



Royal University of Bhutan
Jigme Namgyal Engineering College

Mess Stock and Financial system

Group members.

Tshering Dorji

Rinchen Dem

Anisha Chettri

Puja Lepcha

Contents

Introduction	3
Important of the topic.....	4
Problem Statement.....	4
Proposed System (Solution).....	5
Aims and Objective.....	5
Requirement Gathering.....	6
Baseline project plan.....	7
Introduction	7
System Description.....	7
Context Diagram	8
Feasibility Assessment.....	8
Scheduling Feasibility.....	8
Economic Feasibility.....	12
Technical Feasibility.....	12
Operational Feasibility.....	13
Legal and Contextual Feasibility	13
Political Feasibility	13
Management Issues.....	14
Team Configuration and managements.....	14
Communication Plan	14
Project standards and procedures	15
Analysis phase.....	15
Requirement Determination	15
Requirement gathering.....	16
Process Modeling.....	17
Logic Modeling.....	19
Data Conceptual Modeling	22
Data dictionary for each entity	24

Introduction

- ✓ In the dynamic landscape of the educational institution, effective management of resources is crucial for ensuring a smooth and efficient operation. As first-year students at JNEC, we embarked on a mini-project that tackles a common challenge on the campus. Our mini project focuses on developing a Mess Stock and Financial Transaction system, a solution designed to address the challenges associated with managing the stock of consumables in the mess facilities and handling financial transaction seamlessly.
- ✓ The mess, being a vital hub for student nutrition and community interaction, requires a systematic approach to inventory control and financial tracking. Our proposed system aims to enhance the overall efficiency of these operations, providing real-time insight, reducing manual errors, and providing a more organized and accountable environment within the university mess facilities. Furthermore, by digitizing financial transactions, our system will enhance security measures, mitigating risks associated with manual handling of cash. This will instill confidence among students, staff, and management alike, ensuring a secure and trustworthy environment within the mess facilities.
- ✓ We chose the mess stock and financial system as our mini project topic because it addresses a critical aspect of operational efficiency and resource management in various institutional settings. By focusing on this area, we aim to develop a system that ensures the timely availability of essential supplies, reduces waste, and optimizes budget allocation. This project combines practical inventory management with financial oversight, offering a comprehensive solution that enhances accountability and supports sustainable practices. Ultimately, our goal is to create a streamlined system that can be widely implemented to improve operational effectiveness and financial transparency in any organization.
- ✓ Overall, our goal is to make the mess system work better by using technology to track food and money more efficiently. We're doing this because we believe in making things clear, efficient, and responsible in the university. This project isn't just about fixing current problems; it's about making the campus more modern and forward-thinking.

Important of the topic

Mess stock and financial systems are like the engines that power our economy. They help decide where money goes, how it is invested, and how risks are managed. Understanding them is important because it helps people and businesses make smart choices with their money, grow their wealth, and contribute to overall economic growth. It is like knowing how to navigate a road map so you can reach your destination safely and efficiently.

Problem Statement

- ✓ Inefficient manual tracking of stock or inventory leading to inaccuracies in stock levels. In the current operational framework, the mess team at our institution procures food items from suppliers to provide meals for students. However, there's a problem: they don't share any clear information about how they use or keep track of these suppliers. This lack of transparency creates uncertain about their actions and decisions.
- ✓ Difficulty in identifying and restocking items in a time manner. Our mess team deals with variety of food items ranging from vegetable to diary products. However, without a clear system, it's hard for them to keep track of everything to identify and manage these items properly.
- ✓ Lack of a centralized system for recording transactions and generating bills. Despite our mess team at institution maintain proper track and detail regarding the food items, yet they still rely on traditional paper-based method, which are inefficient and indicate lack of a proper digital system.
- ✓ Possibility of errors in billing, leading to financial inaccurate. Using traditional paper-based methods as mentioned earlier for managing stock and financial transactions can lead to errors in calculations and recording. This happens because they may make mistakes when writing down or calculating numbers. Also, it takes a lot of time to do things this way. These errors and delays can cause financial inaccuracies, meaning the records may not show the correct information about how much money is spent or how much stock is available.
- ✓ Lack of transparency in financial transaction, making it difficult for both students and mess staff in tracking revenue and expenses accurately. Simple example can be, when it comes to student stipends, we often lack clarity on how the mess team calculates them. Instead, we typically only receive a fixed amount, such as between nu 300 to 400, without understanding how this figure is determined.
- ✓ The current problem with mess stock and financial systems often lies in outdated and inefficient manual processes, leading to inaccuracies in inventory tracking and financial management. For example, many institutions still rely on paper-based records or disjointed digital systems, which can result in stock shortages or surpluses, and budget overruns. A specific case is seen in educational institutions where students receive a stipend for meals; without an integrated system, it's challenging to monitor the allocation and usage of these funds accurately. This inefficiency not only impacts the financial health of the institution but also affects the satisfaction and well-being of its members.

Proposed System (Solution)

- The proposed solution to the mess stock and financial system problem is the development of an integrated digital platform that combines real-time inventory management with comprehensive financial tracking. This system will automate data entry to ensure accurate and up-to-date stock levels, reducing the risk of shortages and surpluses. Financial management features will include detailed budgeting tools, expense tracking, and automated stipend allocation for students, ensuring transparency and accountability. By centralizing data and providing real-time analytics, the system will enable better decision-making and resource allocation, ultimately enhancing operational efficiency and financial stability within the institution.
- Utilize a computerized system to keep an eye on the food stock in real-time, ensuring accurate and up-to-date information to the users.
- We setup a centralized system that act like our cashier, recording every stock expense, it will also keep record of amount of meal prepare to the students and generating an accurate bill.
- Improve transaction efficiency by introducing cashless payment option.
- Our system is here to provide transparent reports and analytics, it is like having a personal financial advisor who regularly reviews our accounts, ensuring everything in order and accountable.
- Implement a digital record-keeping system to maintain accurate and well-organized documentation for the future references.

Aims and Objective

Aims

- ✓ Developing a comprehensive automated system for JNEC mess that manages stock, financial transaction, inventory, and expenses.

Objectives

- ✓ Proper interaction with mess runners and organization.
- ✓ Establish a secure database to store information on stock levels, transaction and user details.
- ✓ Choosing an appropriate database management system (DBMs).
- ✓ Developing a system to record and update all mess transaction.
- ✓ Implement alerts such as email or SMS notifications for timely communication, it can be also used to inform mess staff about low stock levels, pending payment or another important update.
- ✓ Providing comprehensive documentation for the system for future references.

Requirement Gathering

Methodology

Method: Iterative

Reason for choosing Iterative.

Our team selected the iterative methodology for developing the mess stock and financial transaction system at JNEC due to its flexibility and capacity for continuous improvement. This approach allows us to break the project into smaller, manageable iterations, incorporating stakeholder feedback at each stage to ensure the solution meets evolving needs effectively. By continuously testing and refining components, we can detect and address issues early, reducing the risk of major setbacks and ensuring a higher quality final product. The iterative method enables seamless adaptation to changing requirements and integration of new features, ultimately delivering a robust, user-friendly, and efficient system.

Supportive Evidence

The iterative method has proven effective in the development of mess stock and financial systems through numerous real-world applications. For instance, in a university setting, implementing an iterative approach allowed the dining services team to roll out an initial version of the inventory management system, gather feedback from staff and students, and make necessary adjustments before the next iteration. This continuous cycle of feedback and improvement led to a system that accurately tracked inventory, minimized waste, and streamlined financial processes, including budget management and stipend allocation. By using the iterative method, the university was able to adapt to user needs and operational challenges in real-time, resulting in a highly efficient and reliable mess stock and financial management system.

Reason for not choosing the other method.

1. Spiral model

Our project needs a quicker and more flexible approach. The spiral model tends to take more time with its careful planning and risk analysis, which might slow down the development process. For a system that deals with financial transactions and needs to adapt fast, a simpler and more iterative method makes more sense. It allows us to do things quickly based on user feedback keeps things at faster pace.

2. Waterfall model

The mess stock and financial system project may involve evolving requirements and the waterfalls models rigid sequential approach might not easily accommodate changes once the development process has started.

3. Case tools

Mess stock and financial systems often involve intricate business rules, calculation and regulatory requirements. Case tools may not offer sufficient support for handling such complexity leading to difficulty in accurately representing and implementation. It is also needed to integrate with various other systems and data sources, such as

inventory management systems and external financial data feeds. Case tools lack features for integrate resulting in additional developing effort and results in integration issues.

4.Rapid Application Development

It might be too rapid for the mess stock and financial system project, potentially leading to compromises in system stability or overlooking critical requirements during the accelerated development cycles. This project demands a balance speed and thoroughness.

Baseline project plan

Introduction

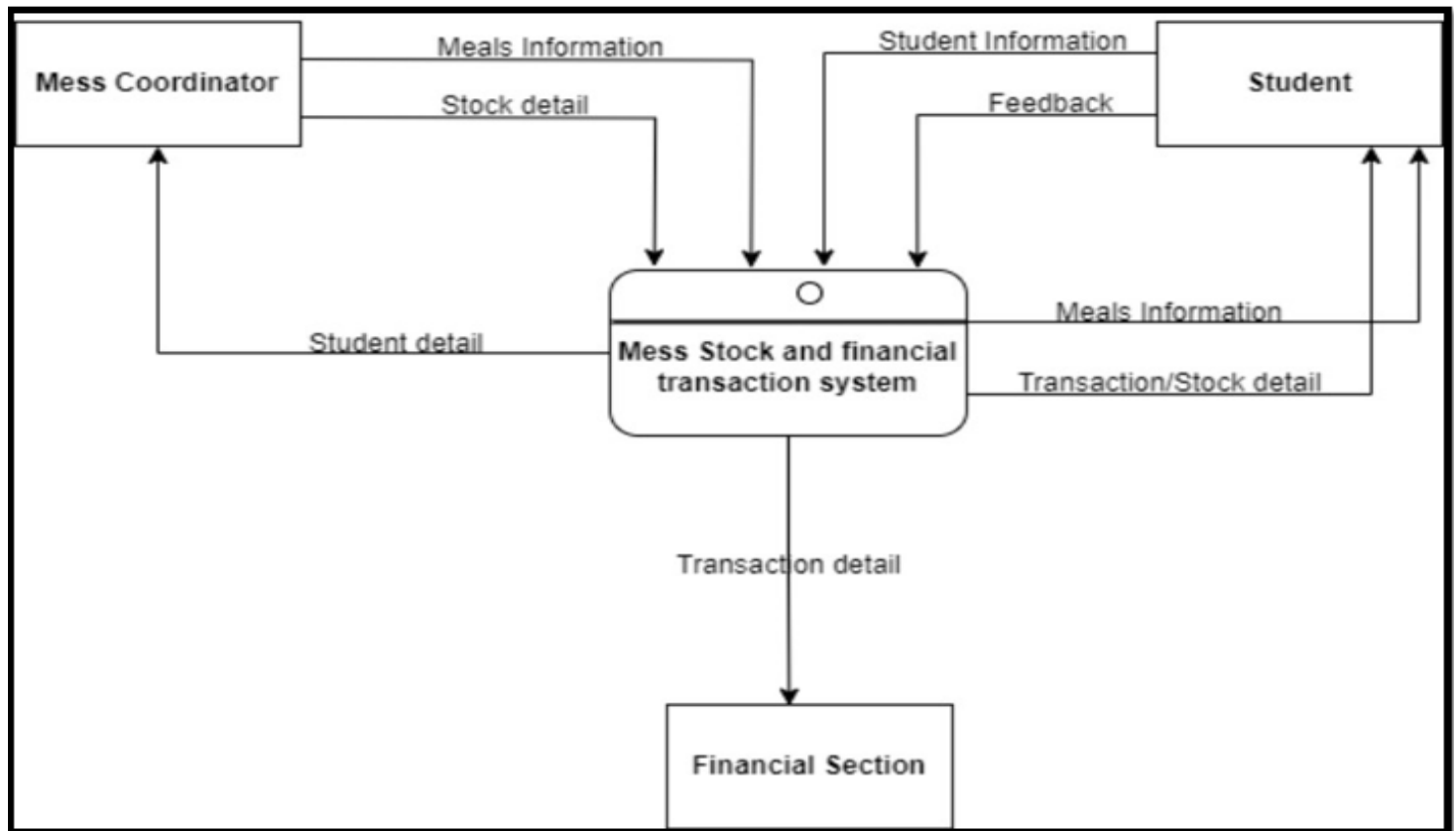
Project Overview: We the first-year students at JNEC have embarked on a crucial mini- project aimed at improving the management of resources within the college mess facilities. Recognizing the significance of efficient resource management in educational institutions, the team is developing a Mess Stock and Financial Transaction system. This system, exploiting modern technology, seeks to streamline the handling of consumables and financial transactions, thereby enhancing efficiency, accuracy, and transparency within the mess facilities. By addressing challenges such as manual stock tracking, lack of centralized transaction recording, and potential errors in billing, the proposed solution aims to optimize resource allocation and operational effectiveness at JNEC.

The project's objectives include establishing proper interaction channels with mess runners, implementing a secure database, selecting suitable database management systems, and developing comprehensive transaction recording mechanisms. By adopting an iterative methodology, the team ensures flexibility and responsiveness to evolving requirements, leading to continuous improvement throughout the development process. Ultimately, the implementation of the Mess Stock and Financial Transaction system promises to modernize operations within JNEC's mess facilities, providing a forward-thinking solution that fosters efficiency and transparency in resource management.

System Description

As meals plays a vital role in human life, that's why every college has a mess management, and it is consider as one of the important parts in the college. Greater the role, greater the responsible, that's why mess management has huge responsibilities regarding mess stocks, provide meals, and keep records of financial transaction. In present scenario the management has to face difficulties in their work as there is no proper place in keeping any record of any transaction in the mess setting. So, the Mess Stock and Financial Transaction System provide a comprehensive software solution designed to streamline and optimize the management of resources within the mess facilities at JNEC mess. It integrates various functionalities to effectively manage stock levels, track financial transactions, generate bills, and ensure transparency and accuracy in operations. Key features include real-time stock management using inventory tracking software, centralized recording of financial transactions, transparent billing and invoicing, comprehensive reporting and analytics capabilities, and digital record-keeping in a secure database. The development of the system follows an iterative approach, allowing for flexibility in requirements gathering and development, and enabling the incorporation of changes based on feedback and evolving needs. Through iterative testing and refinement, the system aims to address the challenges associated with manual stock tracking and financial management, providing a modern and efficient solution for the mess facilities at JNEC.

Context Diagram



Feasibility Assessment

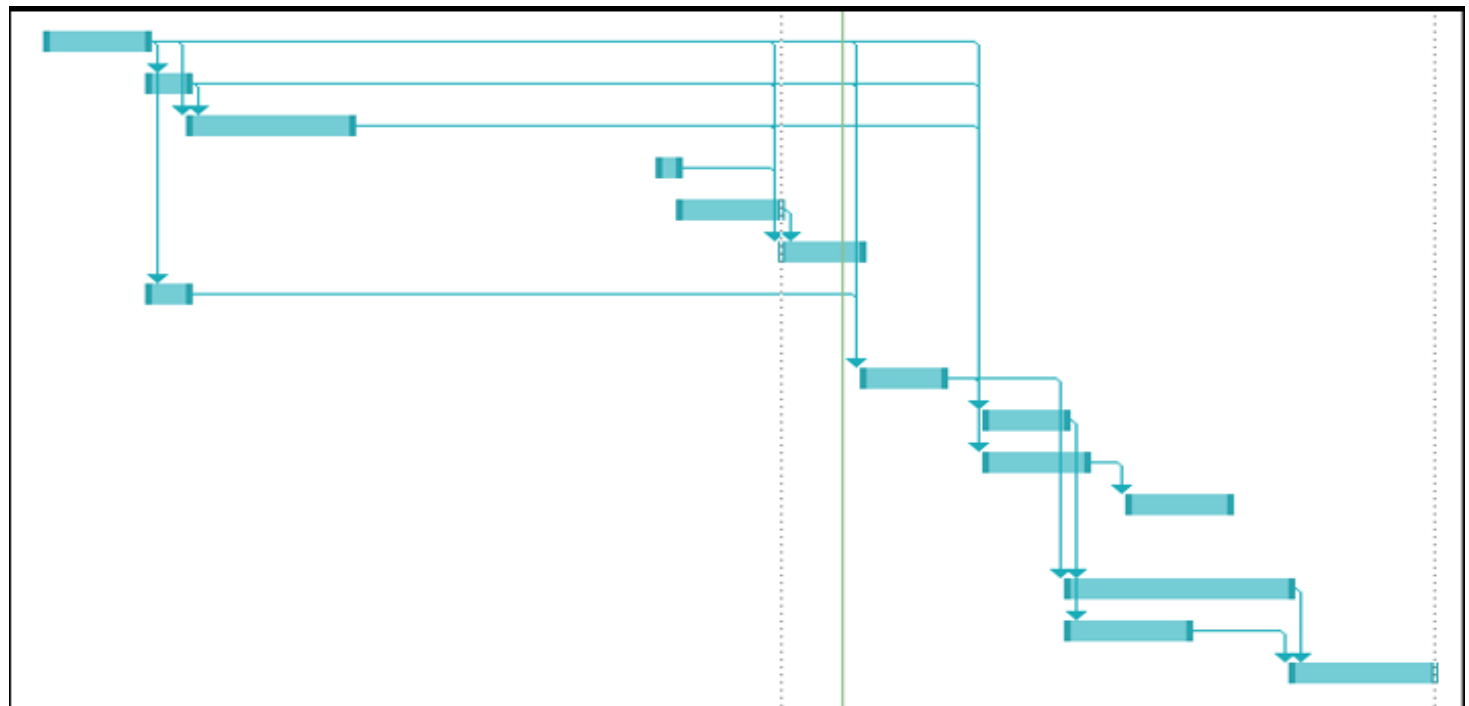
Scheduling Feasibility

Implementing the mess stock and financial transaction system at JNEC is feasible in terms of scheduling because we can start small and gradually expand. Since the system relies in digital tools, scheduling tasks become more efficient. We will work closely with the mess team to ensure a smooth transaction.

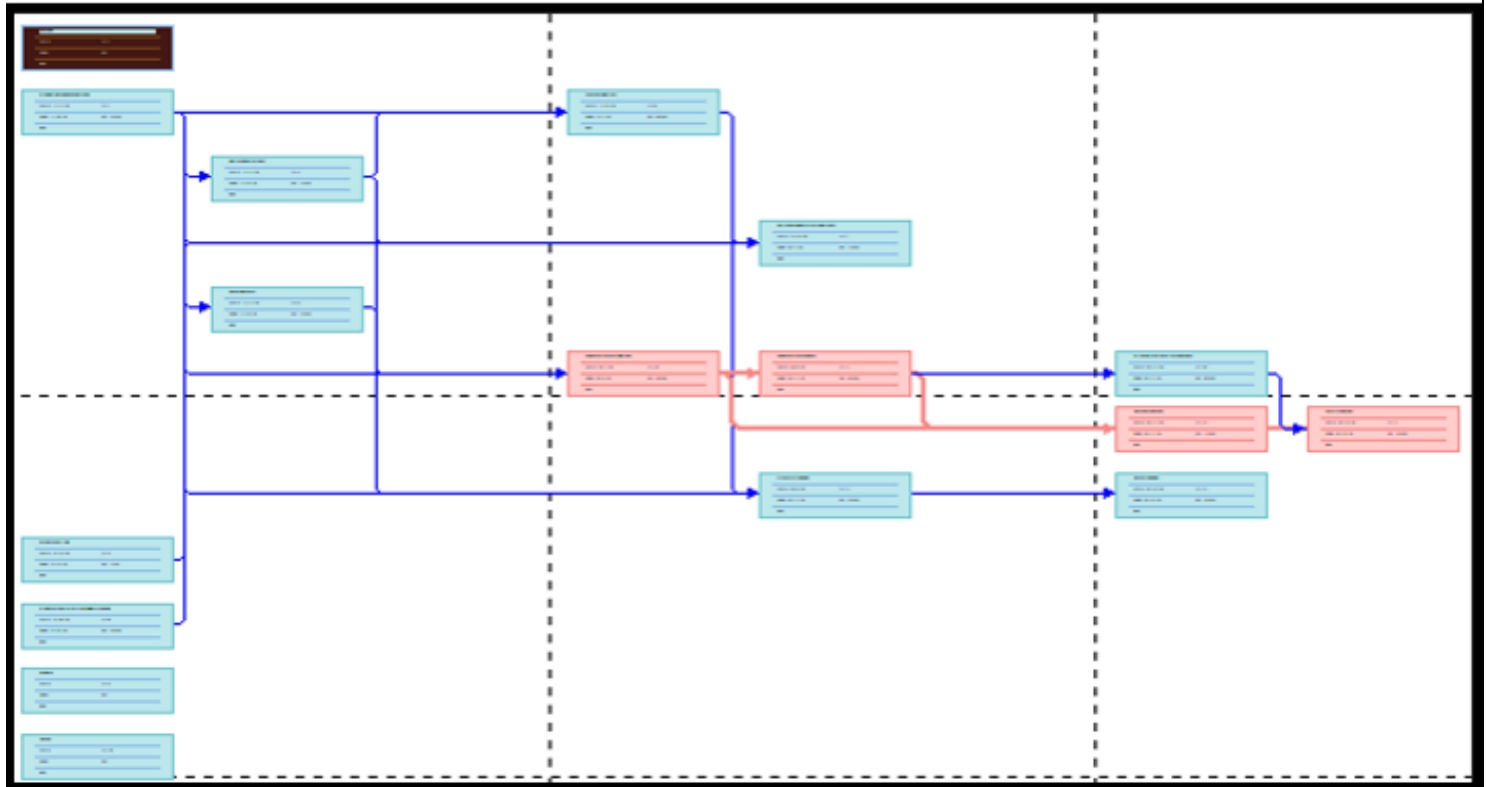
Scheduling

	Task Name	Duration	Start	Finish	Predecessors
1	Planning				
2	Problem definition and scope	3 days	Thu 2/22/24	Mon 2/26/24	
3	Aims and objectives	2 days	Tue 2/27/24	Wed 2/28/24	2
4	Context diagram	6 days	Thu 2/29/24	Thu 3/7/24	2,3
5	Assign team role	1 day	Sat 3/23/24	Sat 3/23/24	
6	Produce the project feasibility schedule	5 days	Sun 3/24/24	Thu 3/28/24	
7	Write base line project plan (BPP)	2 days	Fri 3/29/24	Mon 4/1/24	2,3,4,5,6
8	Meet with user	2 days	Tue 2/27/24	Wed 2/28/24	2
9	Analysis				
10	Requirement of collection	4 days	Tue 4/2/24	Fri 4/5/24	2,3,8
11	Requirement Analysis	4 days	Mon 4/8/24	Thu 4/11/24	10
12	Process modeling	5 days	Mon 4/8/24	Fri 4/12/24	2,3,4,10
13	Data modeling	5 days	Mon 4/15/24	Fri 4/19/24	12
14	Design				
15	Database design	7 days	Fri 4/12/24	Mon 4/22/24	10,11
16	Screen or user interface designs	4 days	Fri 4/12/24	Wed 4/17/24	11
17	Security design	5 days	Tue 4/23/24	Mon 4/29/24	15,16

Gantt Charts



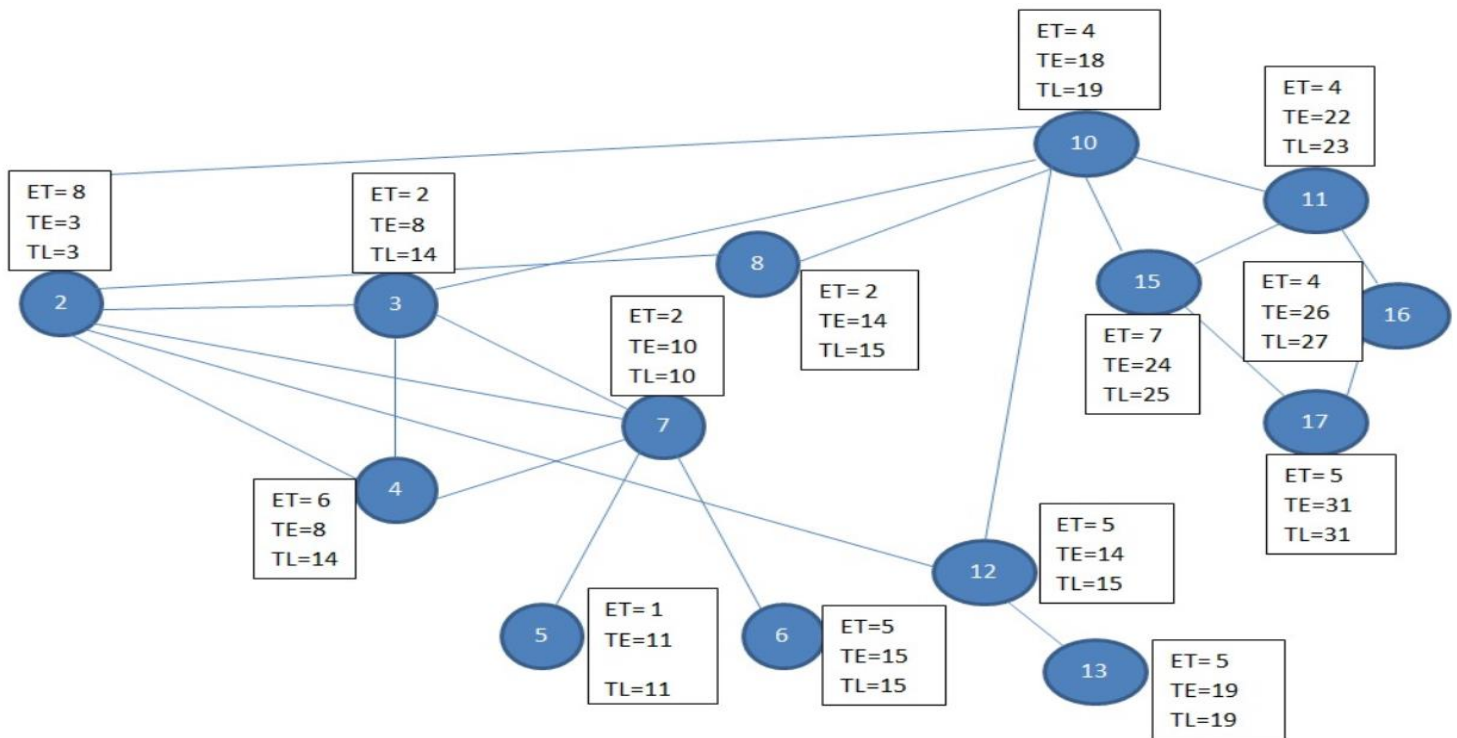
Network Diagram



Critical Path Scheduling (PERT calculation)

SL NO	Tasks	Preceding activities
1	Planning	
2	Problem, definition and scope	
3	Aims and objectives	2
4	Context diagrams	2, 3
5	Assign team role	
6	Produce the project feasibility schedule	
7	Write base line project plan(BPP)	2,3,4,5,6
8	Meet with user	2
9	Analysis	
10	Requirement of collection	2,3,8
11	Requirement Analysis	10
12	Process modeling	2,3,4,10
13	Data modeling	12
14	Design	
15	Database design	10,11
16	Screen or user interface design	11
17	Security design	15,16

Critical path (network diagram)



Critical Path Calculation

Tasks	TE	TL	Slack(TL - TE)
1			
2	3	3	0
3	8	14	6
4	4	14	6
5	11	11	0
6	15	15	0
7	10	10	0
8	14	15	1
9			
10	18	19	1
11	22	23	1
12	14	15	1
13	19	19	0
14			
15	24	25	1
16	16	17	1
17	31	31	0

Economic Feasibility

- We estimate the development cost 15,000.
- Software updates, maintenance: 7000(Which is 46% of the total development cost).

1	Year	0	1	2	3	Total
2	Benefit					
3	Decrease Cost	0	23,700	23700	23700	
4	Total Annual Benefit	0	22571.4	21496.59	20484	
5	Present Value		22571.4	44067.99	64551.99	
6	NPV(Benefits)		22571.4	44067.99	64551.99	64551.99
7						
8	Costs					
9	Development Cost	-1500	0	0	0	
10	Opertional Cost		-7000	-7000	-7000	
11	Total Annual Cost	-1500	-7000	-7000	-7000	
12	Present Value	-1500	-6666.66	-6349.2	-6050.12	
13	NPV(Costs)	-1500	-21666.7	-28015.9	-34065.98	-34065.98
14	Annual Net value					30486.01
15	Return On Investment					0.89
16						
17	Break Even Point					
18	Year-NPV CashFlow	-1500	15904.7	15147.39	14433.88	
19	Overall NPV CashFlow	-1500	904.74	16052.13	30486.01	
20						
21	5 Actual break-even Point=(15904.74-904.74)/15904.74=0.9					
22	Actual break-even Point= 1.9					

- The return on investment (ROI) of our project is 1 year and 9 months and it indicates a promising outlook for the economic feasibility of our project. The project is expected to generate sufficient returns to cover the initial investment within a relatively short timeframe.

Intangible Benefit

- Enhance Transparency: The system provides clear insight into stock levels, financial transactions, and meal preparation, fostering trust and confidence among students, staff, and management. Transparency leads to improved accountability and reduces misunderstandings or mistrust.
- Improved Efficiency: By automating stock tracking, financial transactions, and billing processes, the system saves time and reduces manual errors. This efficiency allows mess staff to focus on other important tasks, ultimately enhancing overall operational productivity.
- Data Accuracy and integrity: The system maintains accurate and well-organized documentation, ensuring data integrity and reliability. This reliable data serves as a foundation for informed decision-making and future planning.

Technical Feasibility

- When considering the technical feasibility for our project, several factors must be evaluated. Firstly, we must ensure the efficiency that's why we have been equipped with advanced hardware components such as computers, coupled with fast internet connectivity.

- Secondly, the system architecture needs careful planning to ensure it can scale effectively, maintain reliability, and deliver optimal performance. That's why we are fortunate to have the guidance of skilled and specialized experts and technicians who provide valuable support and resources, further enhancing our capabilities.
- Thirdly, it's also important to determine how financial data will be stored, processed, and secured within the system. This requires selecting appropriate database technologies and storage solutions that can handle the complexity of the data involved while maintaining data integrity and security. That's we have access to quality software recommendations that streamlines the development process and simplify project implementations.

Operational Feasibility

- Our new financial system for mess stock and financial operations is built to be practical and easy to use. It fits well with our current setup and won't disrupt how we work. We've made sure it's user-friendly and provided training to help everyone learn how to use it. We've also set aside enough time to make sure it works smoothly. Plus, it can grow with us as we need it to. We've thought about any potential problems and have plans to deal with them. In short, our system is designed to work well for our mess stock and financial operations.

Legal and Contextual Feasibility

- Making sure our project about 'mess stock and financial system' is legal and fits our college setting is super important. We need to follow all the rules and guidelines for handling transaction and other work related to mess management in colleges, like campus policies and any wider laws that apply. Also, we've got to keep all the financial information safe, following the rules set by the college. WE need to understand what users need and how our project can help them is key. Plus, we need to make sure our technology works well with what the college already has been doing.
- Additionally, our system is designed to auditable, allowing for easy tracking and verification of transactions to ensure accountability and legal compliance. Furthermore, any contractual agreements related to the system are reviewed to ensure they are legal sound enforceable, thereby, protecting the interest of all parties involved.

Political Feasibility

- To evaluate the political feasibility of our project on 'mess stock and financial system' within the college, we need to ensure it complies with both college policies and any relevant government regulations. Building strong relationships with key stakeholders, such as college administrators, students, and local policymakers, is crucial for gaining support. Public perception on campus is important too, so we must effectively communicate the benefits of our project to address any concerns from students and faculty.
- The proposed is also to make clear political feasibility through its emphasis on transparency, efficiency, and accountability. In the current educational landscape, where transparency and accountability are paramount, the implementation of such a system get significant political support. For college administrators and management, it presents an opportunity to showcase a commitment to modernization and innovation in campus operations. By digitizing financial transactions and implementing transparent billing processes, the system mitigates the risk of errors, ensuring fair and accurate billing for meals consumed. The system is getting developed step by step, which makes it easier for people to get involved and give their opinions. By including mess runners, administrators, and students in the development, it shows that everyone's ideas are important, making it more likely to succeed politically.

Management Issues

Team Configuration and managements

- For our mini-project our team consists of 4 members and each playing a distinct-role vital to our project's objective.
- 1) **Analysis lead**-Puja Lepcha
Puja is our analyst, responsible for conducting in-depth research, gathering requirements and analyzing data crucial to our project success. She will be providing regular update on the analysis part and take lead role in completing our mini project as analyst.
- 2) **Designer**-Anisha Chhetri
Anisha serves as our designer; she will be transforming our project requirement and concept into visually captivating and functional designs. She will mainly focus on the design part of our project that align with project objectives and user expectations.
- 3) **Assistant**- Rinchen Dema
Rinchen will be responsible for offering assistance to designer and analyst in gathering necessary and overseeing the projects progress alongside project manager. She will serve as central point of contact, keeping track of project milestones, deadlines and tasks.
- 4) **Project manager**-Tshering Dorji
Project manager is responsible for providing accurate, timely information, oversee planning, team management, risk mitigation and quality assurance regarding the project to keep things in track through the guidance of our instructor It's the responsible for project manager to provide regular updates on the project progress, any issues or challenges encountered, and seek guidance or approval as needed from the project instructor.

Communication Plan

- ❖ Creating a comprehensive communication plan is crucial for the success of our project, especially in a team setting. While working in our project the team will gather every once a week or more than once depending on the progress of our system. To have an effective communication in the team we mainly focus on:

- **Communication channel**

Communication channels for our project include email, which will be used for formal announcement, document sharing and updates. For instant messaging, we use platform like WhatsApp, Facebook, and also telegram for quick queries. Sometime, for in-depth discussion we manage both virtual, physical meeting and also phone call for urgent matters.

- **Information sharing**

To facilitate effective information sharing within our team, we set up on central places for all our project documents. Like, we have created a secured group in WhatsApp, here, everyone can find what they need, this will make easy to know which version of documents is the latest. We will have a stand-up meeting for quicker discussion to have tasks on a track.

❖ Our project can be managed and collaborated on using Google Drive and team members email addresses.

- i. Tshering Dorji: 05230139.jnec@rub.edu.bt
- ii. Anisha Chhetri: 05230111.jnec@rub.edu.bt
- iii. Rinchen Dema: 05230127.jnec@rub.edu.bt
- iv. Puja Lepcha: 05230126.jnec@rub.edu.bt

Project standards and procedures

The evaluation and acceptance of deliverable ensure that the customer(user) receives the intended values from the project or engagement and that both the parties agree regarding the quality and completeness of the deliverables. So, we focus on:

1) Criteria Establishment

- ✓ Clear criteria will be established based on the requirement gathered from the college administration and potential users (students, staff).
- ✓ Criteria include like menu management, usability (user interface design, ease of navigation), performance like response time, system reliability. Based on college policies and regulatory standards the criteria can be established.

2) Verification and Validation

- ✓ This will achieve through rigorous testing and validation activities of our system like, including functional testing, performance testing and user acceptance testing.

3) Testing and Inspection

- ✓ Testing and inspection will be conducted to identify and address any defects, errors or inconsistencies in the system.
- ✓ To ensure guarantee deliverables of our system, first the project will be checked by the team members and then, it is submitted to our instructor (module tutor) for further assessing and approval of our work.

Analysis phase

Requirement Determination

- Requirement determination used by our group is interview, the purpose of our interview was to understand the opinions of the ASSO and gain insight into the current practices, challenges, and opportunities related to the mess. Additionally, we aimed to obtain accurate and up-to-date information to better understand how the mess functions.

➤ Summary of the interview

Our group conducted an interview with Mr. Phub Tshering as scheduled by our Project Manager. We began our interview by providing a brief explanation of our project and its purpose. Mr. Phub Tshering shared some opinions with us, suggesting the development of a system to record weekly issues and verify total expenditures. We then proceeded with a question-and-answer session. Our first question was about features; our clients would like to see or added to the mess stock and financial system to enhance management like he suggested to implement a feature to prepare a store ledger for clearer information. The second question addressed the biggest challenges faced with the current manual system in the mess. Mr. phub Tshering highlighted the manipulation of prices and quantities by mess runners as a significant challenge. For our third question, we inquired about the desired speed of the system and its importance. Mr. phub Tshering expressed that the system should operate as fast as possible.

Requirement gathering

Functional requirement

- 1) The system should display form to fill up
- 2) The system should allow users to login to the system with their ID and password.
- 3) The system should allow new students to add their information.
- 4) The system should allow students to edit their information, provide profile modification and also allow student to delete its information.
- 5) The System should also allow mess coordinator to add new meals menu.
- 6) The system should allow updating of student's information by the administrator.
- 7) The system should allow updates of stock records by the mess coordinator.
- 8) The system should allow administrator to delete the list of students who have graduate.
- 9) The system should allow mess coordinator to delete list items from the stock records if no longer exists.
- 10) The system should allow students and finance section to view transaction details.
- 11) The system should allow finance section to view stock detail.
- 12) The system should allow user to logout of the system.

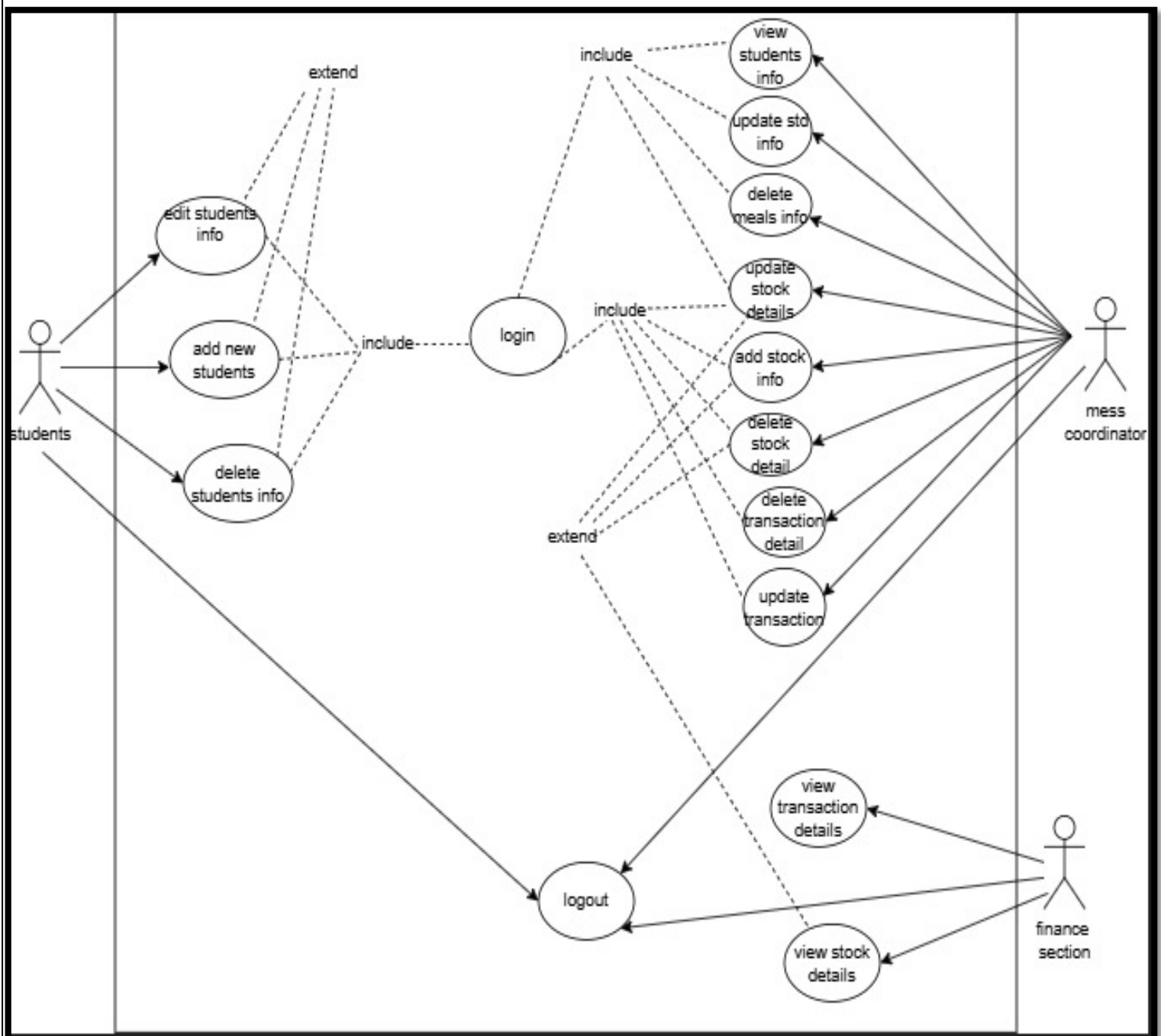
Non-functional Requirements

- 1) The system should work or respond fast, even when lots of people are using the system at the sometime.
- 2) The system should save all the process of the user even when the system is disconnected or frozen due to over access at the same time.
- 3) The system should have a maximum capacity to manage all the information incoming from the database and users.
- 4) To ensure the functionality for the maximum period of time, system should allow or have ability to give privileges to update at least every semester.
- 5) For the system to successfully operate the student's registration services, it should integrate with other IT services.
- 6) The data integrity should be assured by limiting access to the database and by backup functionalities.

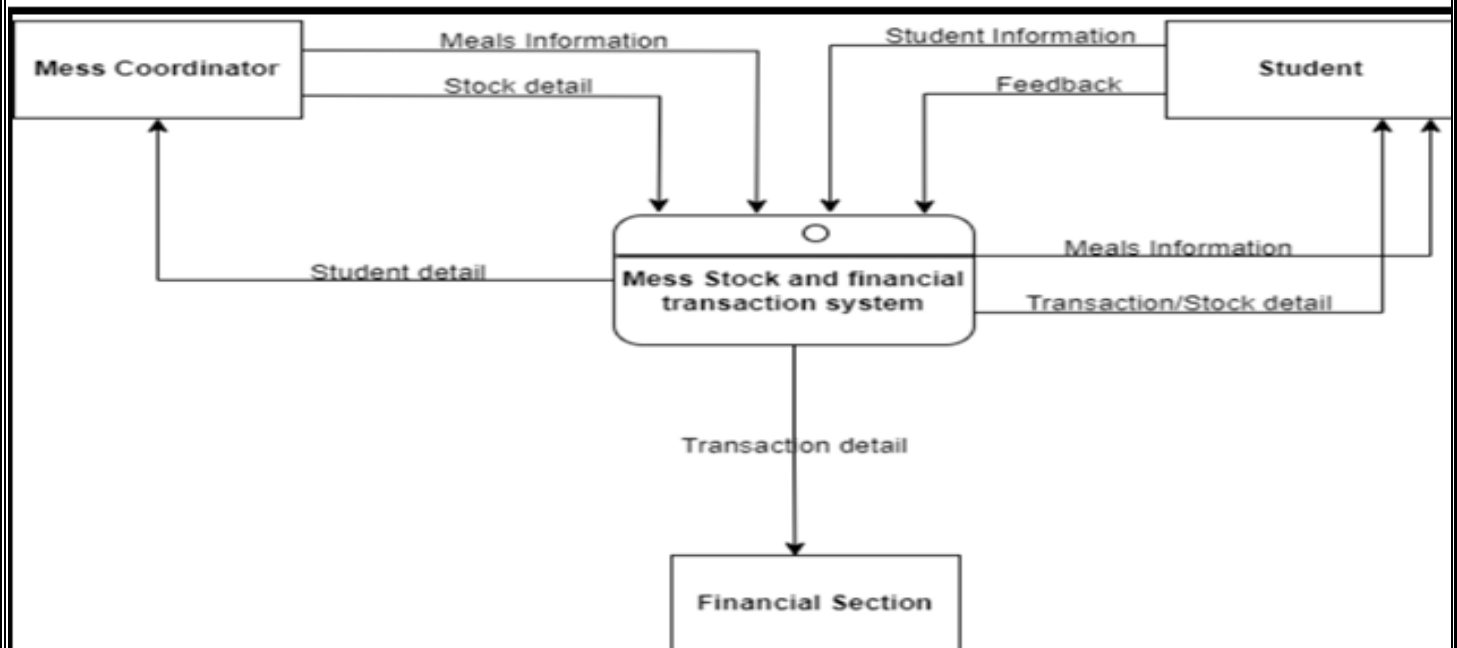
Process Modeling

Use case Diagram.

In the Mess stock and financial transaction system, the use case mainly consists of register case, views transaction and stock details, add, updates and delete stock detail. Similarly add, edit and delete students detail case. This diagram shows the use case diagram for the actions that the actors (Students, Mess coordinator and finance section).

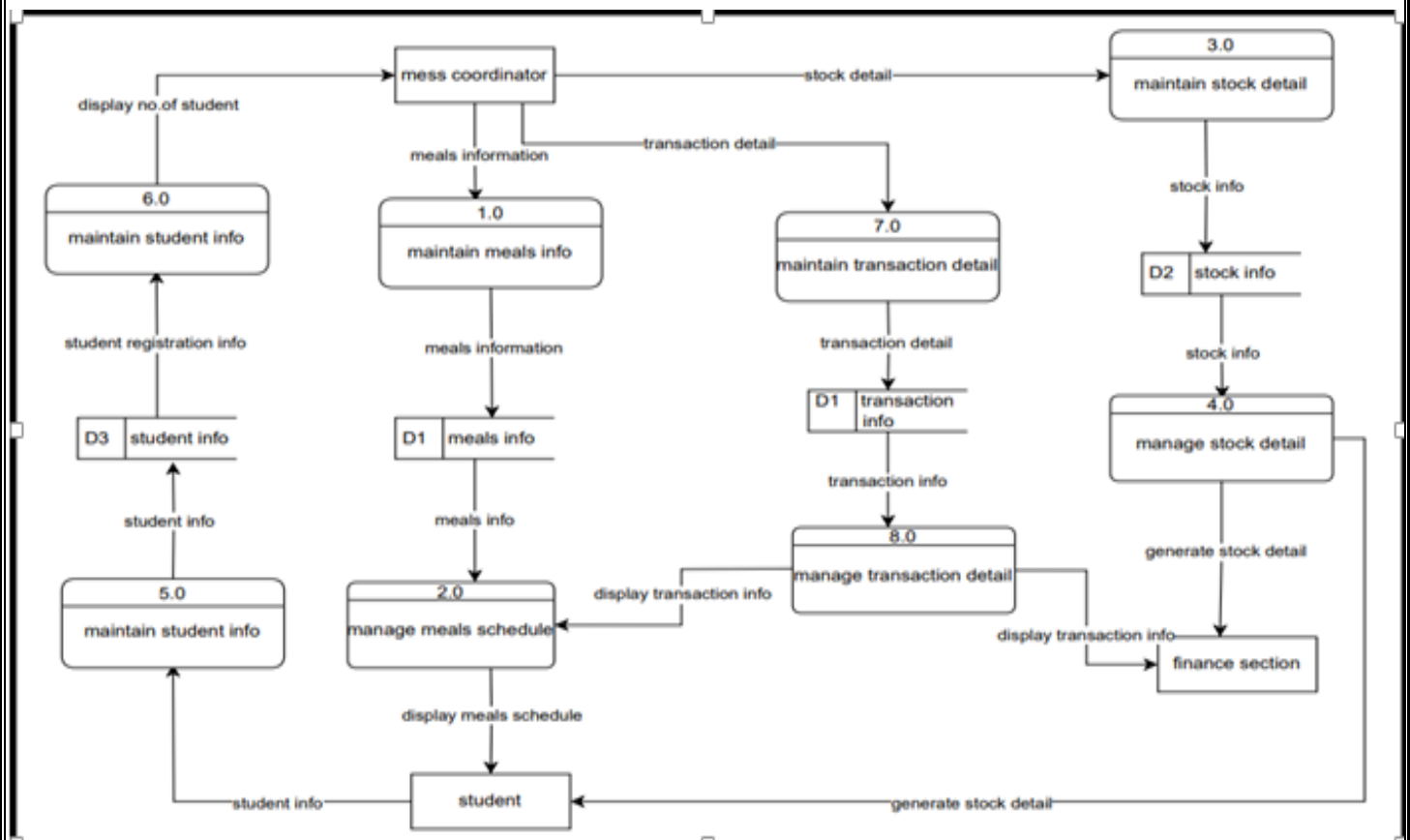


Context Diagram

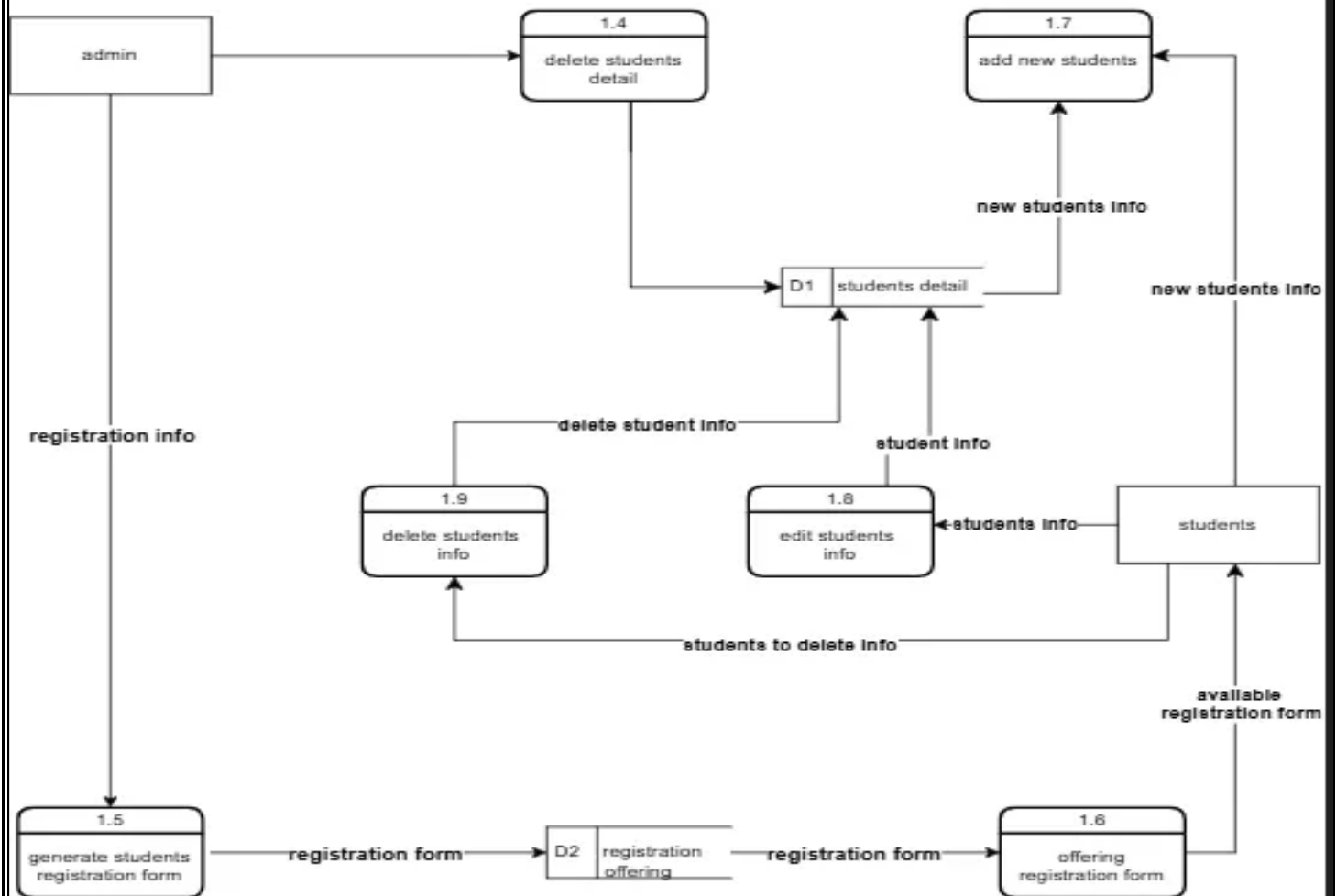


DFD diagram

1. Mess Stock and financial transaction System DFD diagram level 0



2. Mess Stock and financial System DFD diagram level 1



Logic Modeling

1. Structure English

Process 1.7: Add new students

Begin if

Read necessary student information.

Find if student already exists:

 If not, add the student.

 If yes, end process.

End if

End the process.

Begin

Read update stock information by mess coordinator

Do

If data collection is successful

Then

Proceed to communication

Else

Correct any mistakes found

Repeat data gathering

End if

Until all required data is collected accurately.

End.

Process 3.0: Maintain stock detail.

2. Decision Table

Decision Table for process 1.4: Add students.

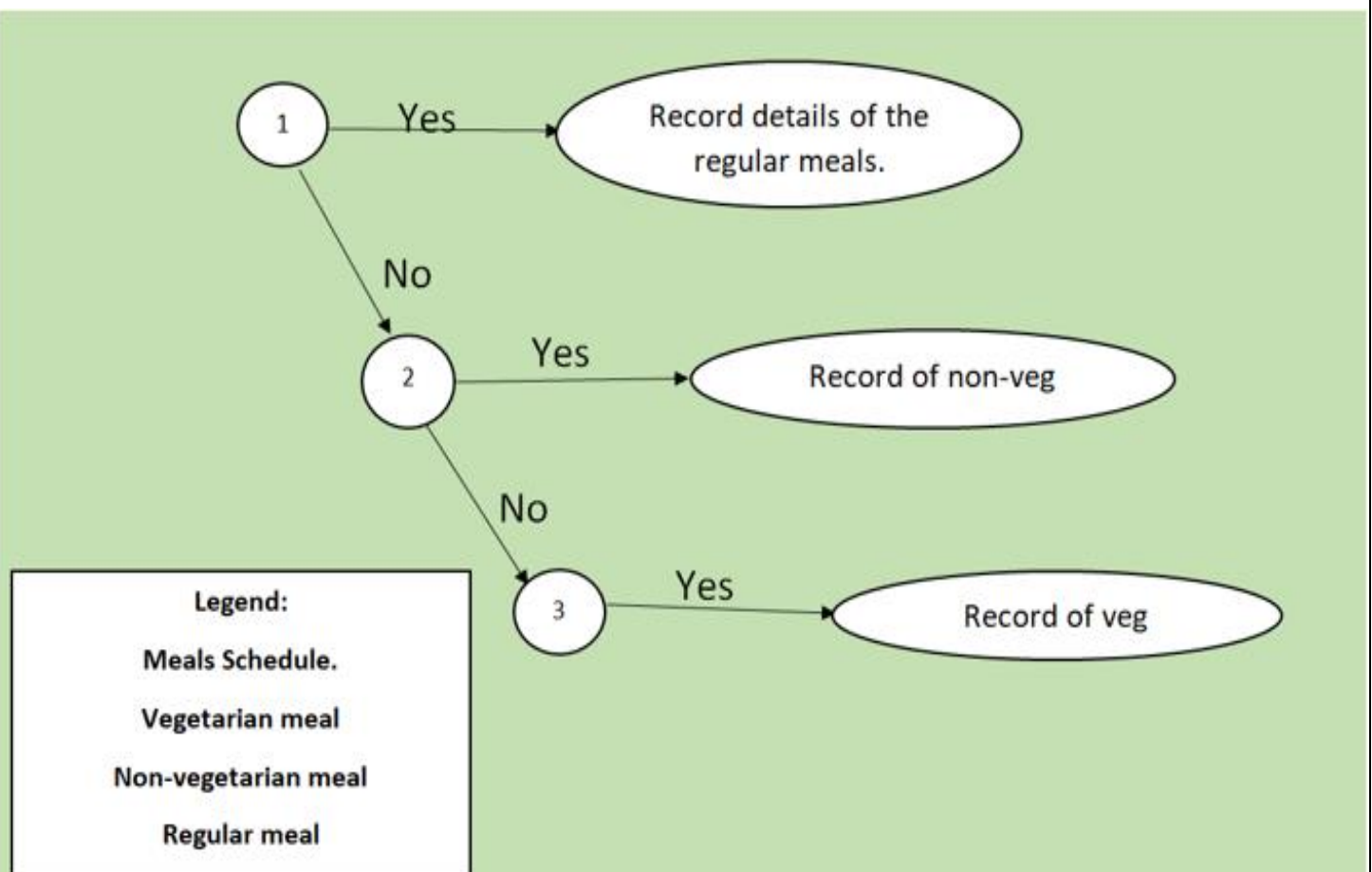
Sl.NO	Conditions/Actions	1	2	3	4	5	6
1	Student Registered	Yes	No	No	No	No	No
2	Valid Subscription	N/A	Yes	Yes	Yes	Yes	No
3	Space Available	N/A	Yes	Yes	Yes	No	N/A
4	Payment Up-to-Date	N/A	Yes	Yes	No	N/A	N/A
5	Dietary Restriction	N/A	No	Yes	N/A	N/A	N/A
6	Eligible for Discount	N/A	Yes	No	N/A	N/A	N/A
7	Not Suspended?	N/A	Yes	Yes	Yes	Yes	Yes
8	1 st Year			✗			
9	2 nd Year		✗		✗		✗
10	3 rd Year	✗					
11	4 th Year					✗	

3. Decision Tree

Decision Tree for process 1.0: Manage meals schedules.

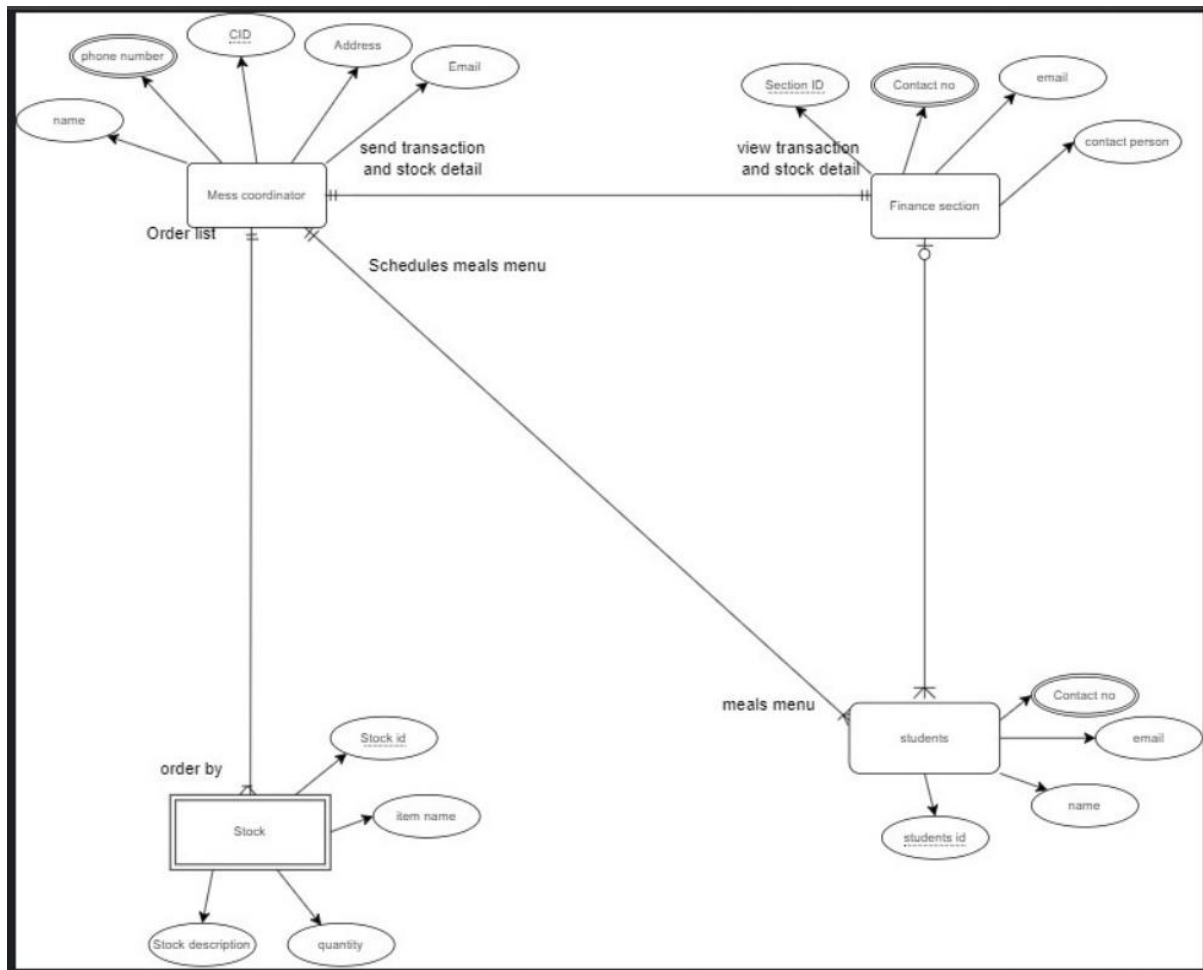
Conditions/Courses of action	Rules								
	1			2			3		
Day of the week	M			Th			TWFSS		
Meals time	B	L	D	B	L	D	B	L	D
Veg and Non-Veg	N	N	Y	N	N	Y	N	N	N
Regular meals	Y	Y	N	Y	Y	N	Y	Y	Y

Decision Tree for process 1.0: Manage meals schedule



Data Conceptual Modeling

✓ ERD diagram



✓ Normalization

Relational table between the entities

Mess Coordinator		
user detail	data type	constraints
CID	Int(20)	PK
name	Varchar(40)	
email	Varchar(40)	
address	Varchar(40)	
phone_number	Int(20)	

Finance Section		
User detail	data type	constraints
section_ID	Int(20)	PK
email	varchar(40)	
contact_number	varchar(40)	
contact person	int(40)	

Stock detail		
Item detail	data type	constraints
stock_id	int(20)	PK
stock_name	varchar(40)	
Stock_des	varchar(40)	
quantity	int(20)	

students detail		
user detail	data type	constraints
students_ID	int(20)	PK
email	varchar(40)	
name	varchar(40)	
contact_number	int(20)	

Relationship between mess coordinator and finance section (1 to 1)

Section_id(PK)	email	contact_no	contact_person	CID(FK)

Since, contact number can be multivalued, so we create another table.

Contact_no	Section_id(PK)

Relationship between student and finances section (1 to many)

Students_id(PK)	name	email	contact_no	section_id(FK)

Since name is a composite value, we decompose into first name and last-name

Students_id	First name	last name	contact_no	section_id(FK)

Contact Number is a multivalued, so we create another table with and primary key

Contact_no	students_id(PK)

Relationship between mess coordinator and stock (1 to many)

Stock_id(PK)	Stock name	stock description	quantity	CID(FK)

Data dictionary for each entity

1. Mess coordinator

Attribute	Description	Data type	length	Constraints
CID	Unique identifier for each mess coordinator	INT		Primary key
name	Name of the mess coordinator	VARCHAR	40	Not null
email	Unique identifier and act as a candidate key	VARCHAR	40	Not null
address	Provide location of a person and act as a candidate key	VARCHAR	40	
Phone number	Multivalued attribute	INT	8	

1. Students

Attribute	Description	Data type	length	constraints
Student id	Uniquely identify each students	VARCHAR	40	Primary key
email	Unique identifier and is a candidate key	VARCHAR	40	
Name	Name of the students	VARCHAR	100	
Contact no	Phone number of a students and mostly it is multivalued	INT	8	
Section id	Finance section id	INT	VARCHAR	Foreign id

3. Stock detail

Attribute	Description	Data type	length	constraints
Stock-id	Uniquely identify each stock item	INT	40	Primary
Stock name	Name of each items/stock	VARCHAR	100	
Stock description	Describe about the items like manufacture date, expire date, MRP, ingredient	VARCHAR		
quantity	No of items	CHAR		
CID	MESS coordinator id	INT		Foreign key

4. Finance Section

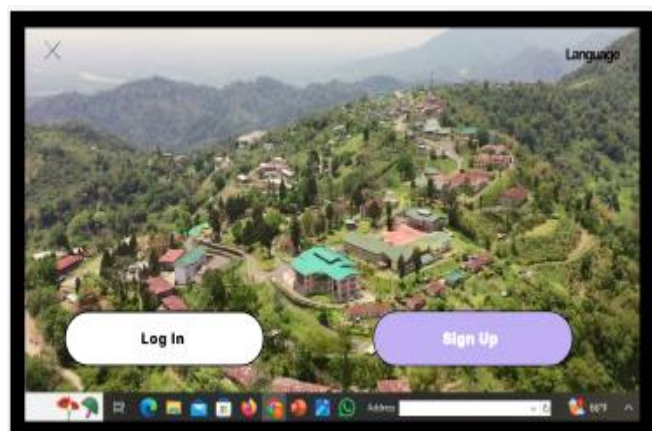
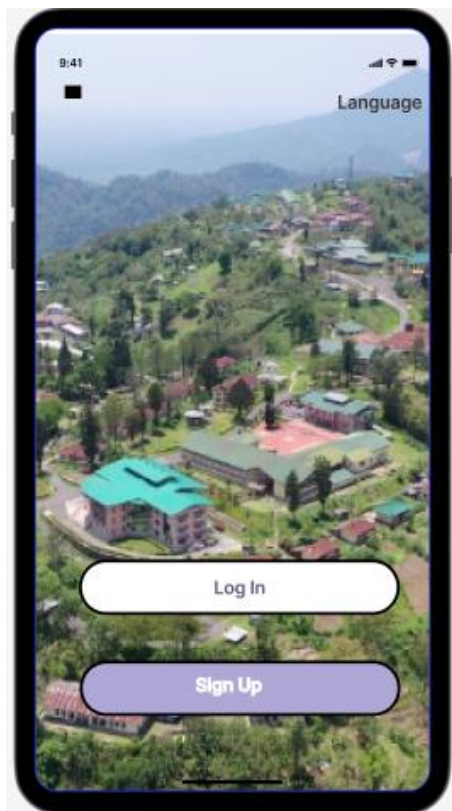
Attribute	Description	Data type	length	constraints
Section id	Uniquely identify finance section	INT	40	Primary key
Email	It's also uniquely identify each attribute	VARCHAR		
Contact number	Phone number of a person or a section(Dept.)	INT	8	
Contact person	Information about a person working in a finance section. Assign one person to be contract.	VARCHAR	40	

Design Phase

We group have design user interface application both in mobile and Desktop



Within the app, users are presented with login and signup pages



New users are required to sign up since they don't have an account. To sign up, users must follow a specific procedure.

1. Enter your name

Create Account
Step 1 of 4

What's your name?
Enter the name you use in real life.

First name Surname

[Already have an account?](#)

[Continue](#)

By tapping "Continue", you acknowledge that you have read the [privacy policy](#) and agree to the [Terms of service](#).

Create account
Step 1 of 4

What's your name?
Enter the name you used in real life?

First name Surname

[Already have an account?](#)

[Continue](#)

By tapping "Continue", you acknowledge that you have read the [privacy policy](#) and agree to the [Terms of service](#).

2. Choose your date of birth

Create Account
Step 2 of 4

What is your date of birth?
Choose your date of birth.

[Already have an account?](#)

[Continue](#)

By tapping "Continue", you acknowledge that you have read the [privacy policy](#) and agree to the [Terms of service](#).

Create account
Step 2 of 4

What is your date of birth?
Choose your date of birth.

[Already have an account?](#)

[Continue](#)

By tapping "Continue", you acknowledge that you have read the [privacy policy](#) and agree to the [Terms of service](#).

3. Set a password



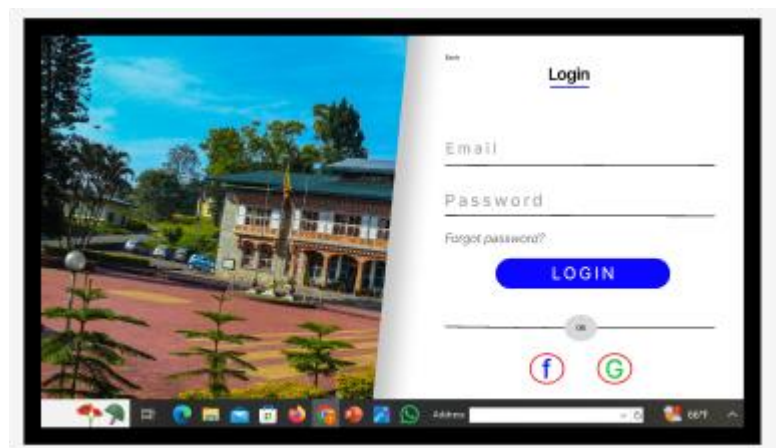
4. Enter your email address

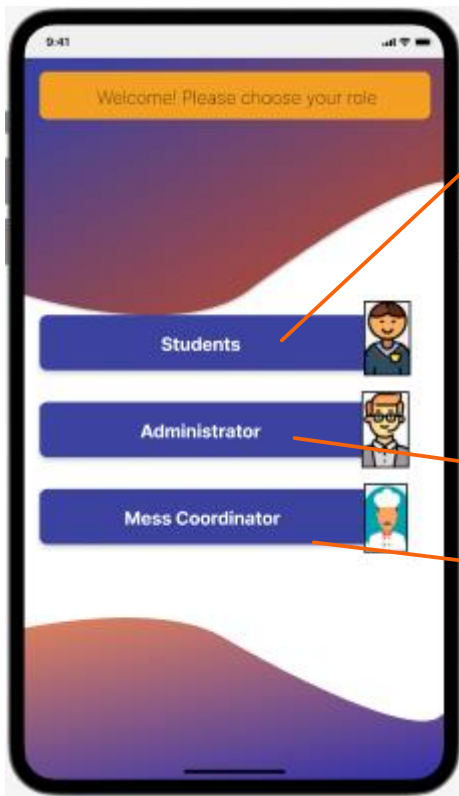


Once these steps are completed, you will receive a confirmation message, and you can then press continue button to return to do a log in.

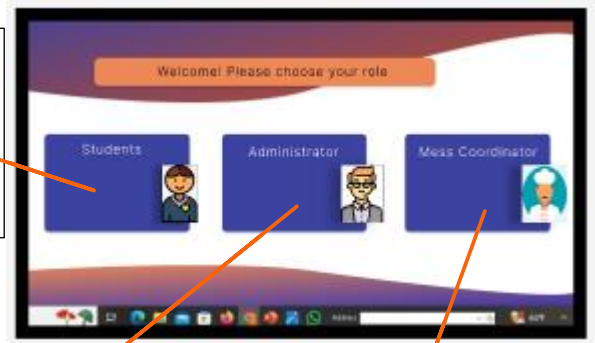


Log in with your new credentials.





As a student, you will have access to view the meals schedule and transaction detail without the privilege to make change.



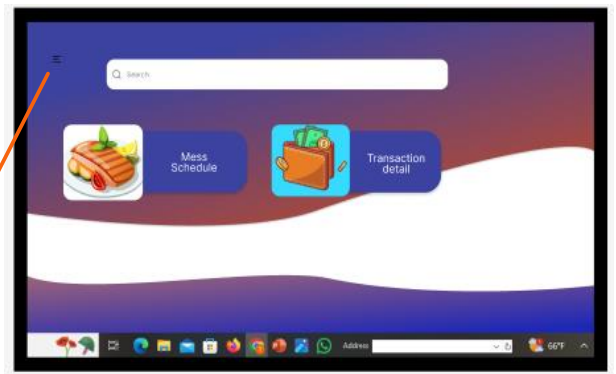
As the administrator, you will have a privilege to make change on the list of the students.

As a mess coordinator, you will manage meals plan, oversee daily menus, and track inventory in the mess.

After logging in, you will be shown a page where you must choose your role.

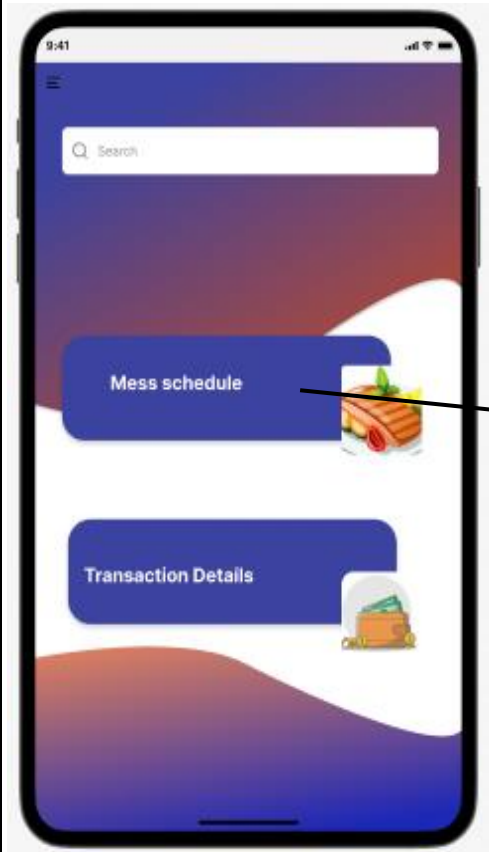
Home page



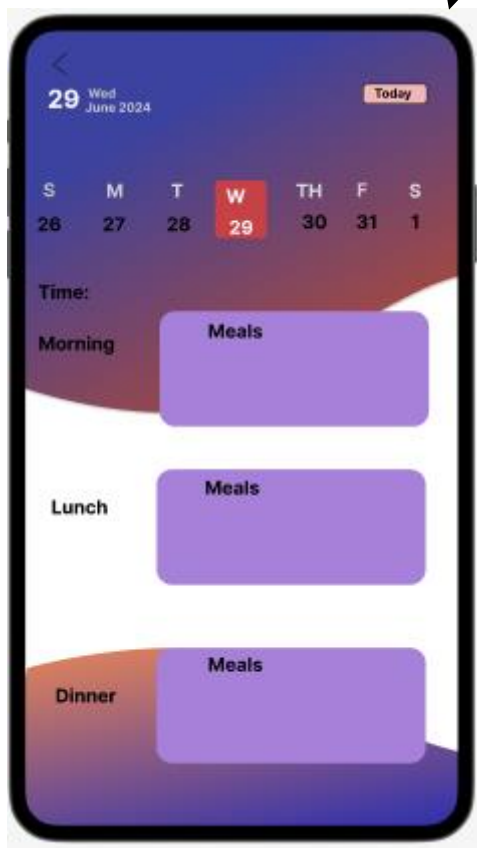


Menu icon

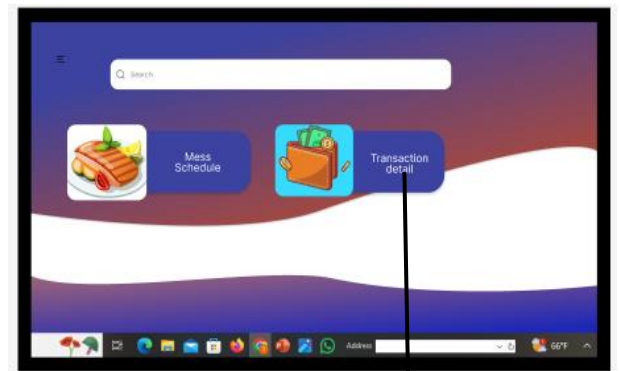




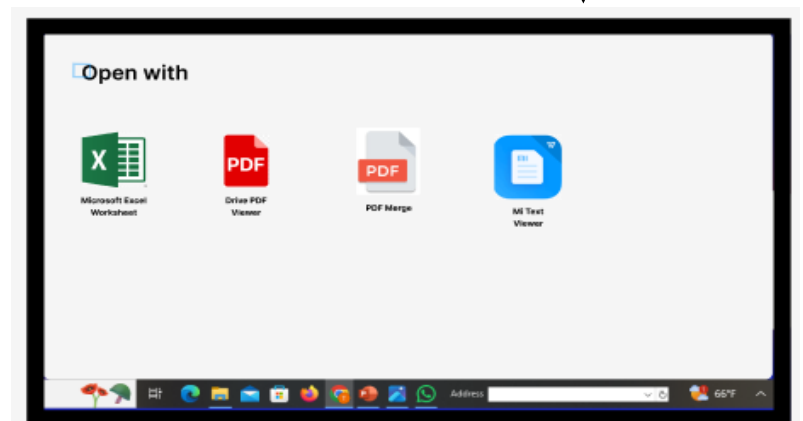
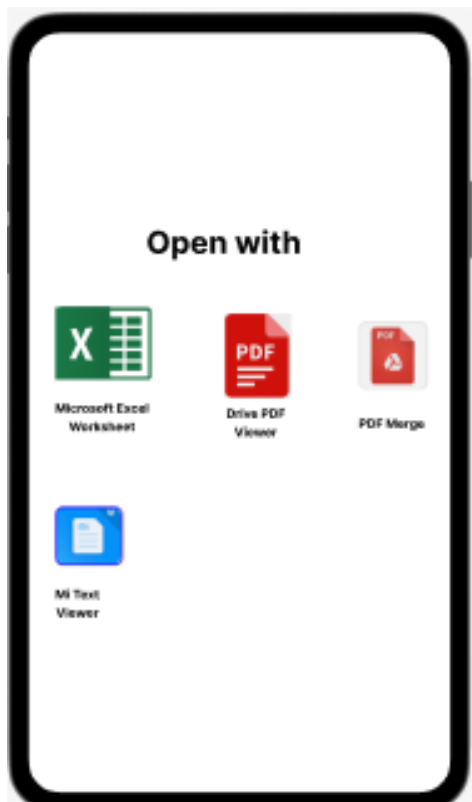
Mess schedule button display meals schedule for the students



It displays the meals items along with their corresponding time and date.



To view the transaction detail, the app will launch an Excel spreadsheet.



It provides a stock detail and transaction details.

The image shows two Excel spreadsheets side-by-side. The left spreadsheet is titled 'STOCK REGISTER' and the right is titled 'ISSUE REGISTER'. Both contain tables for tracking inventory and transactions over three weeks.

Sl. No.	Particulars	Quantity	Rate	Amount	Amount
1st week shopping					
1	Rice	800	30	24000	24000
2	Potato	500	40	20000	20000
3	oil	70	160	11200	11200
4	cheese	80	120	9600	9600
TOTAL				64800	
2nd Week shopping					
1	Rice	500	35	17500	17500
2	cabbage	50	20	1000	1000
3	salt	10	15	150	150
TOTAL				18650	
3rd week shopping					
1	chicken	200	50	10000	10000
2	oil	90	160	14400	14400
3	mushroom	60	50	3000	3000
TOTAL				27400	
TOTAL EXPS IN A MONTH				110850	
Other Exps				2000	
Budgeted amount				Amount	Amount
Total Expenditure				112850	440000
Other expenses				500	113350
Total Stipend				326650	

Particular	Rate	Amount	Amount
1st week shopping			
Rice			
Potato			
oil			
cheese			
TOTAL			
2nd week shopping			
rice			
cabbage			
salt			
TOTAL			
3rd week shopping			
chicken			
oil			
mushroom			
TOTAL			
TOTAL EXPS IN A MONTH			

Excel spreadsheet.

The image shows two Excel spreadsheets side-by-side. The left spreadsheet is titled 'STOCK REGISTER' and the right is titled 'ISSUE REGISTER'. Both contain tables for tracking inventory and transactions over three weeks.

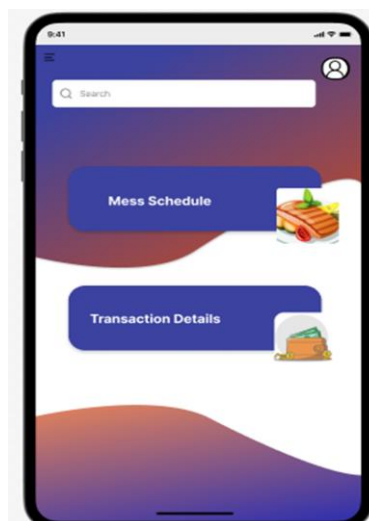
Sl. No.	Particulars	Quantity	Rate	Amount	Amount
1st week shopping					
1	Rice	800	30	24000	24000
2	Potato	500	40	20000	20000
3	oil	70	160	11200	11200
4	cheese	80	120	9600	9600
TOTAL				64800	
2nd Week shopping					
1	Rice	500	35	17500	17500
2	cabbage	50	20	1000	1000
3	salt	10	15	150	150
TOTAL				18650	
3rd week shopping					
1	chicken	200	50	10000	10000
2	oil	90	160	14400	14400
3	mushroom	60	50	3000	3000
TOTAL				27400	
TOTAL EXPS IN A MONTH				110850	
Other Exps				2000	
Budgeted amount				Amount	Amount
Total Expenditure				112850	440000
Other expenses				500	113350
Total Stipend				326650	

Particular	Rate	Amount	Amount
1st week shopping			
Rice			
Potato			
oil			
cheese			
TOTAL			
2nd week shopping			
rice			
cabbage			
salt			
TOTAL			
3rd week shopping			
chicken			
oil			
mushroom			
TOTAL			
TOTAL EXPS IN A MONTH			

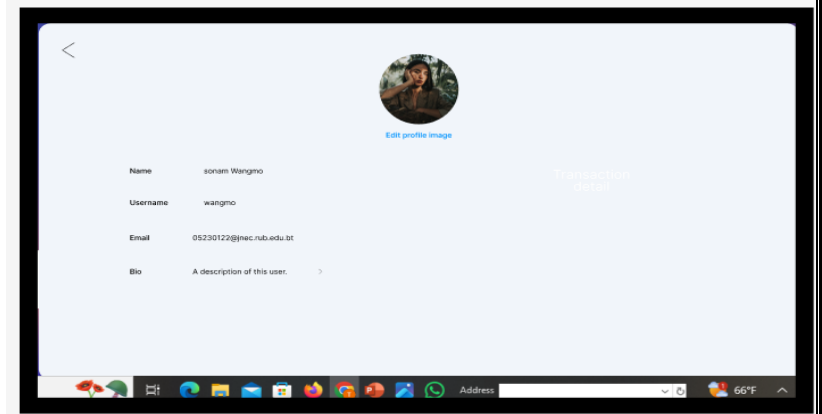
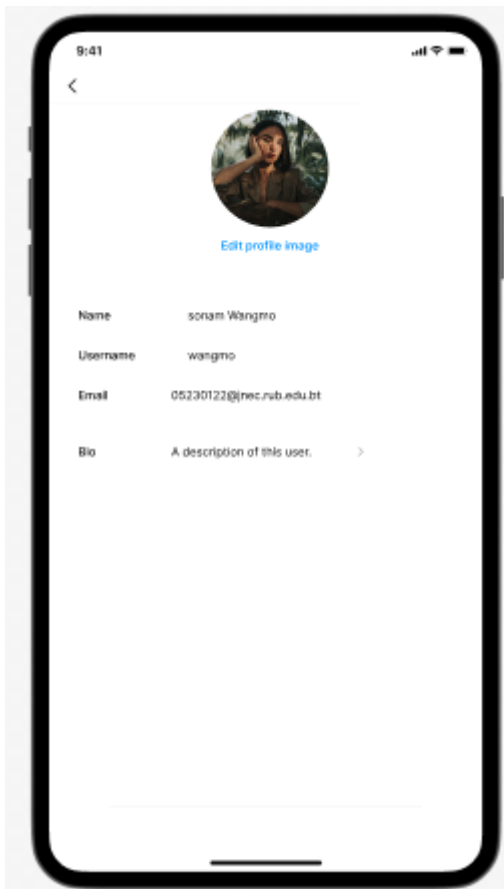


Menu button

1. Home (It will take you directly to the home page)

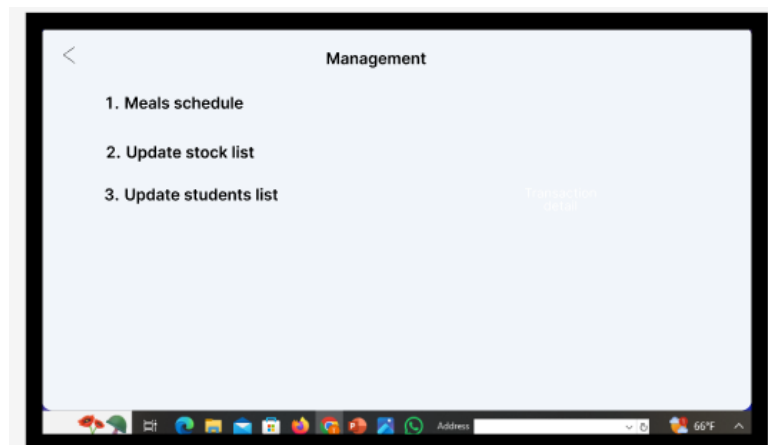


2. Profile



You can manage your account, update your personal information, edit your name and change your profile.

3. Management

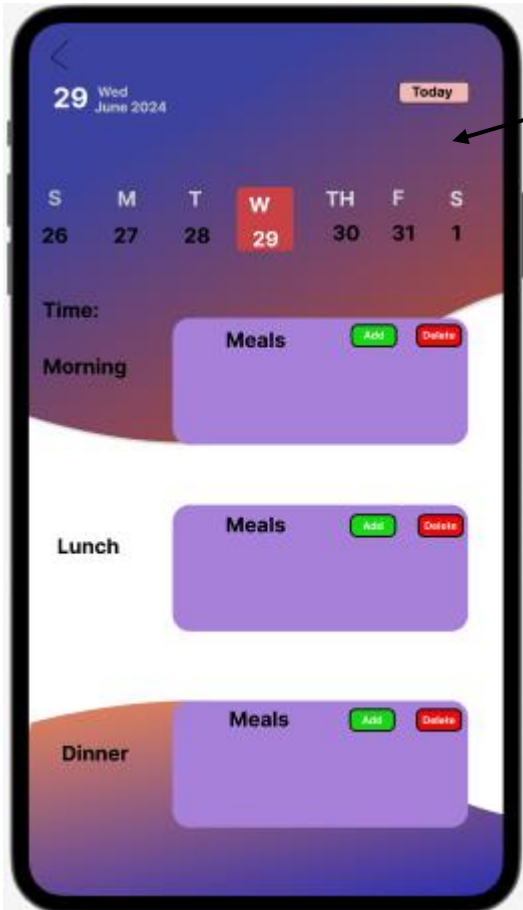


If you are log in as Students, you won't be able to make change to any of these three pages.

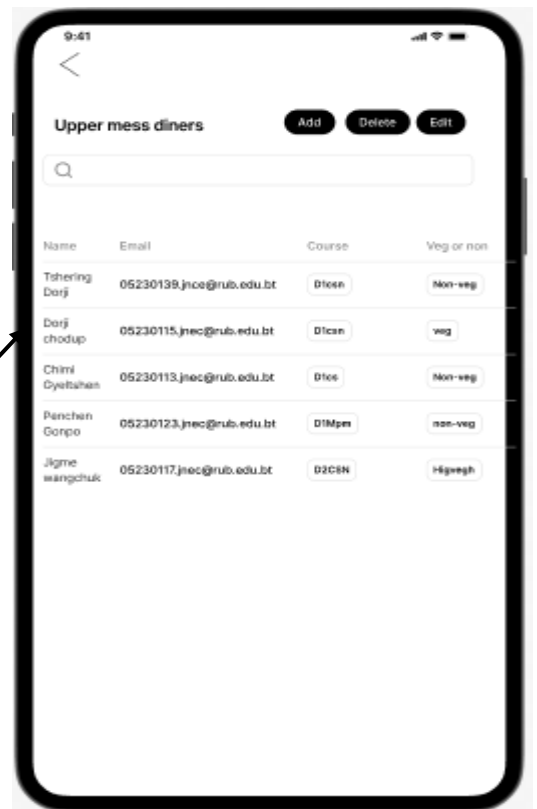
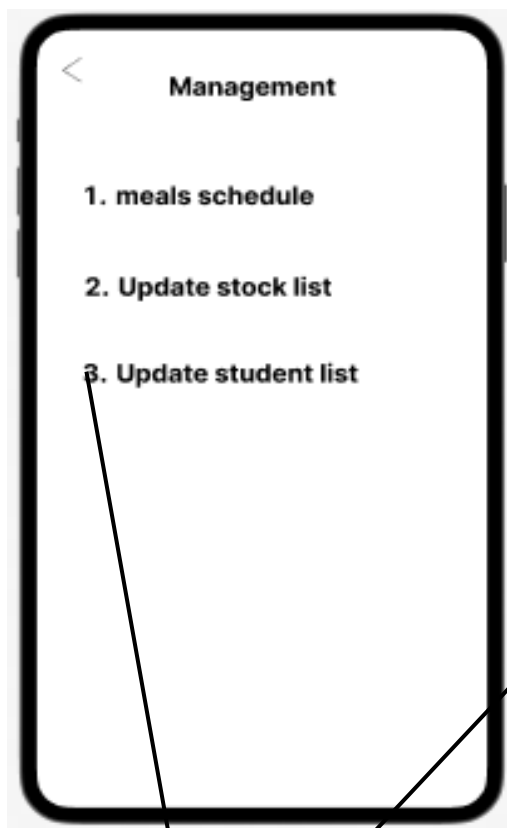
1. Meals schedule
2. Update stock detail
3. Update student list

If you are log in as a mess coordinator, you can make change to

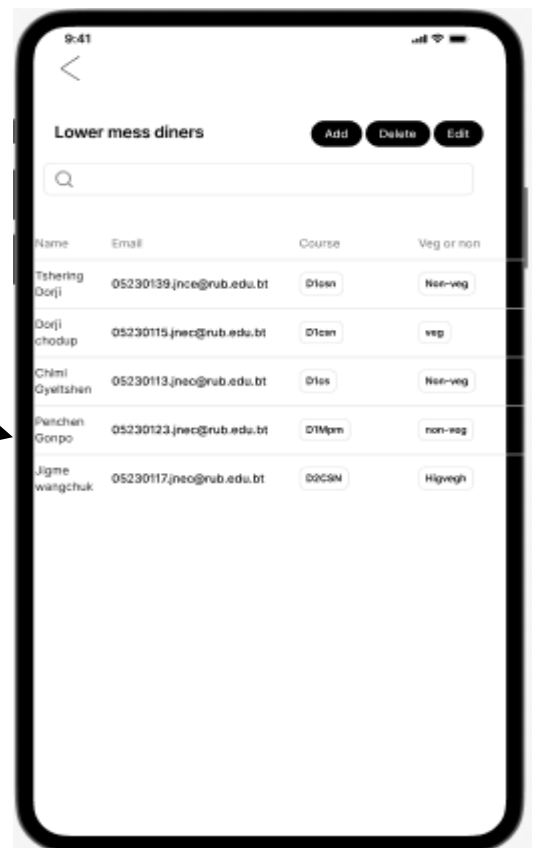
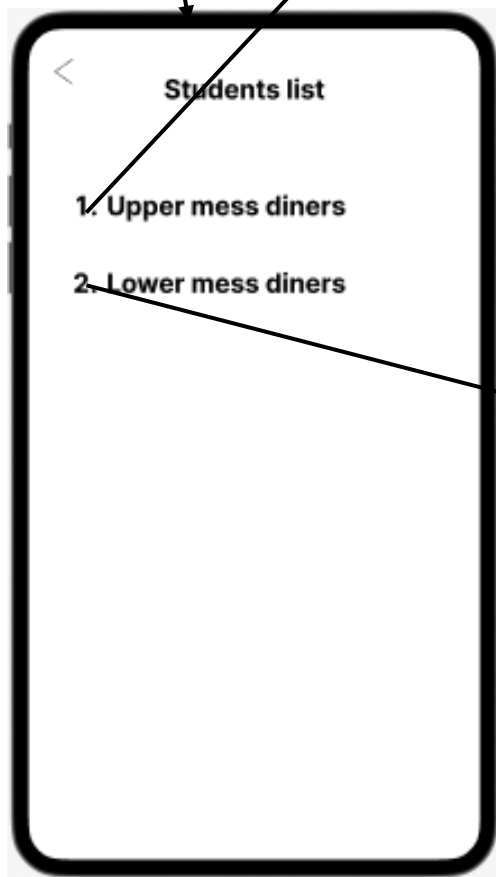
1. Meal's schedule a
2. update stock list

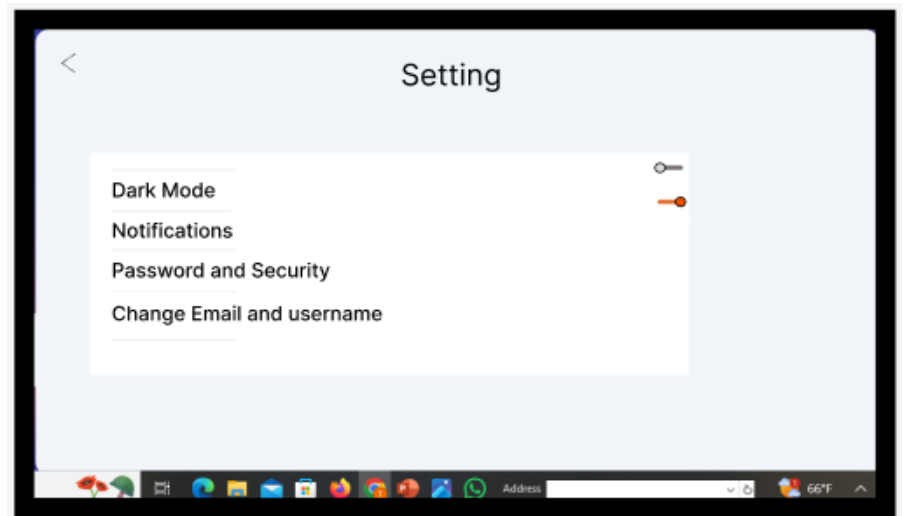


STOCK REGISTER					
E:					
no.	Particulars	Quantity	rate	amount	amount
1st week shopping					
1	Rice	800	30	24000	2400
2	Potato	500	40	20000	2000
3	oil	70	160	11200	1120
4	cheese	80	120	9600	960
TOTAL					6480
2nd Week shopping					
1	Rice	500	35	17500	1750
2	cabbage	50	20	1000	100
3	salt	10	15	150	15
TOTAL					1865
3rd week shopping					
1	chicken	200	50	10000	1000
2	oil	90	160	14400	1440
3	mushroom	60	50	3000	300
TOTAL					2740
TOTAL EXPS IN A MONTH					11085
Other Exps					200
		Amount	Amount		
budgeted amount			440000		
total Expenditure		112850			
other expences		500	113350		
Total Stipend			326650		

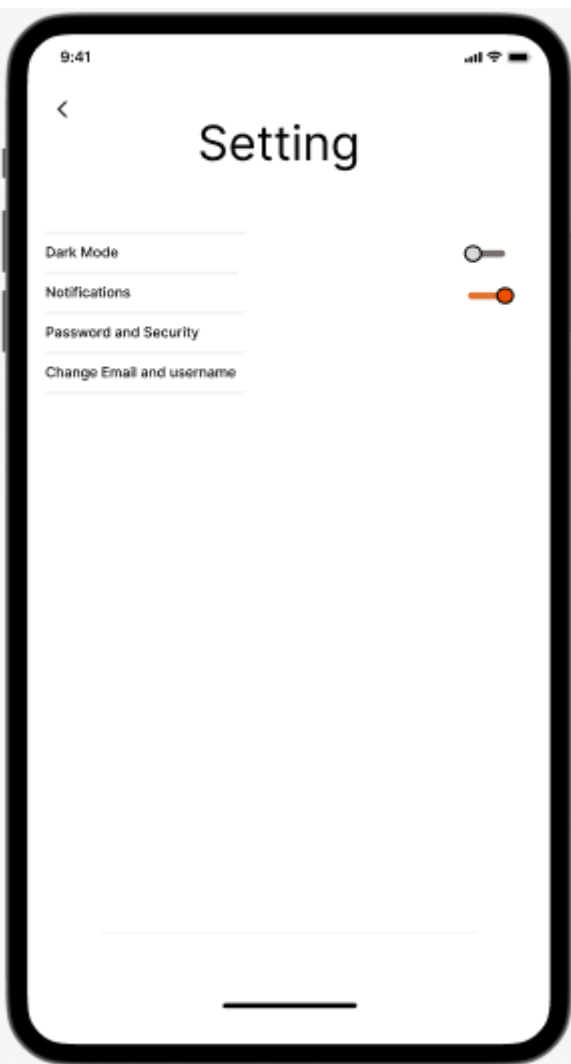


If you are log in as an administrator, you can update student information.





2. Setting



1. Dark mode (theme selection)
2. Notifications (you can turn off and, on the notification,)
3. Password and Security (take you to a page where, you can change your password, hide profile and sensitive data)
4. Change email and username

3. Language

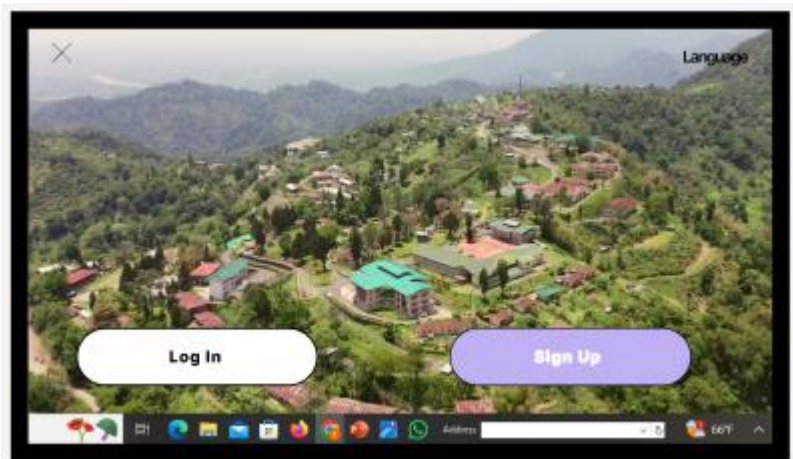


You can select different kind of language. And the default language is English.



It will take you back to the sign up and login page

4. Logout



Conclusion

Our mini-project at JNEC focuses on creating a Mess Stock and Financial Transaction system to improve how our campus mess manages food supplies and money. By using a digital platform, we aim to make inventory management and financial tracking more efficient and accurate. This project will help reduce errors, increase transparency, and provide a safer way to handle transactions. Our goal is to modernize the mess operations, making them more organized and reliable for everyone involved. This system will lead to better resource management and financial practices in our university.

References

TED. (2019, April 19). Figma UI tutorial | Chimamanda Ngozi Adichie [Video]. YouTube. <https://www.youtube.com/watch?v=FTFaQWZBqQ8>

Pusch, B. (2020, April 16). Microsoft project [Video]. YouTube. <https://www.youtube.com/watch?v=ei5xUlksV7o>

Google. (n.d.). Context diagram guides on mess system [Search results]. June 5, 2024, https://www.google.com/search?q=context+diagram+guides+on+mess+system&oeq=context+diagram+guides+on+mess+system&gs_lcrp=EgZjaHJvbWUyBggAEEUYOTIJCAEQIRgKGKABMgkIAhAhGAoYoAHSAQoyOTgyMmowajE1qAllsAIB&sourceid=chrome&ie=UTF-8