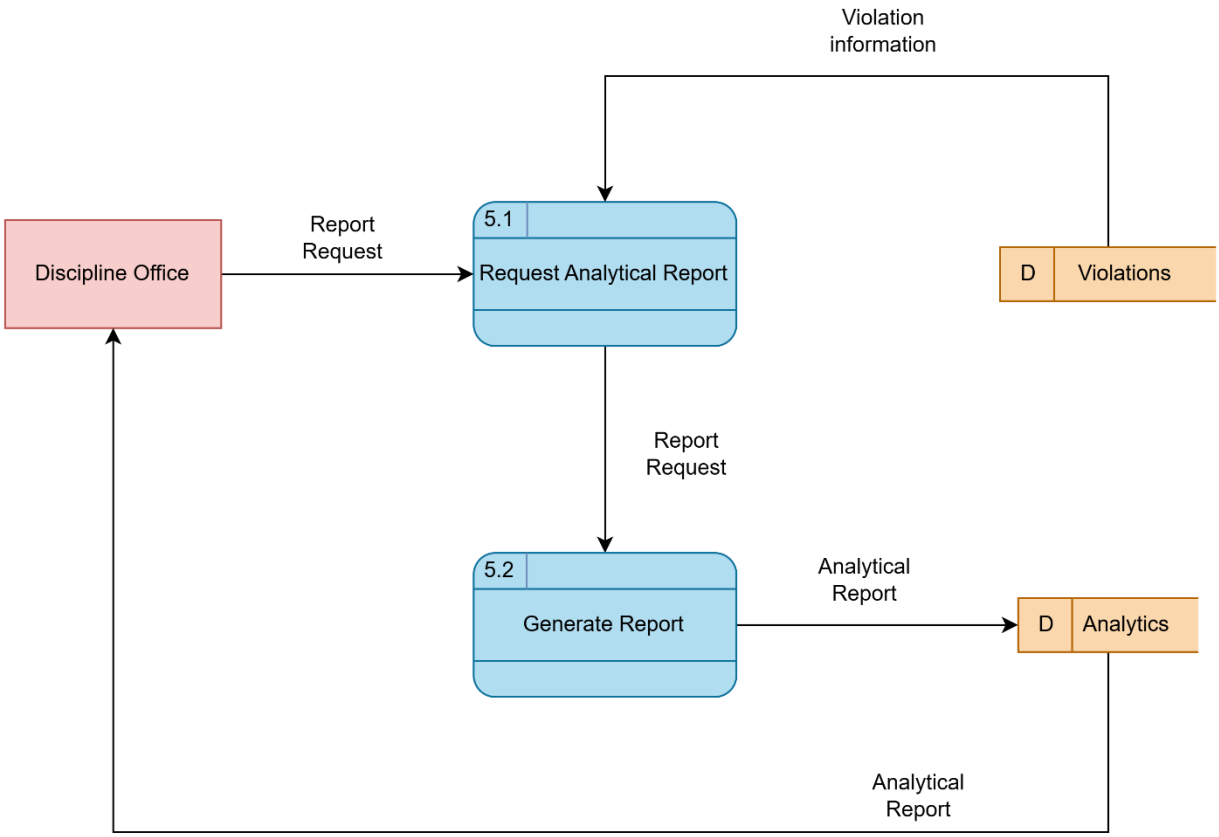

Fig.15 Data Flow Diagram Level 2 (5 of 5)

5.5 Fully Dressed Use Cases

TABLE IX
FULLY DRESSED USE CASE 1

Use Case Section	Comment
Use Case ID	UC-01
Use Case Name	Camera Determines Violation
Created By	Mabini, Nelson Jr.
Date Created	September 05, 2024
Primary Actor	Camera (AI)
Secondary Actor	Student, Security Guard
Include Use Cases	N/A
Extends Use Cases	N/A
Preconditions	1. The AI Camera must have a function to determine dress code violation from a student's attire.
Postconditions	1. A student's dress code violation is determined and to be inputted in the application after scanning the student's QR code.
Main Flow	1. The Camera scans the attire of the student. 2. The Camera identifies the violation, if there are any. Otherwise, it doesn't do anything. 3. The Camera prepares the details of the dress-code violation, to be inputted after scanning the student's QR Code.
Alternative Flows	Scenario 1: Camera Experiences an Error 1. The Security Guard is notified of the error. 2. The Security Guard manually inputs the violation using the drop-down list of violations.

TABLE X
FULLY DRESSED USE CASE 2

Use Case Section	Comment
Use Case ID	UC-02
Use Case Name	Create Violation Slip
Created By	Daniel Bucayan, Maria Theresa Carreon
Date Created	September 05, 2024
Primary Actor	Security Guard
Secondary Actor	Student, Head of the Discipline Office
Include Use Cases	N/A
Extends Use Cases	Manage Violation Slip
Preconditions	1. School dress code policy exists. 2. Student commits a dress code violation. 3. Student has his/her QR Code scanned.
Postconditions	1. Violation is submitted to the system. 2. Student receives a warning through email if it's the 2nd issuance in a term. 3. The Head of the Discipline Office receives the violation slips.
Main Flow	1. The App scans and fills in required information 2. The security guard submits the violation slip to the Disciplinary Office through the app. 3. The Head of the Discipline Office receives the violation slips through the system. 4. The Head of the Discipline Office checks recent appeal requests regarding the violation slips received. 5. The Head of the Discipline Office approves or denies appeal requests, if there are any. Otherwise, the Head of the D.O. just confirms the received violation slips.

	6. The System sends a verdict notification to the student
Alternative Flows	Scenario 1: Student is Issued His 2nd Blue Slips 1. This is the 2nd blue slip of the student. 2. The student is notified and warned, through email, about the consequences if he is issued another violation slip. Scenario 2. No Pending Appeals in the System 1. The system will display a message that there are no pending appeals for review and will just prompt the Head of the D.O. to confirm blue slips without appeals.

TABLE XI
FULLY DRESSED USE CASE 3

Use Case Section	**Comment**
Use Case ID	UC-03
Use Case Name	Manage Appeal
Created By	Mabini, Nelson Jr.
Date Created	September 05, 2024
Primary Actor	Student
Secondary Actor	N/A
Include Use Cases	N/A
Extends Use Cases	File Appeal
Preconditions	1. Student must have a pre-existing violation. 2. The student has access to the web portal to submit an appeal.

	3. The violation is eligible for appeal as per school policy.
Postconditions	1. The appeal is submitted to the Discipline Office for review. 2. The Discipline Office can see the appeal in their dashboard for further action.
Main Flow	1. The student logs in to the web portal. 2. The student views the violation and selects a violation that they want to appeal. 3. Student files an appeal on the specified violation 4. The DCV Management System presents the appeal form, prompting the student to provide a reason for appealing. 5. The web-portal submits an appeal request for that specified violation to be reviewed by the Head of Discipline Office.
Alternative Flows	Scenario 1: Violation Appeal Period Expired 1. The student selects a violation to appeal 2. The system checks the date and finds that the appeal period has expired. 3. An error message is displayed: "The appeal period for this violation has expired. 4. App redirects user back to violation records Scenario 2: Student does not have existing violation. 1. Since the student has no existing violations, no further action is needed.

TABLE XII
FULLY DRESSED USE CASE 5

Use Case Section	Comment
Use Case ID	UC-05
Use Case Name	Generate Analytical Report
Created By	Michael Patrick Escalambre
Date Created	September 08, 2024
Primary Actor	Discipline Office Head
Secondary Actor	N/A
Include Use Cases	N/A
Extend Use Cases	N/A
Preconditions	1. The discipline office head must be logged into the system with appropriate access rights. 2. The blue slip data must be stored and available in the systems for analysis.
Post Conditions	1. The analytical report is generated and displayed. 2. If an error occurs, the user is notified.
Main Flow	1. The head of the discipline office will navigate to the "Analytics Report" Section. 2. The Head of the Discipline Office selects the type of report to generate (Monthly, Per Term, Academic Year). 3. The system retrieves the selected violation slip data. 4. The system generates and displays the analytical report on the screen. 5. The Discipline Office Head then reviews and optionally downloads or prints the report.
Alternative Flow	Scenario 1. No data available for the selected period. 1. If the Discipline Office Head selects a period and no data or record of a blue slip is

	available, the system will display "No Data Available for the Selected Period". 2. The Discipline Office Head is then given the option to select a different time or exit the report.

5.6 Test Cases for Fully Dressed Use Case

Test Case ID	TC_1.01	**Test Case Description**	Succesful Violation Identification		
Created By	Carreon	**Reviewed By**	Daniel	**Version**	1.0
QA Tester's Log	No further comments. Passed				
Tester's Name	Daniel	**Date Tested**	September 7, 2024	**Test Case (Pass/Fail/Not**	Pass

S #	Prerequisites:
1	Student commits a dress code violation.
2	The AI identifies and inputs the violation
3	
4	

S #	Test Data
1	Violation = Denim on Mondays
2	Date = September 08, 2024
3	Time = 7:33 AM
4	

Test Scenario AI Camer determines the Violation of the student upon entering and submits the data to the app.

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	The AI identifies and inputs	The violation information	As Expected	Pass
2	The AI transfer the gathered	Transferred information	As Expected	Pass
3				
4				

Fig.16 Test Case 1 for Fully Dressed Use Case 1

Test Case ID	TC_1.02	Test Case Description	AI Experiences an Error		
Created By	Bucayan	Reviewed By	Thea	Version	1.0

QA Tester's Log	No further comments. Passed

Tester's Name	Thea	Date Tested	September 7, 2024	Test Case (Pass/Fail/Not	Pass

S #	Prerequisites:
1	Student commits a dress code violation.
2	Student ID has been scanned for
3	
4	

S #	Test Data
1	Violation = Denim on Mondays
2	Issued By = Security Guard 1
3	Date = September 08, 2024
4	Time = 7:33 AM

Test Scenario	Verify on entering valid violation information and successfully creating a blue slip.

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	The AI identifies and inputs	The violation information	The system experiences an error, unable to	Fail
2	Manual Inputs	The security guard should	As Expected	Pass
3	Click Submit	The Security Guard submits	As Expected	Pass
4	Receives Email	Student should receive an	As Expected	Pass

Fig.17 Test Case 2 for Fully Dressed Use Case 1

Test Case ID	TC_2.01	Test Case Description	Successful Creation of Blue Slip		
Created By	Bucayan	Reviewed By	Thea	Version	1.0

QA Tester's Log	No failed Data. Passed

Tester's Name	Thea	Date Tested	September 7, 2024	Test Case (Pass/Fail/Not	Pass

S #	Prerequisites:
1	Student commits a dress code violation.
2	Student ID has been scanned for
3	
4	

S #	Test Data
1	Violation = Denim on Mondays
2	Issued By = Security Guard 1
3	Date = September 08, 2024
4	Time = 7:33 AM

Test Scenario	Verify on entering valid violation information and successfully creating a blue slip.

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	The AI identifies and inputs the violation automatically	The violation information should be filled out once identified by the AI.	As Expected	Pass
2	Click Submit	Blue slip should be submitted to the database.	As Expected	Pass
3	Receive email	Student should receive an email regarding the	As Expected	Pass

Fig.18 Test Case 1 for Fully Dressed Use Case 2

Test Case ID	TC_2.02	Test Case Description	Creation of 2nd Blue Slip of a Student		
Created By	Bucayan	Reviewed By	Thea	Version	1.0
QA Tester's Log	No failed Data. Passed				
Tester's Name	Thea	Date Tested	September 7, 2024	Test Case (Pass/Fail/Not	Pass

S #	Prerequisites:
1	Student commits a dress code violation.
2	Student ID has been scanned for
3	
4	

S #	Test Data
1	Violation = Denim on Mondays
2	Issued By = Security Guard 1
3	Date = September 08, 2024
4	Time = 7:33 AM

Test Scenario: Verify on entering valid violation information and successfully creating a blue slip, issuing a 3rd one on the same student.

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	The AI identifies and inputs	The violation information	As Expected	Pass
2	Click Submit	Blue slip should be	As Expected	Pass
3	Receive Email	Student should receive a	As Expected	Pass

Fig.19 Test Case 2 for Fully Dressed Use Case 2

Test Case ID	TC_2.03	Test Case Description	No pending appeals		
Created By	Carreon	Reviewed By	Nelson	Version	1.0
QA Tester's Log	Passed				
Tester's Name	Nelson	Date Tested	September 7, 2024	Test Case (Pass/Fail/Not Executed)	Pass

S #	Prerequisites:
1	Access to Web Portal
2	No pending appeal listed
3	
4	

S #	Test Data
1	Display message = "No pending appeal"
2	
3	
4	

Test Scenario: No pending appeal in the system

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	http://demo.apcdo.edu.ph	Site should open	As Expected	Pass
2	Enter email & Password	Credential can be entered	As Expected	Pass
3	Click Submit	User is logged in	As Expected	Pass
4	dashboard	Dashboard should open	As Expected	Pass
5	Display message	Pending Appeal"	As Expected	Pass

Fig.20 Test Case 3 for Fully Dressed Use Case 2

Test Case ID	TC_3.01	Test Case Description	Appeal Blue Slip		
Created By	Mabini	Reviewed By	Michael	Version	1.00
QA Tester's Log	Passed				
Tester's Name	Michael	Date Tested	September 7, 2024	Executed)	Pass

S #	Prerequisites:
1	PC or phone to access web portal
2	Has pre-existing violation
3	
4	

S #	Test Data
1	LoginID = nymabini@apc.edu.ph
2	ViolationID = Violation1
3	Appeal Reason = "Fill in blank"
4	

Test Scenario: Verify on requesting appeal on specific violaition

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Navigate to http://demo.apcdo.edu.ph	Site should open	As Expected	Pass
2	Enter APC email and wait for the credential verification	Credential is verified. Role is identified	As Expected	Pass
3	Navigate to Appeal dashboard	Dashboard should open	As Expected	Pass
4	Submit request with reason	Submittion of complete appeal request for D.O review	As Expected	Pass
5	Appeal request pending	Student shows reason and evidence, and is waiting furhter actions	As Expected	Pass

Fig.21 Test Case 1 for Fully Dressed Use Case 3

Test Case ID	TC_3.02	Test Case Description	Appeal Submission Fails Due to Expired Appeal Period		
Created By	Mabini	Reviewed By	Michael	Version	1.0

QA Tester's Log	Passed

Tester's Name	Michael	Date Tested	September 7, 2024	Test Case (Pass/Fail/Not	Pass

S #	Prerequisites:
1	Access to Web Browser.
2	Student submitted an appeal.
3	
4	

S #	Test Data
1	Appeal Date = September 7, 2024
2	Violation = White Socks
3	Proof for Appeal = Picture
4	Appeal Deadline: September 7, 2024

Test Scenario	Selected violation is not accpeting appeal requests anymore

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Navigate to http://demo.apcdo.edu.ph	Site should open	As Expected	Pass
2	Enter APC email and wait for the credential verification	Credential is verified. Role is identified	As Expected	Pass
3	Navigate to Appeal dashboard	Dashboard should open	As Expected	Pass
4	Display message	Display message "Appeal Period Expired"	As Expected	Pass
5	Return to appeal dashboard	Redirects to main menu	As Expected	Pass

Fig.22 Test Case 2 for Fully Dressed Use Case 3

Test Case ID	TC_4.01	Test Case Description	Success in Generating Analytical Report		
Created By	Escalambre	Reviewed By	Nelson	Version	1.0

QA Tester's Log	Passed

Tester's Name	Nelson	Date Tested	September 15, 2024	Test Case (Pass/Fail/Not	Pass

S #	Prerequisites:
1	Discipline Office Head logged into the web portal.
2	Blue slip data available in the system.
3	
4	

S #	Test Data
1	Discipline Office Head Login.
2	Blue slip data for review.
3	
4	

Test Scenario	The user will generate an Analytical Report.

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Log in as the Discipline Office Head.	Successfully logged in	As Expected	Pass
2	Navigate to the "Analytics Report" section.	Navigation successful	As Expected	Pass
3	Select a time period (e.g., weekly, monthly, yearly).	Time period selected successfully	As Expected	Pass
4	Click the "Generate Report" button.	Report is generated	As Expected	Pass
5	Report is displayed showing various statistics.	Report shows correct statistics such as total number of blue slips and offenses made	As Expected	Pass

Fig.23 Test Case 1 for Fully Dressed Use Case4

Test Case ID	TC_4.02	Test Case Description	No Data Available for the Selected Period		
Created By	Escalambre	Reviewed By	Nelson	Version	1.0

QA Tester's Log	Passed

Tester's Name	Nelson	Date Tested	September 15, 2024	Test Case (Pass/Fail/Not	Pass

S #	Prerequisites:
1	Discipline Office Head logged into the web
2	No blue slip data is available for the
3	
4	

S #	Test Data
1	Discipline Office Head Login.
2	Time period with no blue slip data.
3	
4	

Test Scenario	The user will search for data but no data is available.

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	Log in as the Head of Discipline Office.	Successfully logged in	As Expected	Pass
2	Navigate to the "Analytics Report" section.	Navigation successful	As Expected	Pass
3	Select period of report	Period of report selected successfully	As Expected	Pass
4	Click the "Generate Report" button.	Report is generated	Message is shown "No Data Available for the Selected Period"	Fail
5	A pop-up message is displayed.	Pop-up shows "No Data Available for the Selected Period"	As Expected	Pass

Fig. 25 Test Case 2 for Fully Dressed Use Case 4

5.7 Activity Diagrams with Swimlanes

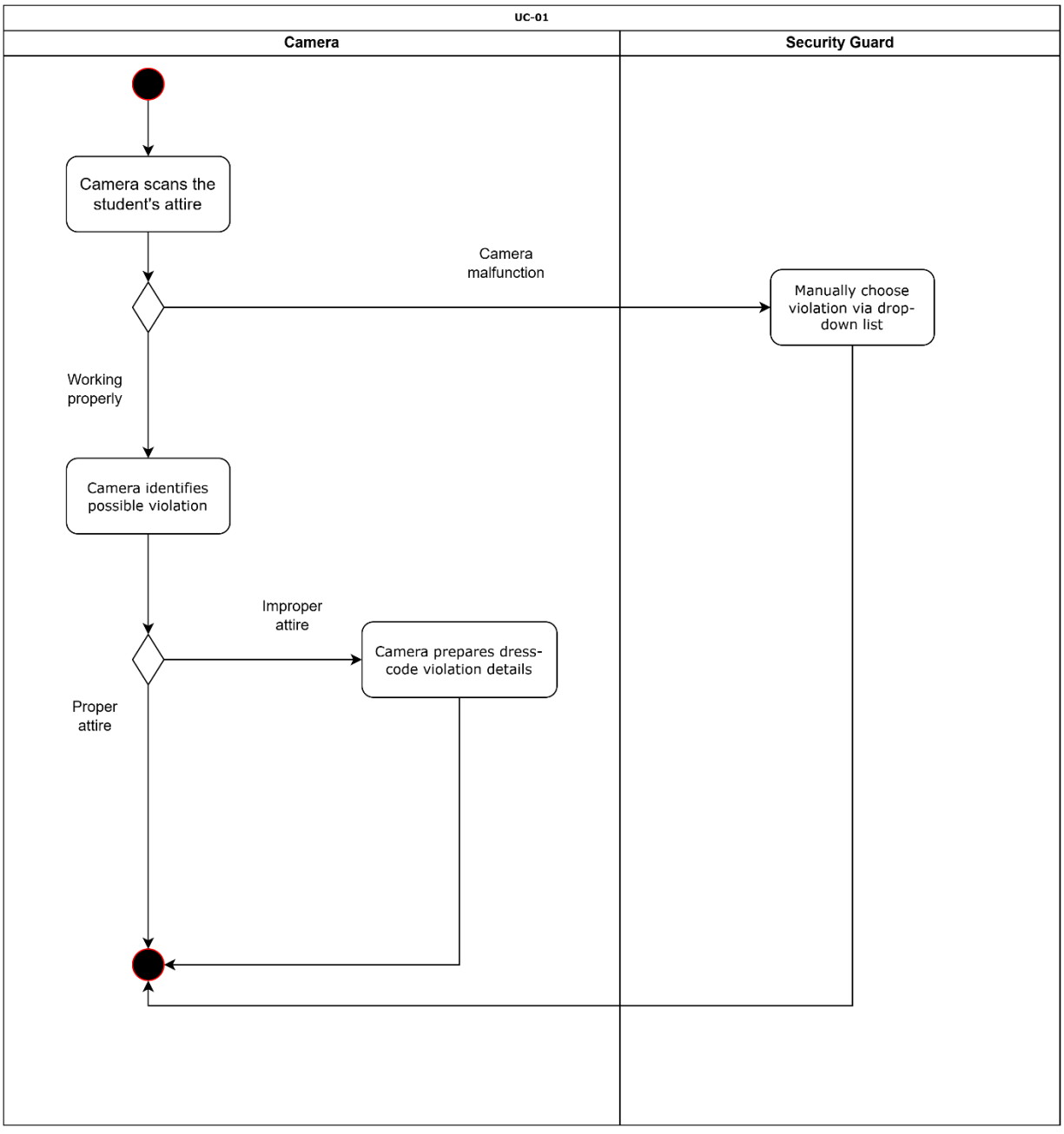

Fig.24 Activity Diagram for Use Case 1

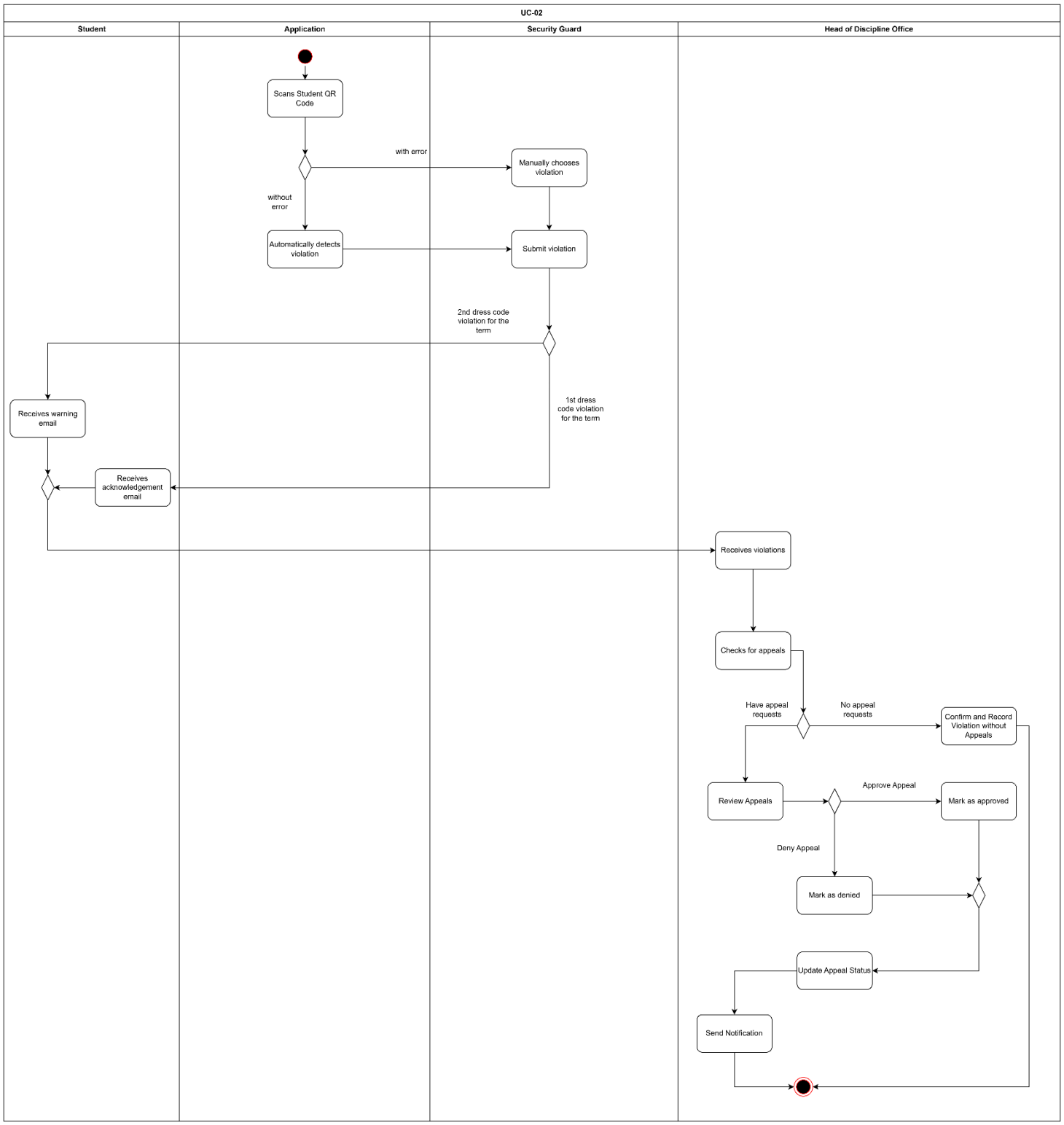

Fig.25 Activity Diagram for Use Case 2

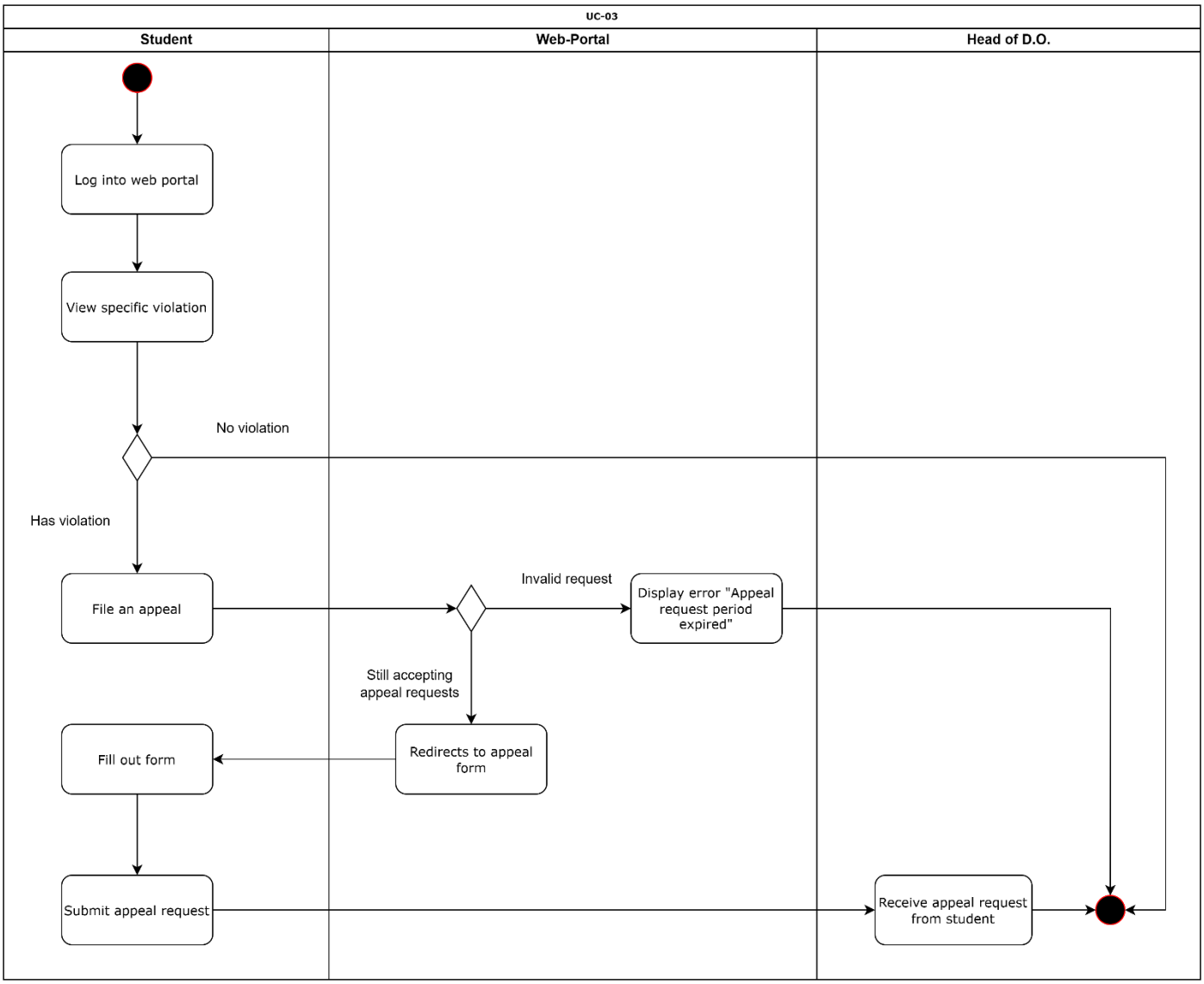

Fig.26 Activity Diagram for Use Case 3

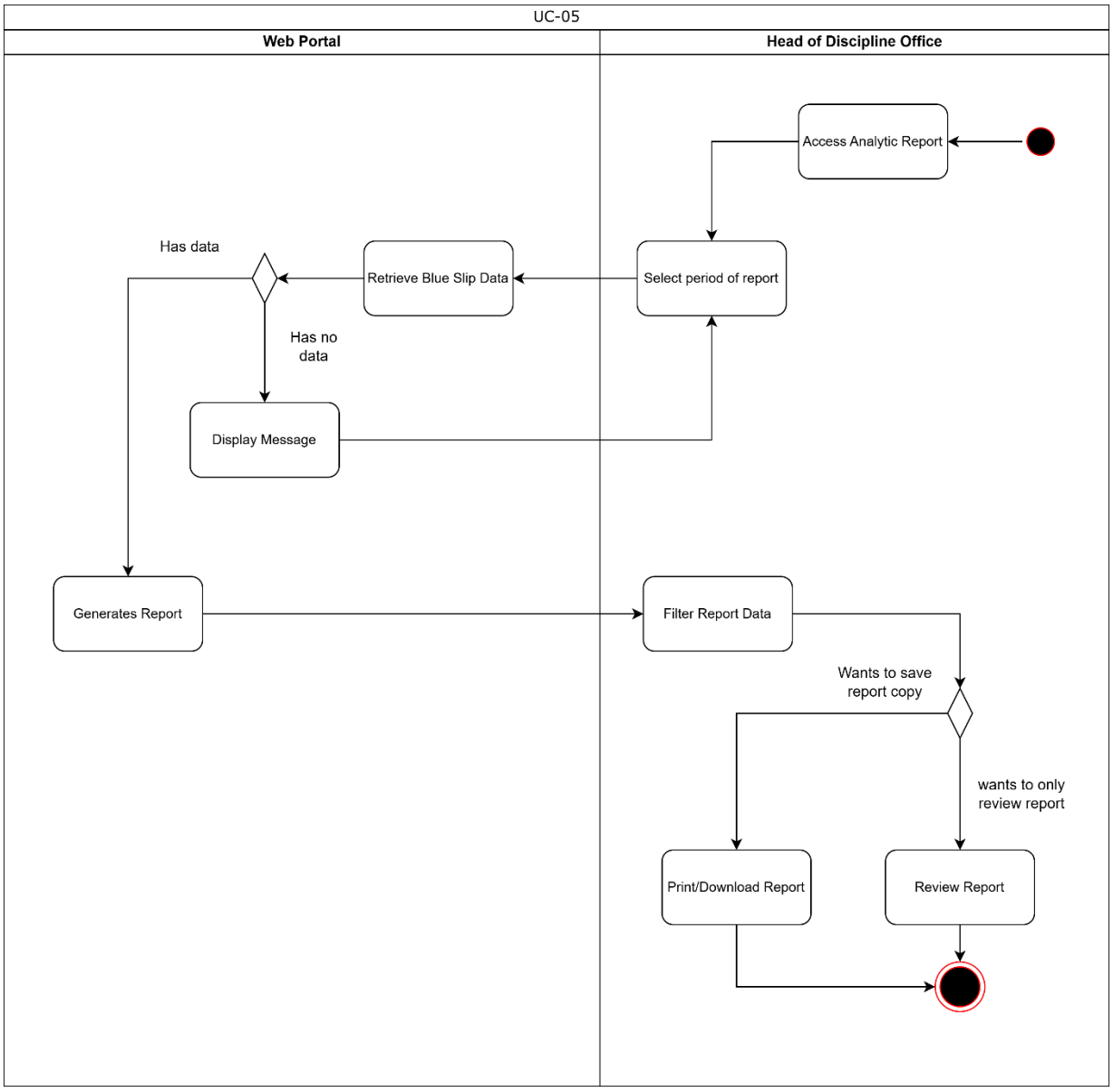

Fig.27 Activity Diagram for Use Case 5

5.8 Database Design

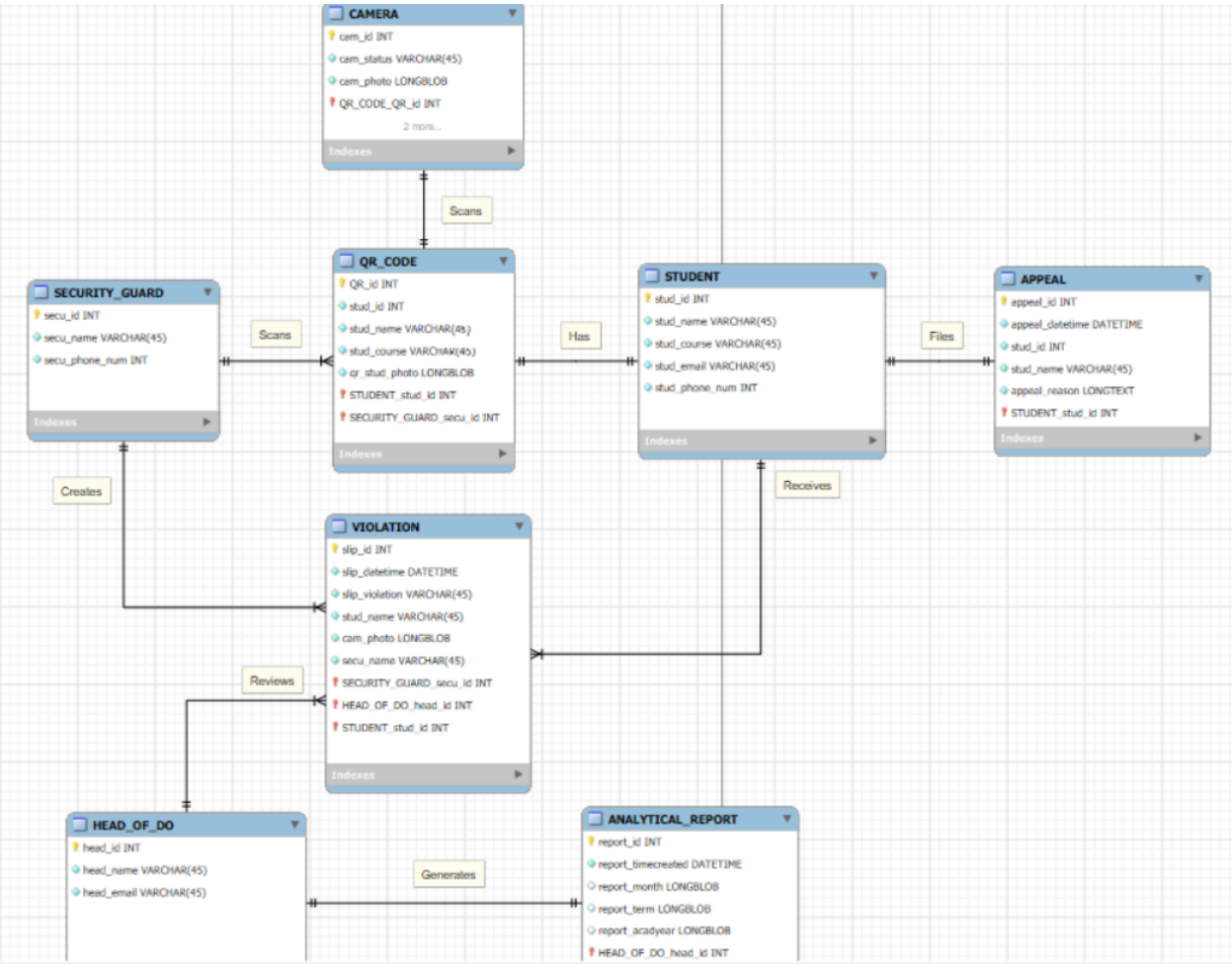

Fig.28 Entity-Relationship Diagram

TABLE XIII
DATA DICTIONARY

Table Name	Attribute Name	Contents	Type	Format	Range	Required	PK or FK	FK Referenced Table
Camera	cam_id	Camera ID Number	INT	XXXXXX	0000000000-9999999999	Y	PK	
	cam_status	Camera Status	VARCHAR	Xxxxxxx		Y		
	cam_photo	Photo Taken by the Camera	LONGBLOB			Y		
	qr_id	QR Code ID	INT		0000000000-9999999999	Y	FK	QR_Code Table
Student	stud_id	Student ID Number	INT	XXXXXX	0000000000-9999999999	Y	PK	
	stud_name	Student Name	VARCHAR(45)	Xxxxxxx		Y		
	stud_course	Student Course	VARCHAR(45)	Xxxxxxx		Y		
	stud_email	Student Email	VARCHAR(45)	Xxxxxxx		Y		
	stud_phone_num	Student Phone Number	INT		0000000000-9999999999	Y		
QR_Code	qr_id	QR Code ID	INT	XXXXXX	0000000000-9999999999	Y	PK	
	stud_name	Student name in QR	VARCHAR(45)	Xxxxxxx		Y		
	stud_course	Student course in QR	VARCHAR(45)	Xxxxxxx		Y		
	stud_photo	Student photo in QR	LONGBLOB			Y		
	stud_id	Student ID Number in QR	INT	XXXXXX	0000000000-9999999999	Y	FK	Student Table
	secu_id	Security Guard ID Number	INT	XXXXXX	0000000000-9999999999	Y	FK	Security_Guard Table
Security_Guard	secu_id secu_name	Security Guard ID	INT	XXXXXX	0000000000-9999999999	Y	PK	
	secu_phone_num	Security Guard Name	VARCHAR(45)	Xxxxxxx		Y		
		Security Guard Phone Number	INT	XXXXXX	0000000000-9999999999	Y		
Appeal	appeal_id	Appeal ID	INT	XXXXXX	0000000000-9999999999	Y	PK	
	appeal_datetime	Date and time the appeal was created	DATETIME	MM/DD /YYYY		Y		
	stud_name	Student Name	VARCHAR(45)	Xxxxxxx		Y		
	appeal_reason	Reason of Appeal	TEXT INT	Xxxxxxx		Y		
	stud_id	Student ID Number		XXXXXX	0000000000-9999999999	Y	FK	Student Table
Violation	slip_id	Blue Slip ID Number	INT	XXXXXX	0000000000-9999999999	Y	PK	
	slip_datetime	Date and Time Blue Slip is Created	DATETIME	MM/DD /YYYY		Y		
	slip_violation	Student Violation	VARCHAR(45)	Xxxxxxx		Y		
	stud_id	Student ID Number	INT	XXXXXX	0000000000-9999999999	Y		
	stud_name	Student Name	VARCHAR(45)	Xxxxxxx		Y		
	stud_course	Student Course	VARCHAR(45)	Xxxxxxx		Y		
	secu_id	Security ID Number	INT	XXXXXX	0000000000-9999999999	Y	FK	Security_Guard Table
	head_id	Head of DO ID Number	INT	XXXXXX	0000000000-9999999999	Y	FK	Head_of_DO Table
Head_of_DO	head_id	Head of DO ID Number	INT	XXXXXX	0000000000-9999999999	Y	PK	
	head_name	Name of Head of DO	VARCHAR(45)	Xxxxxxx		Y		
	head_email	Email Head of DO	VARCHAR(45)	Xxxxxxx		Y		
Analytical_ Report	report_id	Report ID Number	INT	XXXXXX	0000000000-9999999999	Y	PK	
	report_datetime	Date and Time report is created	DATETIME	MM/DD /YYYY		Y		
	report_month	Monthly Report	LONGBLOB					
	report_term	Termly Report	LONGBLOB					
	report_acadyear	Academic Year Report	LONGBLOB					
	head_id	Head of DO ID Number	INT		0000000000-9999999999	Y	FK	Head_of_DO Table

5.9 Prototype

Fig. 29. Home Page

Figure 29 shows the home page of the application for scanning QR codes. Clicking the issue button directs the user to the QR scanning feature of the app.

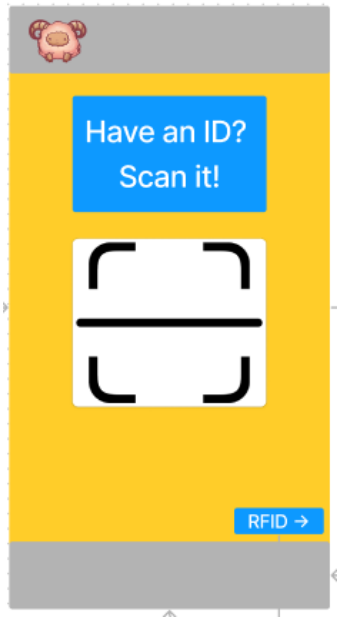

Fig.30. QR Scanning Interface

This feature is seen on Figure 30. If students don't have any QR code in their ID, an RFID scanning feature is also available. This acts the same as the QR Scanning feature that gets a student's credentials but using the RFID in the student IDs.

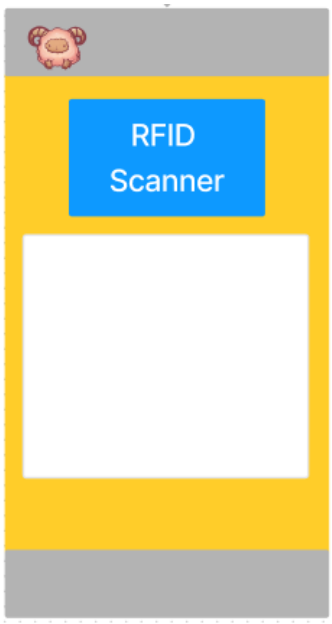

Fig.31. RFID Scanning Interface

Figure 31 shows the RFID Scanner Interface in which the Security Guard will use to scan the student's credentials.

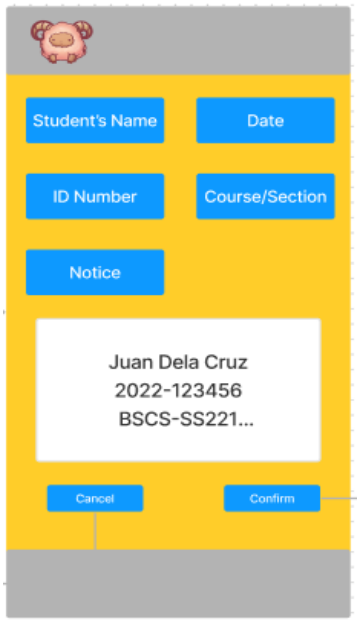

Fig. 32. Message Box Confirmation

Figure 32 shows the message box that appears after successfully scanning a student's QR Code. If, somehow, the information is wrong, it can be cancelled to be redirected back to the QR Scanning Interface to scan the code once again. If credentials are correct, pressing confirm would automatically input the credentials to the system, and the "Reason" element will appear.

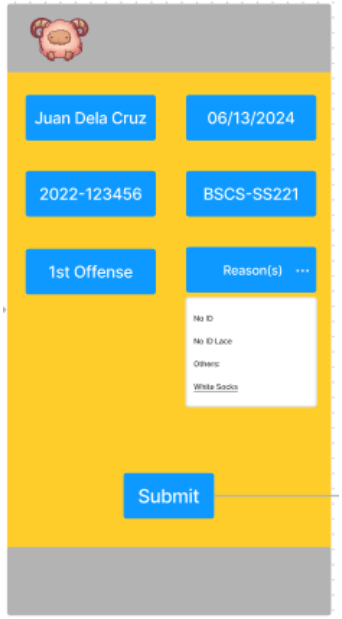

Fig.33. Automated Inputting of Credentials

Figure 33 shows the drop-down menu in the “Reason” tab provides the user with several violations to choose from based on what violation is done.

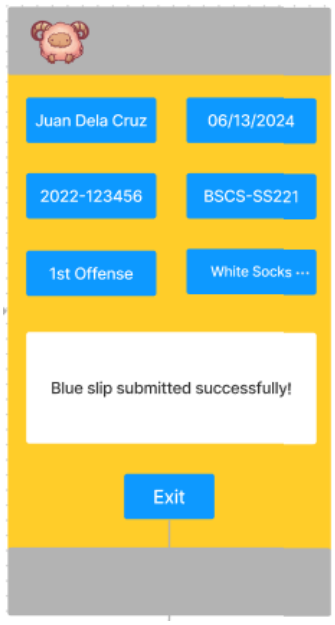

Fig.34. Blue Slip Submission Interface

Figure 34 shows the interface when the blue slip is successfully submitted. After this process, it redirects back to the Home Page where the guard can issue another blue slip by repeating the process.

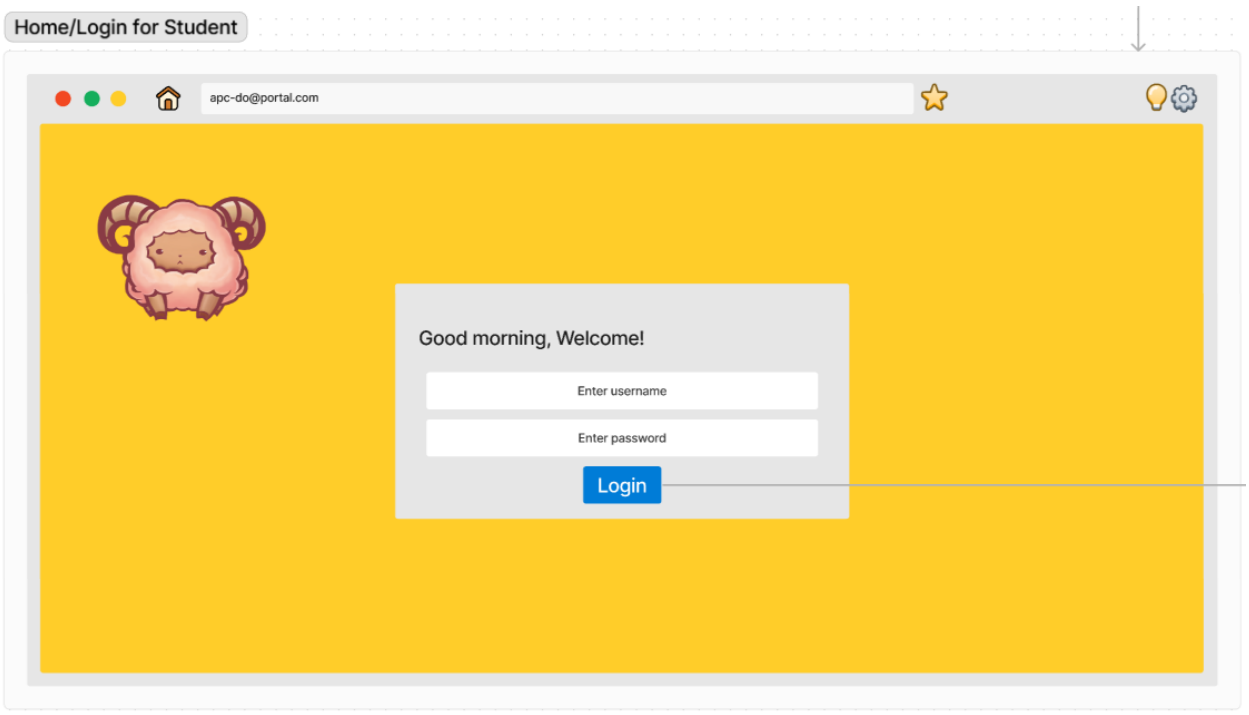

Fig.35. Login Page for Student Portal

Figure 35 shows the login page for the students' portal. This portal is dedicated for filing an appeal for received blue slips. Students can log-in to their APC credentials to access the portal.

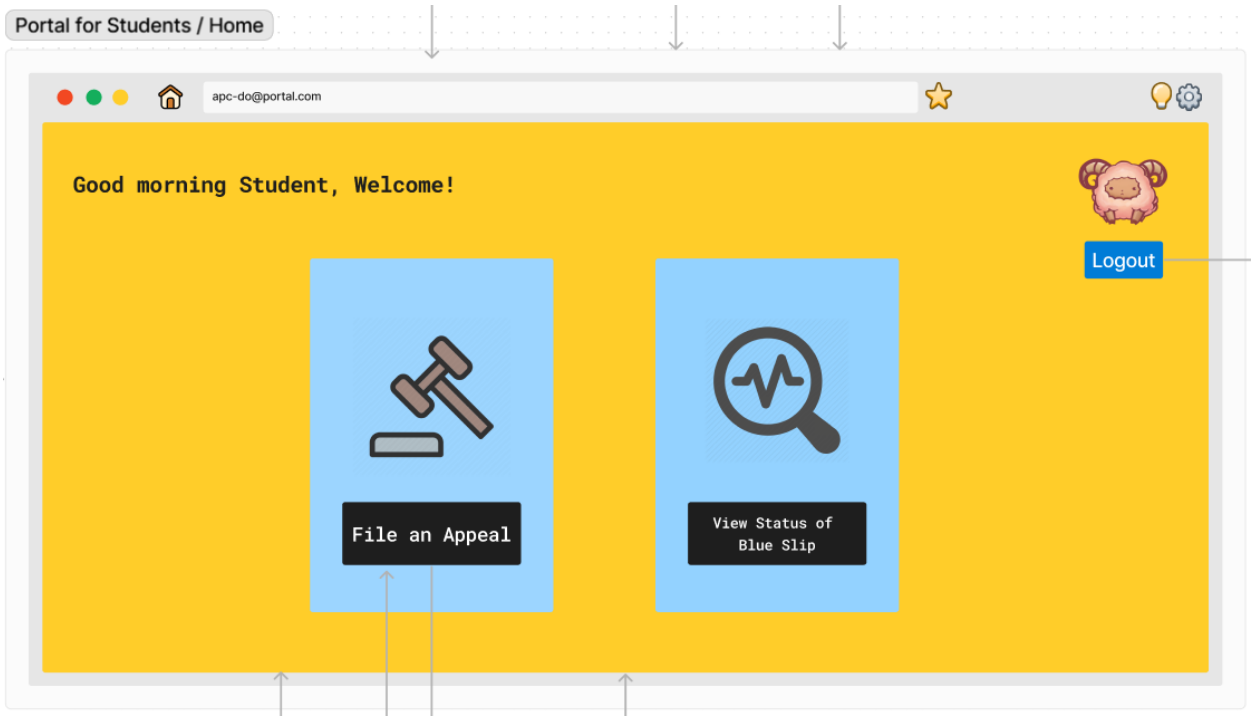

Fig.36. Home Page for Student Portal

Figure 36 shows the home page where they can file an appeal for the blue slips, they receive, as well as view the current number of blue slips that they have received for the current term.

Fig.37. Appeal Form Interface

Figure 37 shows the appeal form in the student's portal. Students can input their respective credentials and their reasons for appealing. They then attach a picture of their current attire for the day. They will be required not to change the file name of the picture as it will show the current date and time of when the picture was taken. Pictures taken will also be required to be taken on the school premises. Failure to do so would void their appeal.

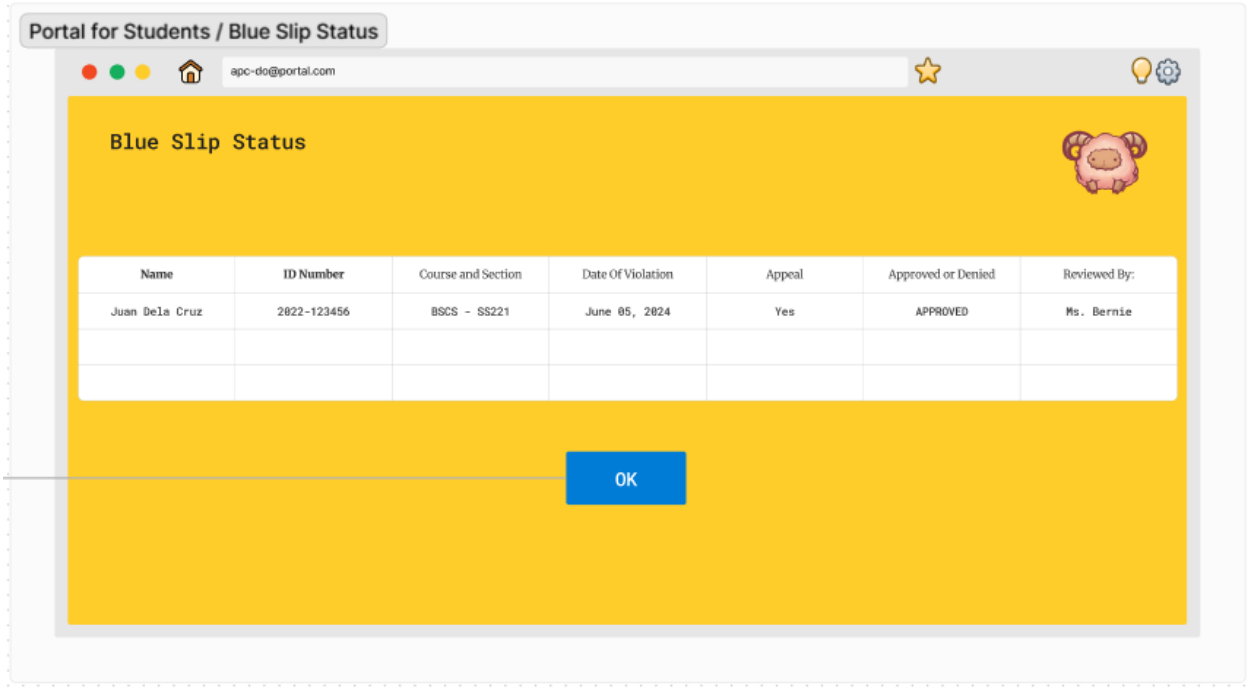

Fig.38. Blue Slip Status Interface

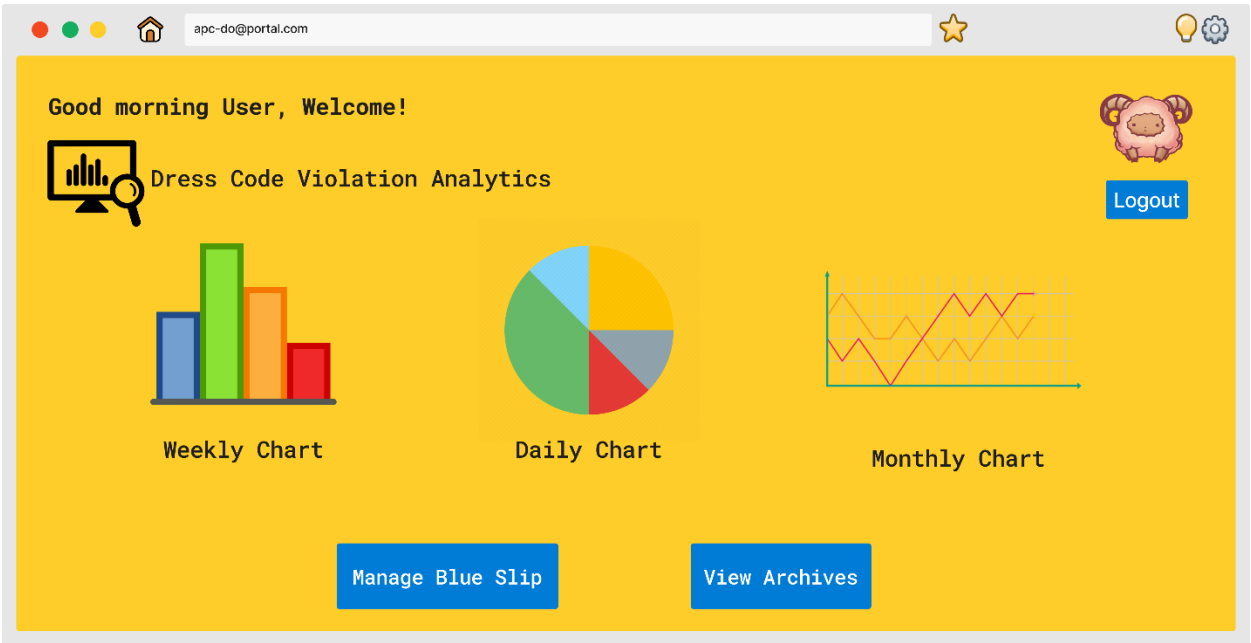

Fig.39. Home Page for DO Portal

Figure 39 shows the home page for the DO portal, which contains the dashboard for analytical reports based on the current data in the system. The user can just simply click the logos to see specific reports and the user can also go view the archives or manage current blue slips by clicking the respective buttons.

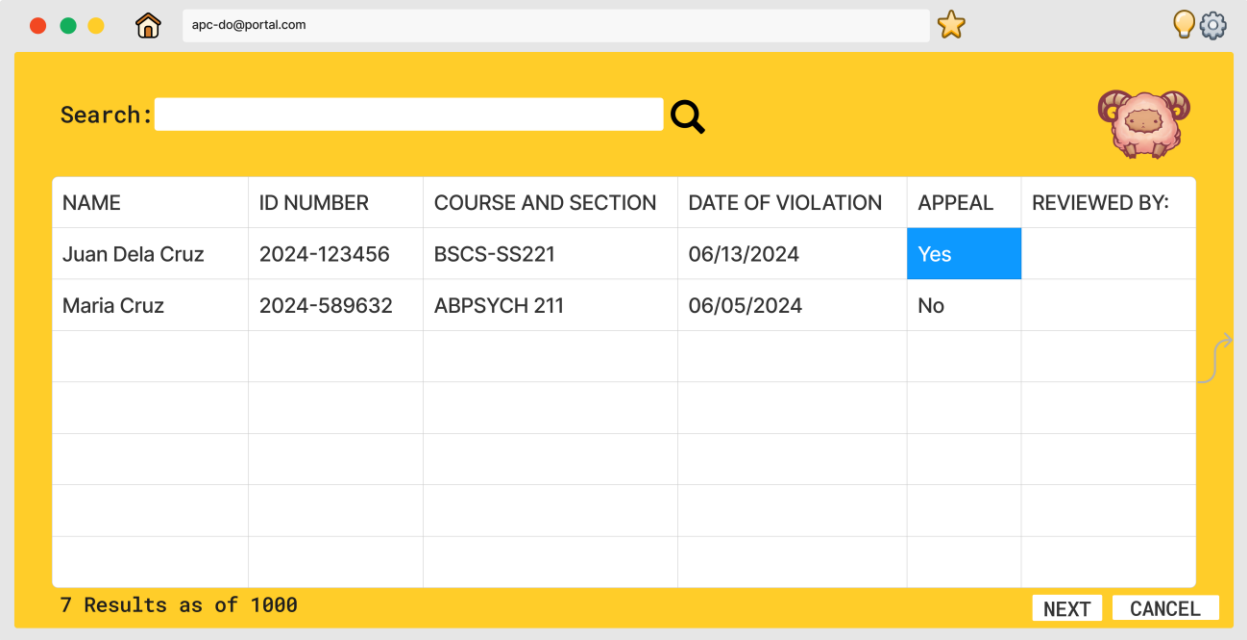

Fig.40. Manage Blue Slip Interface

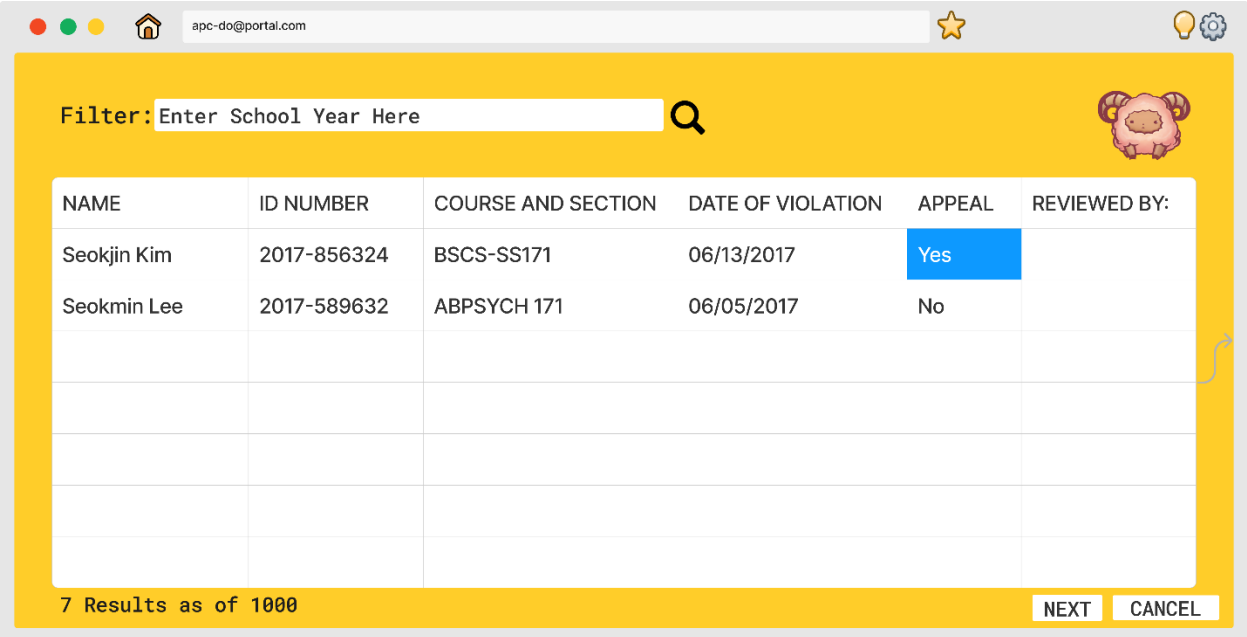

Fig.41. Archives Interface

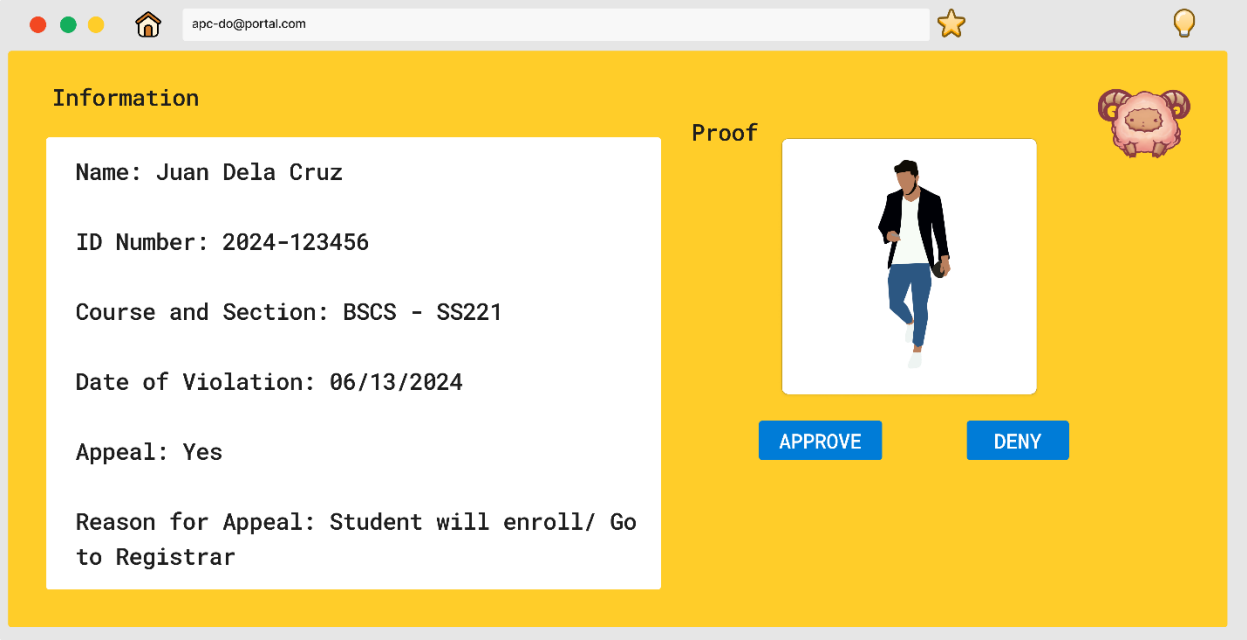

Fig.42. Appeal Review Interface

Figure 42 displays the submitted appeal of the student, along with the attachments. The user decides whether to approve the appeal or not, notifying the student with the result.

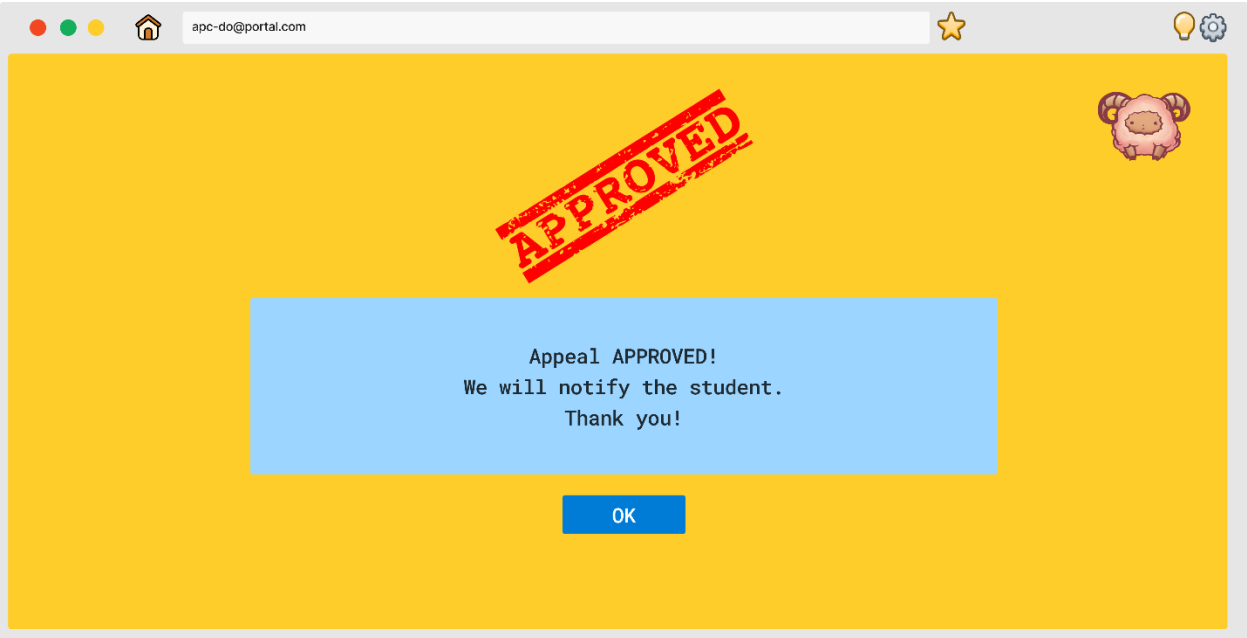

Fig.43. Approved Appeal Interface

Figure 43 shows the interface when the appeal has been approved by the DO. The student will be notified regarding their successful appeal and the DO will not record it as a violation.

5.10 Initial Cloud-Based Prototype

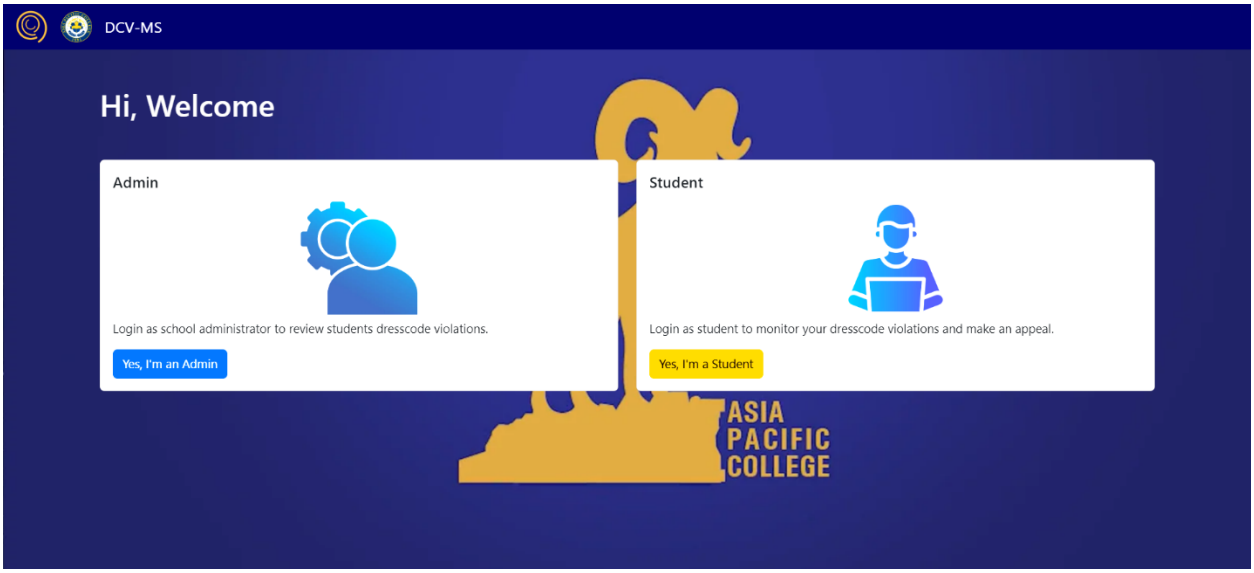

Fig.44 Home Page for User That is Not Logged In

Figure 44 shows the home page interface for users that are not yet logged in. It has an option to log in as an Admin or as a student.

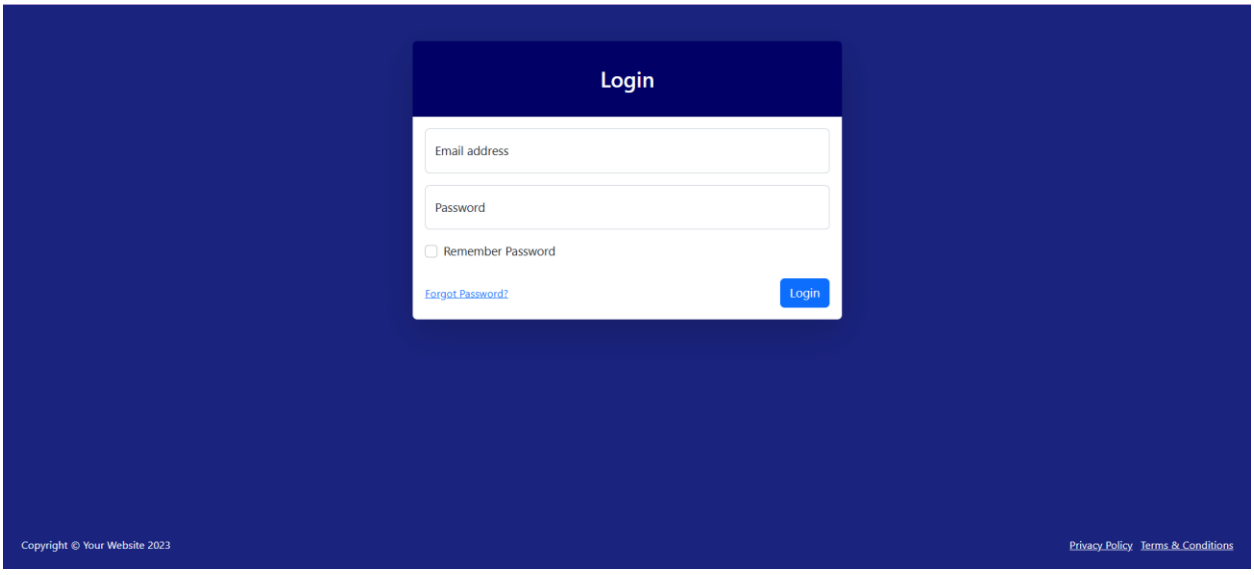

Fig.45 Login Page

Figure 45 displays the login page interface. Students can log in with their email address and password if they already have an existing account. The Head of DO is also able to log in but they have admin privileges instead.

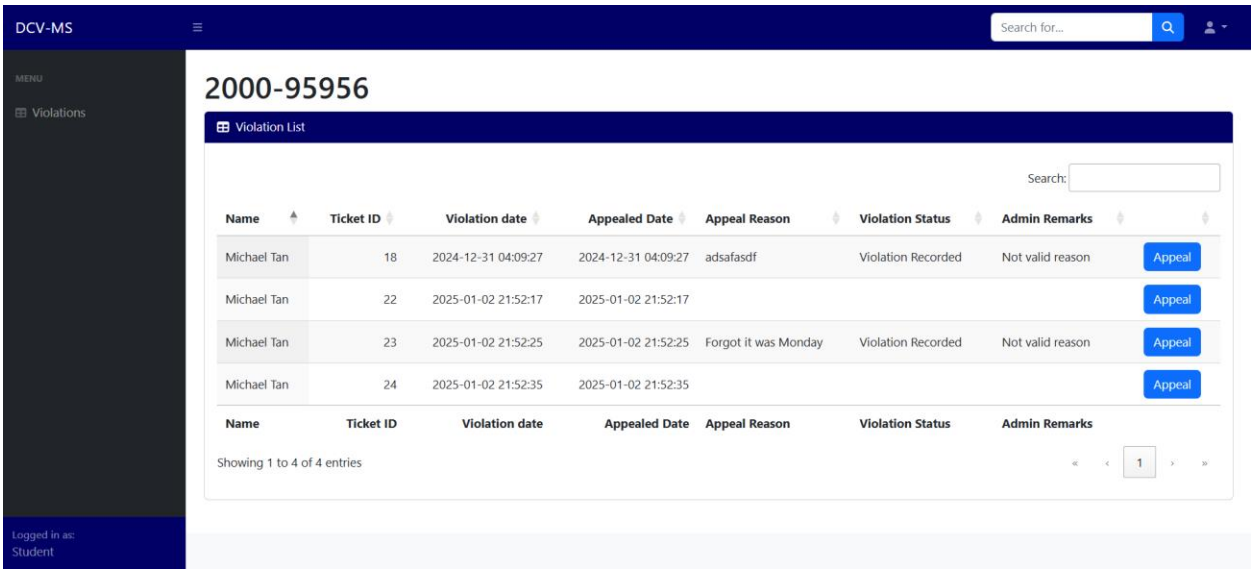

Fig.46 Home Page for Students

Figure 47 displays the home page for the students. The page displays the current violation records of students, including the ID number of the violation record, the date of issuance of the violation. From there, students can file an appeal by pressing the “Appeal” button.

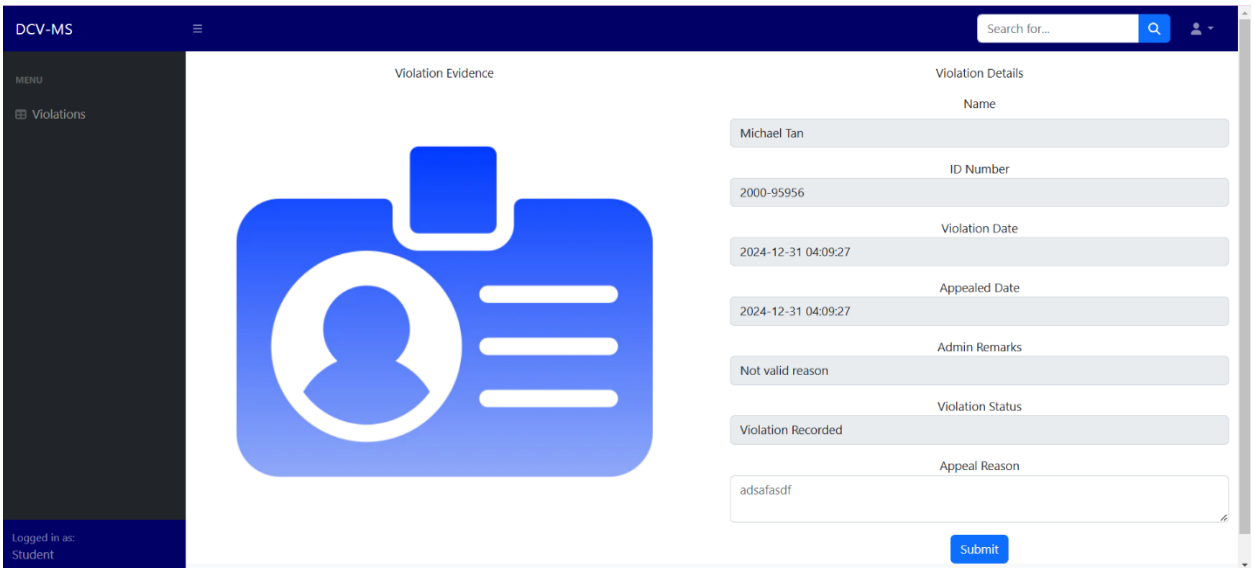

Fig.47 File Appeal Page

Figure 48 displays the file appeal page. Students can go to this page to file an appeal regarding their recently issued violation slip. Students are required to fill in the required text fields in order to submit the appeal.

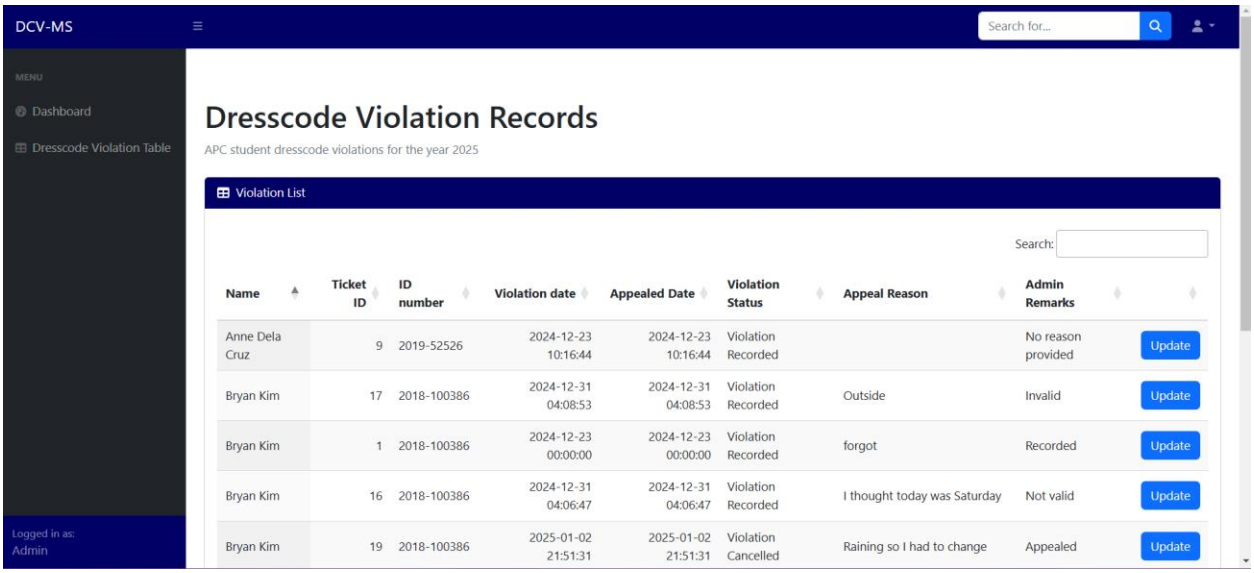

Fig.48 Admin Violation Record Page

Figure 50 displays the admin home page. In this page, the Head of DO can view dress code violation records and also violation records that are yet to be recorded or reviewed.

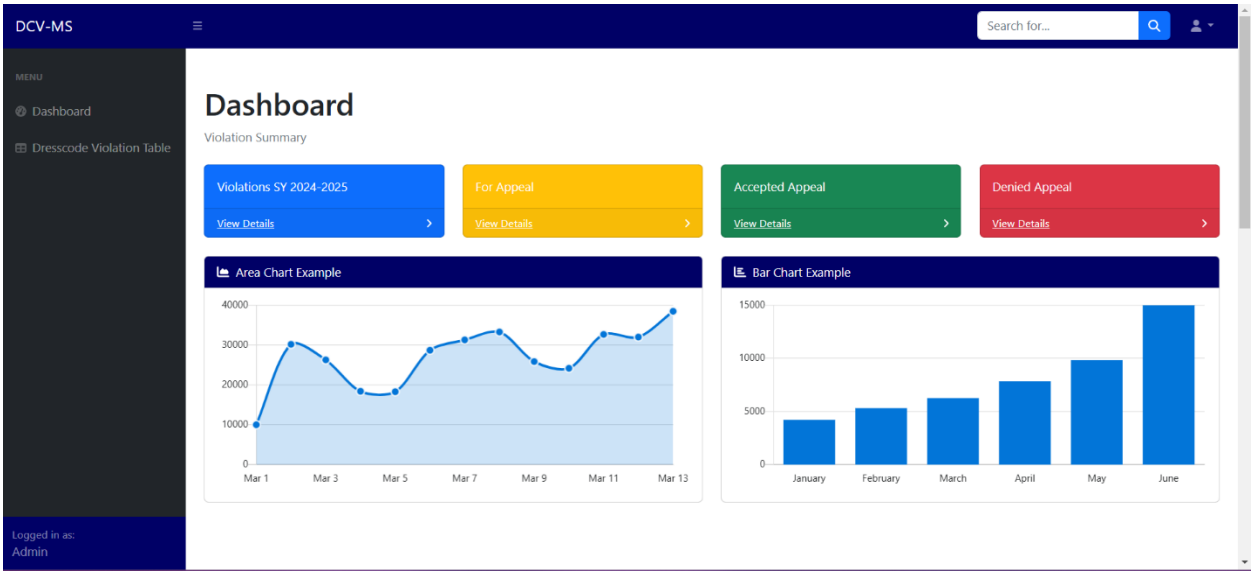

Fig.49 Admin Dashboard Page

Figure 51 displays the admin dashboard page. In this page, the Head of DO can view dress code violation records analytics.

5.11 Technology Stack

The developers used Hostinger to host the website, which used their cloud hosting features to ensure reliable and scalable performance. For mobile application, GitHub was used for easier collaboration and version control.

Website:

- **Hostinger:** A web hosting website that is used to host the prototype and for coding.
- **PHP:** The main language used in developing the website for the project.
- **phpMyAdmin:** The default database used on the website for local development. It is helpful for testing before using a more robust database system.
- **Bootstrap:** A framework that helps build a responsive web portal.

Mobile Application:

- **Android Studio:** The primary development environment used in Mobile Application.
- **React Native:** A JavaScript framework that is used for developing mobile application.
- **React Native Vision Camera:** Provides a range of computer vision like face detection, QR code scanning and more. Integrated to the mobile app to handle camera functionalities.

5.12 Hostinger

The developers utilized the Hostinger for coding and for hosting the website prototype.

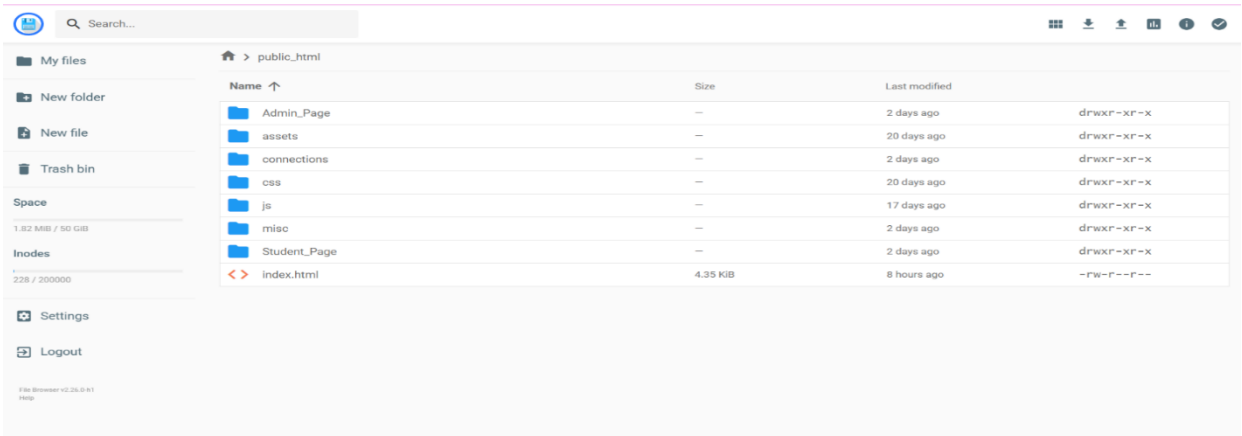

Fig.50 File manager of Hostinger

5.13 GitHub Repository

The developers utilized the React Native Framework and created a new repository within the personal account of Daniel Bucayan, one of the developers. This ensures a new copy of the framework in the personal account for collaboration. The said repository for the mobile application project that is within the personal account of one of the developers is found in this link: https://github.com/DanielBucayan/Automated_Blue_Slip_System.

5.14 GitHub Project Repository Updates

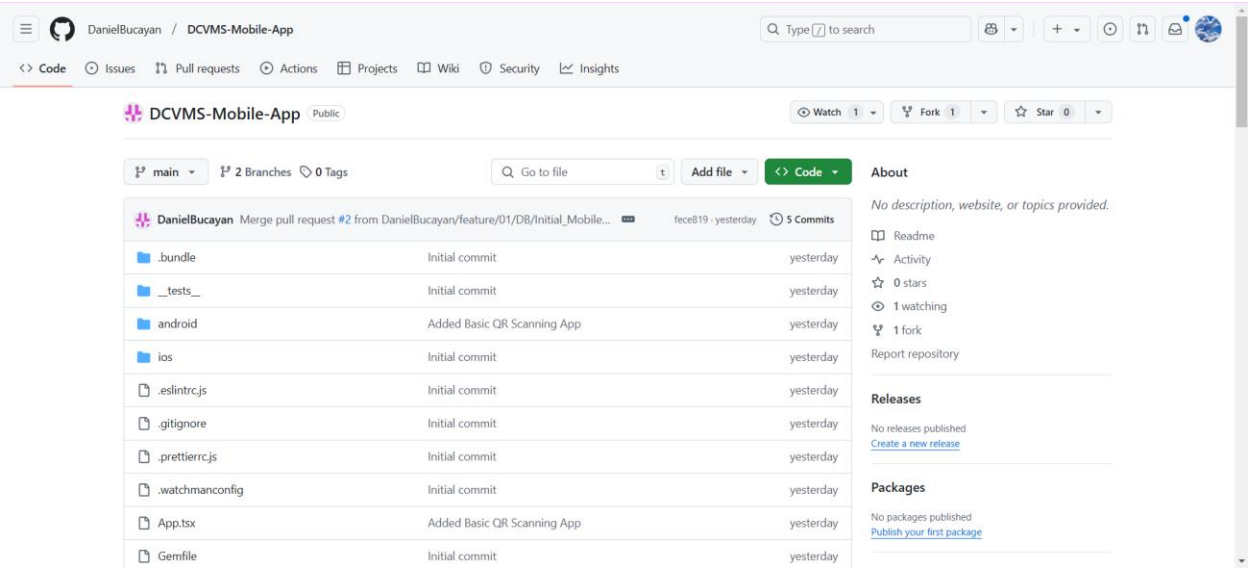

Fig.51 Home Page of Project Repository in GitHub

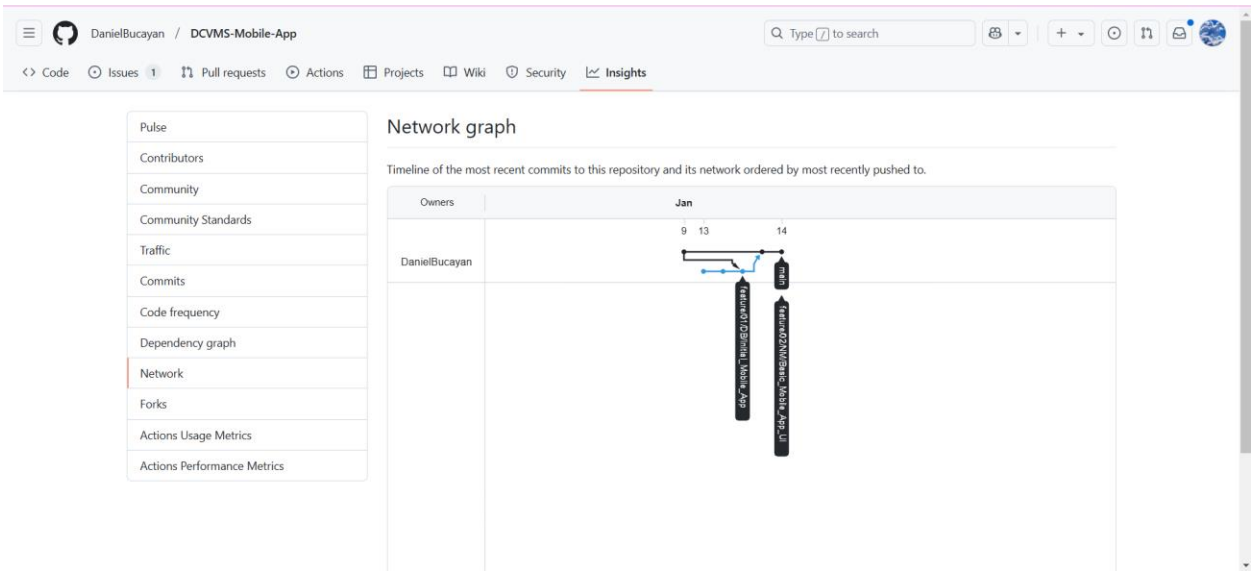

Fig.52 Network Graph of Project Repository

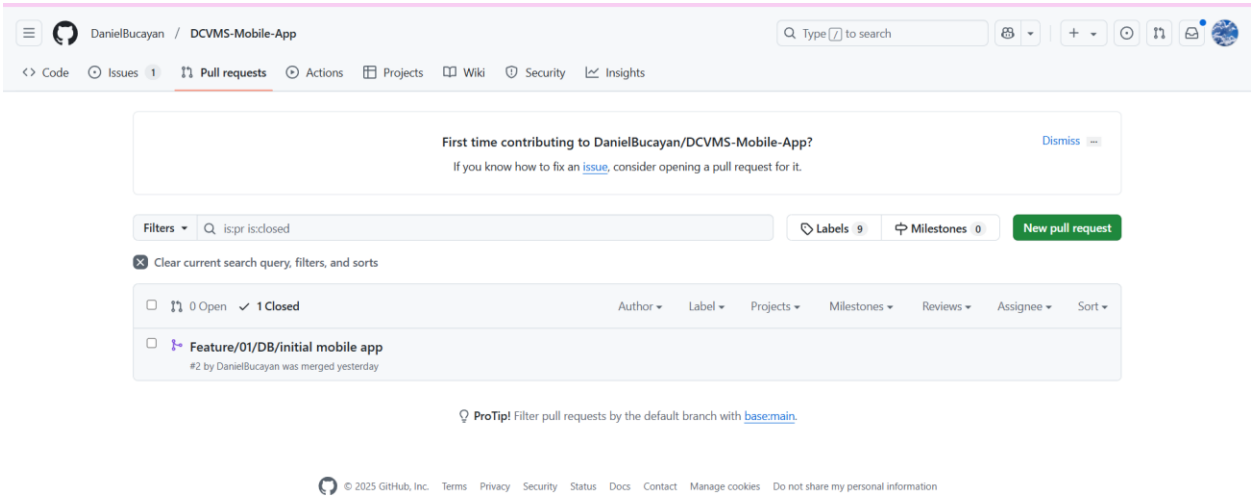

Fig.53 GitHub Issues

5.15 Release Plan

We are on schedule with our project's progress; currently the group is revisions and finalization. The product backlog focuses on user stories, and enhancements prioritized to ensure that the given concerns are addressed. Backlog management allows us to stay on track and maintain focus on delivering the product within the timeframe.

Target Group: Asia Pacific College Disciplinary Office

Goal: Implement a user-friendly web-based portal system that will effectively manage the blue slips received and managed. The use of paper will be distinguished and be replaced by a built-in scanning system to acquire the student's data.

Needs:

- Reduce process time for encoding process of blue slips.
- Improve the enforcement of dress code policies.
- Provide the client with a more efficient way of blue slip management.

Value:

- Increased process efficiency for encoding and recording blue slips.
- Enhanced flexibility of blue slip issuance.
- Improved sustainability of the process.

Key Feature

Phase 1:

- DCV Management System Application
  - QR Scanning Feature
  - RFID Scanning Feature
- Student Portal for Appealing
  - Student Login
  - View Received Blue Slips
  - Basic Appeal Functionalities
- DO Portal
  - Basic Analytics Report Dashboard
  - View Submitted Blue Slips

Phase 2:

- Application Enhancement
  - Data Flow Diagram (DFD)
  - Unified Modeling Language (UML)
  - Security Modeling
- DO Portal Improvements
  - Filter Functionalities

    - Archive for Recorded Blue Slips
- Student Portal
    - Feedback Functionalities

Phase 3:

- General Testing and Debugging
- UI and Functionalities Finalizations for Portal and Application
- Project Deployment

References

[1] L. L. Feuerborn and A. D. Tyre, "Establishing Positive Discipline Policies in an Urban Elementary School," January 2012. [Online]. Available: https://doi.org/10.1007/bf03340975.

[2] E. Gustafsson-Wright and S. Osborne, "Digital Tools for real-time data collection in Education," 23 July 2023. [Online]. Available: https://www.brookings.edu/articles/digital-tools-for-real-time-data-collection-in-education/.

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[6] COING Inc., "Clockify - Employee attendance tracker," Clockify, [Online]. Available: https://clockify.me/attendance-tracker.

[7] A. J. Casabuena, S. T. Kim, Z. Sabroso and A. Fortuno, *Automated Discipline Office Process,* 2020.

[8] Asia Pacific College, "2023 Student Handbook," 09 October 2023. [Online]. Available: https://apc.edu.ph/student-handbook-2023/.

Appendices

Appendix A: Project Vision

For the Discipline Office who has a problem managing and issuing dress code violation slips. The Dress Code Violation (DCV) Management System is an automated system for managing and issuing dress code violated slips that allows the DO to manage dress code violation slips, review submitted dress code violation slips, distribute digital dress code violation slips, and gain insights from the analytical reports offered by the system. Unlike the current system that still utilizes the manual writing and recording of information, our product will provide a streamlined process for managing and recording data from the dress code violation slips, as well as provide analytical reports based on the recorded data in the system.

Appendix B: Schedule/Release Plan

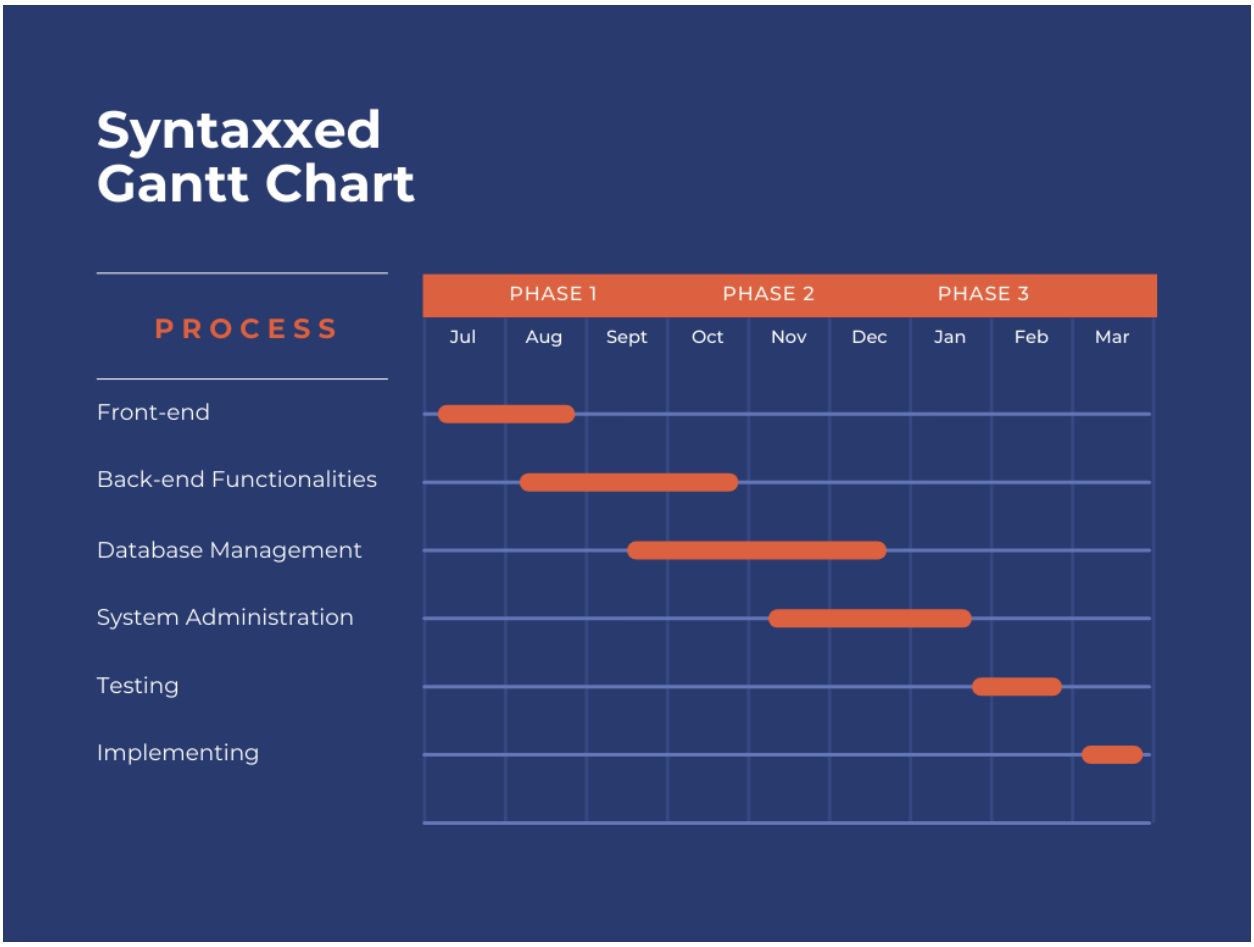


Fig.54. Gantt Chart

Appendix C: Product Roadmap

TABLE XIV
PRODUCT ROADMAP

SNTSDEV	SSYADD1	SCSPROJ
1. Finding a client • Interview • Gather information • Identify pain points 2. Project Proposal • Documentation • Low-Fidelity Prototype	1. Portal • High-Fidelity Prototype for Student and DO Portal • Diagramming • Database Modelling • Basic Portal UI 2. Mobile Application • High-Fidelity Prototype for Application • Diagramming • QR Code Scanning • Basic Application UI	1. Continuation • Application and Portal UI Enhancement • Testing and Debugging • Implement Security Measures • Checking of UI and Functionalities

Appendix D: Teams Meetings

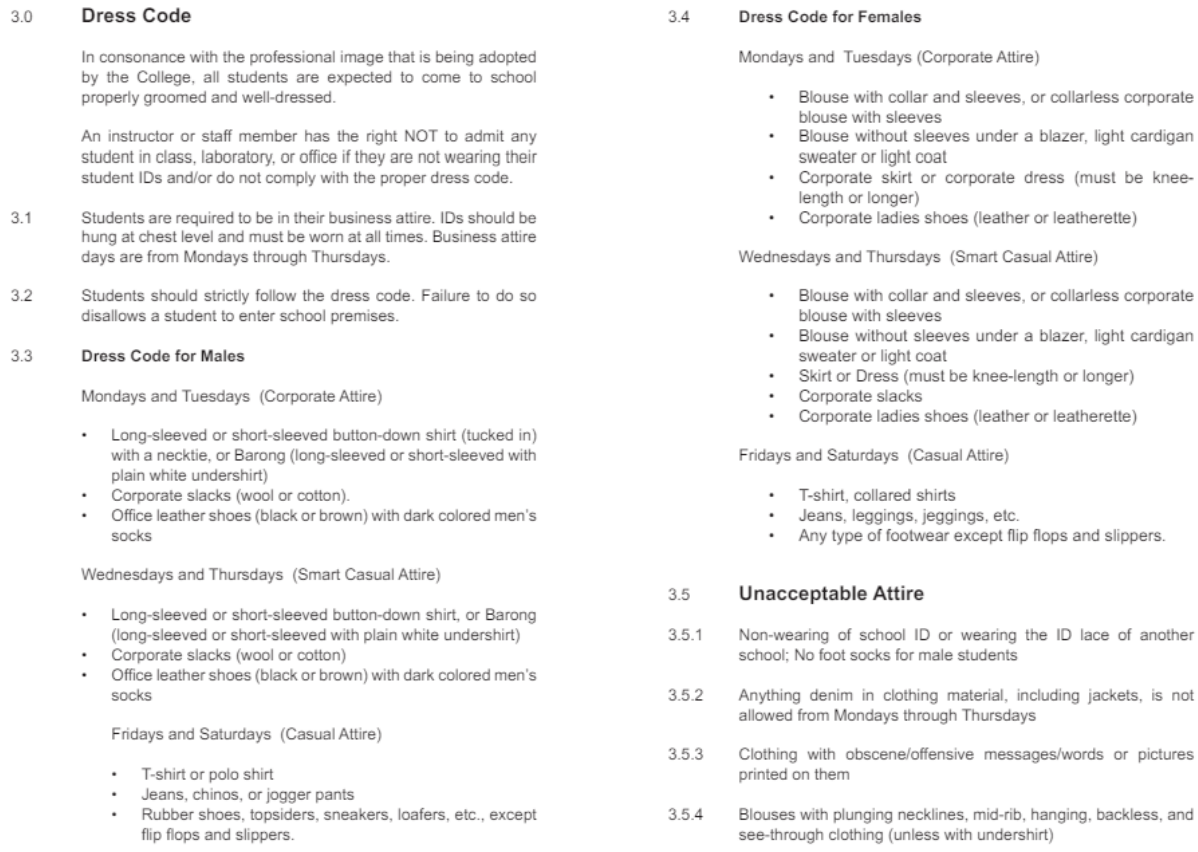
TABLE XV
MINUTES OF THE MEETINGS

Date	Participants	Title	Agenda
April 25, 2024	• Daniel Bucayan • Michael Patrick Escalambre • Nelson Mabini Jr. • Ms. Bernadette Sison	1st Client Meeting	• Ask for requested features. • Learn about the blue slip process. • Learn how current system operates.
May 02, 2024	• Daniel Bucayan • Michael Patrick Escalambre • Nelson Mabini Jr. • Maria Theresa Carreon • Mr. Alvin Limpin	1st Consultant Meeting	• Checked the lean canvas • Asked consultant for suggestions • Clarify the possible cost structure.
May 03, 2024	• Daniel Bucayan • Nelson Mabini Jr. • Mr. Jayvee Cabardo	1st Adviser Meeting	• Asked clarifications for the unique value propositions. • Checked the lean canvas.
May 21, 2024	• Daniel Bucayan • Michael Patrick Escalambre • Nelson Mabini Jr. • Ms. Bernadette Sison	2nd Client Meeting	• Gave updates regarding the project defense. • Informed the client about suggestions by the panelists. • Asked questions for clarifications regarding the developers' inference. • Learn about other problems of the process.
May 24, 2024	• Daniel Bucayan • Nelson Mabini Jr. • Michael Patrick Escalambre • Mr. Jayvee Cabardo	2nd Adviser Meeting	• Clarified how to do Chapter 3 for documentation
May 30, 2024	• Daniel Bucayan • Nelson Mabini Jr. • Michael Patrick Escalambre	Interview for Network Structure	• Inquired about the network structure of web-enabled services in APC • Asked for possible ways to host the system.

	• Mr. Jojo Castillo		
May 31, 2024	• Daniel Bucayan • Nelson Mabini Jr. • Michael Patrick Escalambre • Maria Theresa Carreon • Mr. Jayvee Cabardo	3rd Adviser Meeting	• Checked Chapter 4 of the documentation. • Clarified what to change for the Feasibility part. • Asked for suggestions about the Product Vision.
June 11, 2024	• Daniel Bucayan • Maria Theresa Carreon • Mr. Jayvee Cabardo	4th Adviser Meeting	• Checked updates on changes for the Chapter 4. • Showed current Use Case Stories and Use Case Diagram
September 24, 2024	• Daniel Bucayan • Maria Theresa Carreon • Michael Patrick Escalambre • Mr. Jayvee Cabardo	5th Adviser Meeting	• Updates regarding Diagrams • Showed Use Cases, Use Case Diagram, Fully Dressed Use Case, and Activity Diagram
October 15, 2024	• Daniel Bucayan • Maria Theresa Carreon • Mr. Jayvee Cabardo	6th Adviser Meeting	• Finalization of revised diagrams according to adviser's suggestion. • Referral to ITRO regarding Cloud Hosting
December 6, 2024	• Daniel Bucayan • Maria Theresa Carreon • Nelson Mabini • Mr. Cyrus Gabilla	1st Consultant Meeting	• Updates about the project's objective and milestone. • Asked for suggestion about the best framework to use. • Asked for assistance in connecting to the server of ITRO.
December 9, 2024	• Daniel Bucayan • Maria Theresa Carreon • Michael Patrick Escalambre • Nelson Mabini • Sung Tae Kim • Ms. Roselle Gardon	2nd Consultant Meeting	• Suggestions about improving the SRS Document for the Project.

Appendix E: List of Dress Code Information

Figure 25 shows the information regarding the dress code policies in Asia Pacific College (APC). This image was taken from the Student Handbook of APC [8].



3.0 **Dress Code**

In consonance with the professional image that is being adopted by the College, all students are expected to come to school properly groomed and well-dressed.

An instructor or staff member has the right NOT to admit any student in class, laboratory, or office if they are not wearing their student IDs and/or do not comply with the proper dress code.

3.1 Students are required to be in their business attire. IDs should be hung at chest level and must be worn at all times. Business attire days are from Mondays through Thursdays.

3.2 Students should strictly follow the dress code. Failure to do so disallows a student to enter school premises.

3.3 **Dress Code for Males**

Mondays and Tuesdays (Corporate Attire)

- Long-sleeved or short-sleeved button-down shirt (tucked in) with a necktie, or Barong (long-sleeved or short-sleeved with plain white undershirt)
- Corporate slacks (wool or cotton).
- Office leather shoes (black or brown) with dark colored men's socks

Wednesdays and Thursdays (Smart Casual Attire)

- Long-sleeved or short-sleeved button-down shirt, or Barong (long-sleeved or short-sleeved with plain white undershirt)
- Corporate slacks (wool or cotton)
- Office leather shoes (black or brown) with dark colored men's socks

Fridays and Saturdays (Casual Attire)

- T-shirt or polo shirt
- Jeans, chinos, or jogger pants
- Rubber shoes, topsiders, sneakers, loafers, etc., except flip flops and slippers.

3.4 **Dress Code for Females**

Mondays and Tuesdays (Corporate Attire)

- Blouse with collar and sleeves, or collarless corporate blouse with sleeves
- Blouse without sleeves under a blazer, light cardigan sweater or light coat
- Corporate skirt or corporate dress (must be knee-length or longer)
- Corporate ladies shoes (leather or leatherette)

Wednesdays and Thursdays (Smart Casual Attire)

- Blouse with collar and sleeves, or collarless corporate blouse with sleeves
- Blouse without sleeves under a blazer, light cardigan sweater or light coat
- Skirt or Dress (must be knee-length or longer)
- Corporate slacks
- Corporate ladies shoes (leather or leatherette)

Fridays and Saturdays (Casual Attire)

- T-shirt, collared shirts
- Jeans, leggings, jeggings, etc.
- Any type of footwear except flip flops and slippers.

3.5 **Unacceptable Attire**

3.5.1 Non-wearing of school ID or wearing the ID lace of another school; No foot socks for male students

3.5.2 Anything denim in clothing material, including jackets, is not allowed from Mondays through Thursdays

3.5.3 Clothing with obscene/offensive messages/words or pictures printed on them

3.5.4 Blouses with plunging necklines, mid-rib, hanging, backless, and see-through clothing (unless with undershirt)

Fig.55. Dress Code for Male and Female Students

3.5.5 Tank tops (sando/spaghetti straps) without cardigan/sweater/ jacket

3.5.6 Sports t-shirt, pedal pushers/clam-diggers, mid-calf, and Capri pants

3.5.7 Slippers and elevator/platform shoes that are either closed or open-toed.

3.5.8 Skirts with hemlines and slits that are too high

3.5.9 Dangling earrings for men

3.5.10 Headgears, caps, wigs, hats, or wearing of headdress (unless authorized for an official school activity)

3.5.11 Cross-dressing (unless authorized for an official school activity)

3.5.12 Physical Education (PE) uniforms should be worn during PE class time only; it should be worn only in designated areas for P.E.

3.5.13 There is no prescribed haircut for students (but hair must be neatly combed and clipped for boys who sport long hair). During internship, students are obliged to have a neat hairstyle.

Violation of the APC dress code is subject to disciplinary action and students may not be allowed to enter the building. Violators will be issued documented warnings (violation slip). The issuance of three (3) consecutive violation slips in a term for dress code is considered as insubordination and will automatically merit suspension for the student. All violations are recorded and will affect grants and privileges.

Fig.56. Unacceptable Attires for Male and Female Students