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Chapter 1: Introduction

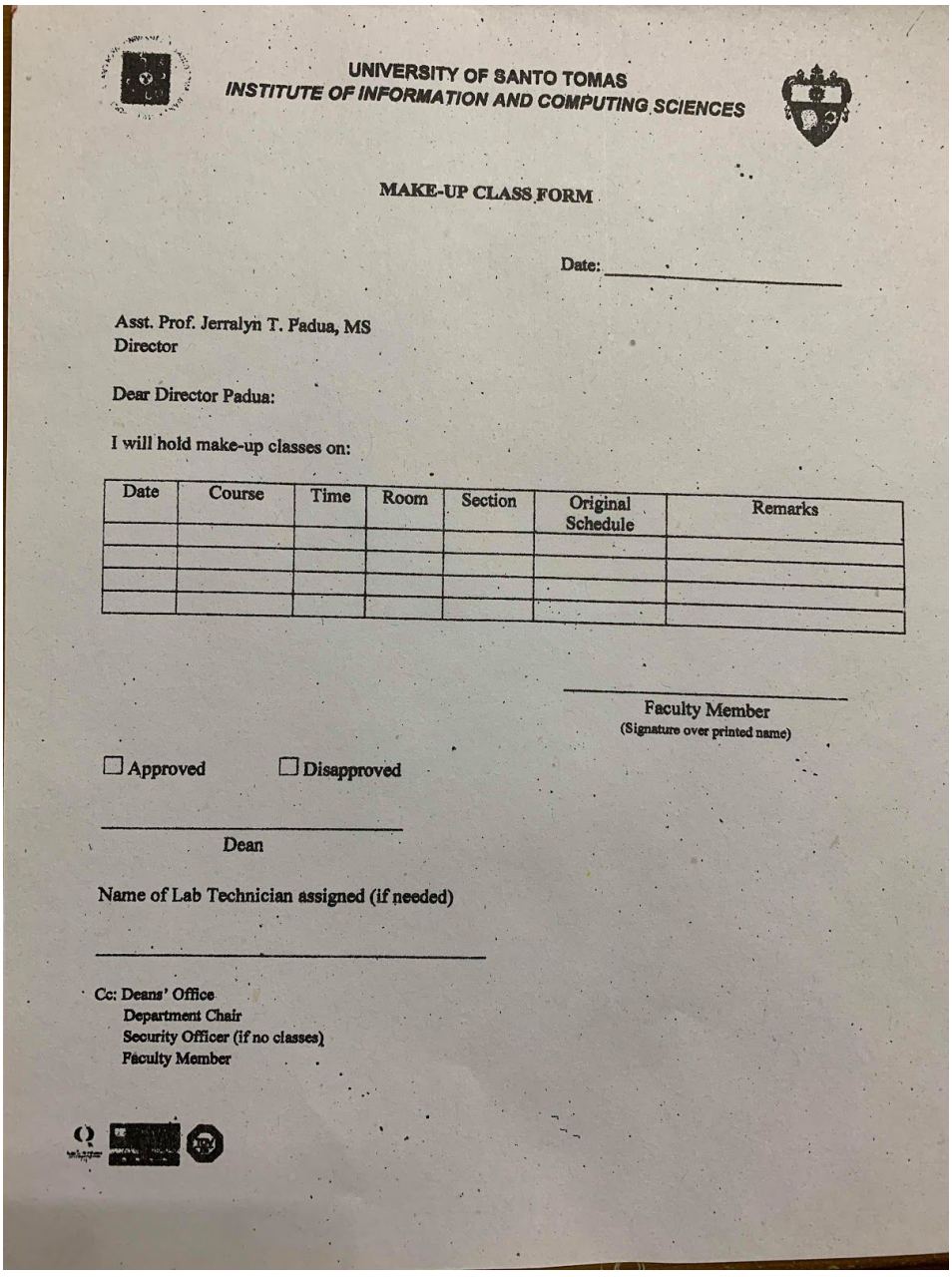
Project Context

The current attendance monitoring process in the Institute of Information and Computing Sciences is done manually by their staff. The staff would make rounds every hour to check the attendance of the faculty members, then record it on a sheet of paper. This makes it difficult for the person-in-charge to check the attendance of the faculty and keep track of each faculty member's time-in and time-out.

Currently, the requests for make-up classes in the said institute is also done manually until today. The student or the faculty member will fill up a make-up class request form as shown in the figure below containing the following details: date of make-up class, course code, time of make-up class, room number, section, original schedule, the faculty member's name and signature, and the remarks (approved/disapproved). The student or the faculty member would find an available room through the whole schedule of the faculty members, this would be approved by the institute director or secretary afterwards.

The proponents had come up with a solution to address this problem. A web application that will log each faculty member's time in and time out for each class using an RFID card reader and the faculty member's Identification Card. The Institute Staff and Administrators will have access to all the time logs of the faculty members and online requests for make-up class. For the make-up class request, the faculty member will be able to request through an online

form. The administrators will be able to view whenever a new request has been made, making it easier to track and review a request



UNIVERSITY OF SANTO TOMAS
INSTITUTE OF INFORMATION AND COMPUTING SCIENCES

MAKE-UP CLASS FORM

Date: _____

Asst. Prof. Jerralyn T. Padua, MS
Director

Dear Director Padua:

I will hold make-up classes on:

Date	Course	Time	Room	Section	Original Schedule	Remarks

_____
Faculty Member
(Signature over printed name)

☐ Approved ☐ Disapproved

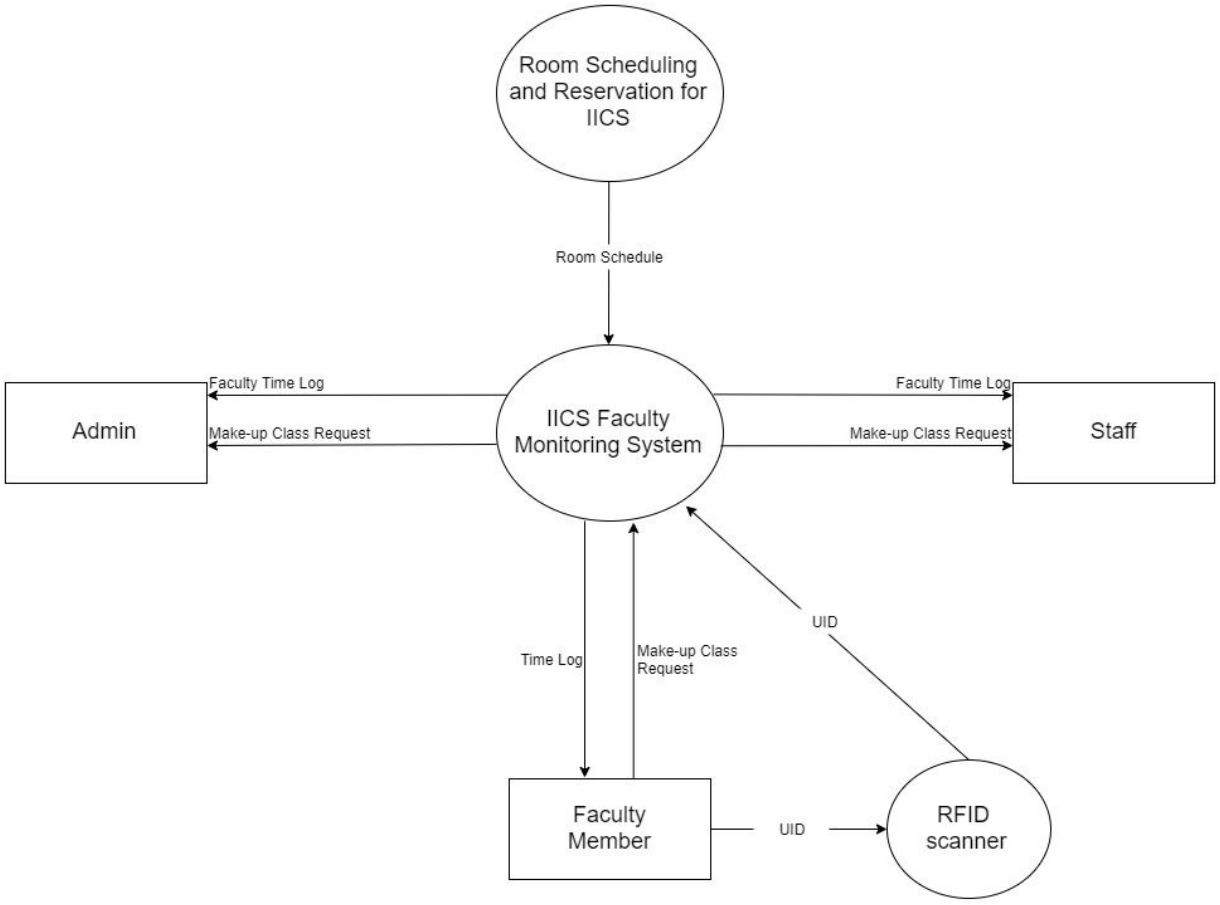
_____
Dean

Name of Lab Technician assigned (if needed)

_____

Cc: Deans' Office
Department Chair
Security Officer (if no classes)
Faculty Member

Figure 1.1.1 Make-up Class Form



The figure shows the data that the users and the system will receive and generate. The IICS Faculty Attendance Monitoring System will retrieve the schedule of each room from the Room Scheduling and Reservation System. Once the Faculty member has tapped his/her Identification card on the RFID scanner, its UID will be sent to the IICS Faculty Attendance Monitoring System and the timestamp will be recorded. All the records will be kept in the Time Log, which the Admin, Staff and Faculty Member can view. The Faculty Member may also send a Make-up Class Request. The said request can be viewed by the Staff and Admin, but only the Admin is allowed to approve or deny the request.

Purpose and Description

The IICS Faculty Attendance Monitoring System aims to improve the attendance monitoring of the Institute and will be used by the faculty members, administrators, and staff. The proposed system will benefit the IICS Office and faculty members in a way that they will be able to easily log their daily attendance, and request for a make-up class. The staff will no longer be required to do hourly rotation to check on each class. Faculty members can view their own attendance logs and request for a make-up class online through the web application. The administrators track the time log of faculty members and review make-up class requests on the web application.

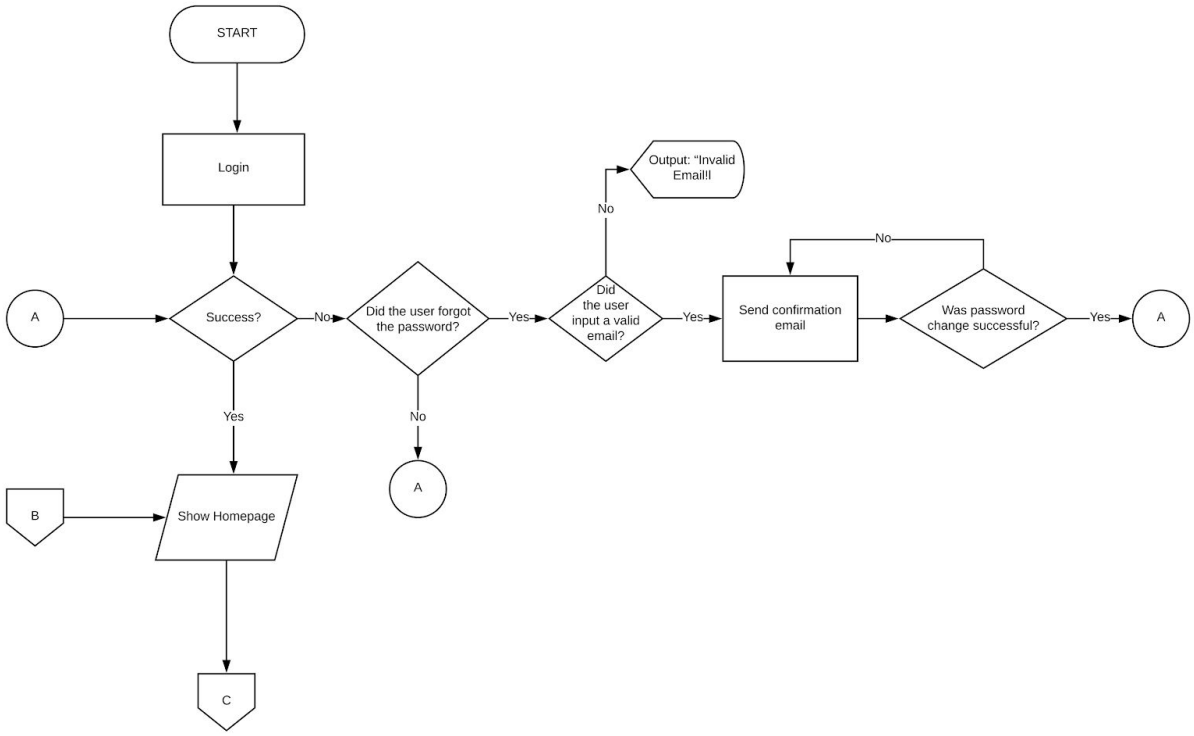


Figure 1.1.2 Professor's Web App Flowchart A

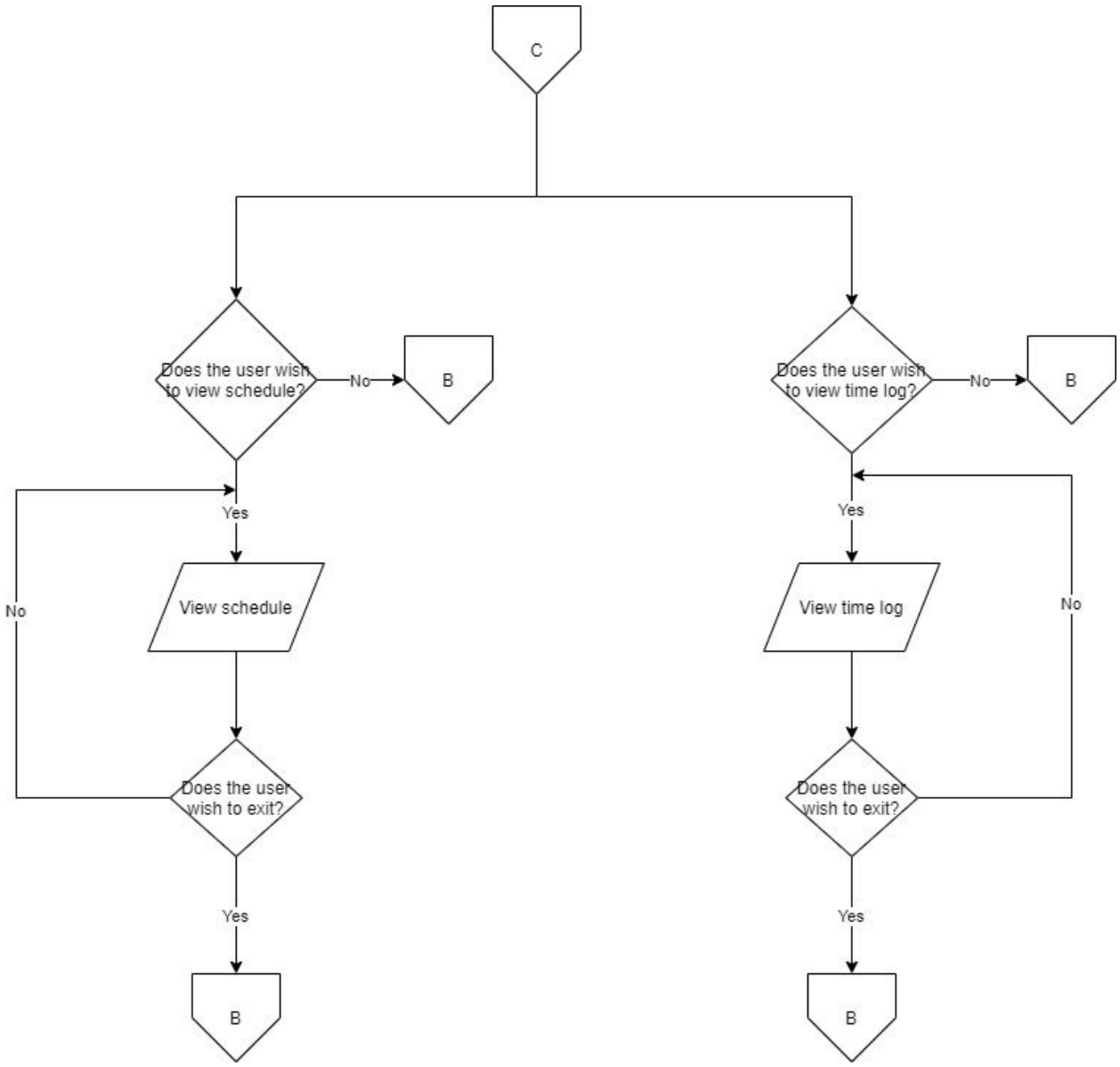


Figure 1.1.3 Professor's Web App Flowchart B

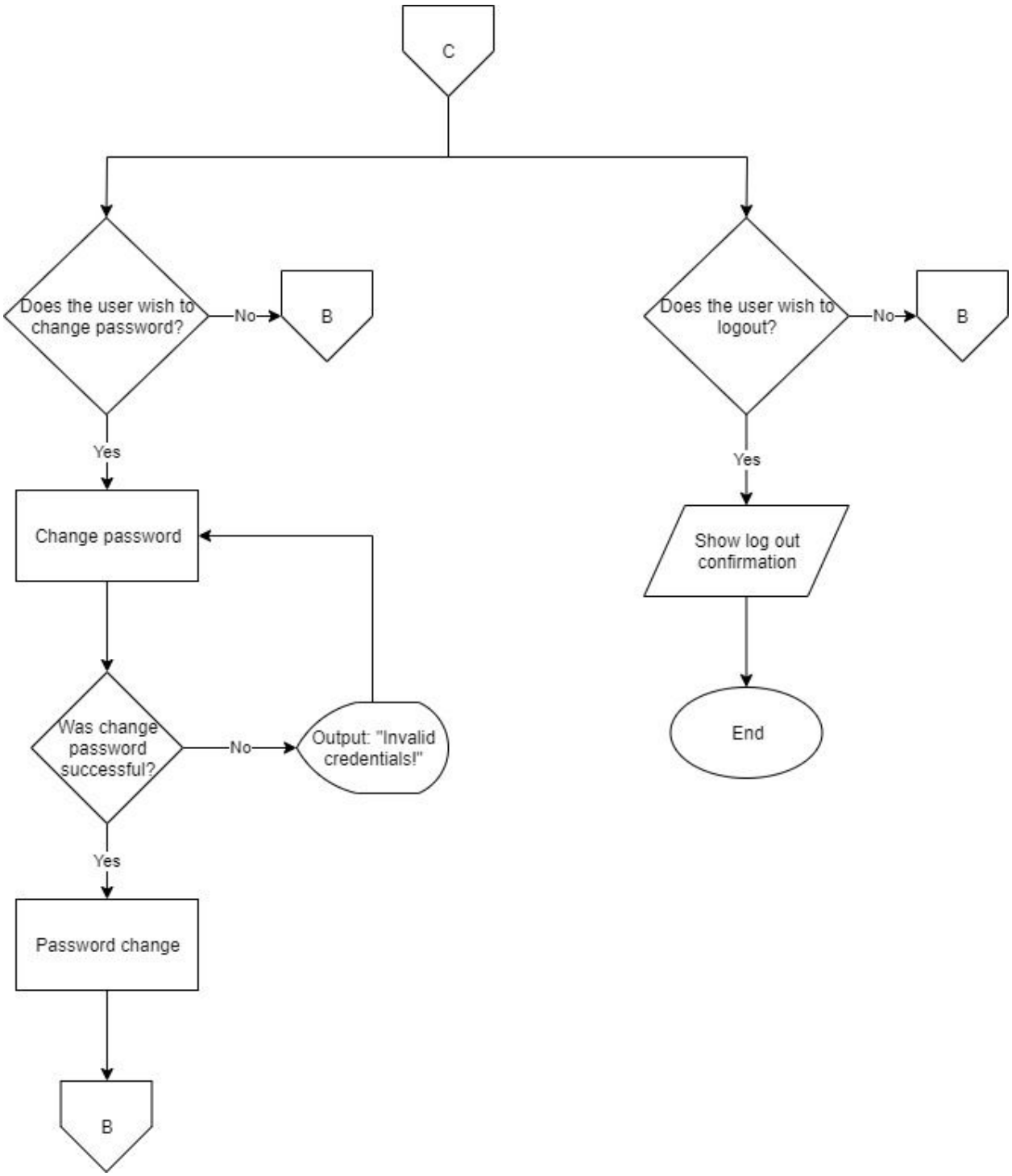


Figure 1.1.4 Professor's Web App Flowchart C

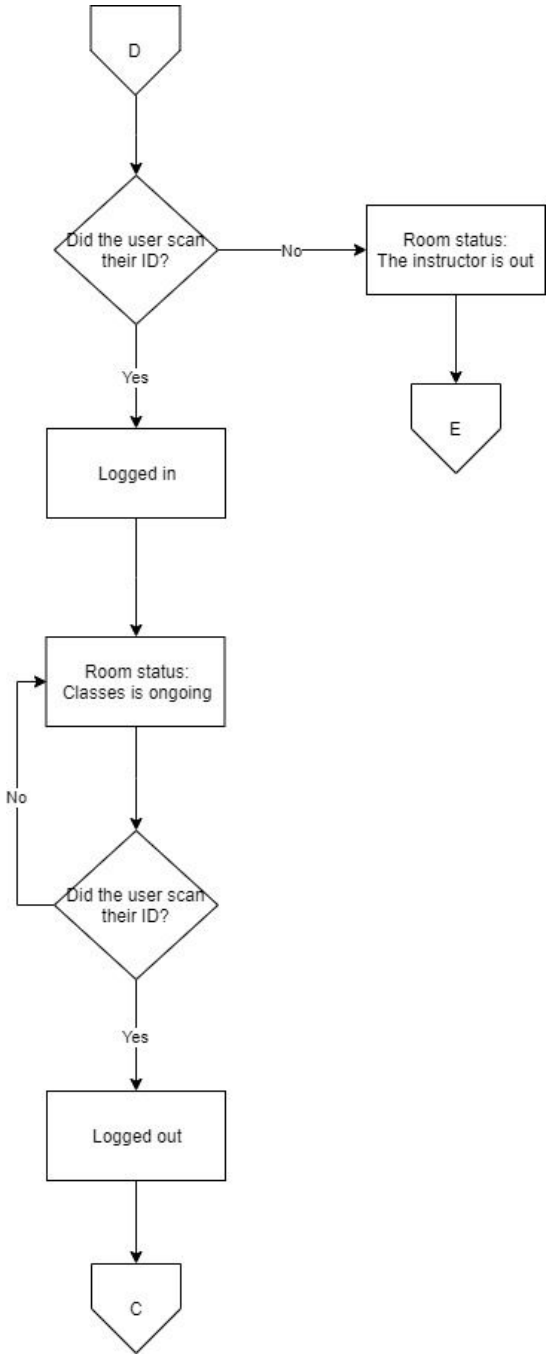


Figure 1.1.5 Professor's Web App Flowchart D

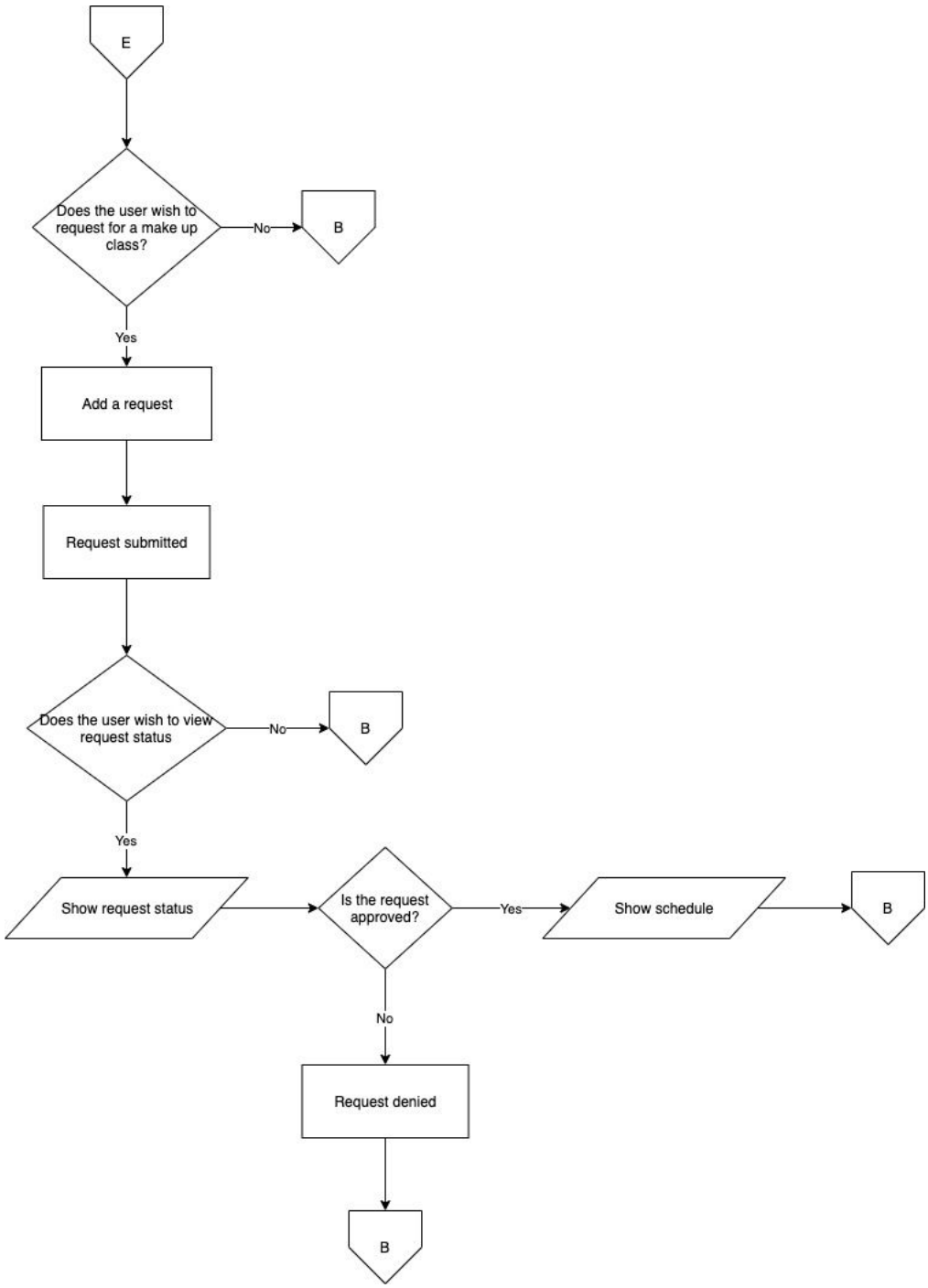


Figure 1.1.6 Professor's Web App Flowchart E

As seen in Figure 1.1.2 to 1.1.6 Professor's Web App starts by logging in using his or her user credentials initially provided by the academic staff of the Institute of Information and Computing Sciences. The web app will then check the records if the credentials given are correct. If the credentials provided by the user are correct, the user is brought to the homepage, otherwise the user is brought back to the login screen to enter his or her credentials. The user then can view his or her schedule, change password if he/she wishes to do so. If the professor entered the room where the class is scheduled, the professor is expected to scan his or her ID using the RFID scanner. If the professor scanned his or her ID, it will be recorded to his or her time log as log in, the room status on the System Administrator's Web App will also show that there is a class on going on the said room. If the class is done, the professor should scan his or her ID again and the application will record it to his or her time log as log out. The room status will then be changed to vacant. If a professor missed a class and he or she requests for a make up class, the professor should go to the Make-up Class Request Page then click the add request. The professor should enter important details needed for the make up class. The request will be forwarded to the System Administrator. If the request is approved, the make-up class will be added to the schedule.

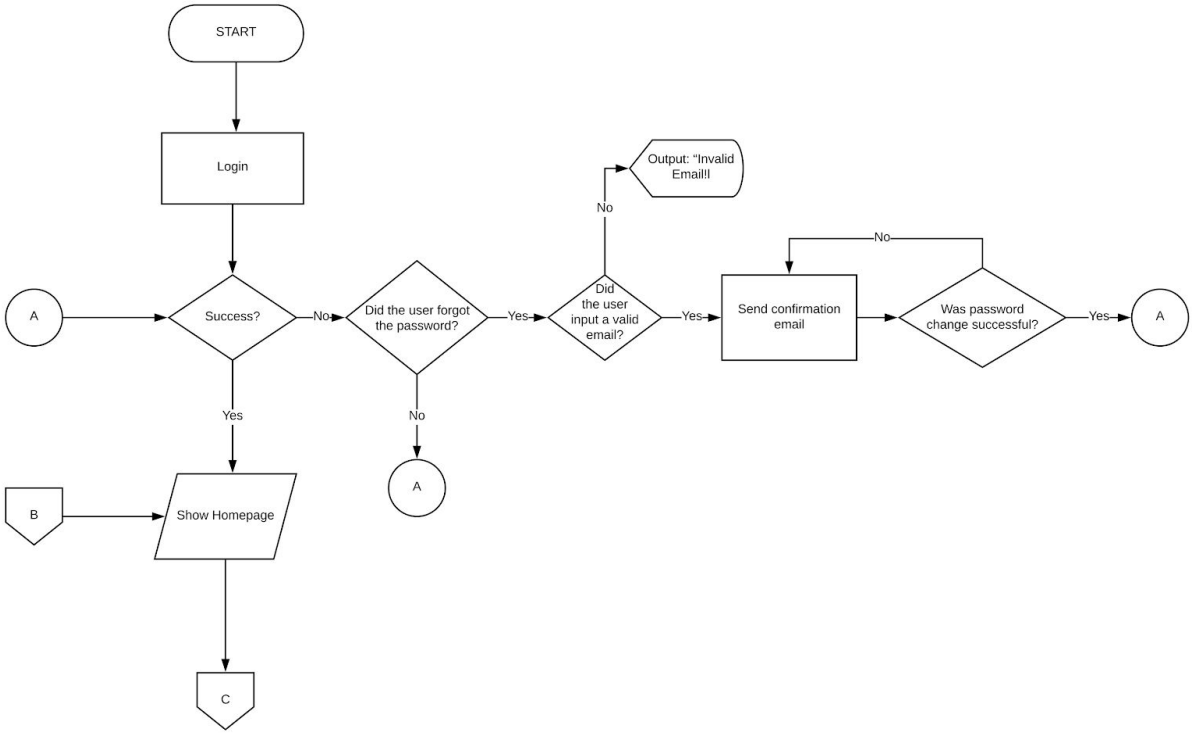


Figure 1.2.1 Academic Staff's Web App Flowchart A

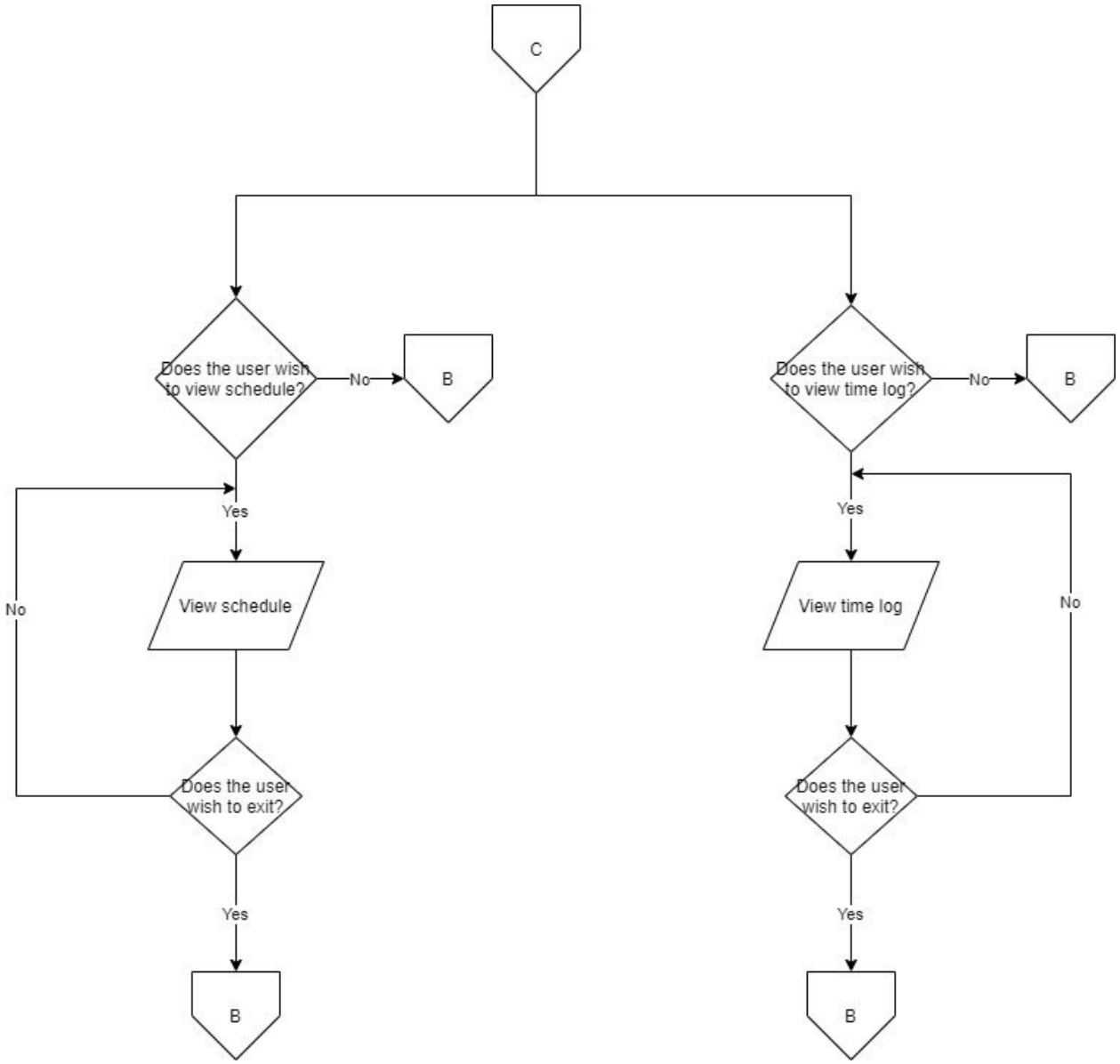


Figure 1.2.2 Institute Academic Staff's Web App Flowchart B

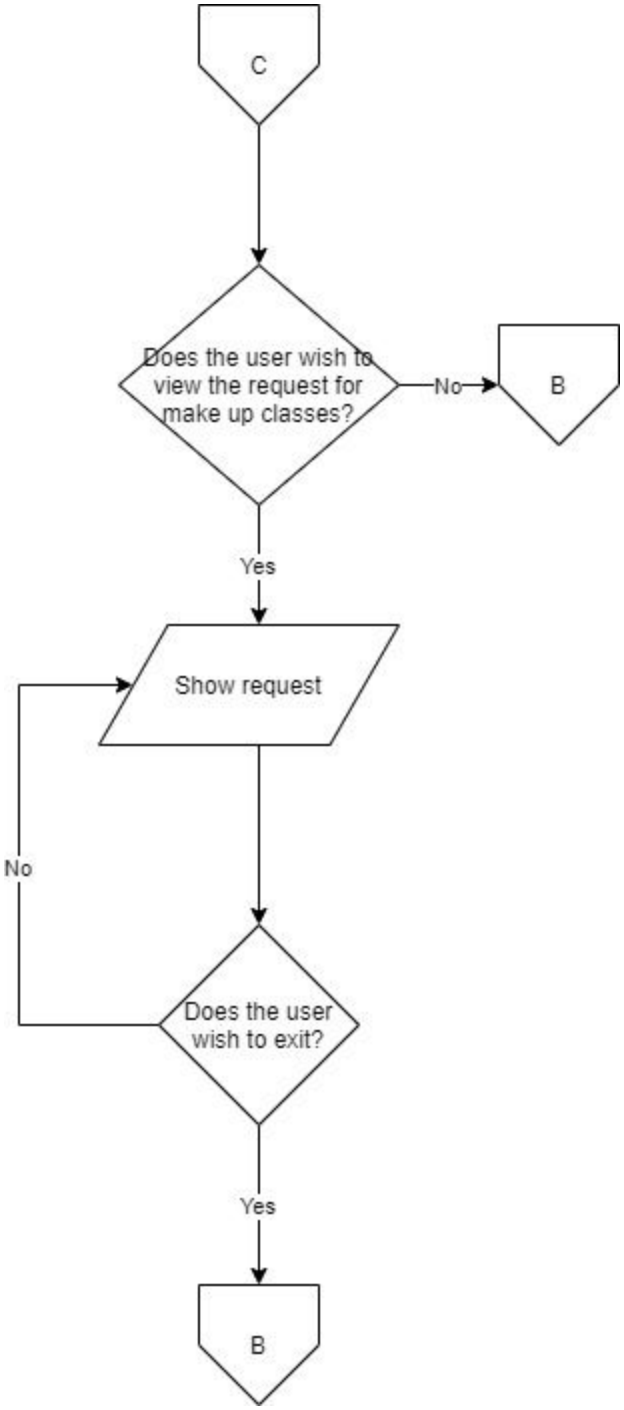


Figure 1.2.3 Academic Staff's Web App Flowchart C

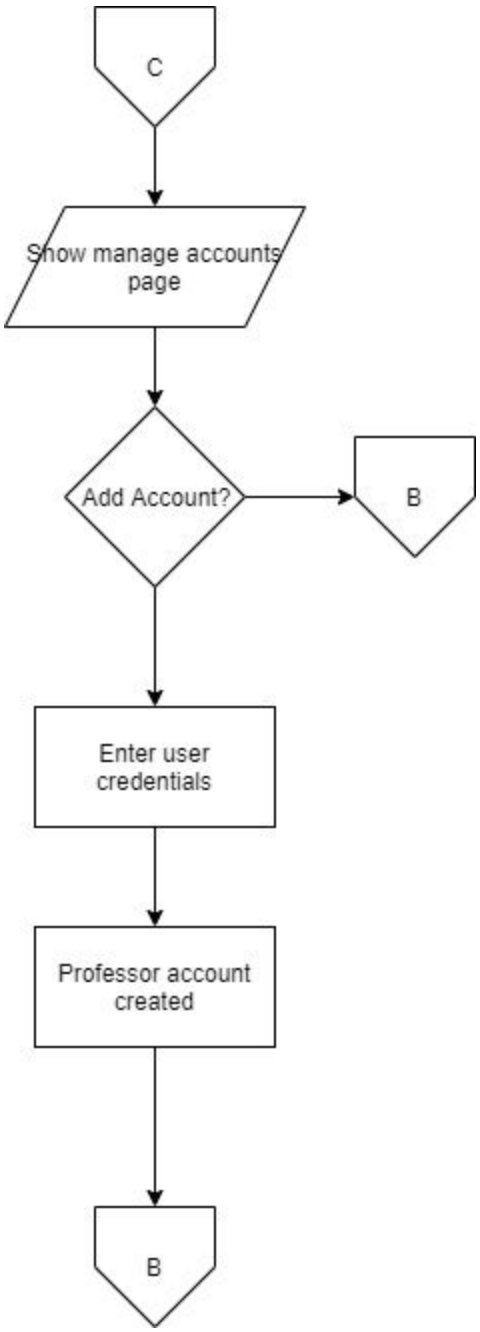


Figure 1.2.4 Academic Staff's Web App Flowchart D

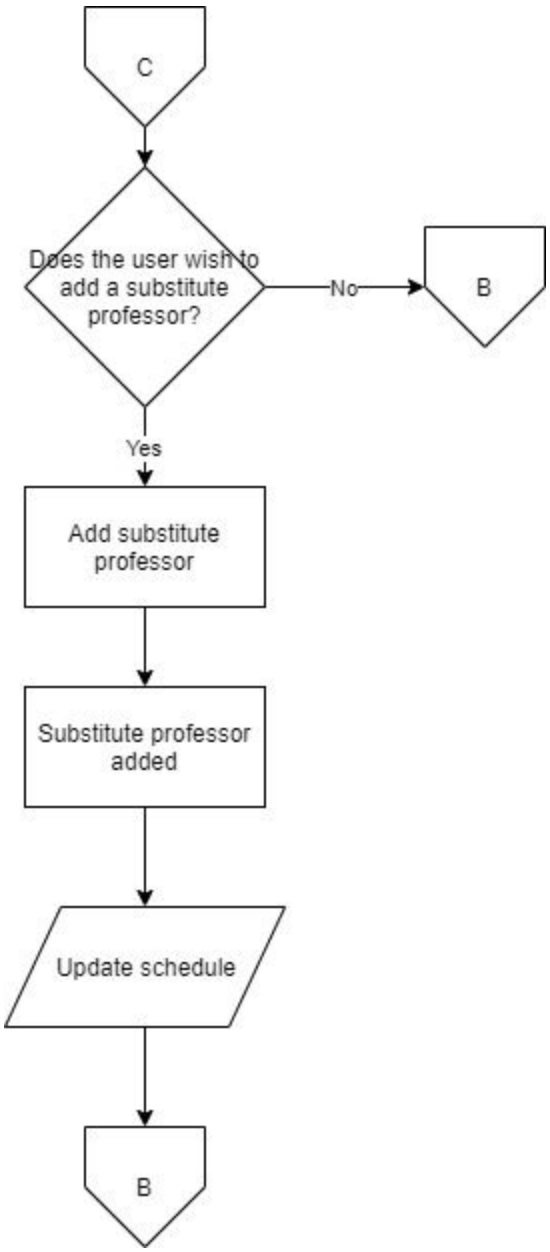


Figure 1.2.5 Academic Staff's Web App Flowchart E

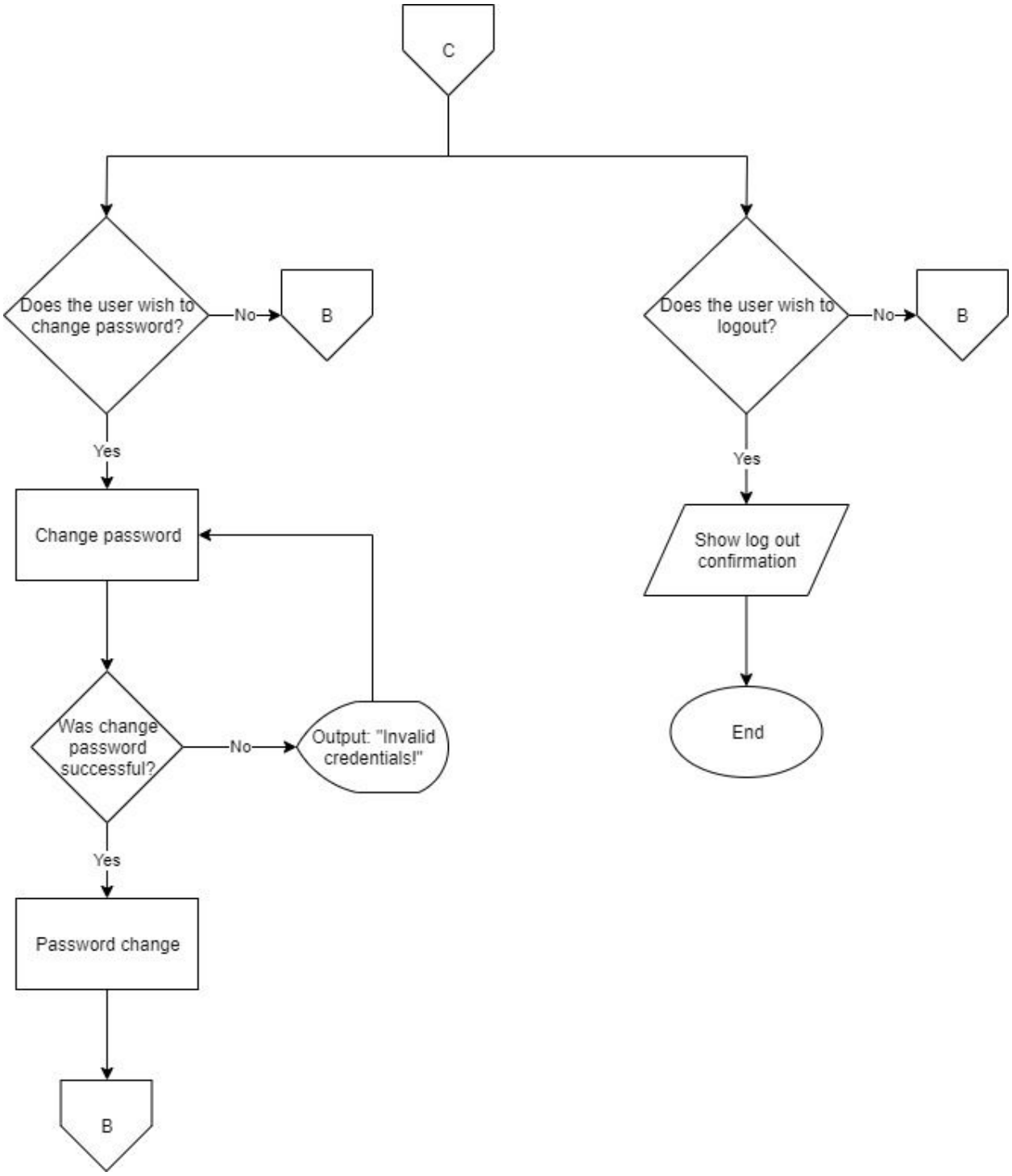

C
Does the user wish to change password?
No
B
Yes
Change password
Was change password successful?
No
Output: "Invalid credentials!"
Yes
Password change
B
Does the user wish to logout?
No
B
Yes
Show log out confirmation
End

Figure 1.2.6 Academic Staff's Web App Flowchart F

As seen in Figure 1.2.1 to 1.2.6 Academic Staff's Web App starts by logging in using his or her user credentials. The application will then check the records if the credentials given are correct. If the credentials provided by the user are correct, the user is brought to the homepage of the application, otherwise the user is brought back to the log in screen to enter his or her credentials. The staff can add the schedule of each room and add a substitute professor to an existing schedule. After saving the schedule the admin will be able to view the schedule. If there is a request for makeup class, the staff will then view it.

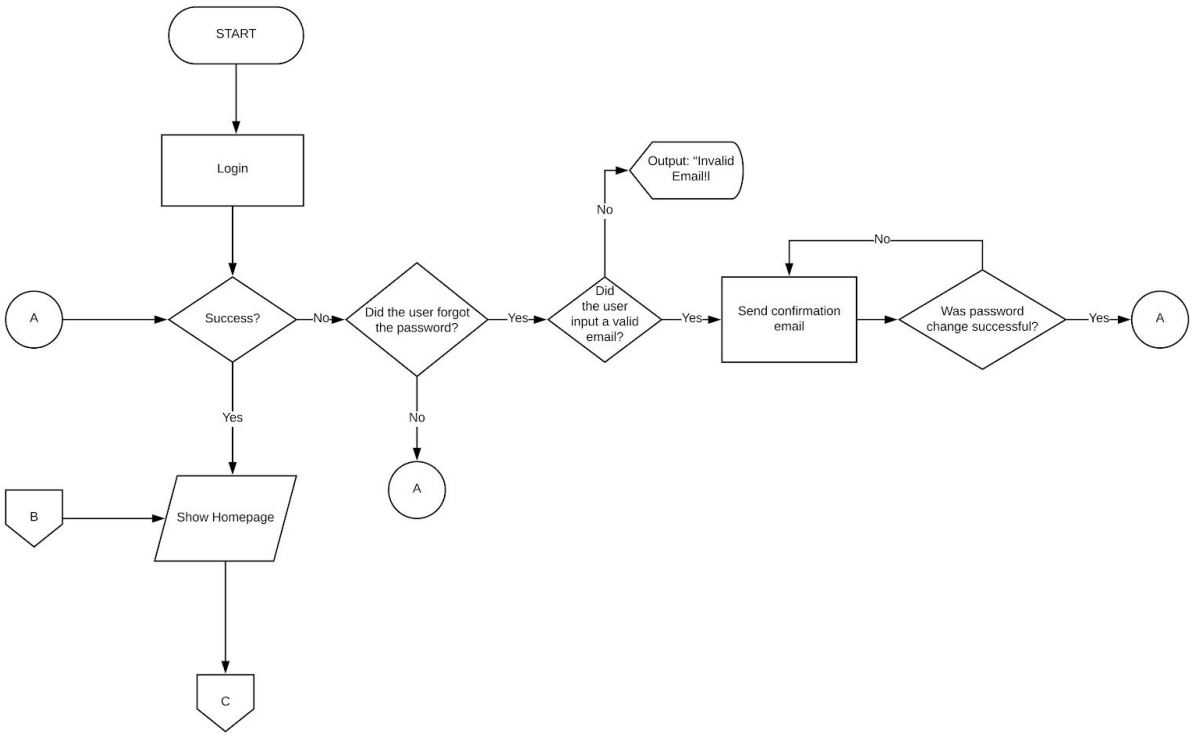


Figure 1.3.1 Secretary and Director's Web App Flowchart A

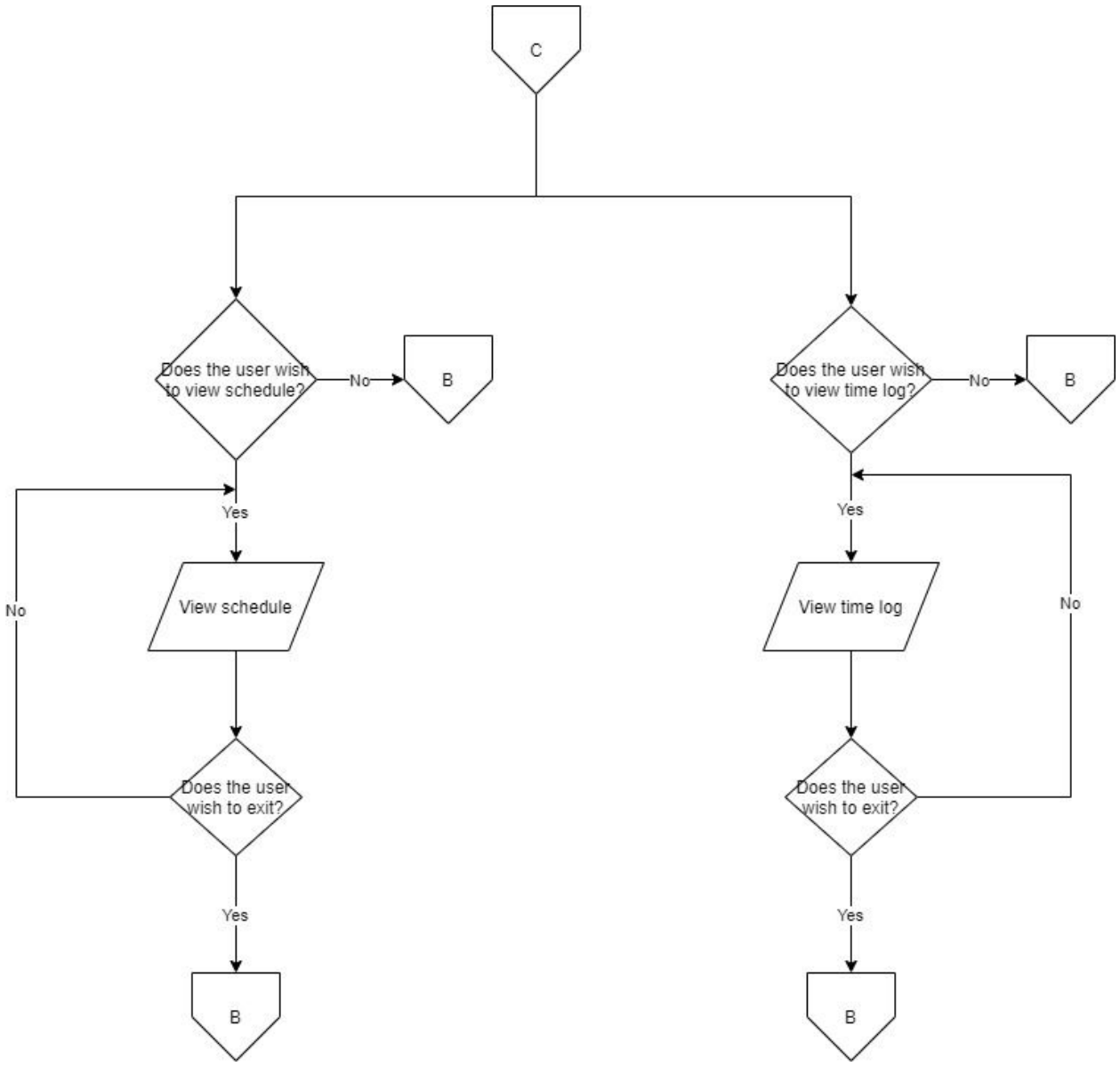


Figure 1.3.2 Secretary and Director's Web App Flowchart B

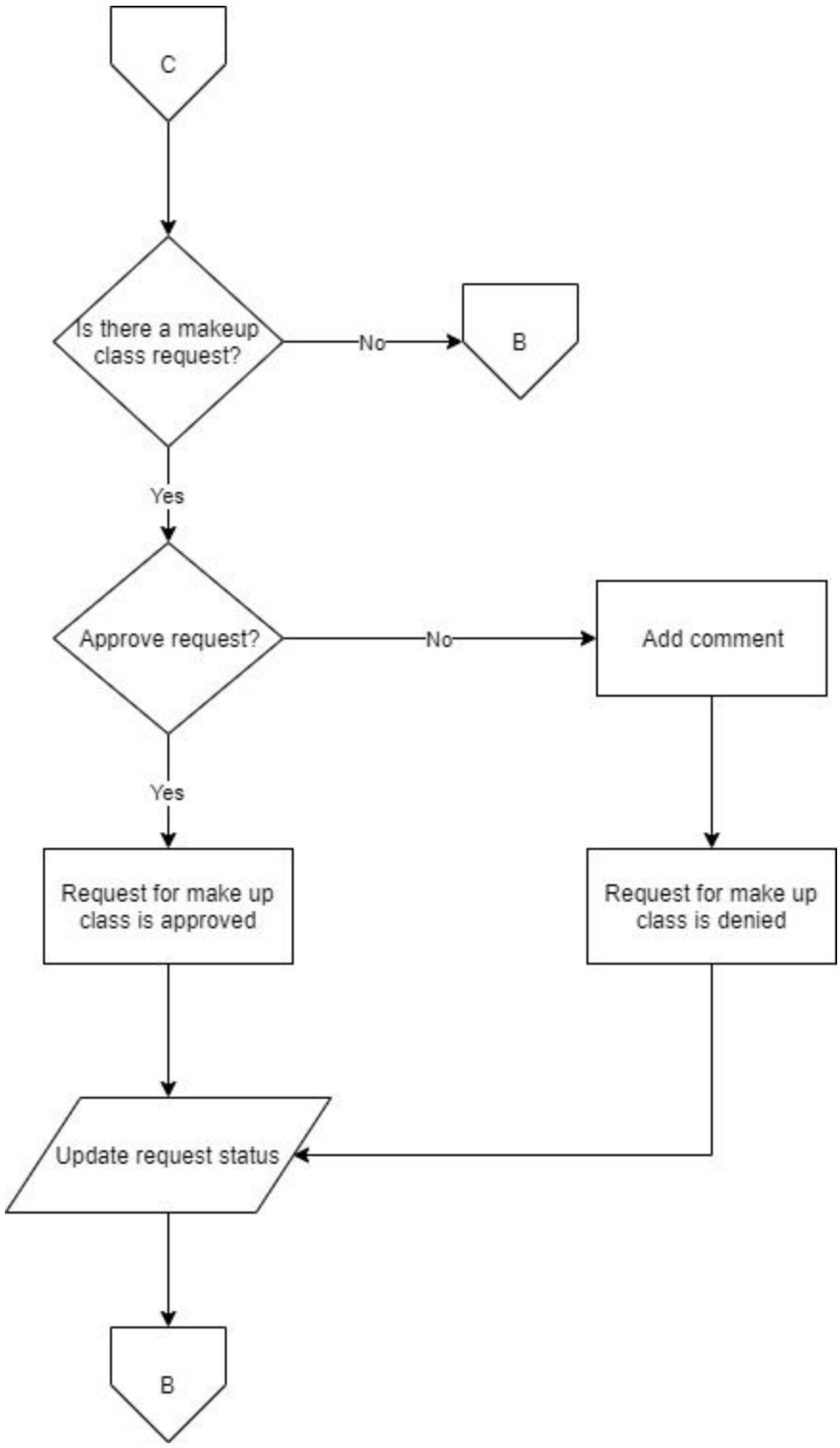


Figure 1.3.3 Secretary and Director's Web App Flowchart C

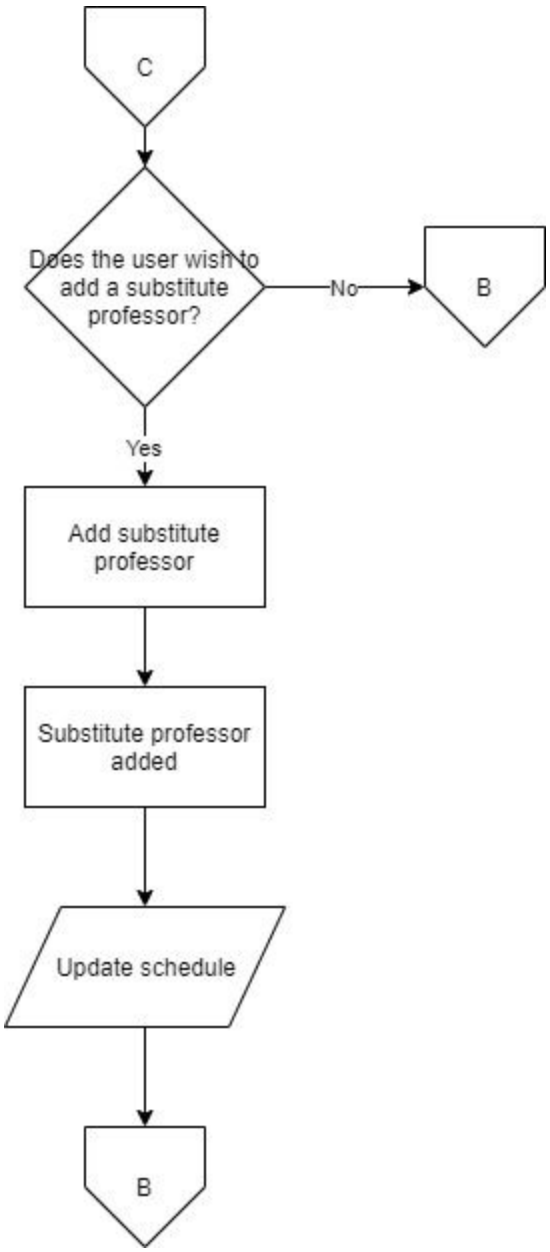


Figure 1.3.4 Secretary and Director's Web App Flowchart D

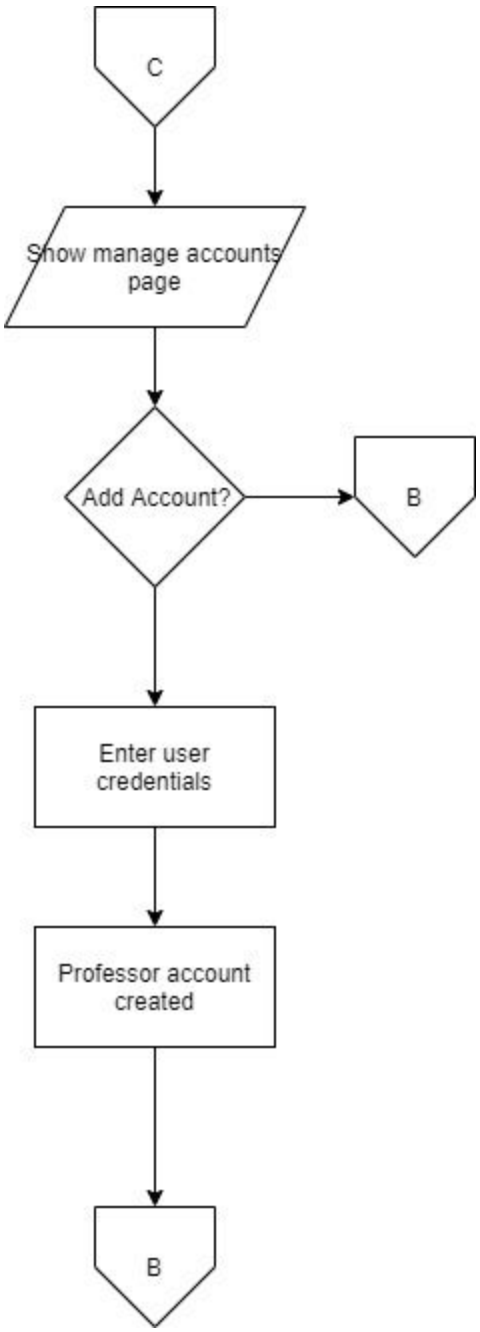


Figure 1.3.5 Secretary and Director's Web App Flowchart E

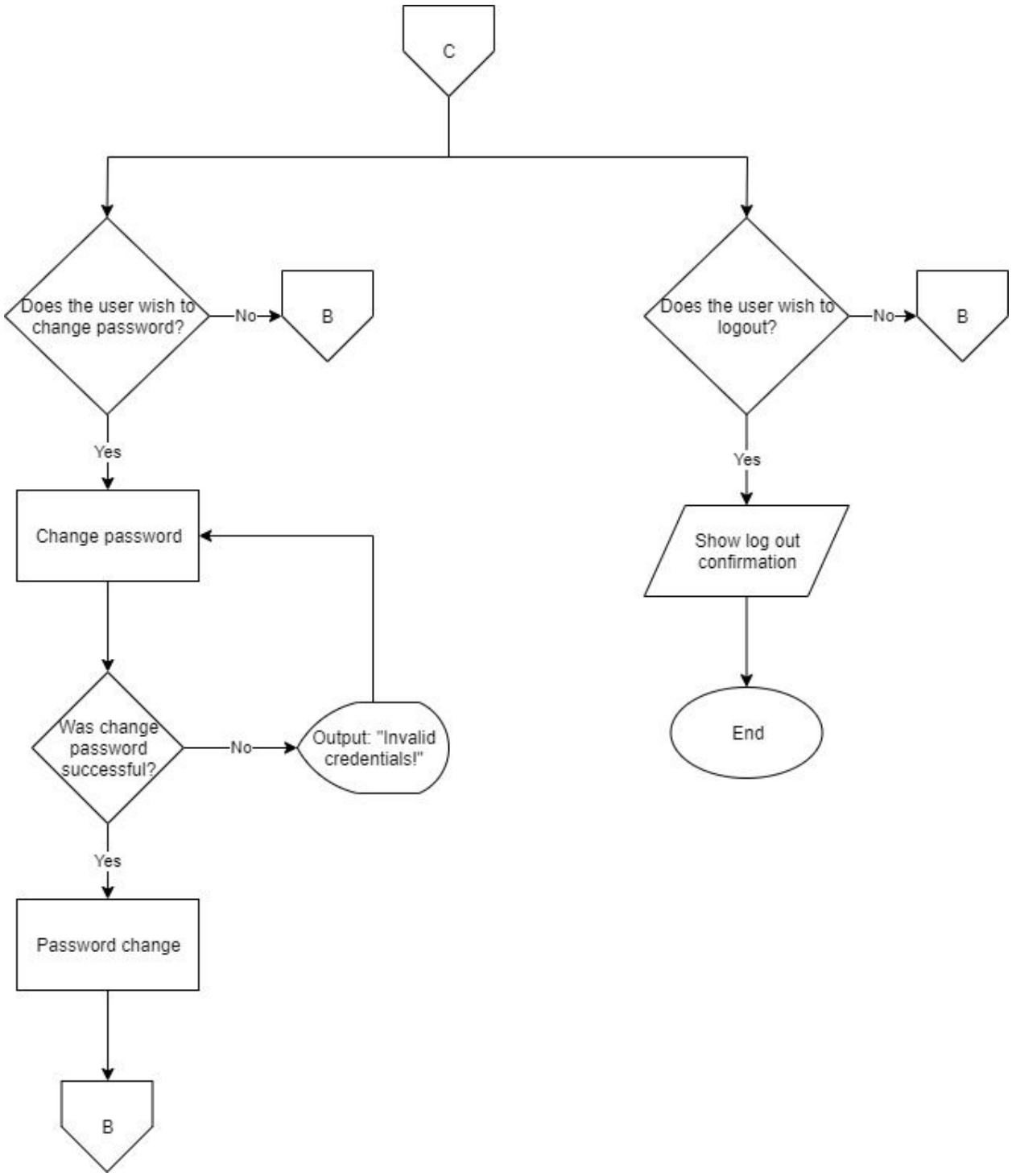


Figure 1.3.6 Secretary and Director's Web App Flowchart F

As seen in Figure 1.3.1 to 1.3.7 Secretary and Director's Web App starts by logging in using his or her user credentials. The web app will then check the records if the credentials given are correct. If the credentials provided by the user are correct, the user is brought to the homepage of the web app, otherwise the user is brought back to the log in screen to enter his or her credentials. The admin can add the schedule of each room and add a substitute professor to an existing schedule. After saving the schedule the admin will be able to view the schedule. If there is a request for makeup class, the Secretary or the Director can approve it or add a comment thus, the request is denied. The Secretary or Director can also add a substitute professor.

General Objective

The project aims to develop a web application that will monitor the attendance of faculty members from the Institute of Information and Computing Sciences.

Specific Objectives

The Project specifically aims to:

1. Allow professors to log their class attendance by tapping their University Identification Cards on an RFID scanner.

2. Allows real-time monitoring of professors' attendance in their respective classes.

3. Enable professors to request for make-up classes.

4. Display the time log of professors.

5. Record substitute professor's attendance.

Scope and Limitations

1. The system has 3 access levels with different privileges according to their role:

    1. Admin

        i. Create User Accounts

        ii. Manage Substitute Professor

        iii. Approve/Deny Make-up Class Request

        iv. View Time Log

    2. Staff

        i. Create User Accounts

        ii. View Substitute Professor

        iii. View Time Log

3. Faculty

    i. View Time Log

    ii. Send Make-up Class Request

2. Only the admin accounts, intended for the institute director and institute secretary, are able to approve and disapprove make-up class requests.

3. The time in and time out input will be received from the RFID scanner.

4. Admin and staff accounts are able to view the time log of all users.

5. Professors can only view their own time Log.

6. The system is intended to be used by the Institute of Information and Computing Sciences.

7. The system will communicate with another web application to retrieve the schedule of the rooms.

8. The system will not generate a printable attendance sheet. This is because there is a separate online form that the office fills up with regards to Faculty attendance.

9. If the faculty member has no Identification card, only the Institute Administrators can edit their attendance on the Time Log.

Chapter 2: Review of Related Literature

There have been numerous ways to manage the attendance of an organization's employees. One of which is the punched card attendance system. It is used with a very stiff paper which the employee would use the machine to punch a hole into the paper indicating his or her time in and out of the office. Early punched cards helped to process the United States census in 1890. They soon proved useful in calculating invoices and issuing payslips. Insurance companies, public utilities, businesses, and governments all used them to keep detailed records of their customers, competitors, employees, citizens, and enemies (Heide, 2009.) This technology has already been implemented within most of the smartphones today and have been used by companies as another variation of an attendance monitoring system. This system will include the same methodology used in the said studies but using a different equipment to determine the process of monitoring the attendance of the faculty.

There have been different applications made for monitoring the employees' attendance, each have different specifications, for example: one of the mobile applications created with the similar logic of tracking its employee's attendance is called Hubstaff. The app allows its users to enter entries and it also shows the location where it was used (Kurzawska, K, 2018.) In 2015, a study was created to make use of electronic tags to facilitate automatic wireless identification, with a Bluetooth Smart enabled device. "It was to resolve the issue of errors in the student attendance manual entries resulting from human errors and also provided the administrators with the statistics of attendance scores" (Lodhaa, R., Guptaa, S., Jaina, H., Narulaa, H., 2015.) In this project, radio frequency will be utilized to communicate external data

into the system. RFID scanners will used to capture the signals embedded in the ID. This process is found most suitable for the client because a similar procedure is implemented in each building inside the university. Attendance and Information monitoring using RFID is often used because it takes advantage of the Identification or Membership cards most establishments already produce and take it a step further. It is convenient and Cost effective for both consumer and seller (Lozano-Nieto, 2011.) Recent technological advancements make the fusion of RFID and sensors viable and enable many RFID tags with low-cost sensing capabilities. Intel's Wireless Identification and Sensing Platform (WISP) is a representative sensing-enabled tag which extends RFID beyond simple identification to in-depth sensing and computation (Smith, 2006; Sample, 2007.) It uses an ultra-low power 16-bit general-purpose micro-controller for sensing, computation and RFID communication. Such sensor nodes (with RFID communication interface) can be powered by harvesting Radio Frequency (RF) power from a reader (Lopez, Pedro Peris, 2013.) The system will be reading passive tags from the User's Identification card. Passive tags have no battery, it uses the radio waves it receives from the scanner to deliver the information (Chabanne, 2011.) It is in read-only mode, it can no longer be modified. The Application will only read the pre-existing data, which will then be used to connect the user to the system's database. RFID tags are small electronic components that are used to identify and track objects. They have applications in various fields such as inventory tracking, supply-chain management, theft prevention, and the like. An RFID system consists of an RFID tag (i.e., transponder), an RFID reader (i.e., transceiver), and a back-end database. An RFID reader consists of an RF transmitter and receiver, a control unit, and a memory unit. These instruments work together to transfer and receive information stored on radio waves between the reader and

an antenna attached to an RFID tag. This information interacts with stored items upon a back-end database that some readers are able to connect to. Depending on the type of the tag, they too have the capability to perform different functions with the information transferred from a reader (Liu, X., Li, K. 2018.) Data collected by RFID access control systems can be used by multiple parts of an enterprise. An enterprise's security function is the obvious user, but other typical users include line managers and the human resources (HR) and legal departments. Records can be used in ways that personally identify individuals or in aggregate forms that limit the ability to identify individuals. In the latter case, records about multiple individuals are extracted from the database of the access control system, and personally identifying information is removed prior to analysis (Balkovich, E., Bikson, T., Bitko, G., 2005.) RFID has numerous advantages compared to the bar code. The data contents of RFID read-write tags can be changed. On the other hand, bar codes' data cannot be changed once printed. Also, barcodes need a good line-of-sight and human assistance in order to read the tag while RFID tags can be read without human assistance. Moreover, RFID tags can be read over great distances than barcodes. Barcodes must be near the scanner in order for it to be readable. Additionally, RFID tags has better storage capacity than barcodes. Additionally, the barcode scanner can scan barcodes one at a time using a single portal, on the other hand multiple RFID tags can be read at one time using a single portal (Brown, D., 2007.) RFID (Radio Frequency ID) indicates the capability of identifying by means of radio frequency transmissions. The identification involves assigning a unique identity to an object that is distinguishable in an unambiguous way. In this original form RFIDs have the same functionality as a barcode. Regarding its evolution, the main purpose of this technology, beyond barcodes, is to obtain identified information about objects, animals, or persons by means of small

apparatuses working at radio frequency. The intake of information is achieved by means of searching operations, identification, selection, spatial localization, and tracking. Identifier and identified communicate using radio frequency signals, hence no physical contact (unlike, for example, use of magnetic stripe cards) is needed (Orecchini, G., Roselli, L., 2014.) A project concerning room reservation for the same Institute has been done in the past. They used Google Calendar to account for the schedule (Quitor, C., Plata, T., Silvestre, R., Valdes, P., 2018.) There are many types of RFID readers but they differ when it comes to performance. The environment where the reader operates is the main concern. There are environments that require a more durable reader and there are some that are more user-friendly. For example, Plano, Texas-based Venture Research, Inc. uses specific readers for their file-folder tracking system and another for a forklift. They differ when it comes to casing to allow more protection to the forklift environment (Zelbst, P., Soower, V., 2016.) The local computer system can be a portable computer having an RFID reader. The portable computer having an RFID reader can be a pocket personal computer (PC) with an RFID reader plug-in (Braunstein, A. S., 2009.) Scheduling Systems plays a vital role in the industry in terms of productivity, “Scheduling systems are designed to help you keep on top of everything you need to get done. Rather than wasting valuable time writing and rewriting lists on a notepad, why not keep track online?” (Sloan, K., 2018.)

Table 2.1 Synthesis

No.	Authors and Year Published	Title	Relevance to Study
1	Balkovich, E., Bikson, T., Bitko, G. (2005)	What We Found	Data collected from the RFID can be used flexibly in multiple parts of the system.
2	Brown, D. (2007)	RFID Implementation	Discusses advantages of RFID compared to the older barcode systems.
3	Chabanne, H., Pascal, U., Susini, J. (2011)	RFID and the Internet of Things	Discussed different kinds of transponders (commonly known as tags) that communicates with the RFID scanner.
4	Heide, L.(2009)	Punched-Card Systems and the Early Information Explosion, 1880–1945	It focuses on the different uses of punched cards systems as well as in terms of monitoring employees.

5	Kurzawska, K. (2018) https://www.timecamp.com/blog/2018/06/mobile-employee-attendance-tracking-apps/	Top 7 Mobile Employee Attendance Tracking Apps	It showcased different types of apps that all specializes on the managing of employees depending on what each of the companies need.
6	Liu, A., Shahzad, M., Liu, X., Li, K. (2018)	RFID Protocol Design, Optimization, and Security for the Internet of Things	RFID tags have different types that have different capabilities to perform different functions with the information transferred from a reader.
7	Lodhaa, R., Guptaa, S., Jaina, H., Narulaa, H. (2015) https://www.sciencedirect.com/scien	Bluetooth Smart based Attendance Management System	A study conducted to use automatic wireless identification, with a Bluetooth Smart enabled device to be able to take attendance of students without having to manually write down their attendance.

	ce/article/pii/S1877050915003300		
8	Lopez, Pedro Peris; Hernandez-Castro, Julio C; Li, Tieyan (2013)	Security and Trends in Wireless Identification and Sensing Platform Tags - Advancements in RFID	A wireless identification and sensing platform is an RFID device that supports sensing and computing: a microcontroller powered by radio-frequency energy.
9	Lozano-Nieto, A. (2011)	RFID Design Fundamentals and Applications	includes the different fields where RFID is being utilized.
10	Orecchini, G., Roselli, L. (2014)	RFID background	Assigning a unique identity to an object that is distinguishable in an unambiguous way.
11	Quitor, C., Plata, T., Silvestre, R., Valdes, P. (2018)	Room Reservation and Scheduling System for IICS	A project that addresses scheduling for the same Institute.

12	Zelbst, P., Soower, V. (2016)	RFID for the Supply Chain and Operations Professional	Usage of different types of RFID reader depending on the environment.
13	Braunstein, A. S.(2009)	RFID-based Personnel Tracking	Local computer systems can be portable with an RFID reader.
14	Sloan, K.(2018)	4 Benefits of Using a Scheduling System in Your Business	Scheduling systems are common in the industry and is used to reduce time constraints.

Chapter 3: Technical Background

Functional Requirements

Table 3.1 - Functional Requirements

Functional Requirements	Description
Manage Accounts	Allows the system administrator and the staff to operate and modify the accounts in the system.
Log in	Allows the system administrator, the staff, and the professor to log into an account with the correct credentials given.
Change Password	Allows the system administrator, the staff, and the professor to change their account's password with the right credentials given.
Forgot Password	Allows the system administrator, the staff, and the professor to recover an account

	given that correct email credentials are given.
View Make-up Class Request	Allows the system administrator, the staff, and the professor to view the request of make-up class from the respective professors.
Approve/Deny Make-up Class Request	Allows the system administrator to approve/deny the requests of make-up classes from the professors.
Add Schedule	Allows the system administrator and the staff to add a new schedule on a specific room.
Add Substitute	Allows the system administrator and the staff to add a substitute professor based on the make-up class request and schedule of the professor.

View All Time Logs	Allows the system administrator and the staff to view the time in/time out of the professors.
View Schedule	Allows the system administrator and the staff to view the schedule of every room and professor.
View Own Time Log	Allows the professor to monitor his/her own time log.
Scan ID	Allows the professor to automatically input his/her login time to the system
Send Make-up Class Request	Allows the professor to send a request to the system administrator for a makeup class.
View Make-up Class Request	Allows the system administrator and the staff to supervise the requests for make-up classes.

Non-Functional Requirements

Table 3.2 - Non-Functional Requirements

Non-Functional Requirements	Description
Availability	The system will be available during specified operating hours with no unplanned outages.
Data Integrity	The system will be able to verify the username input to its corresponding password.The system will be able to address the schedules to its corresponding room and faculty.
Maintainability	The system will allow system administrator to add, modify, and delete content, add accounts, add schedules.
Performance	The system will be able to accommodate simultaneous data input from the users.
Reliability	The system will run indefinitely. The web

	host should always be operational to provide the progress of data from the equipment to the database, from the system administrator to the users and vice versa.
Scalability	The system will be able to accommodate the number of users and schedules in different rooms provided.
Security	The system will assure the password is encrypted. The system will only validate input from registered users with their UID.
Usability	The system will be user-friendly, easy to navigate, and easy to manage by the users and the system administrator.

Technical Requirements

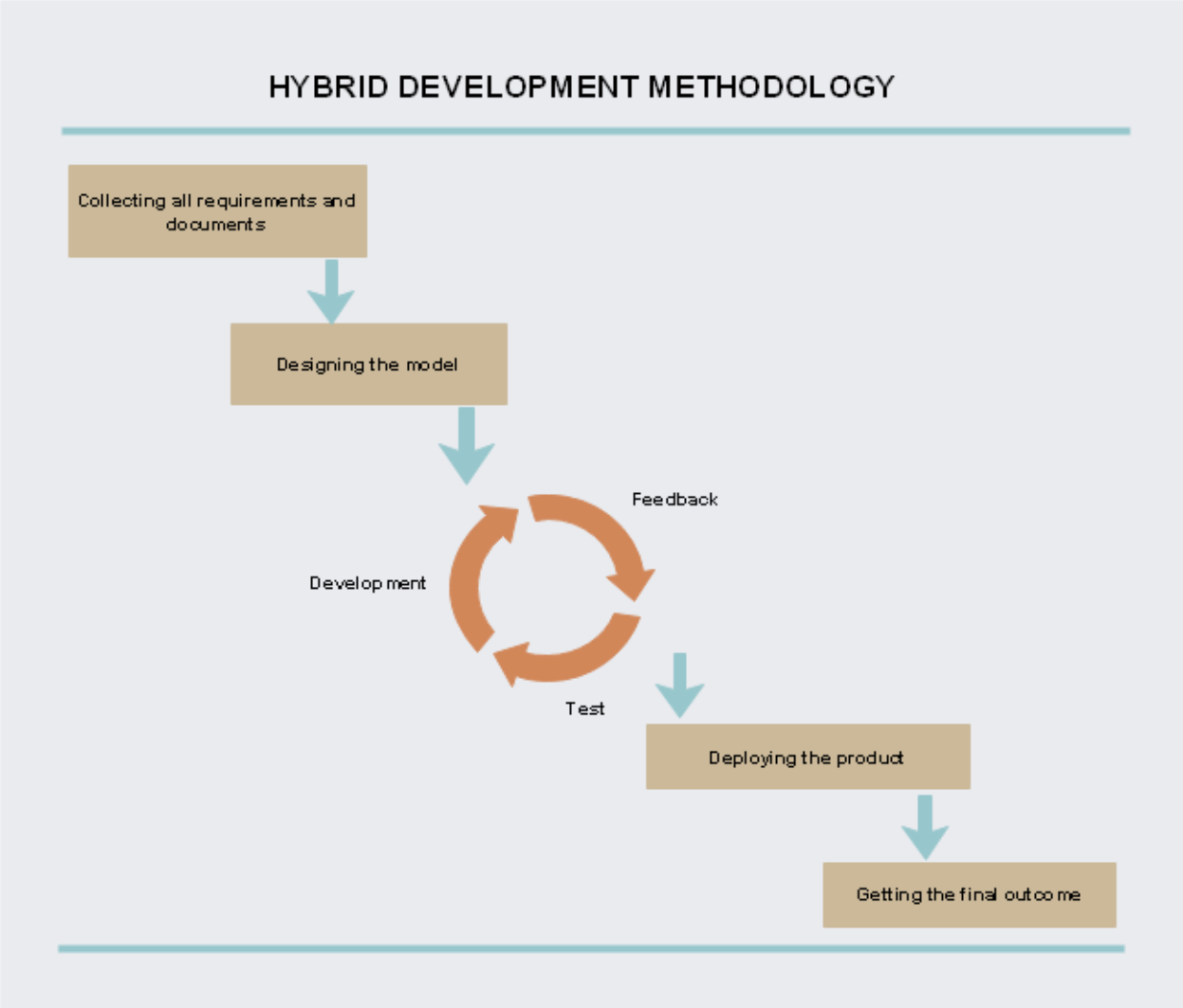
The proponents used a device with an Intel Core i5-4210U 2.7GHz processor with 8gb of RAM. Sublime text editor was used as the IDE and XAMPP was used as the localhost. MySQL was also built in XAMPP which the proponents used as the database.

Table 3.3 Technical Requirements

Hardware	**Model**
CPU	Intel Core i5-4210U 2.7GHz
GPU	NVIDIA GeForce
Memory	8GB RAM

Methodology

Figure 3.1 - Software Development Life Cycle



The proponents will be using a hybrid development methodology of the Software Development Life Cycle (SDLC) for the system because it supports the necessities required for the system in the most cost-efficient way possible. The proponents aim to follow through the

client's demands and create prototypes while continuously working on the development process to fulfill the client's needs. This will be able to maintain the quality of the system without having to completely revise the entire system.

There are several stages the proponents need to undergo in carrying out the development process of the system. The first stage is the initialization, this is where the planning of the project begins. It covers the gathering of requirements that will be used for the project through the interviews with the client. The second stage is when the documentation for the design of the system with the use of diagrams and the prototype are created. The third stage is the development in which the proponents will begin to develop the actual system. After which is feedback and testing wherein the proponents will have encountered bugs and errors in the system which will return to the development stage to be fixed. The proponents will then proceed to the deployment of the product which meant the beta testing of the system in which the users will test out to see how the system works in the real world. In the final step is where the proponents will encounter bugs and errors that weren't noticed before.

System Design

Figure 3.2 - Use Case Diagram

As seen in Figure 3.2 above, the use case diagram defines interactions among the actors and their roles. The Faculty Member can only view their own time logs, log in which includes change and forgot password, send make-up class requests and also monitor them. The staff can manage user accounts, manage substitute professor, log in, and view time logs. The admin can also log in, view time logs, manage substitute professor, manage user accounts, and approve/deny make-up classes.

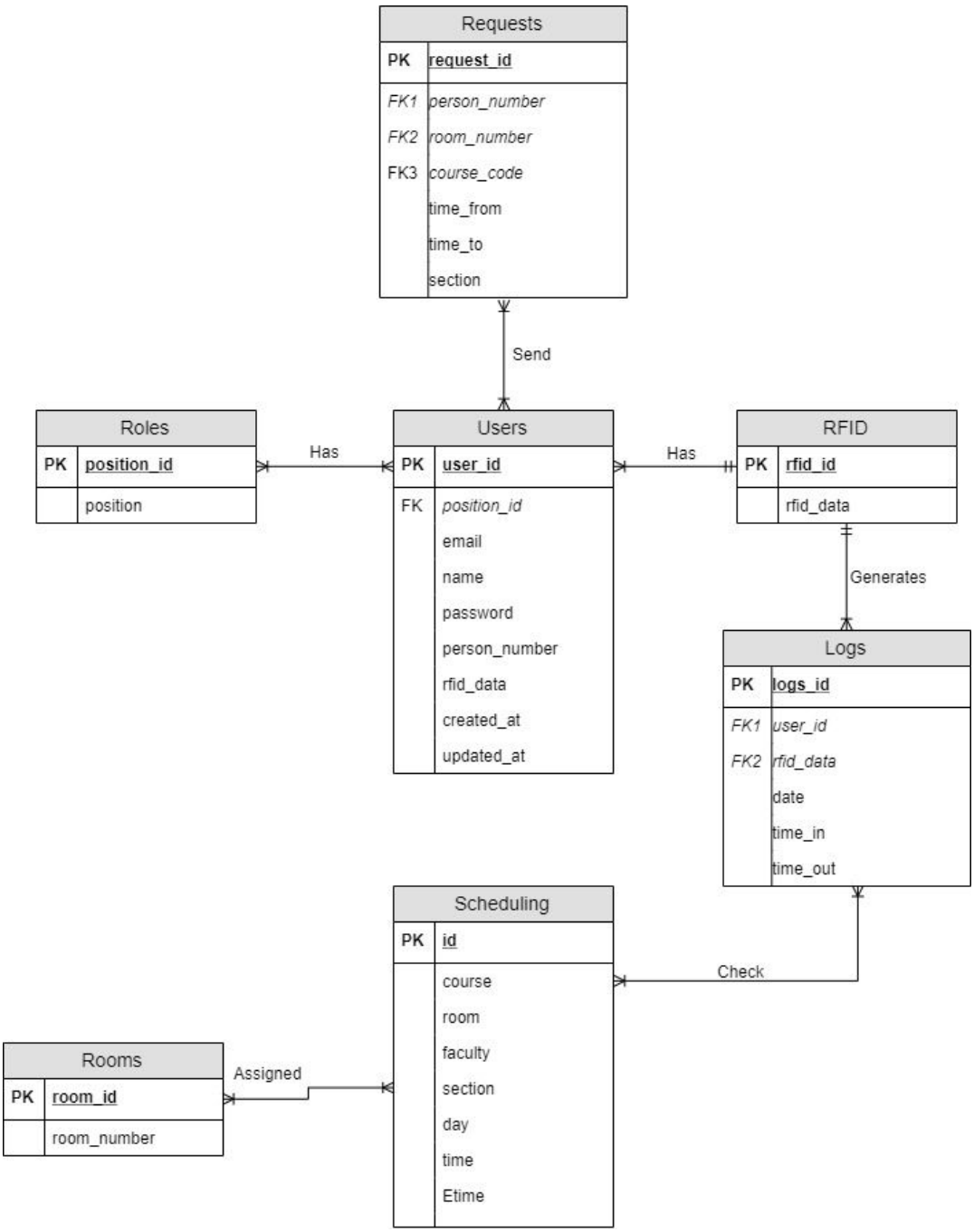


Figure 3.3 Entity Relationship Diagram

Table 3.3 Data Dictionary

Table Name	Column Name	Type	Description/Notes
users	user_id	int(12)	Primary Key
users	email	varchar(100)	Users' valid email address
users	name	varchar(100)	Users' name
users	password	varchar(255)	Users' password
users	position_id	int(10)	Foreign Key
users	person_number	int(11)	Users' employee number
users	rfid_data	varchar(20)	UID of professors' ID
users	created_at:	timestamp	Time of when the professor account is created
users	updated_at:	timestamp	Time of when the professor account is updated

roles	position_id	int(10)	Primary Key
roles	position	varchar(20)	Identifies if the user is an admin, staff, or professor
rooms	room_id	int(5)	Primary Key
rooms	room_number	varchar(20)	Classroom number
rfid	rfid_id	int(10)	Primary Key
rfid	rfid_data	varchar(20)	UID of professors' ID
course	course_id	int(10)	Primary Key
course	course_code	varchar(10)	Course code
course	course_name	varchar(100)	Course description
logs	logs_id	int(11)	Primary Key
logs	user_id	int(10)	Foreign Key

logs	date	date	Date of time log
logs	rfid_id	int(5)	Foreign Key
logs	time_in	timestamp	Time of log in
logs	time_out	timestamp	Time of log out
requests	request_id	int(10)	Primary Key
requests	person_number	int(11)	Foreign Key
requests	room_number	varchar(20)	Foreign Key
requests	course_code	varchar(10)	Foreign Key
requests	time_from	timestamp	Start time of the make-up class request
requests	time_to	timestamp	End time of the make-up class request
requests	section	varchar(20)	The section who will attend the make-up class

System Sequence Diagram

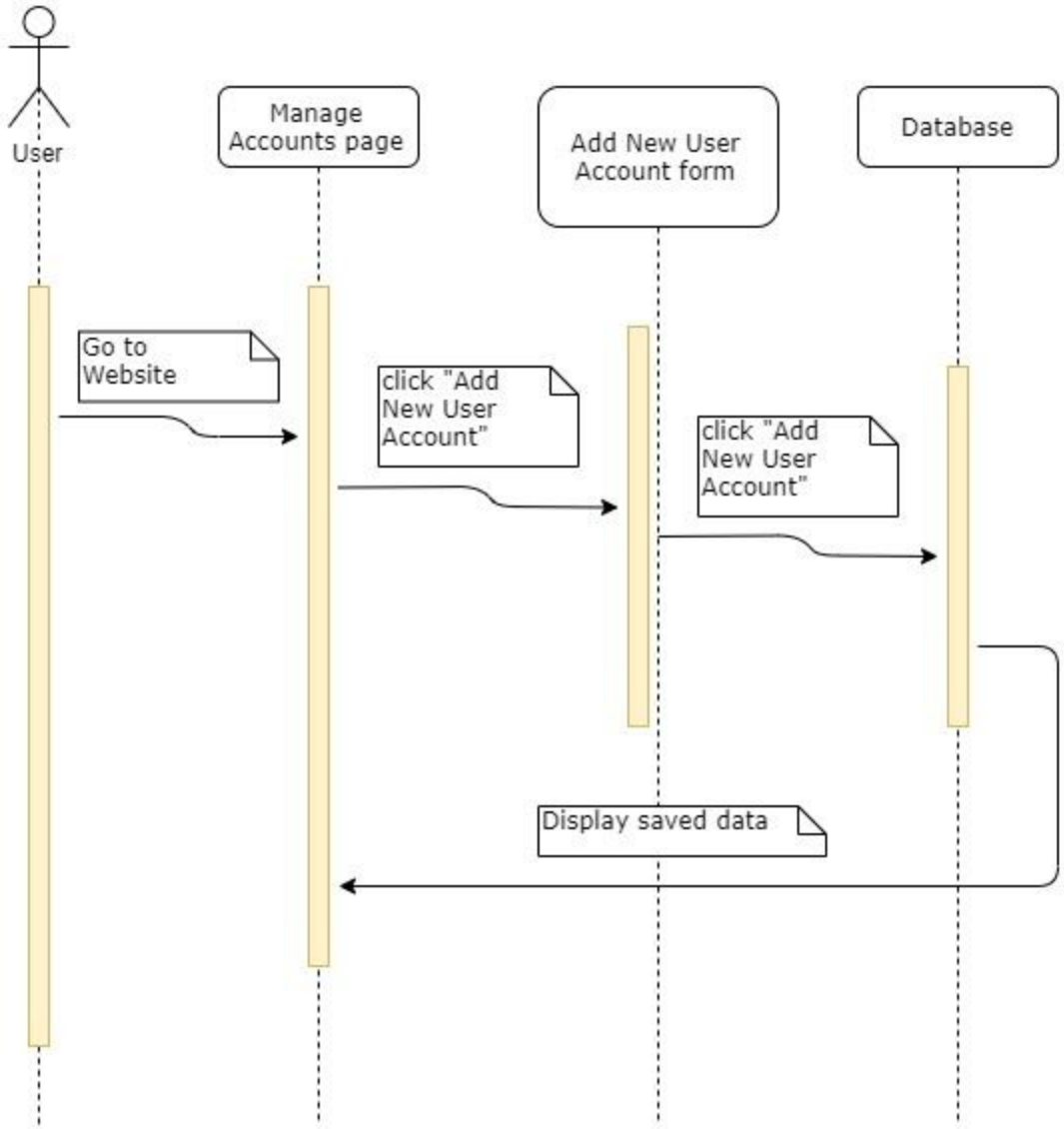


Figure 3.3 - Admin and Staff's Manage User Accounts

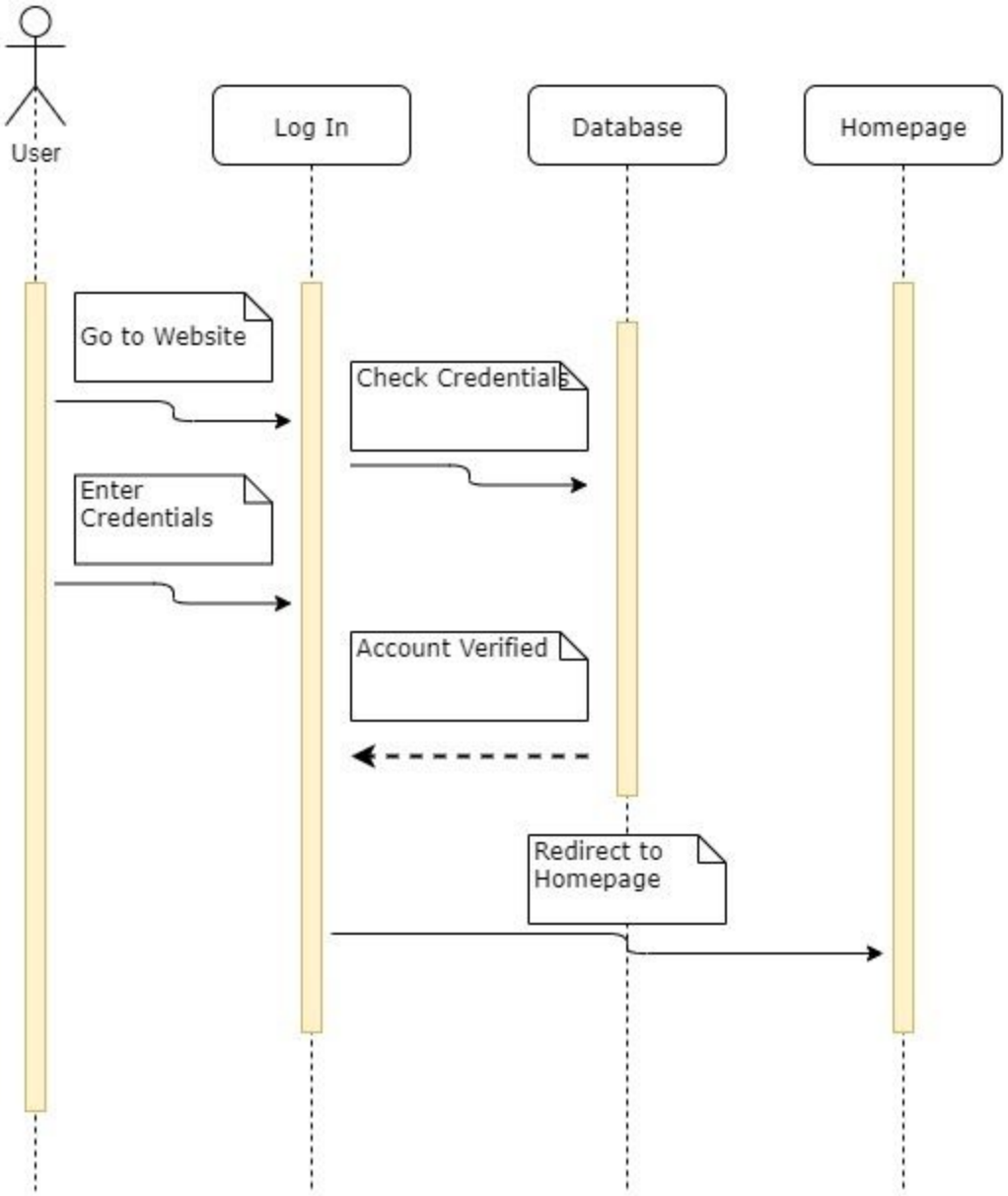


Figure 3.4 - Faculty, Admin and Staff Log In

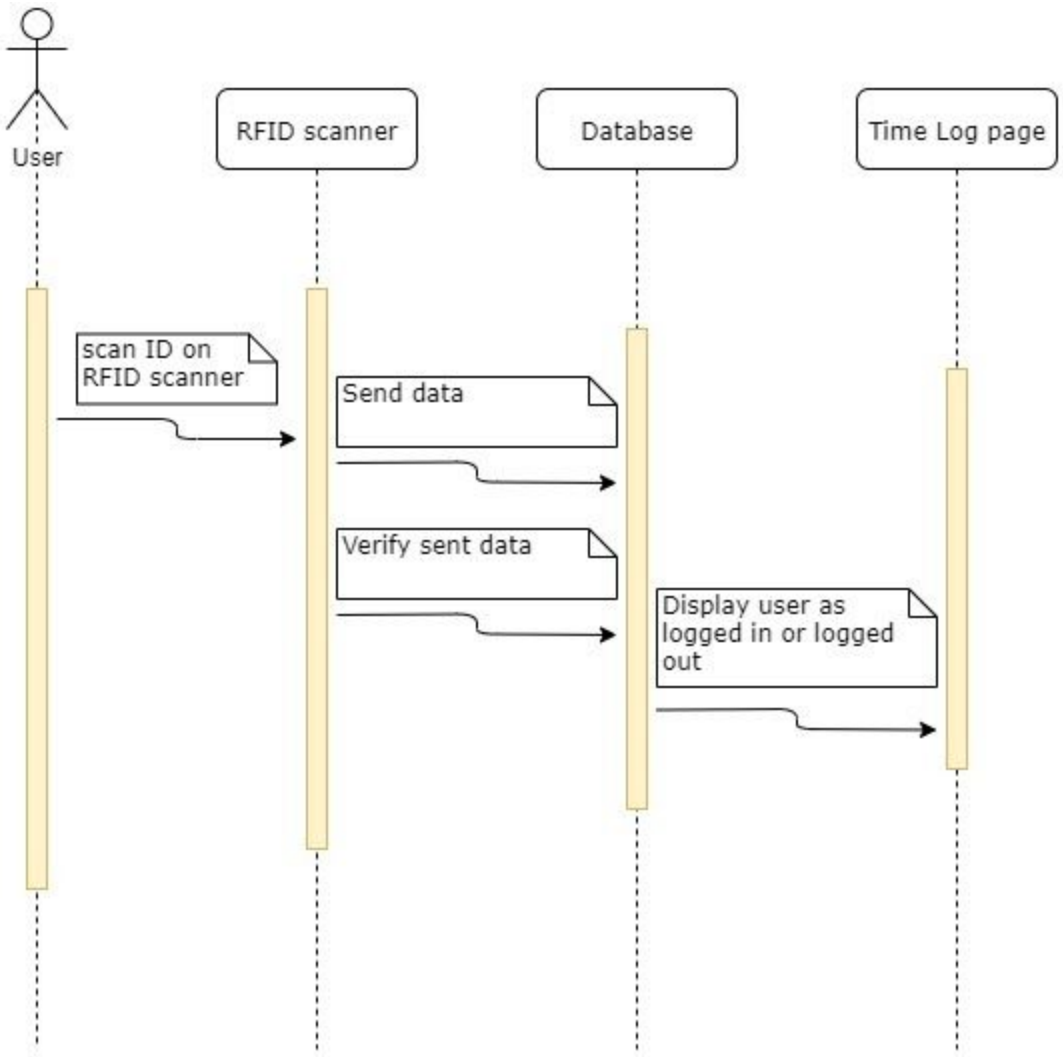


Figure 3.6 - Faculty Time Log

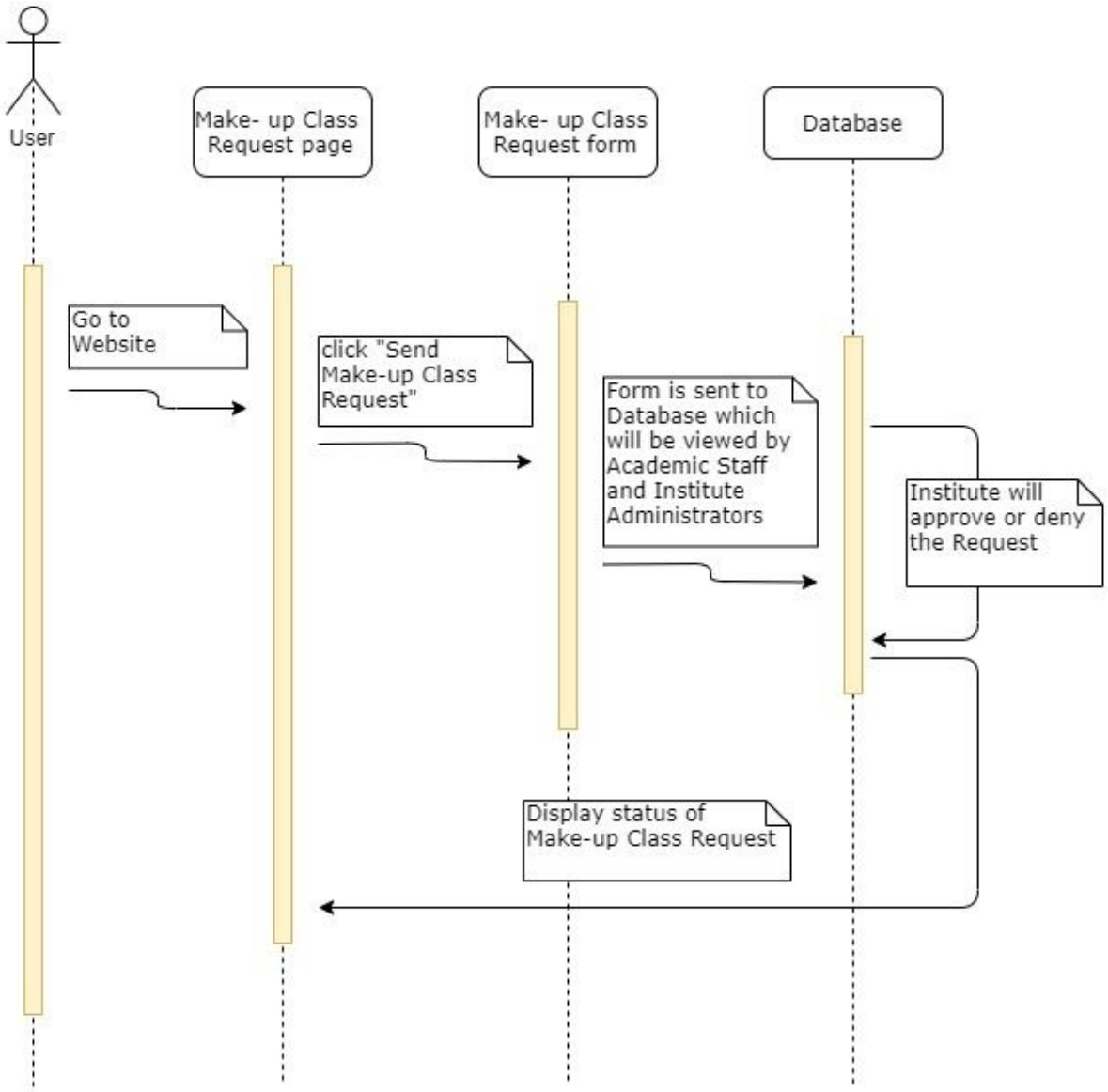


Figure 3.7 - Faculty Send Make-up Class Request

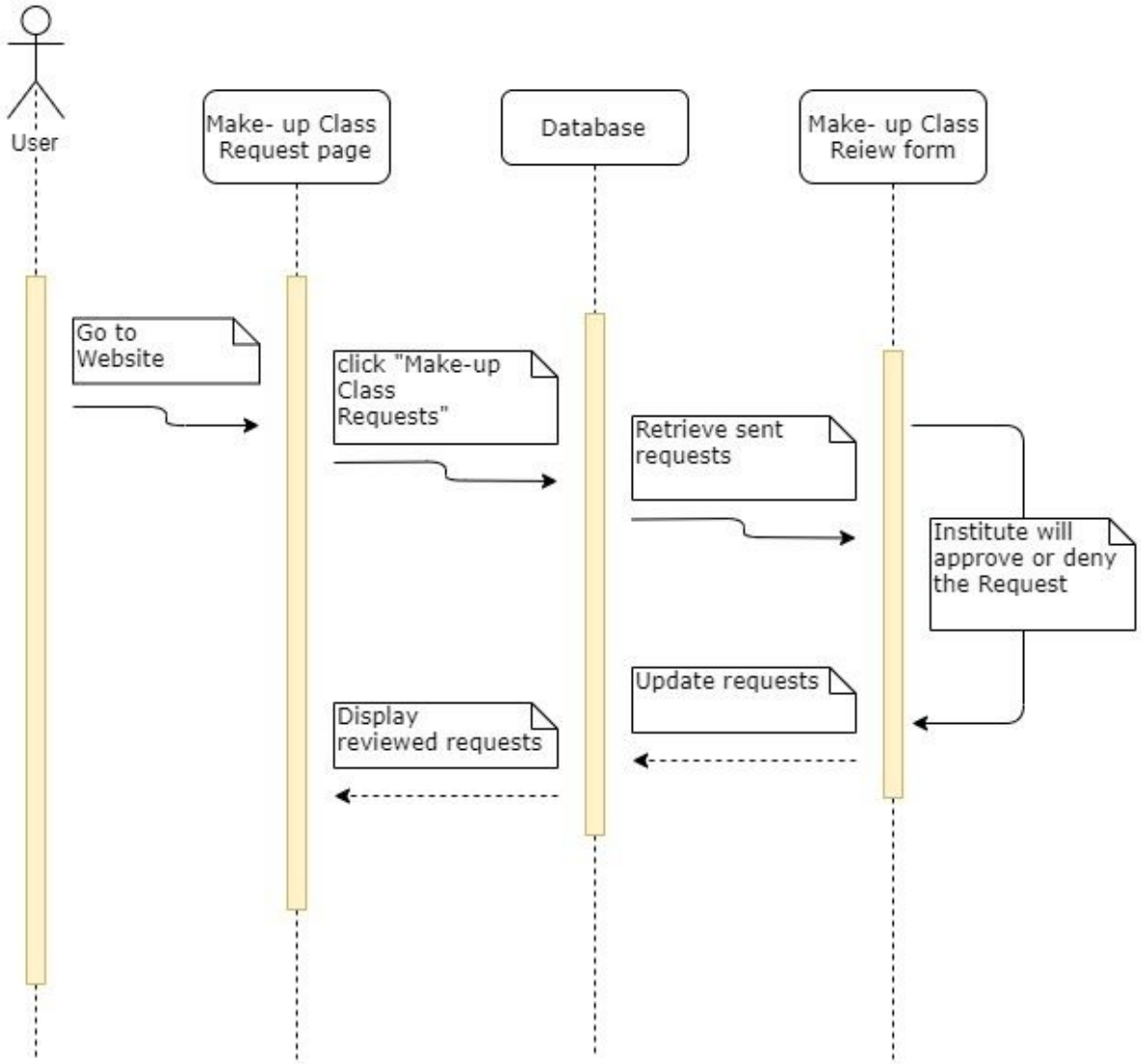


Figure 3.8 - Admin review Make-up Class Request

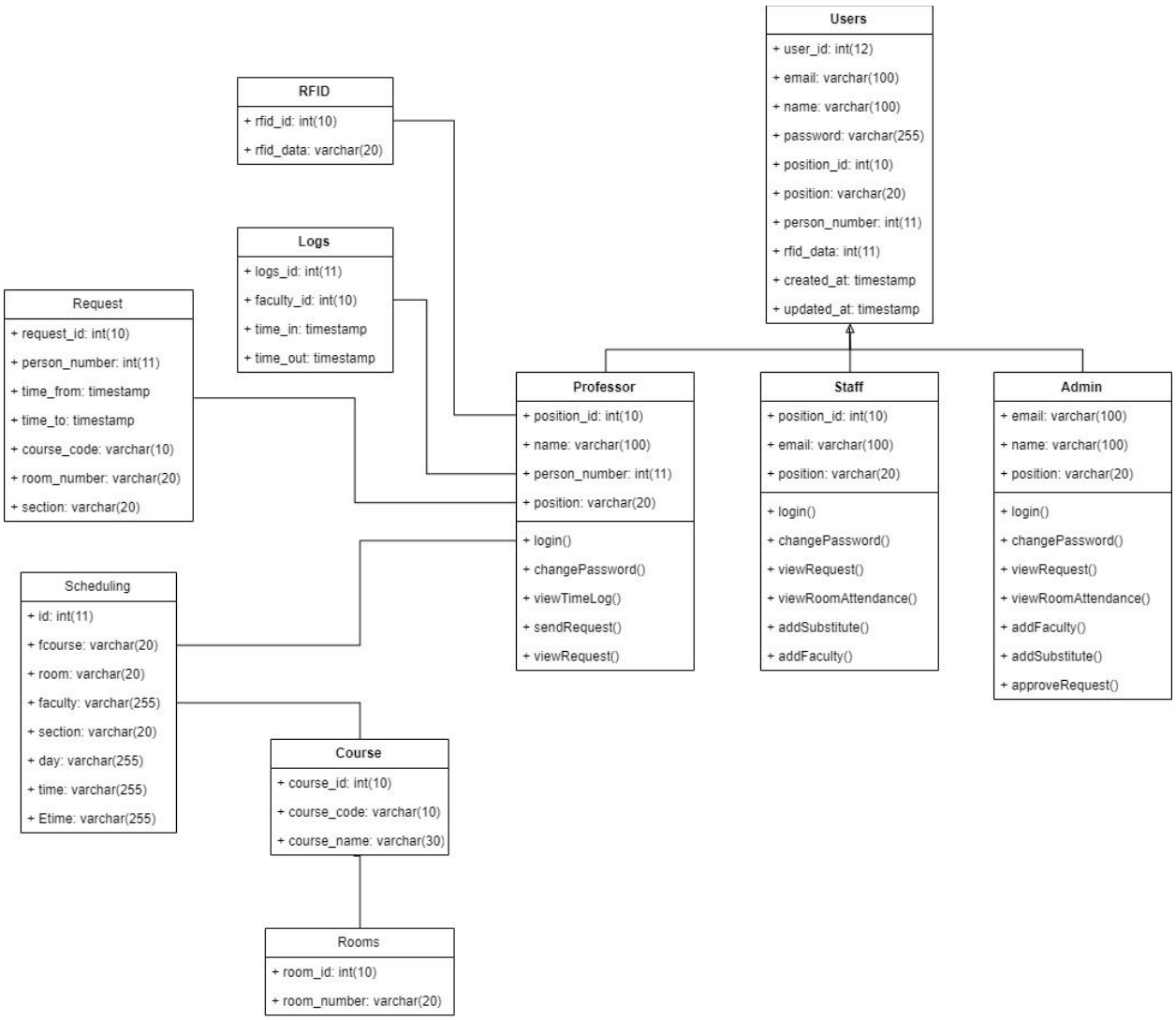


Figure 3.9 - Class Diagram

Development Plan

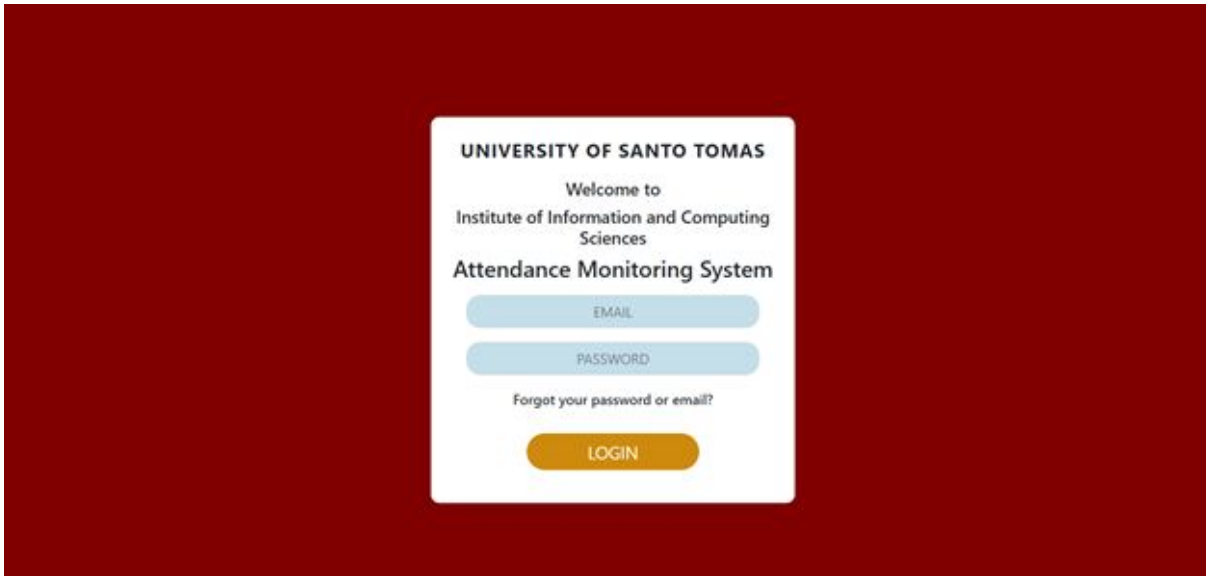


Figure 4.0 Log in page

The log in page requires the user to enter his/her username and password. The ust.edu.ph e-mail address of the Faculty members is set as their usernames by default.

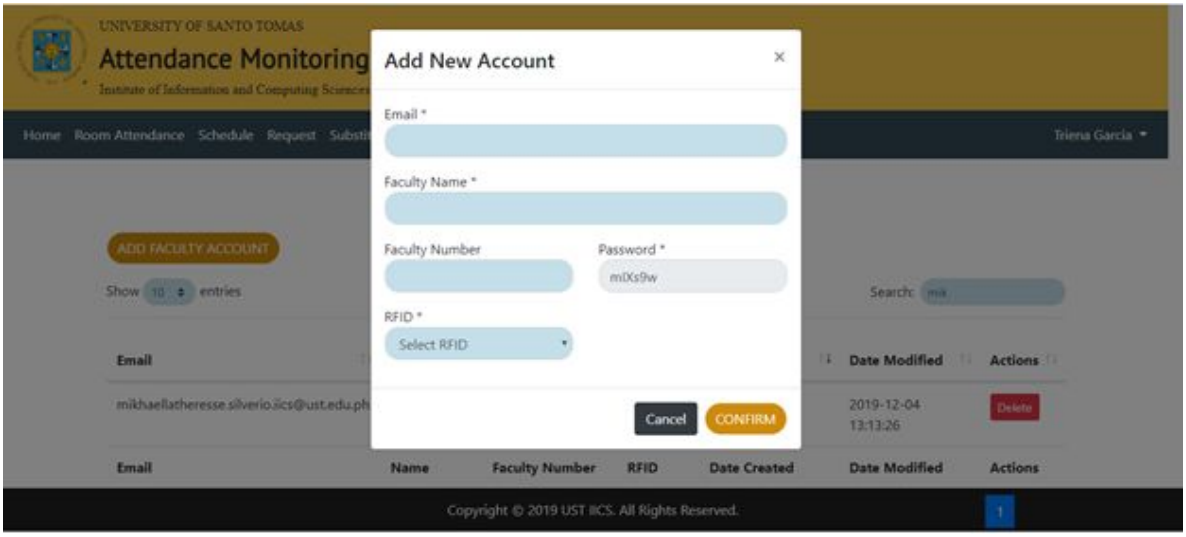


Figure 4.1 Add new user window

Only the institute administrators and academic staff are allowed to add a new user into the system. Adding a new faculty member into the system requires their email address, name, faculty number, and the UID or unique key of their identification card.

Figure 4.2 Change password page

The change password feature requires users to enter their old password before creating a new one. Faculty members are advised to change the default password provided to them initially.

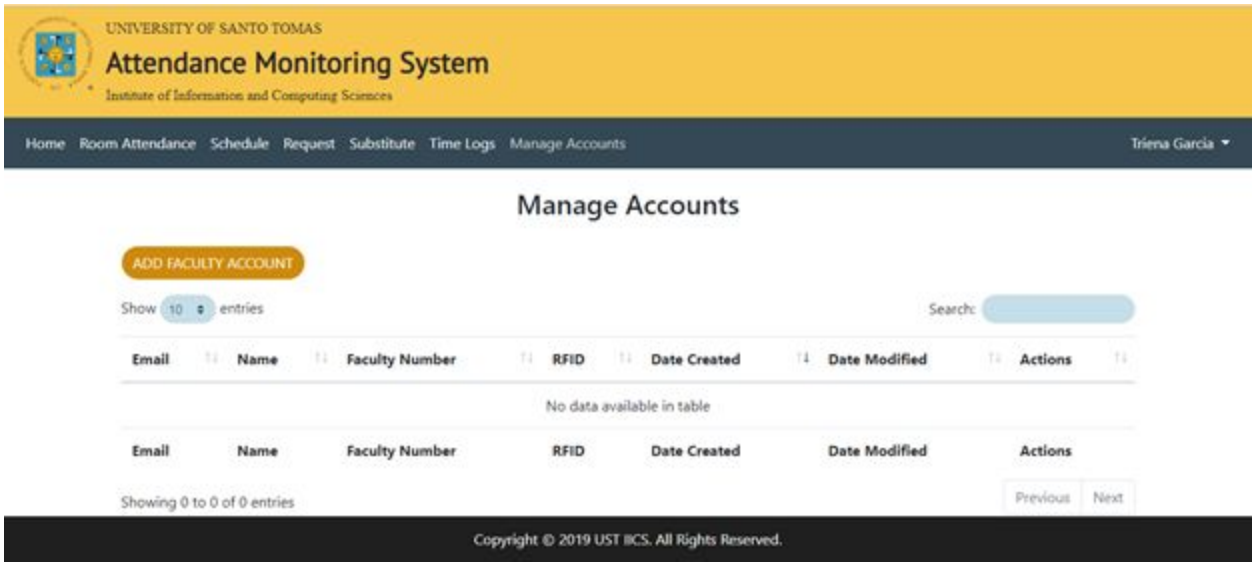


Figure 4.3 Manage accounts page

Allows staff and admin to view all the existing user accounts and add new user accounts into the system.

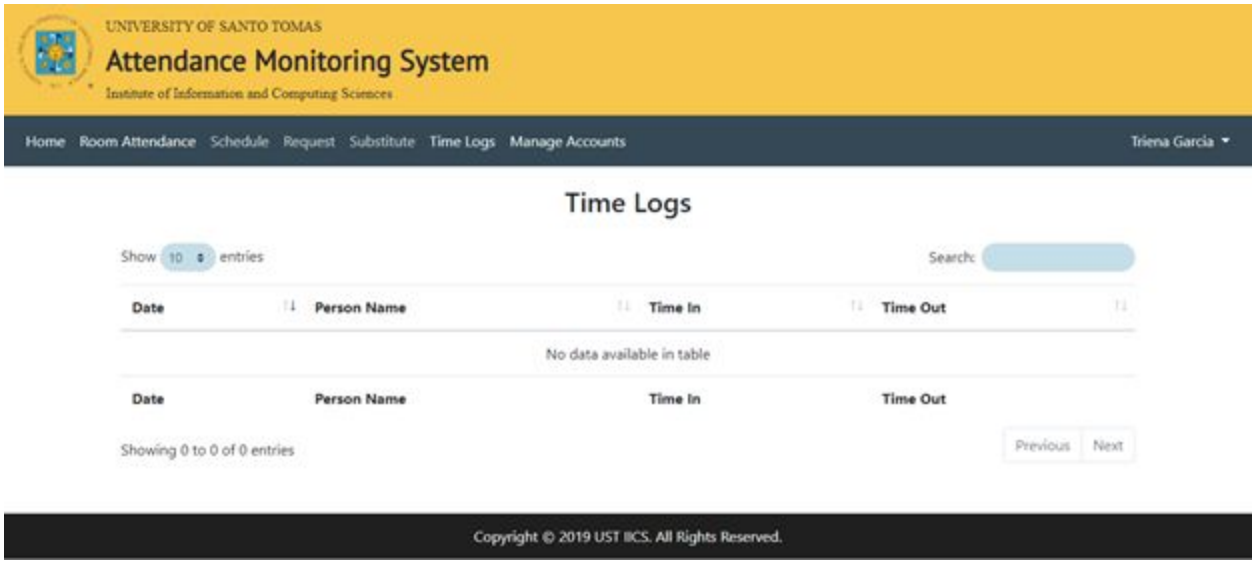


Figure 4.4 Time log page

Allows administrators and staff to monitor the time log of faculty members.

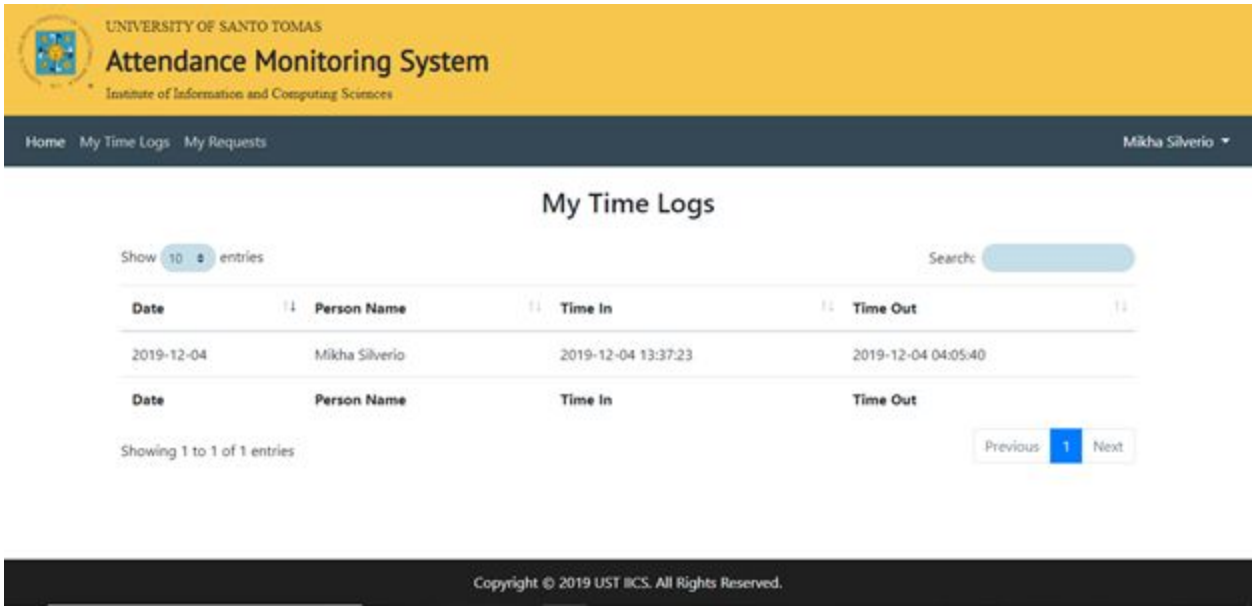


Figure 4.5 Faculty time log page

Allows faculty members to view their own time log.

Test Plan

During the alpha test, each function will be tested individually to identify bugs/errors before the deployment stage. As seen below is table 3.4 and listed are the functional and non-functional requirements that will be tested.

Alpha Test

Table 3.4 Test Cases

Test Case Number	**Test Case Scenario**	**Test Case Description**	**Expected Results**
1	Manage Accounts	User wishes to operate and modify accounts in the system.	The user has modified/edited accounts in the system.
2	Log In	User must input the correct credentials.	The user is logged into the system.
3	Change Password	User has entered the old password, new	The user's account's password has been changed.

		password, and new password confirmation.	
4	Forgot Password	User has forgotten password.	The user will contact the admin/staff and get a default password.
5	Approve/Deny Make-up Class Request	User wishes to approve/deny requests from the professor.	The user has approved/deny the request.
6	Add Schedule	User wishes to add a new schedule.	The user has successfully added a new schedule.
7	Add Substitute	User wishes to add a substitute professor.	The user has successfully added the substitute.
8	View All Time Logs	User wishes to view all time logs.	The user has viewed all time logs.

9	View Schedule	User wishes to view schedule.	The user has viewed all the schedule.
10	View Own Time Log	User wishes to view own time log.	The user has viewed his/her own time log.
11	Scan ID	User must scan his/her ID card to the RFID scanner.	The user has successfully scanned his/her time in and time out.
12	Send Make-up Class Request	User wishes to send a make-up class request.	The user has successfully sent a request.
13	View Make-up Class Request	User wishes to view make-up class requests.	The user has viewed all make-up class requests.

Implementation Plan

Figure 3.9 Gantt Chart

Task Name	Start Date	End Date	Duration
Chapter 1			
Project Context	10/29/2019	10/31/2019	3 days
Purpose and Description(with flowchart)	10/29/2019	11/10/2019	13 days
Objectives	11/2/2019	11/10/2019	9 days
Scope and Limitation	11/2/2019	11/12/2019	11 days
Chapter 2			
Review of Related Literature	11/9/2019	11/15/2019	7 days
Chapter 3			
Functional Requirements	11/13/2019	11/18/2019	6 days
Non-Functional Requirements	11/13/2019	11/18/2019	6 days
Methodology	11/22/2019	11/24/2019	3 days
Activity Diagram			
Use Case Diagram	11/30/2019	12/1/2019	2 days
System Sequence Diagram	11/30/2019	12/2/2019	3 days
Class Diagram	12/1/2019	12/3/2019	3 days
Database Design/ER Diagram	12/1/2019	12/3/2019	3 days
Development Plan	12/30/2019	12/3/2019	4 days
Test Plan	12/1/2019	12/3/2019	3 days
Implementation Plan	12/2/2019	12/3/2019	2 days
Coding			
assembling of RFID	11/15/2019	11/23/2019	9 days
revising of arduino code for RFID	11/17/2019	11/29/2019	13 days
Time Log	11/24/2019	12/1/2019	8 days
User Interface	11/20/2019	12/3/2019	14 days
Create New User	11/26/2019	12/3/2019	8 days
Login	11/26/2019	12/3/2019	8 days
Change Password	11/26/2019	12/3/2019	8 days

After Alpha testing, the proponents will be deploying the system to the web host of the Institute of Information and Computing Sciences. A training will be conducted to show the administrators and staff of the institute how the system works. The beta test will be implemented on two classrooms, with one RFID scanner for each. The system will be tested over a period of time where the proponents can do maintenance and repairs if issues arise. After that, a User Acceptance Test will be conducted to determine if there are further concerns. If all the tests yield positive results, the proponents will officially hand over the system to the client.

Appendix A

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