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**A SOFTWARE PROJECT MANAGEMENT REPORT  
BASED ON  
FIRST LADIES HALL DINING MANAGEMENT SYSTEM**

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# 1 Introduction

Welcome to the comprehensive documentation of the First Ladies Hall Dining Management System. This innovative project introduces a user-friendly website designed specifically to cater to the needs of residential students within First Ladies Hall. The system has been developed to enhance the overall dining experience for these students, streamlining various aspects of dining management through a convenient online platform. As we delve deeper into this documentation, you'll gain insights into the features, functionalities, and the positive impact our system aims to bring to the dining routines of the residents.

We used Microsoft Project to plan and track every step of making the First Ladies Hall Dining Management System. It helped us organize our work, keep track of time, and communicate with everyone involved. This way, we ensured that we build a system that makes dining easier for the students living in First Ladies Hall.

## 1.1 Background

At the heart of every university, Residential Halls stand as vital hubs, providing students with a nurturing living environment. Within these halls, the management of meal services emerges as a pivotal responsibility. With students hailing from diverse corners of the country, maintaining a balance of nutritious and timely meals becomes imperative, directly influencing their academic performance and well-being.

Recognizing the multifaceted challenges in orchestrating an efficient dining system, our project introduces a transformative approach – the automation of the hall dining system. The core idea revolves around developing a user-friendly website where students and hall supervisors can seamlessly interact with meal services. This automation promises not only simplicity in the order process but also efficient tracking and management of meal data. We chose Microsoft Project for its robust features that facilitate project planning, scheduling, and management. Its user-friendly interface allows us to easily create and maintain Gantt charts, track progress, allocate resources, and collaborate with team members effectively. Additionally, its integration with other Microsoft Office tools ensures seamless communication and documentation across the project team. Overall, Microsoft Project provides the comprehensive functionality needed to efficiently manage our project from inception to completion.

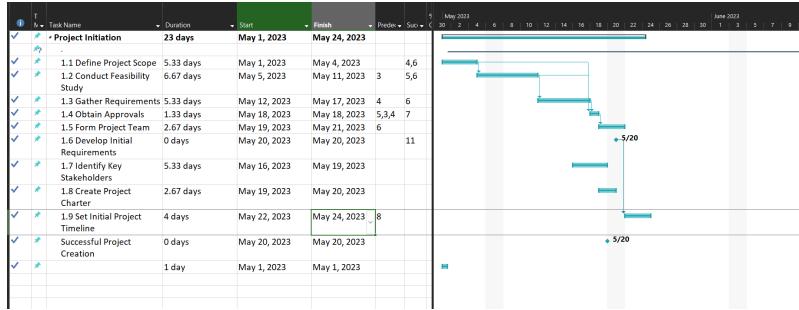


Figure 1: Project Initialization and Gantt Chart

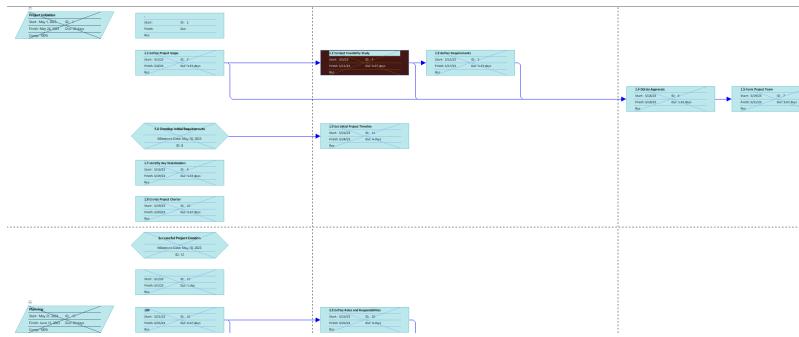


Figure 2: Network Diagram of Project Initialization (after completion)

## 1.2 Benefits and Beneficiaries

This web-based system is a comprehensive solution that extends its advantages to every student enrolled at Shahjalal University of Science and Technology (SUST). The system is thoughtfully designed to accommodate the diverse needs of two primary user roles: Customers, who are the students utilizing the dining services, and Supervisors, entrusted with ensuring the seamless and efficient operation of the dining system. The user will be this system:-

- Supervisors
- Students (Customer)

## 1.3 List of the performance the system will provide

Enhancing user experience and streamlining operations, the system offers a range of features to cater to both customers and supervisors:

- **Intuitive Food Category Display:** Customers are provided with a visually appealing interface that allows them to effortlessly browse through a comprehensive list of food categories.
- **Efficient Food Selection:** Customers can seamlessly explore individual food categories, view detailed information about specific

food items, and conveniently select single or multiple items through the user-friendly website interface.

- **Transparent Pricing Information:** The system ensures transparency by displaying accurate pricing information for each food item. Customers can easily comprehend item prices and track the total amount to be paid, promoting an informed decision-making process.
- **Invoice Generation:** Customers have the convenience of generating a detailed invoice summarizing their selected food items. This generated invoice serves as a comprehensive record of their order, facilitating a smooth and organized ordering process.
- **Order Facilitation for Supervisors:** Supervisors are equipped with tools to efficiently track all generated invoices. This functionality not only aids in monitoring overall system activity but also enables supervisors to assist customers, ensuring a collaborative and supportive ordering environment.

## 1.4 Stakeholders

There are two types of stakeholders:

- Dining managements in halls
- Consumers of the dining ( Students )

## 2 All Calendar year in Details Manner

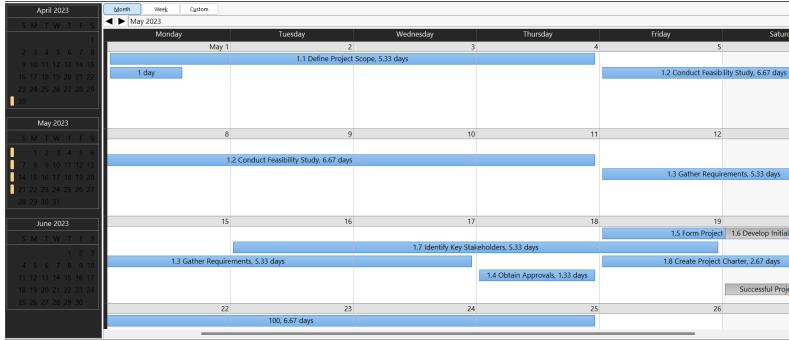


Figure 3: Calendar Overview: April to June

The above figure provides an overview of the activities scheduled from April to June. This timeline encapsulates various tasks and milestones essential for the project's progression, including but not limited to research, stakeholder meetings, and initial database design.

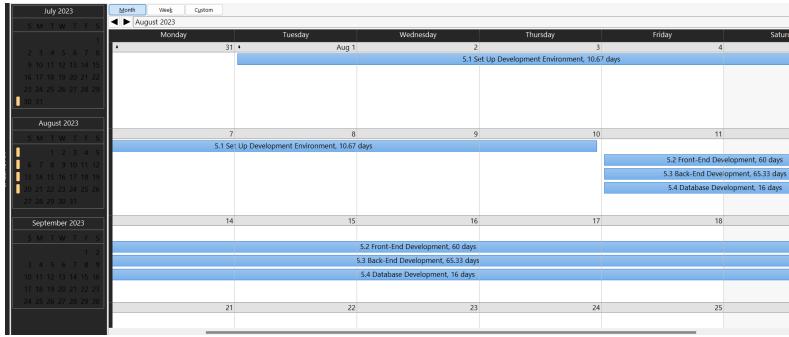


Figure 4: Calendar Overview: July to September

This figure illustrates the scheduled tasks and activities for the period from July to September. It encompasses crucial phases of the project, such as detailed requirement analysis, system prototyping, and feedback gathering from stakeholders.

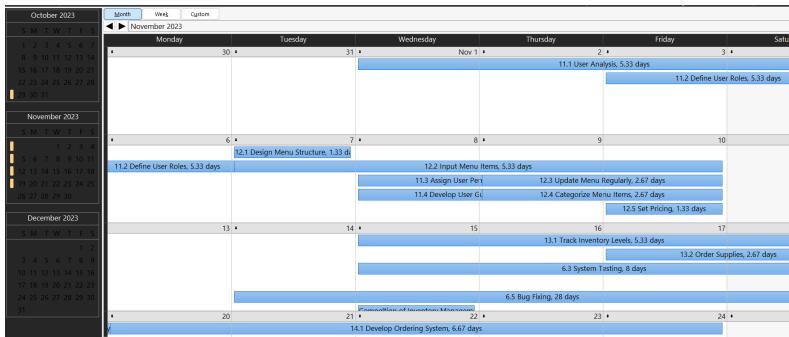


Figure 5: Calendar Overview: October to December

The calendar details from October to December represent the final stages of the project, including system development, testing, and deployment preparations. This timeline outlines the critical milestones leading to the completion and implementation of the new dining order system.

## 3 Project Planning

The successful development of the First Ladies Hall Dining Management System required meticulous planning and organization. Using MS Project, we ensured that every aspect of the project was carefully managed from inception to completion.

### 3.1 Defining Project Scope

Our initial step was to clearly define the scope of the project. This involved understanding the specific needs of the First Ladies Hall at Shahjalal University of Science and Technology. We outlined the key features and functionalities required for the dining management system, ensuring alignment with stakeholder expectations.

### 3.2 Task Decomposition

We broke down the project into manageable tasks, each with specific deliverables and deadlines. This decomposition allowed us to create a detailed work breakdown structure (WBS). Key tasks included requirements gathering, system design, development, testing, and deployment.

### 3.3 Resource Allocation

Resource allocation was a critical component of our planning. MS Project enabled us to assign resources to tasks based on their availability and expertise. This ensured optimal utilization of personnel, equipment, and materials. Regular adjustments were made to address any resource constraints and to keep the project on track.

### 3.4 Scheduling and Milestones

We developed a comprehensive project schedule using Gantt charts in MS Project. The schedule included all project tasks, durations, dependencies, and milestones. Key milestones were set to mark significant

achievements in the project timeline, such as the completion of the requirements analysis, system design, and each development phase.

### **3.5 Progress Tracking**

Throughout the project, we used MS Project to track progress. This involved updating task statuses, recording actual work completed, and comparing it against the planned schedule. Progress reports and visual indicators helped us identify any deviations early and implement corrective actions promptly.

### **3.6 Risk Management**

Risk management was integral to our planning process. We identified potential risks that could impact the project and assessed their likelihood and impact. Mitigation strategies were developed for each risk. MS Project helped us monitor these risks continuously, allowing us to take proactive measures to minimize their effects.

### **3.7 Collaboration and Communication**

Effective collaboration and communication were facilitated through MS Project's features, which allowed team members to share updates and access project information in real-time. This ensured that everyone involved in the project was aligned and informed about the latest developments.

### **3.8 Reporting and Analysis**

We leveraged MS Project's robust reporting capabilities to generate detailed reports on task progress, resource utilization, and project status. These reports provided valuable insights for project managers and stakeholders, aiding in decision-making and ensuring transparency throughout the project lifecycle.

By following a structured project planning approach with the help of MS Project, we were able to manage the development of the First Ladies Hall Dining Management System effectively. This planning ensured that the project stayed on schedule, within scope, and met the high standards expected by our stakeholders.

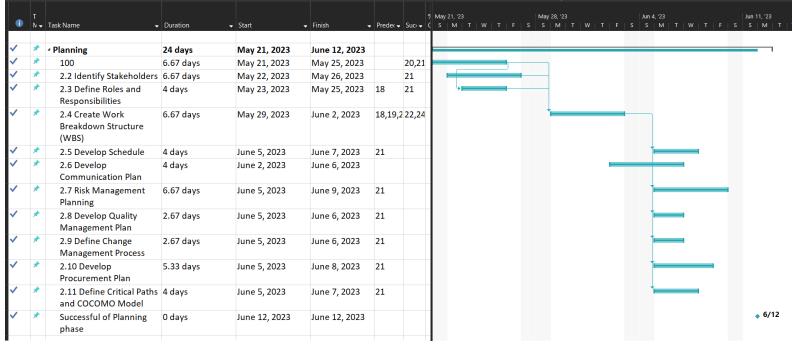


Figure 6: Project Planning and Gantt Chart

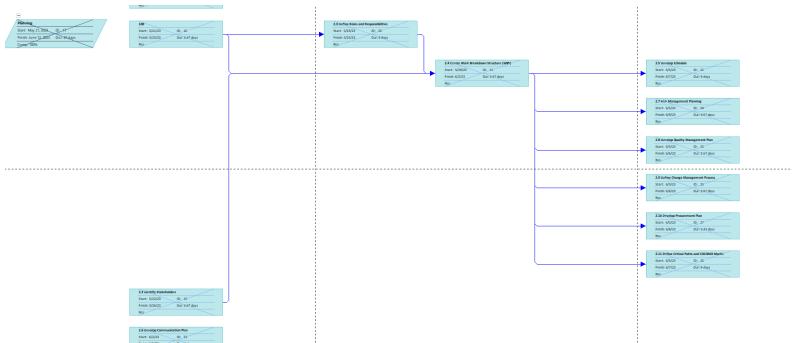


Figure 7: Network Diagram of Project Planning (after completion)

## 4 Requirement Gathering

The overall purpose of Requirements Analysis is to gather every bit of information needed to design a database that meets the informational needs of an organization.

The requirement gathering methods that we have used in our analysis are:

- *Interviews:* We conducted structured interviews with key stakeholders, including the supervisor and students of First Ladies Hall at Shahjalal University of Science and Technology. The interviews aimed to delve deep into the stakeholders' perspectives, preferences, and expectations regarding the dining order system. Questions were crafted to elicit specific details about the ordering process, desired features, and any pain points experienced.
- *User Observation:* This method involved a direct and unobtrusive observation of users as they interacted with the current order and meal receiving process. By immersing ourselves in the user environment, we gained insights into the practical aspects of their interactions, identifying potential areas for improvement. This observational approach was particularly useful in uncovering implicit

user requirements that might not be apparent through interviews alone.

- *Document Analysis:* Through a thorough examination of existing documents such as order logs, databases, and procedural documents, we aimed to understand the current system's workflow, limitations, and strengths. Document analysis provided a historical context, helping us identify recurring issues and user pain points. It also informed us of any procedural constraints that needed consideration in the new system.
- *Surveys:* To gather a broader set of opinions, we designed and distributed surveys to both dining hall managements and consumers (students). The surveys included a mix of closed-ended and open-ended questions, covering topics such as user preferences, satisfaction levels, and specific features desired in the new system. Survey responses provided quantifiable data and valuable qualitative insights.

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Figure 8: Task And Gant Chart of Requirement Analysis Phase

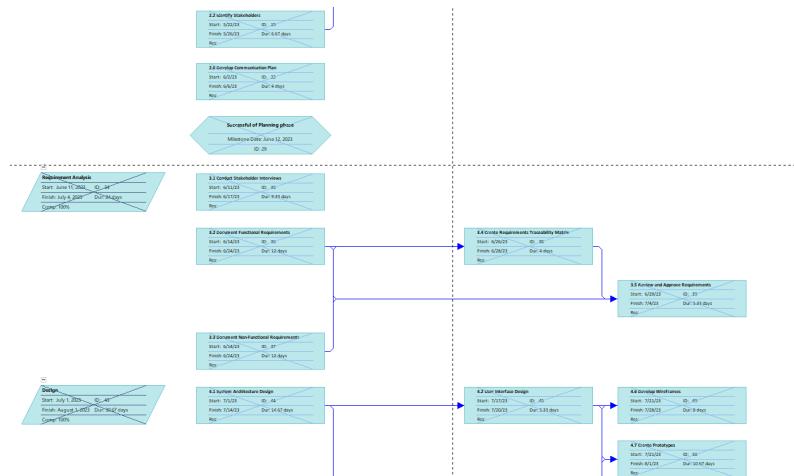


Figure 9: Network Diagram of Requirement Analysis(after completion)

These methods collectively ensured a comprehensive and multi-faceted approach to requirement gathering, covering user preferences, system

interactions, existing workflow analysis, and both qualitative and quantitative feedback from stakeholders.

## 4.1 Functional Requirements

The functional requirements outline the specific capabilities and features that the dining order system must possess to meet the needs of its users. These requirements are designed to ensure the system's functionality aligns with the expectations and preferences identified during the requirement gathering phase:

- **User Authentication:**

- Every user should have a dedicated account to access the system.
- Users must undergo an authentication process to ensure secure and authorized access.

- **User-friendly Category and Item Display:**

- The system should present a user-friendly interface displaying various food categories prominently.
- Within each category, food items should be visually presented in an organized manner, facilitating easy navigation for users.

- **Comprehensive Item List:**

- The system will provide a comprehensive list of all food items offered by the canteen admin.
- Users, particularly students, should be able to easily explore and browse the entire range of available food items.

- **Detailed Food Item Information:**

- The system will display detailed information for each food item, including descriptions, images, and prices.
- Users should have access to a visual representation of the food items, enhancing their decision-making process.

These functional requirements lay the foundation for an intuitive and user-centric dining order system. User authentication ensures security, while the user-friendly display of categories and items, along with comprehensive item lists and detailed information, contributes to a seamless and informative user experience.

## 4.2 Non-functional Requirements

Non-functional requirements specify the criteria that can be used to judge the operation of a system rather than specific behaviors. These requirements address aspects such as performance, security, usability, and maintainability. For the dining order system, the following non-functional requirements are identified:

- **Performance:**

- The system should provide quick response times to user interactions.
- It should handle concurrent user requests efficiently, especially during peak dining hours.

- **Security:**

- User authentication and data transmission should be encrypted to ensure the security of user accounts and sensitive information.
- Access to certain features (e.g., supervisor dashboard) should be restricted to authorized personnel.

- **Usability:**

- The system should have an intuitive and user-friendly interface to cater to users with varying levels of technical expertise.
- Navigation through food categories and item selection should be straightforward and accessible.

- **Maintainability:**

- The system should be modular and easily upgradable to accommodate future changes or additions to the menu.
- Regular maintenance tasks, such as updating item prices or adding new categories, should be simple and not disrupt the overall system functionality.

These non-functional requirements ensure that the dining order system not only performs efficiently but also meets essential criteria related to security, usability, and maintainability.

## 4.3 Analysis of Existing Documents

### 4.3.1 Document-1: Tracking of Old Meals

A handwritten note on lined paper. At the top right, it says "Due - 80". Below that, there's a large sum "228 25". To the left of these numbers, there's some handwritten text that appears to be names or identifiers. Below the large sum, there are several lines of handwritten additions, all crossed out with a large X. These additions include "29+29+29+29+29+26+", "20+29+26+29+22+6+29+", and "29+ 228 25". Further down, there are more additions: "22+29+29+29+29+28+29+" and "6+29+29+29+29+29+29+29+2892-802". At the bottom left, the word "Paid" is written next to "292 +".

Figure 10: Document-1: Tracking of Old Meals

In Document-1, the manual tracking of old meals is evident. The payable amount is handwritten on the note, and student names are used for

tracking. The manual cutting of balances is observed after dues are received. This process highlights the need for an automated system to streamline and digitize these tracking processes.

#### 4.3.2 Document-2: Menu Showcasing

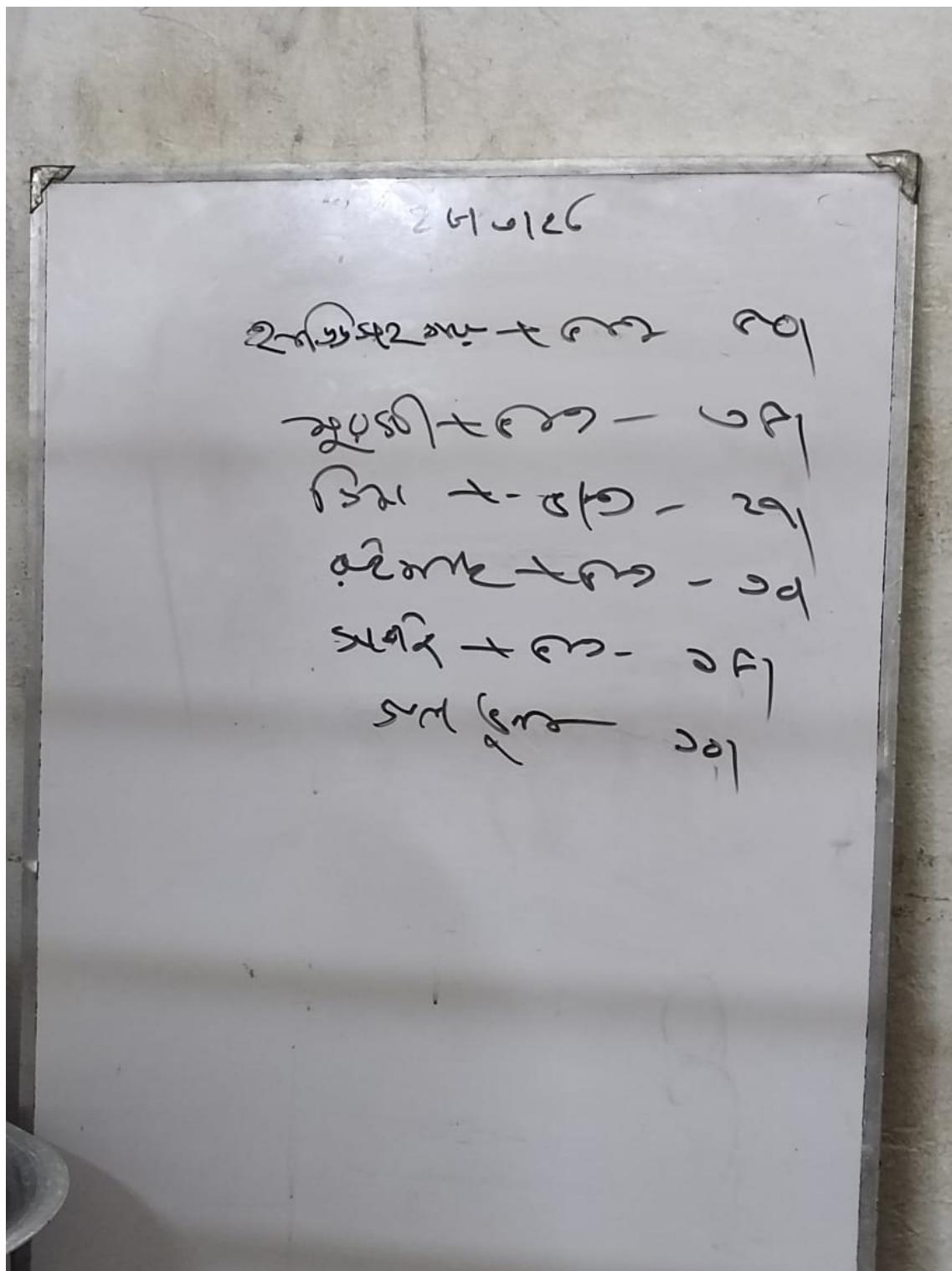


Figure 11: Document-2: Menu Showcasing

Document-2 showcases a manual method of menu presentation. Menus for a specific time are handwritten, featuring packages of two items for a given date, with prices manually written. This emphasizes the need for a digital platform to dynamically showcase menus and prices, allowing for easy updates and modifications.

#### 4.3.3 Document-3: Detailed Bills

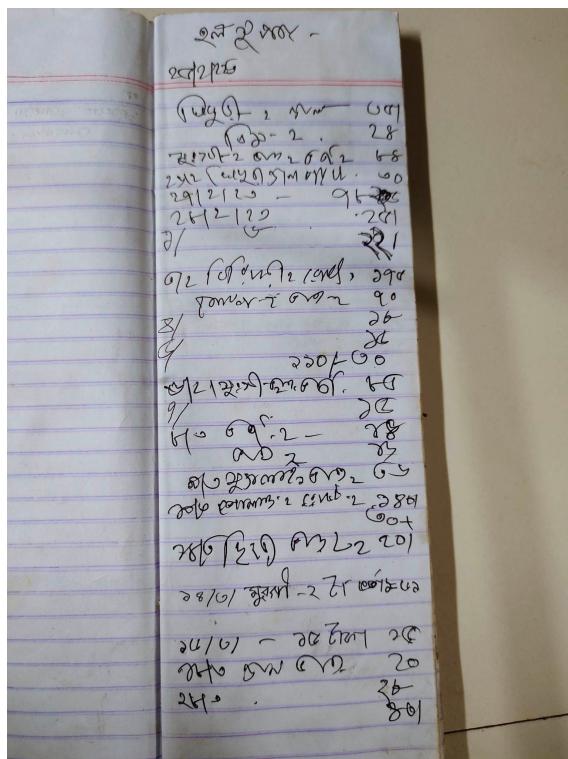


Figure 12: Document-3: Detailed Bills

Document-3 displays detailed bills with item names and dates, manually recorded on a notebook. This manual recording process underscores the importance of transitioning to a digital system that can generate detailed invoices automatically, reducing the risk of errors and providing a more efficient billing process.

## 5 Use Case Diagram

### 5.1 Overall Use Case

The overall use case diagram provides a high-level overview of the primary interactions within the dining order system. The key use cases identified for this system encompass various functionalities catering to both dining hall managements and consumers (students). Here are some of the most important use cases:

- **Registration through the Website:** Users can register on the system by providing necessary details through the website.
- **Login with Registered Email and Password:** Authenticated users can log in to the system using their registered email and password.
- **Manage Item:** Admin or authorized personnel can manage food items, including adding new items, updating prices, and removing items from the menu.
- **Cart Item:** Users can add food items to their virtual cart while browsing the available menu.
- **Food Order:** Users can place orders for selected items from their cart, specifying quantities and any additional preferences.
- **Manage Order:** Supervisors or admin can manage and track incoming orders, ensuring efficient processing and timely delivery.
- **Bill Payment:** Users can make payments for their orders through the system, either online or through other designated payment methods.

The use case diagram visually represents these interactions, showcasing the relationships between actors (users) and the various use cases. Each use case contributes to the overall functionality and efficiency of the dining order system.

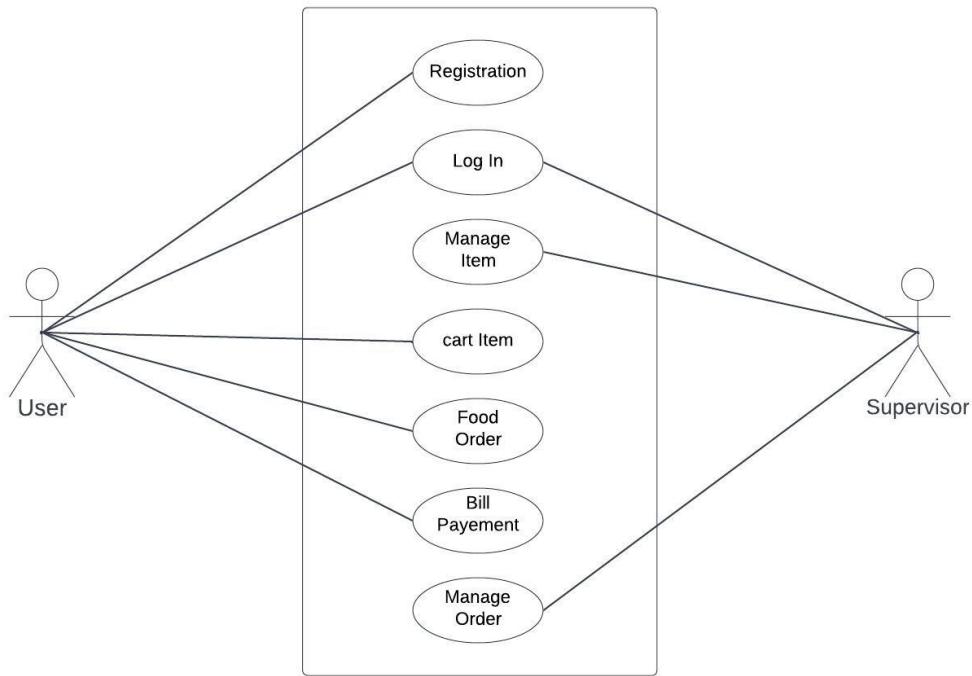


Figure 13: Overall Use Case Diagram

## 5.2 Use Case Diagram for Only User

The use case diagram for users (students) focuses on the key interactions and functionalities available to them within the dining order system. Here are the most important use cases for users:

- **Register and Login:**

- *Description:* Users who are new to the system can register by providing necessary information such as name, email, and password. Registered users can log in using their credentials to access personalized features and account information.
- *Preconditions:* The user needs to have a valid email address, and the system should not already have an account associated with that email.

- **See Available Food:**

- *Description:* Users can browse through a categorized list of available food items, each accompanied by details like name, description, and price. This functionality helps users make informed decisions about their meal choices.

- *Preconditions:* The user must be logged in to access the list of available food items.

- **Food Order:**

- *Description:* Users can add selected food items to their shopping cart, specify quantities, and include any special instructions or preferences. After confirming the order, the system calculates the total cost and updates the user's cart accordingly.
- *Preconditions:* The user must be logged in, and there should be available food items in the system.

- **See Previous Orders:**

- *Description:* Users can view a comprehensive history of their previous orders, including details such as order items, dates, and total amounts paid. This feature provides users with a record of their dining history within the system.
- *Preconditions:* The user must be logged in, and there should be a history of previous orders associated with the user's account.

- **Feedback:**

- *Description:* Users can submit feedback on their dining experiences, including comments, ratings, and suggestions. This information is valuable for the system administrators to enhance the overall user experience and improve the quality of service.
- *Preconditions:* The user must have completed at least one order to provide feedback.

- **Bill Payment:**

- *Description:* After confirming their order, users proceed to the payment stage. Users can make secure payments online or through designated payment methods accepted by the system. Successful payment completes the order process.
- *Preconditions:* The user must be logged in, and there should be items in the user's cart.

- **Change Password:**

- *Description:* Users have the option to change their account password for enhanced security.

- *Preconditions:* The user must be logged in.

The use case diagram visually represents these interactions, showcasing the relationships between users and the various functionalities available to them within the dining order system.

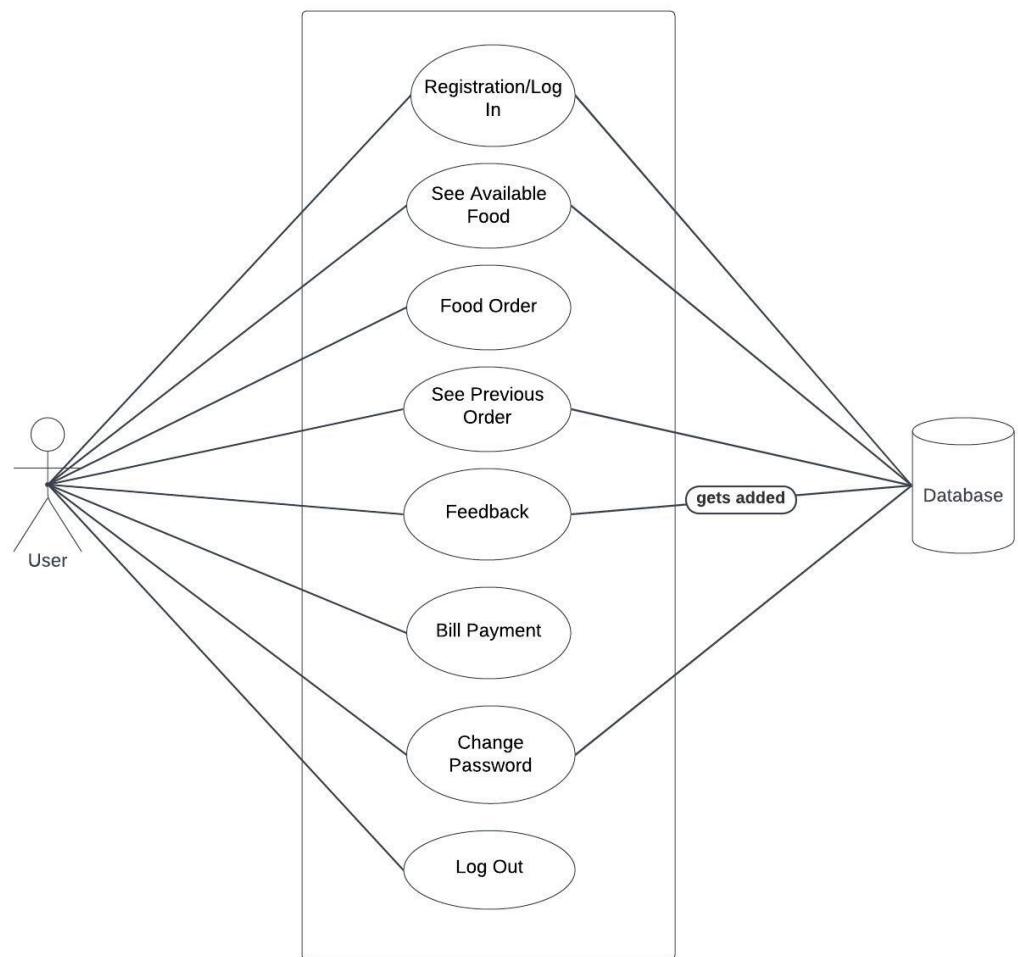


Figure 14: Use Case Diagram for Only Users

### 5.3 Use Case Diagram for Only Supervisor

The use case diagram for supervisors encompasses a detailed set of interactions and functionalities tailored to their role within the dining order system. Here are the expanded descriptions for each use case:

- **Login:** Supervisors initiate the system by logging in with their authorized credentials, gaining access to the supervisor dashboard.
- **Add Item:** Supervisors can contribute to the system's menu by adding new food items. This includes providing comprehensive details such as item names, descriptions, prices, and relevant images.
- **Update Item:** To maintain an up-to-date menu, supervisors can modify existing food items. This involves the ability to update prices, descriptions, or any other relevant information associated with the menu items.
- **Delete Item:** Supervisors have the authority to remove food items from the menu. This functionality is useful for discontinuing certain items, updating the menu based on availability, or responding to changing preferences.
- **Process Order:** Supervisors play a crucial role in processing incoming orders. This involves ensuring that the selected items are available, coordinating with kitchen staff, and overseeing the order fulfillment process to guarantee customer satisfaction.
- **View Order:** Supervisors can view the details of all incoming orders. This includes information such as selected items, quantities, customer details, and the status of each order. This feature aids in effective order management.
- **Create Invoice:** For each order, supervisors have the responsibility to generate detailed invoices. These invoices summarize the selected items, quantities, and the total amount to be paid. This ensures transparency and accuracy in the billing process.
- **View Transactions:** Supervisors can access a comprehensive record of all transactions within the system. This includes a history of orders, payments, and any adjustments made. The ability to view transactions provides valuable insights into the financial aspects of the dining order system.

The use case diagram visually represents these detailed interactions, illustrating the relationships between supervisors and the diverse functionalities available to them within the dining order system.

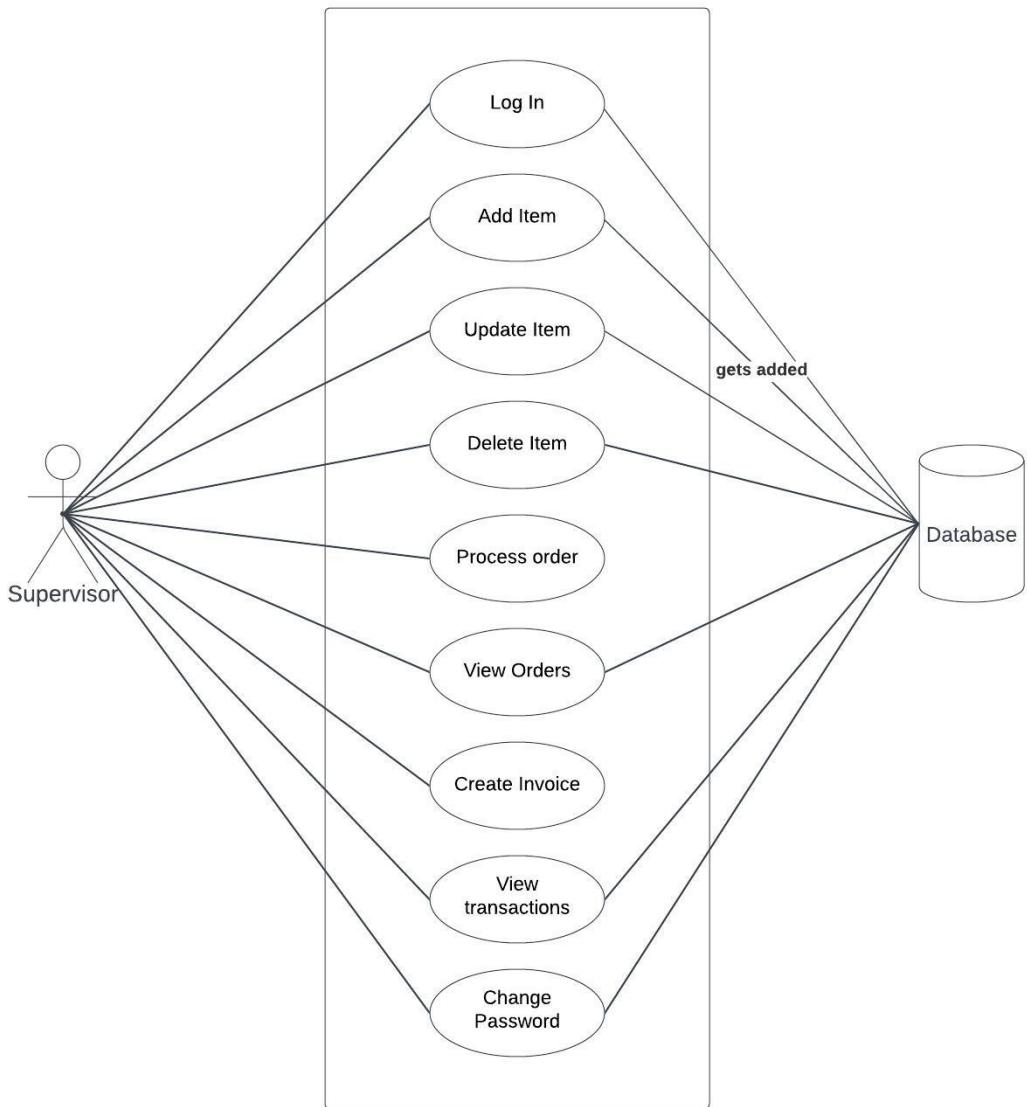


Figure 15: Use Case Diagram for Only Supervisor

## 6 Data Flow Diagram

We have included three levels of data flow diagrams. These are:

- Level 0
- Level 1
- Level 2

These three levels has even more layers for better modulation.

### 6.1 Level 0 Data Flow Diagram

Level 0 DFD of our project is given below:

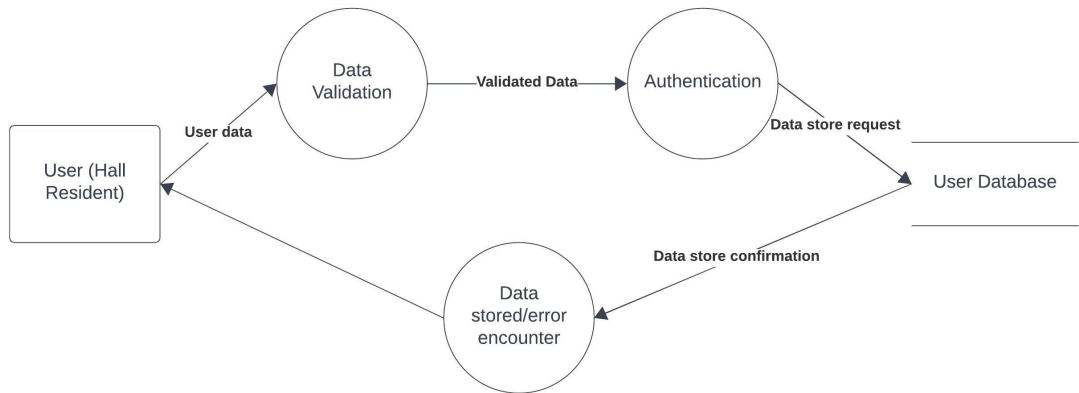


Figure 16: Level 0 of Data Flow Diagram

## 6.2 Level 1 Data Flow Diagram

Level 1 DFD of our project is given below:

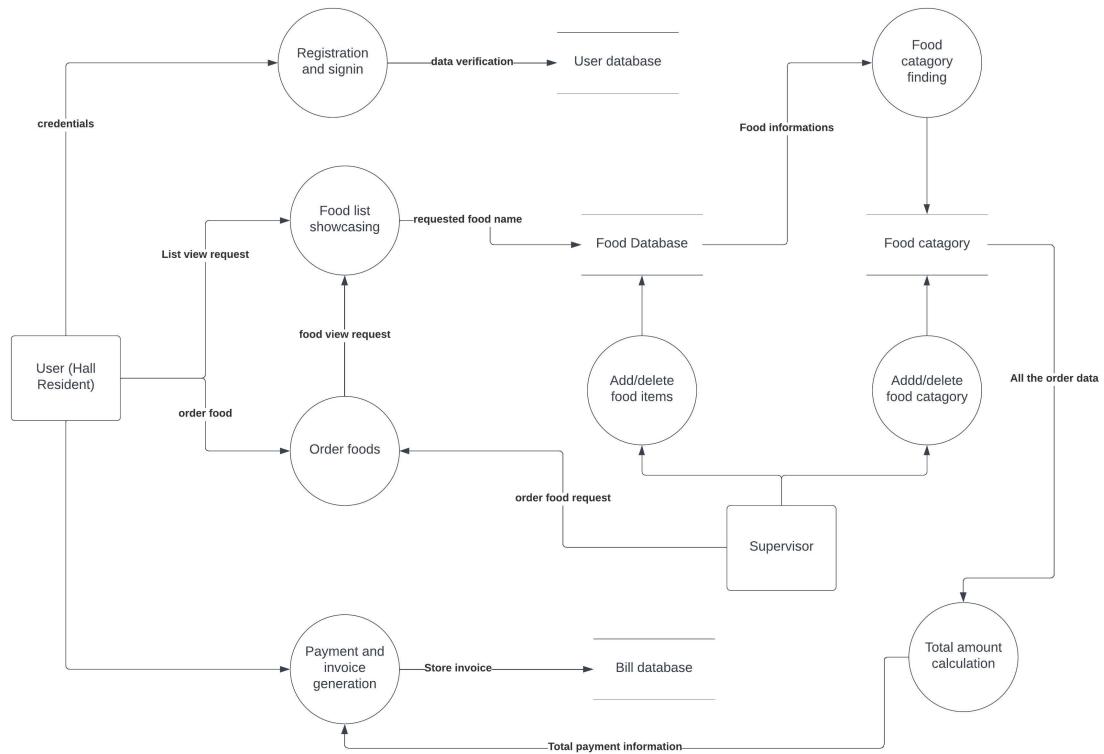


Figure 17: Level 1 of Data Flow Diagram

### 6.3 Level 2 Data Flow Diagram

Level 2 DFD of our project is divided into two parts which are given below:

- Food items management by supervisor module
- Food order system module

#### 6.3.1 Food items management by supervisor module

One of the Level 2 of DFDs is Food items management by supervisor module. This is given below:

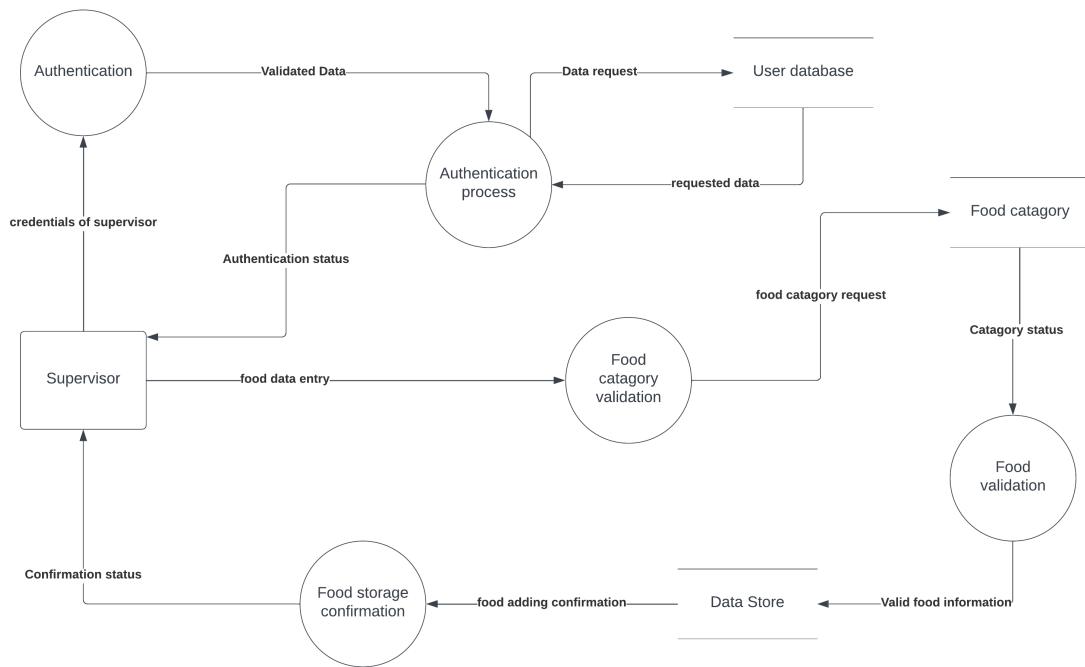


Figure 18: DFD Level 2: Food items management by supervisor module

### 6.3.2 Food order system by user module

One of the Level 2 of DFDs is Food order system by user module. This is given below:

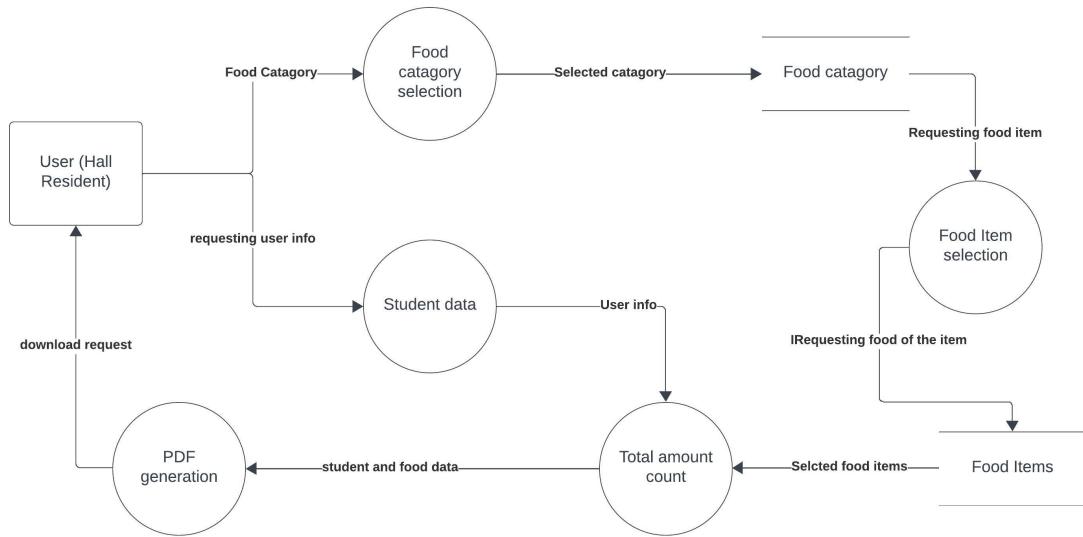


Figure 19: DFD Level 2: Food order system by user module

## 7 ER Diagram

We have four strong entity:

- User
- Order
- Food category
- Food

and two weak entity:

- Supervisor
- Feedback

### 7.1 User Entity

The attributes of this entity are given below:

- username
- email
- phone no
- registration number
- department name
- password

### 7.2 Order Entity

The attributes of this entity are given below:

- username
- email
- phone no
- registration number
- payment method
- payment amount
- items

### **7.3 Food Category Entity**

The attributes of this entity are given below:

- category id
- name
- description
- image

### **7.4 Food Entity**

The attributes of this entity are given below:

- category id
- food id
- name
- image
- description

### **7.5 Supervisor Entity**

The attributes of this entity are given below:

- email
- password

### **7.6 Feedback Entity**

The attributes of this entity are given below:

- email
- comment

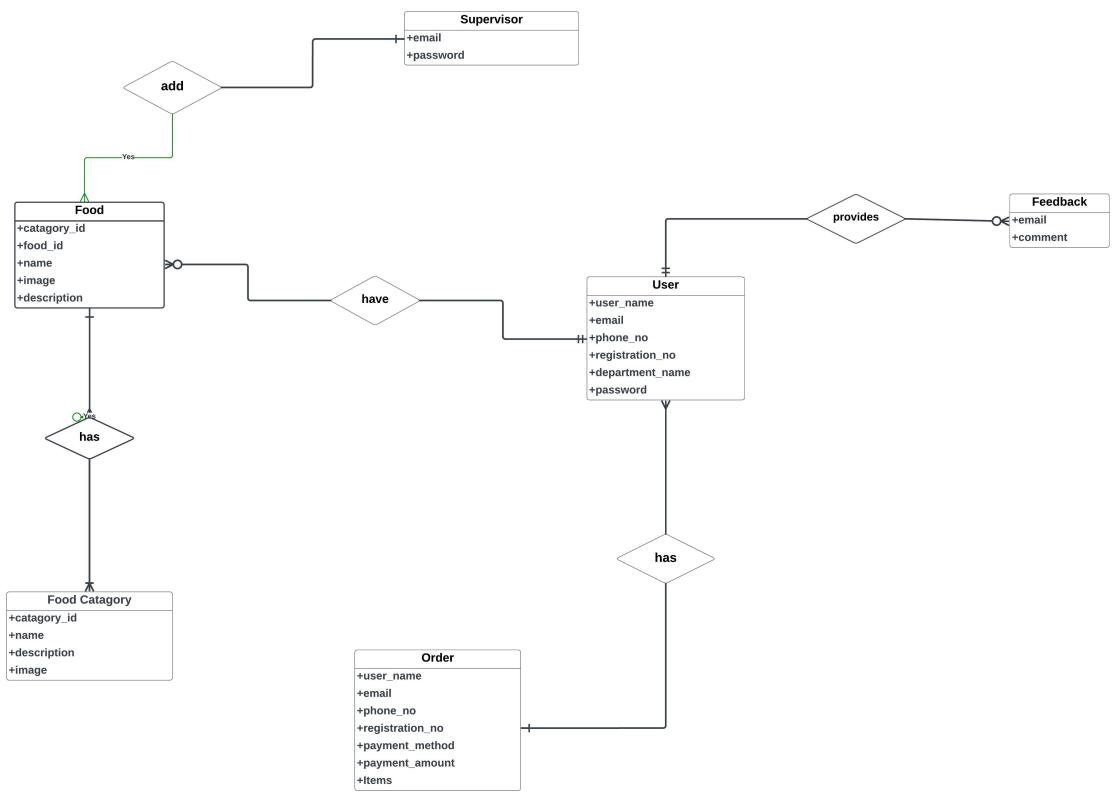


Figure 20: ER Diagram

## 8 UI Design

The UI design for the First Ladies Hall Dining Management System aims to create an intuitive and user-friendly interface. Using MS Project, we carefully planned and structured the design phase to ensure that the user interface meets the needs and expectations of the users.

### 8.1 Design Objectives

Our primary objectives for the UI design include enhancing user engagement, ensuring ease of use, and eliminating language barriers. To achieve these goals, we have incorporated both English and Bangla languages into the interface.

### 8.2 Planning and Prototyping

Using MS Project, we outlined the tasks involved in the UI design process, including initial concept creation, wireframing, prototyping, and user testing. Each task was scheduled with clear deadlines and dependencies to ensure a systematic and efficient design process.

### 8.3 User-Centered Design Approach

The design process followed a user-centered approach. We conducted user research to gather insights into the preferences and behaviors of our target users. This involved:

- *User Personas*: Developing detailed user personas based on the data collected during the requirement gathering phase.
- *User Scenarios*: Creating user scenarios to understand the context in which the system will be used.

### 8.4 Wireframing and Prototyping

We created wireframes and interactive prototypes to visualize the layout and functionality of the UI. MS Project helped us schedule and manage these activities, ensuring timely feedback and iterations. The prototypes were developed using tools like Adobe XD and Figma, which allowed us to create interactive elements and gather user feedback effectively.

## 8.5 Incorporation of Bangla Language

To enhance user engagement and accessibility, we incorporated the Bangla language into the UI. This involved:

- *Localization*: Translating interface elements into Bangla.
- *Usability Testing*: Conducting usability testing with native Bangla speakers to ensure clarity and effectiveness.

## 8.6 User Testing and Feedback

User testing was a critical part of our design process. We conducted multiple rounds of testing with both students and staff members to gather feedback on the UI. MS Project was used to plan and track these testing sessions, ensuring that feedback was incorporated into the design iteratively.

## 8.7 Final Design Implementation

After incorporating user feedback, we finalized the UI design and began implementation. The final design was documented in detail, including specifications for each interface element. This documentation was used to guide the development team during the implementation phase.

By following a structured and user-centered design approach, facilitated by MS Project, we created a user-friendly and engaging UI for the First Ladies Hall Dining Management System. The incorporation of Bangla ensures that the system is accessible to all users, enhancing their overall experience.



Figure 21: Project DEsign and Gantt Chart

## 8.8 Front Page

The Front Page serves as the gateway to the dining order system, presenting an inviting and intuitive interface for users.

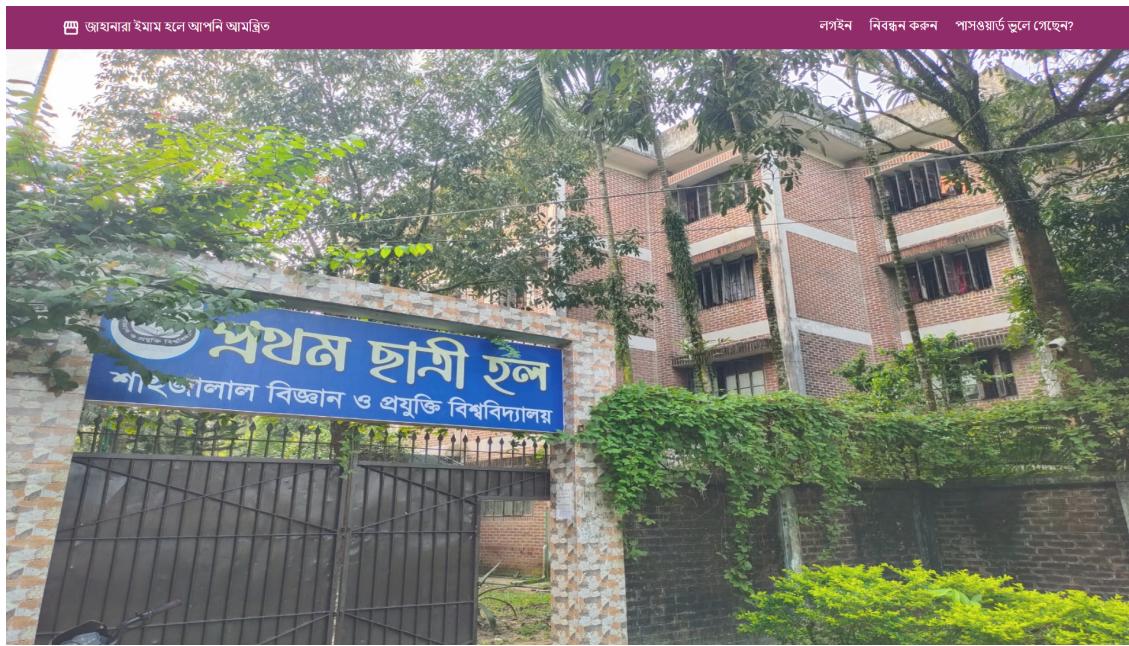


Figure 22: Front Page - 1



## আমাদের সম্বন্ধে জানুন

শহীদ জোলাল বিজ্ঞান ও প্রযুক্তি বিশ্ববিদ্যালয়ের মধ্যে শিক্ষার্থীদের জন্ম তৈরীকৃত প্রথম হল থেকে আহনারা ইমাম হল, যাতে প্রতি নতুন অসংখ্য শিক্ষার্থী নিয়ে পোড়ে আসে।

এসব শিক্ষার্থীদের সুবাস্তু ও সচিক পরিচর্যার জন্ম প্রতিমিন প্রয়োজন নির্দিষ্ট পরিমাণ ক্যালোরি ও শরীরিক চাহিএ। তাদের যাদ চাহিয়ে পুরণের প্রায় মেঘ বিকাশের সুযোগ করে দেবার জন্ম বিশ্ববিদ্যালয়ের কর্তৃপক্ষ প্রতিষ্ঠা করে আহনারা ইমাম হল ভূইয়া। এছানে নিখ ব্যাকুল-দাবারের ব্যবস্থ করে হল সামুদ্রিক ঘরানার প্রযুক্তিতে বাইরের কেজল ব্যাবর ছাড়ি।

## আমাদের ডাইনের সময়সূচী

সকালের নাস্তা



Figure 23: Front Page - 2

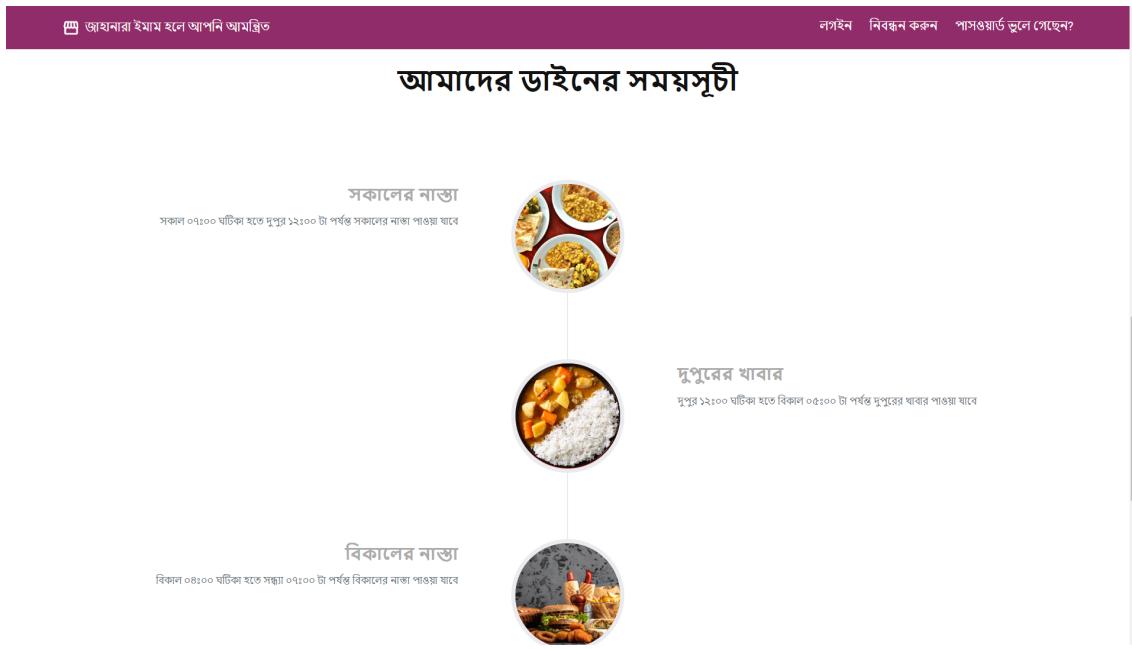


Figure 24: Front Page - 3

## 8.9 Register Page

The Register Page allows users to create accounts with ease, streamlining the onboarding process.

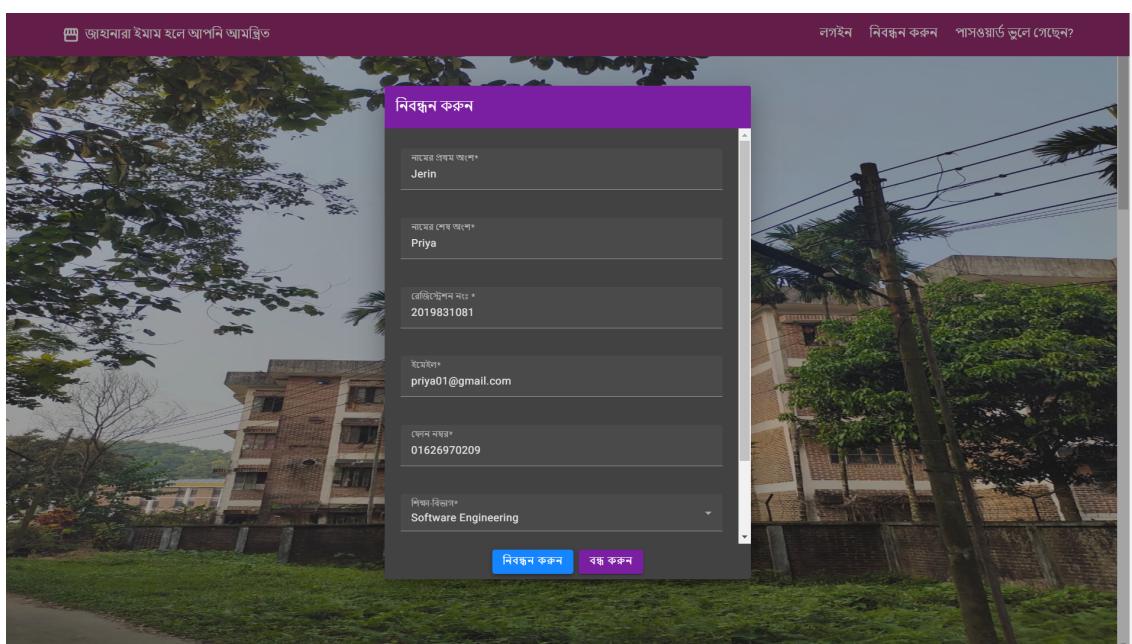


Figure 25: Register Page for users

## 8.10 Login for Students

The Login Page for students facilitates secure access to their accounts, ensuring a seamless user experience.

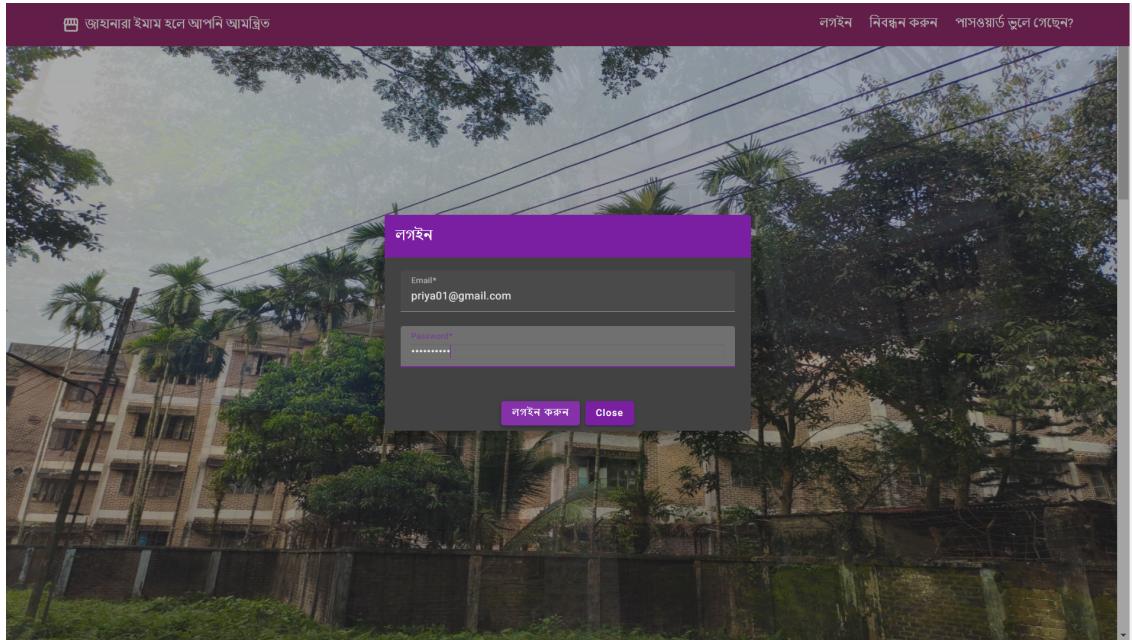


Figure 26: Login for students

## 8.11 Dashboard

The Dashboard provides users with a centralized and organized view of relevant information and actions.

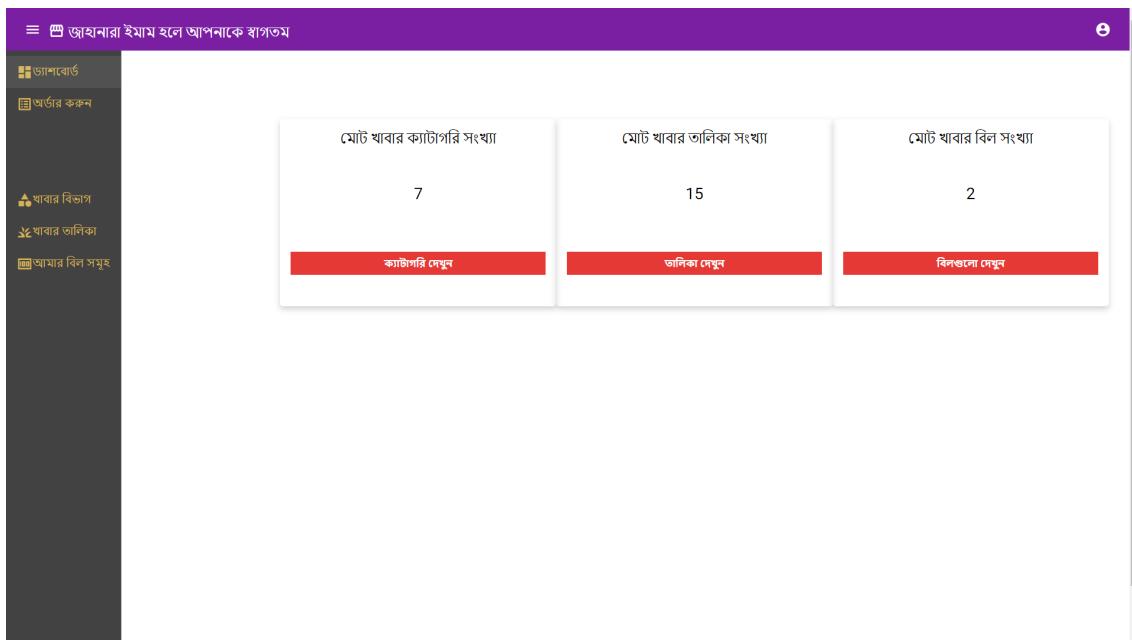


Figure 27: Dashboard

## 8.12 Food Category Page

The Food Category Page allows users to explore and navigate through various food categories effortlessly.

Food Categories		
Name	Image	Description
পুরো		গরম ও ঠাণ্ডা সকল ধরণের পুরোর সময়সূচী
ফাস্টফুড		বাহ্যিক মান সমন্বিত রেসে ঘরে তৈরী ফাস্টফুড
মালে		মালে ও চেস মালের আইটেম
মাছ		ফেস ও বাহ্যিক মান নিয়ন্ত্রণে তৈরী মাছের আইটেম
রাইস		ভেজেল মুক্ত চানের তৌরি আইটেম
সরবজি		আজা ও ফেস সরবজির খাবার
সালাদ		বিভিন্ন ধরণের সরবজি ও ফেসের সময়সূচী সালাদের খাবার

Figure 28: Food Category Page

## 8.13 Food Items Page

The Food Items Page presents a visually appealing display of available food items, making it convenient for users to make selections.

Food Items				
Name	Category Name	Image	Description	Price
বার্গার	ফাস্টফুড		অর্বাচ চিজ বার্গার, চিকেন প্যাটি এবং এক্সট্‍রা চিজ	40
পিকাচু	ফাস্টফুড		অর্বাচানো, টেম্পেটে ও ব্যাকনের পিপিস টাইপ মজজুরেনো চিজ	60
আলু-পেপে ভাজি	সরবজি		আলু ও পেপের মিশনে তৈরী ভাজি	12
চিড়স ভাজি	সরবজি		ফেশ চিড়সের ভাজি	10
সাদা ভাত	রাইস		প্রেইন সাদা চিকন চানের ভাত	20
পোর্ক	রাইস		প্রেইন কানকিজের চানের পোর্ক	35

Figure 29: Food Items Page

## 8.14 Food Order Page

The Food Order Page provides users with a step-by-step process for placing orders, ensuring a smooth and intuitive ordering experience.

≡ আহানা ইমাম হলে আপনাকে খাগতম  
অর্ডারসমূহ ম্যানেজ করুন  
সর্বমিট করুন এবং বিল ডাউনলোড করুন

ছাত্রদের বিজ্ঞাপিতা:  
নাম(Name)\*  
Priya  
ইমেইল(Email)\*  
priya01@gmail.com  
ফোনযোগের নম্বর\*  
01626970209  
মুদ্রণশিল্প পছতি\*  
ক্যাপ্চ

খাদ্যর বিভাগ নির্বাচন করুন:  
ভাজা ভাজা  
সাদা ভাজ  
মুলা  
পরিমাণ\*  
1  
মোট \*  
20  
সর্বমিট পরিমাণ: 0

**যোগ করুন**

Add Order  
নাম খাদ্যর বিভাগ মুলা পরিমাণ মোট টিলিট করুন

Figure 30: Food Order Page: Before Ordering

≡ আহানা ইমাম হলে আপনাকে খাগতম  
অর্ডারসমূহ ম্যানেজ করুন  
সর্বমিট করুন এবং বিল ডাউনলোড করুন

ছাত্রদের বিজ্ঞাপিতা:  
নাম(Name)\*  
Priya  
ইমেইল(Email)\*  
priya01@gmail.com  
ফোনযোগের নম্বর\*  
01626970209  
মুদ্রণশিল্প পছতি\*  
ক্যাপ্চ

খাদ্যর বিভাগ নির্বাচন করুন:  
সবজি  
টেক্স ভাজি  
মুলা  
পরিমাণ\*  
1  
মোট \*  
10  
সর্বমিট পরিমাণ: 60

**যোগ করুন**

নাম খাদ্যর বিভাগ মুলা পরিমাণ মোট টিলিট করুন  
সাদা ভাজ  
রাইস  
20 1 20  
আল ফুলাই  
মাংস  
30 1 30  
টেক্স ভাজি  
সবজি  
10 1 10

Figure 31: Food Order Page: After Adding Order

## 8.15 Invoice

The Invoice Page provides users with a clear and detailed summary of their orders, aiding in transparent and accurate billing.

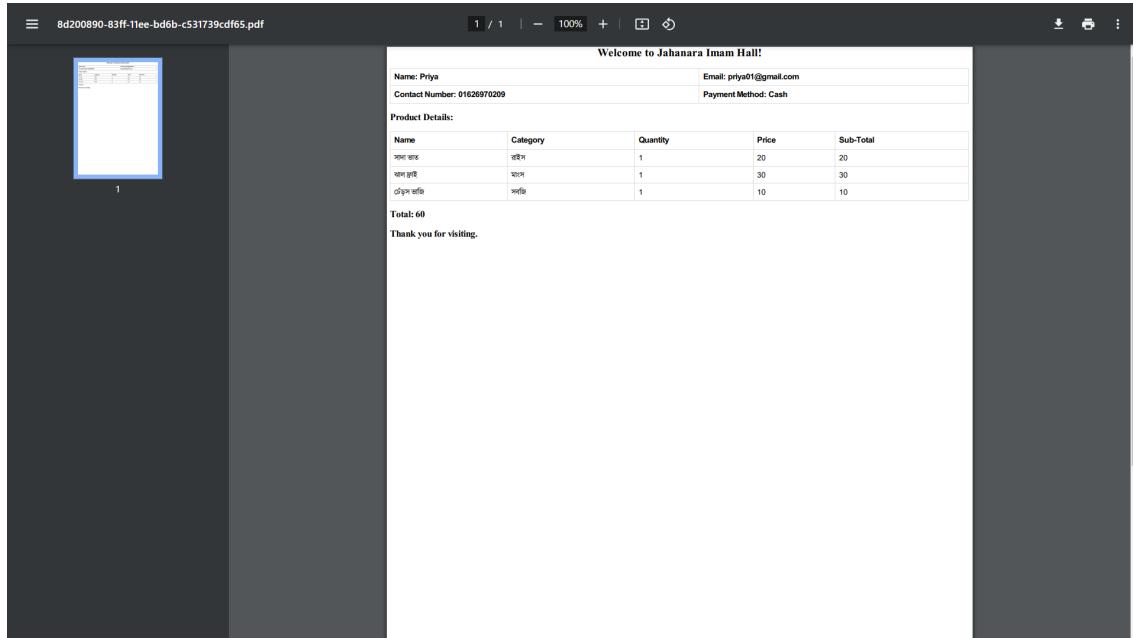


Figure 32: Invoice

## 8.16 Supervisor Login Page

The Supervisor Login Page grants access to supervisors, allowing them to manage food items and oversee the ordering process.

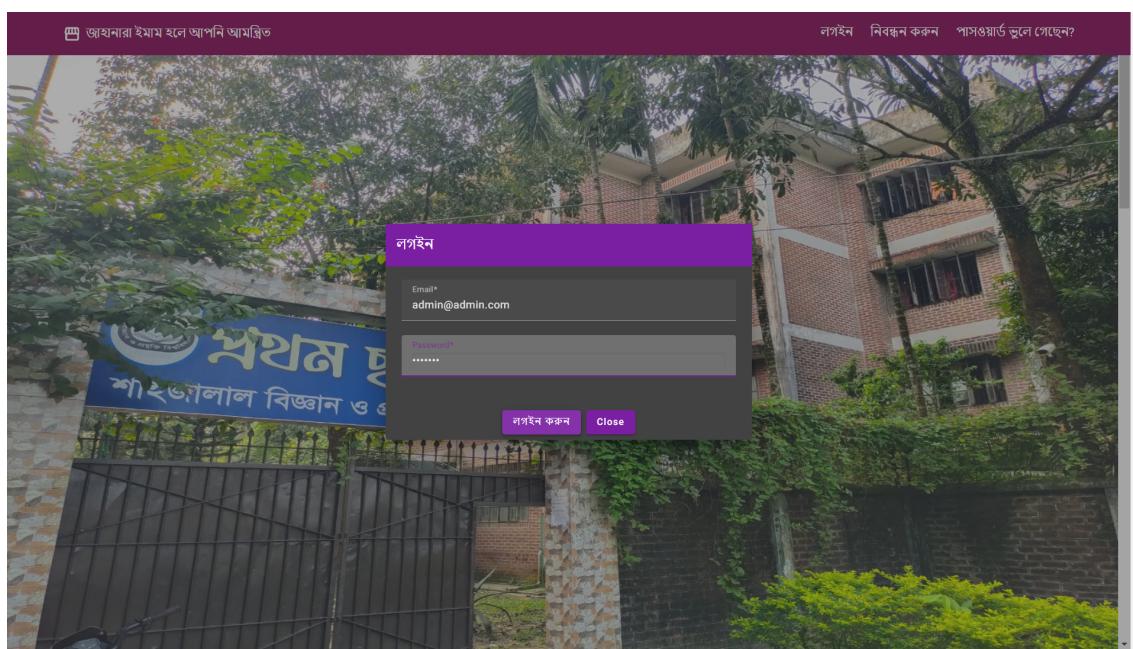


Figure 33: Supervisor Login Page

## 8.17 Add Food Page

The Add Food Page empowers supervisors to contribute to the system's menu by adding new food items.

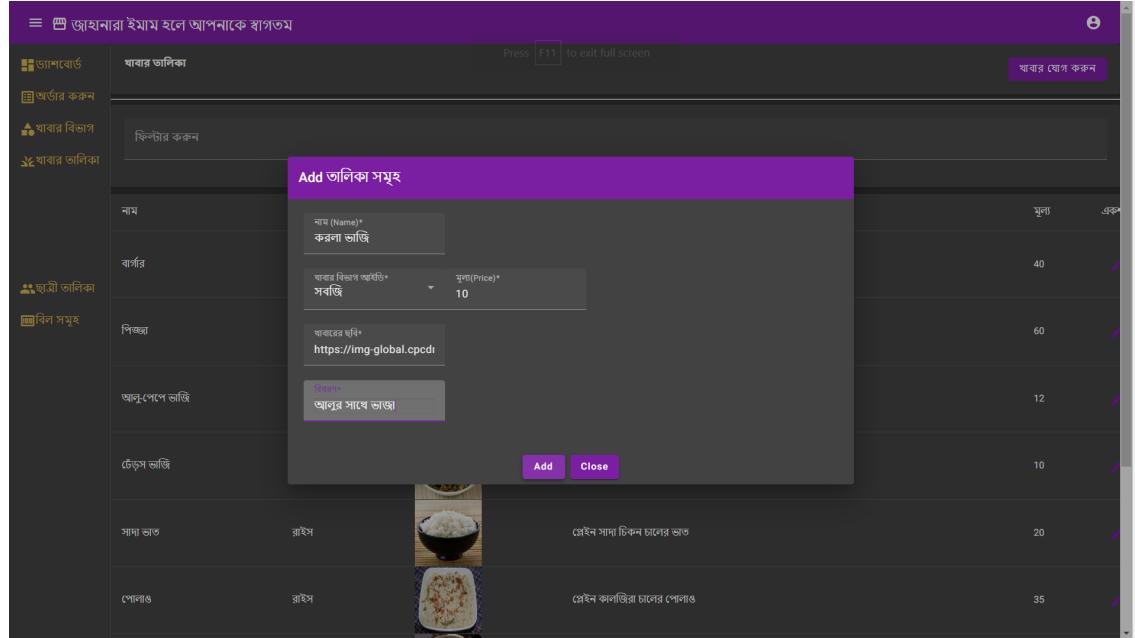


Figure 34: Add Food Page

## 8.18 Students List Page

The Students List Page provides supervisors with an organized view of registered students, facilitating efficient management.

Name	Email	Phone
Promi Mojumder	moju@gmail.com	01234567892
Sanzida Afrin	sanzida@gmail.com	01234567897
Sanjana Afrin	sanjana@gmail.com	01234567891
Sadia Islam	sadia@gmail.com	01234567893
Amaya Rahman	amaya@gmail.com	01234567893
Anika Jaman	anika@gmail.com	01234567895
Bonna Mirza	bonna@gmail.com	01234567896
Chameli Banu	chameli@gmail.com	01234567897
Mitu Chowdhury	mitu@student.sust.edu	01234567898
Mahin Ferdous	mahin@gmail.com	01234567899
Karima Hossain	karima@gmail.com	01234567890
Bijoti Saha	bijoti@gmail.com	01234567891

Figure 35: Students List Page

## 8.19 Bills List Page

The Bills List Page offers supervisors insights into the financial transactions and billing history within the system.

নাম	ইমেইল	বোগাখান নথর	পেমেন্ট পদ্ধতি	মোট পরিমাণ	একশন-সমূহ
Priya	priya01@gmail.com	01626970209	Cash	60	
Priya	priya01@gmail.com	01626970209	Cash	60	
Sanzida	sanzida@gmail.com	01234567891	Cash	65	
Priya	priyajerin9@gmail.com	01795809737	Cash	405	

Figure 36: Bills List Page

## 8.20 Forget Password

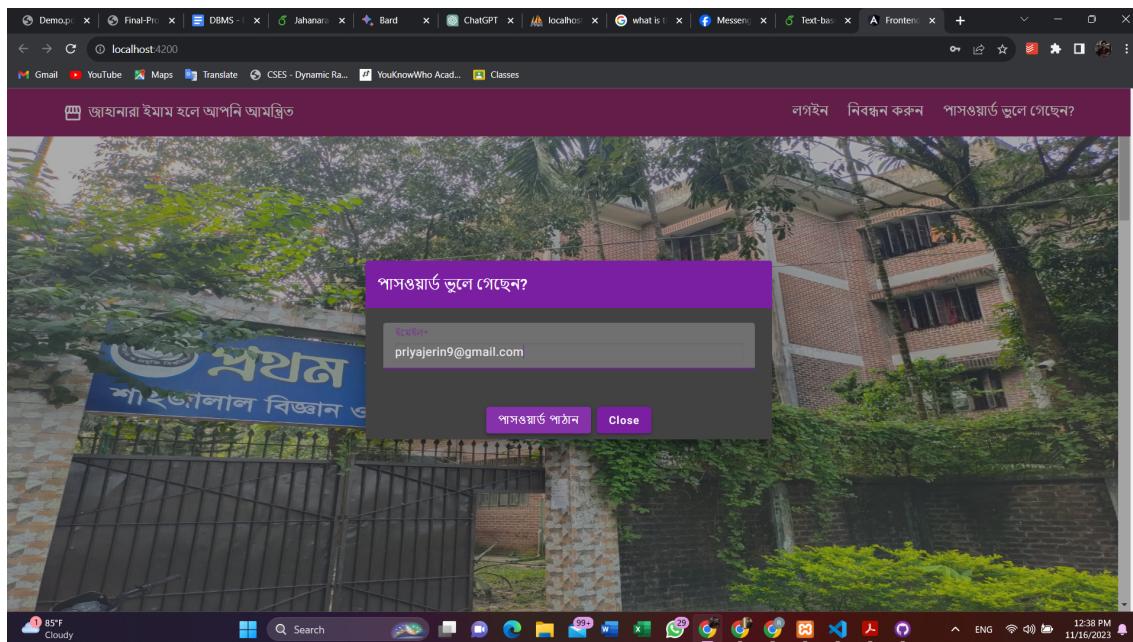


Figure 37: Forget Password - 1

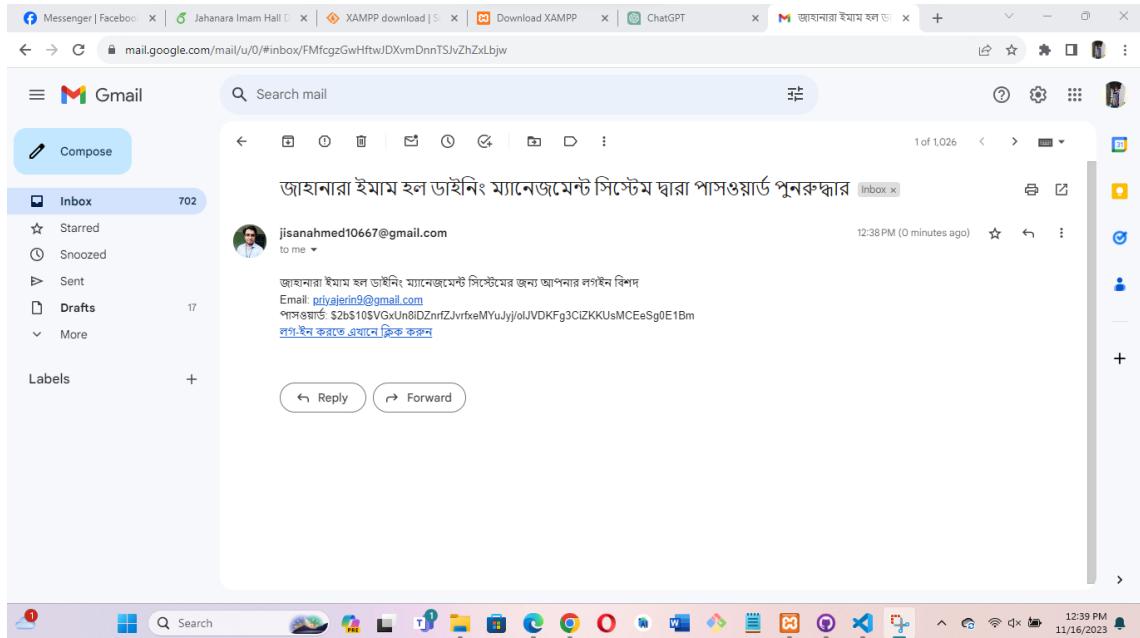


Figure 38: Forget Password

If any registered user forget password, they can use this feature to retrieve that providing email of that account. After providing the mail, user can find the password, as well as can find a link which will redirects to the landing page of the website.

## 8.21 Change Password

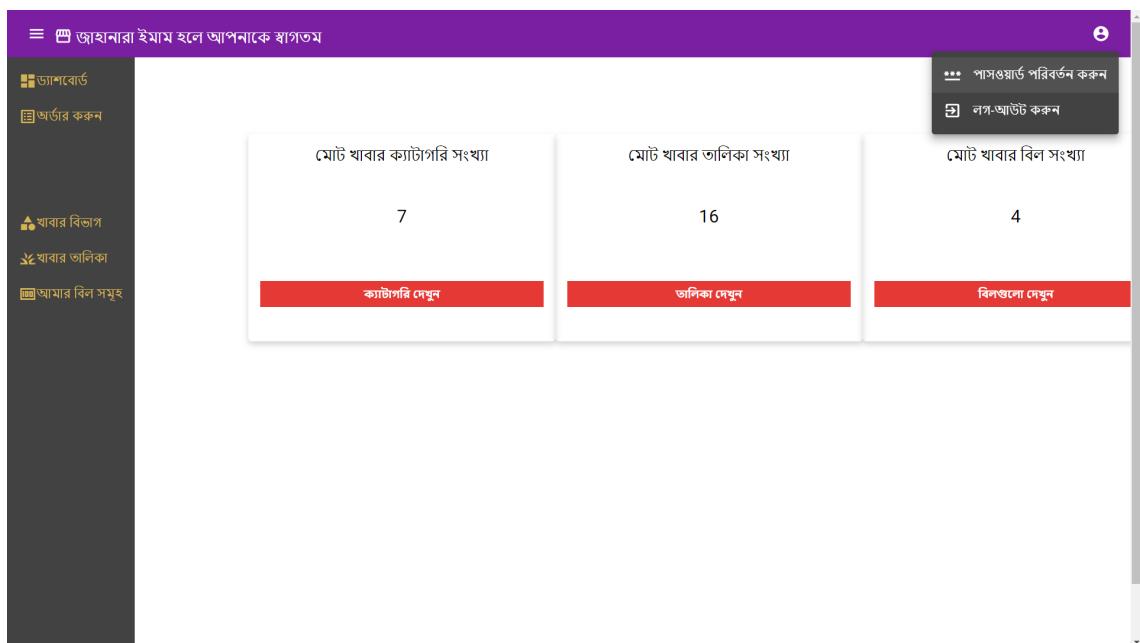


Figure 39: Change Password - 1

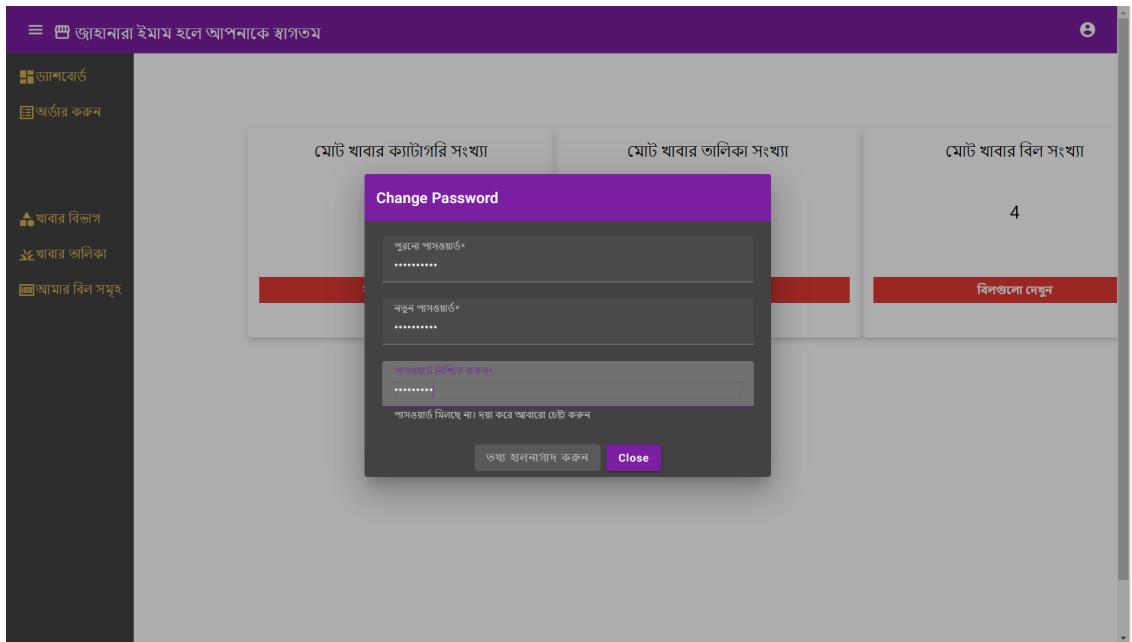


Figure 40: Change Password - 1

Users can change the password using this feature. They have to give the old password for verification, as well as a new password to change the previous one.

## 9 Database Schema Design

In our Database there are 7 tables with connection of one to many between a lot of them and each table has some unique columns and foreign keys to establish the connections between the tables.

The database or table diagram is added below for easier understanding about the tables and the attributes present in all the tables :

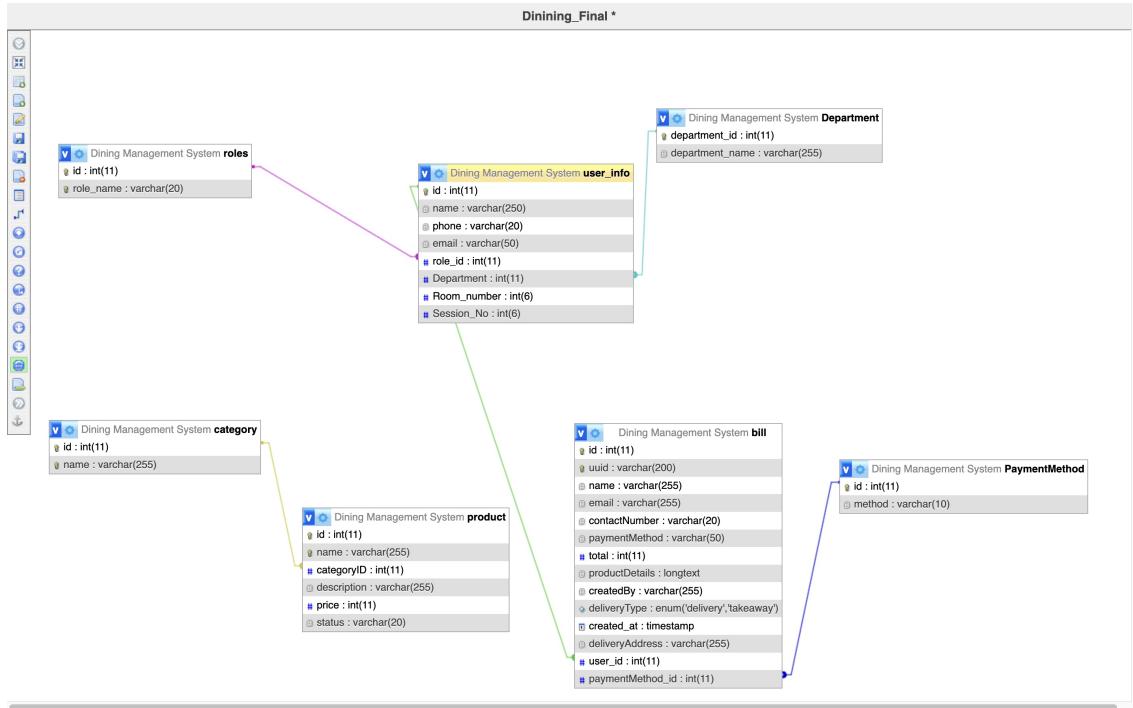


Figure 41: Database Design

# 10 Implementation

The implementation of our project was a meticulously planned process, ensuring a robust and efficient system by leveraging various technologies and languages. This phase followed a structured approach as detailed in our MS Project plan.

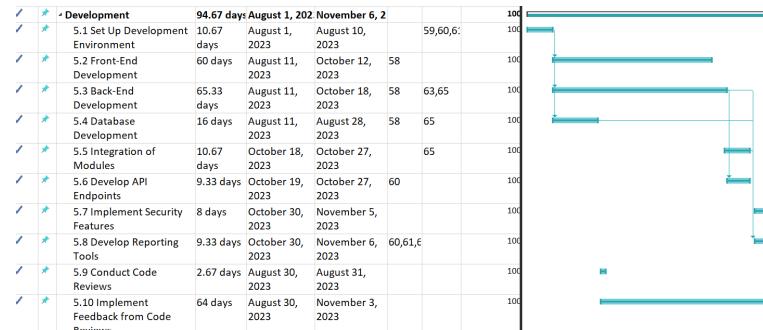


Figure 42: Project Development and Gantt Chart

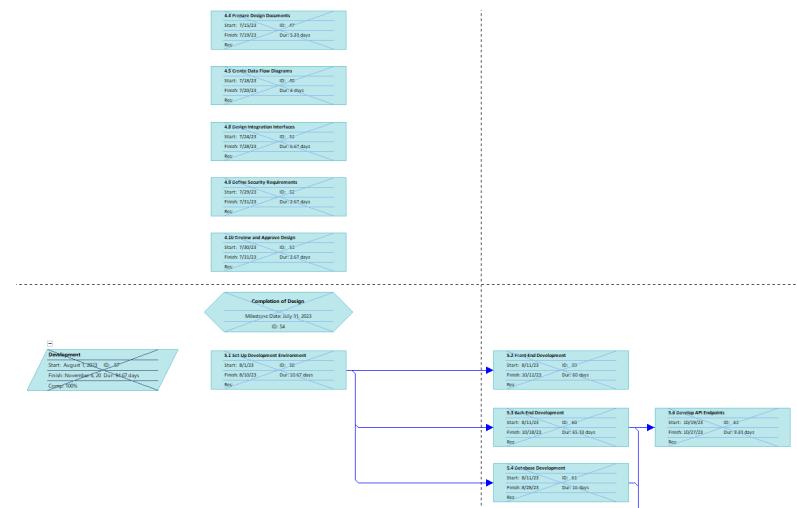


Figure 43: Network Diagram of Project Development (after completion)

## 10.1 Technologies and Languages

The implementation utilized a diverse set of technologies and languages to build a comprehensive system:

- **JavaScript:** Used for client-side scripting, enabling dynamic and interactive user interfaces.
- **HTML:** The standard markup language for creating the structure of web pages.

- **CSS:** Employed for styling and layout, enhancing the visual presentation of the user interface.
- **TypeScript:** Added to JavaScript for static typing, improving code maintainability and scalability.
- **EJS (Embedded JavaScript):** Used for server-side templating, allowing dynamic generation of HTML content with JavaScript logic.
- **SCSS (Sassy CSS):** A CSS preprocessor that adds features like variables, nested rules, and mixins, enhancing the styling process.

## 10.2 Frameworks and Tools

We incorporated various frameworks and tools to streamline development and enhance system functionality:

- **Angular:** A robust front-end web application framework that provides a structured approach to building dynamic single-page applications.
- **Node.js:** Facilitated server-side scripting, allowing JavaScript to be used on the server and enhancing application performance.
- **JSON Web Token (JWT):** Used for secure information transmission, enhancing authentication and authorization processes.

## 10.3 Database Management

For data storage and management, we utilized:

- **MySQL:** A reliable and efficient relational database management system for handling structured data.

## 10.4 Development Phases

The development process was divided into several key phases, each meticulously planned and tracked using MS Project:

- **System Design:** This phase involved creating detailed designs of the system architecture, user interfaces, and database schema. Design documents and prototypes were reviewed and refined based on stakeholder feedback.

- **Development:** During this phase, coding was performed for both the front-end and back-end components. Modules were developed incrementally and integrated continuously, following best practices for code quality and maintainability.
- **Testing:** Multiple levels of testing were conducted, including unit testing, integration testing, and system testing. Bugs and issues were tracked and resolved iteratively to ensure a stable and reliable system.
- **Deployment:** The system was deployed on a web server, and deployment scripts were tested to ensure a smooth launch. Post-deployment monitoring and maintenance plans were also established.

## 10.5 Version Control and Collaboration

The implementation code, including EJS and SCSS components, is hosted on GitHub. This platform enabled transparent and collaborative development, facilitating version control and continuous integration. All team members could track progress, manage changes, and collaborate effectively.

## 10.6 Access to Code

For further details and access to the implementation code, you can refer to our GitHub repository. The repository includes all source code, documentation, and setup instructions, providing a comprehensive overview of the system.

By adhering to a structured development process and utilizing a variety of technologies and tools, we successfully implemented a robust and efficient dining management system for the First Ladies Hall.

# 11 Testing

In the development lifecycle, we meticulously conducted various stages of testing to ensure the functionality, reliability, and performance of the implemented modules. This phase was guided by the detailed tasks and schedules outlined in our MS Project plan.

## 11.1 Unit Testing

Our initial focus was on unit testing to verify the correctness of individual components, particularly backend routes. This involved:

- **Backend Routes Verification:** Ensuring that all API endpoints were correctly configured and handled requests accurately. We used Postman to create and execute comprehensive API tests, covering various input scenarios to test robustness.
- **Database Synchronization:** Testing the seamless flow of data between the application and the database to maintain data integrity. We scrutinized data transactions to ensure consistency and accuracy.

## 11.2 Integration Testing

After unit testing, we proceeded with integration testing to verify that different modules work together as expected. This phase included:

- **Module Integration:** Testing interactions between various system modules to ensure smooth communication and data exchange.
- **Data Flow Verification:** Ensuring that data flows correctly across different parts of the system, maintaining consistency and reliability.

## 11.3 System Testing

System testing was conducted to evaluate the entire system's performance and functionality under various conditions. Key tasks included:

- **Performance Testing:** Assessing the system's performance under different loads to identify bottlenecks and ensure it can handle expected user traffic. Stress testing was performed to determine the system's limits.

- **Usability Testing:** Validating user interactions with the interface to ensure a smooth and intuitive user experience. Feedback was gathered to enhance usability.
- **End-to-End Testing:** Simulating real-world scenarios to test the complete system workflow. This included testing all user interactions and data processing from start to finish.

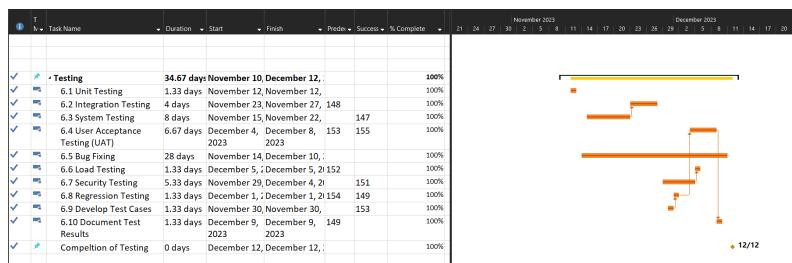


Figure 44: Project Testing and Gantt Chart

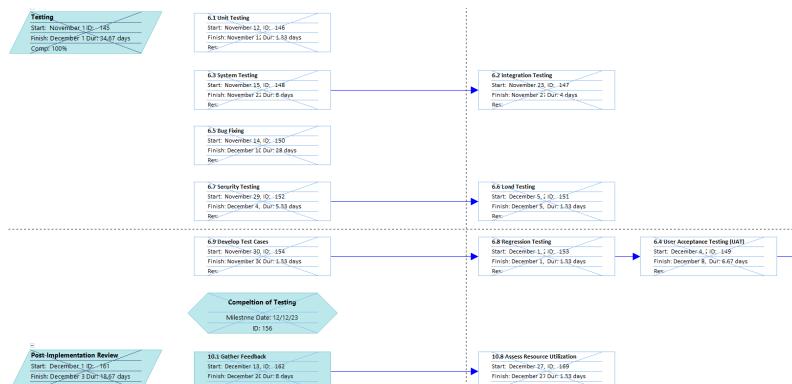


Figure 45: Network Diagram of Project Testing (after completion)

## 11.4 User Acceptance Testing (UAT)

The final stage involved User Acceptance Testing (UAT), where actual users tested the system in a real-world environment to ensure it met their needs and expectations. This included:

- **Feedback Collection:** Gathering feedback from users to identify any issues or areas for improvement.
- **Final Adjustments:** Making necessary adjustments based on user feedback to ensure the system's readiness for deployment.

## 11.5 Testing Tools

Our testing process leveraged several tools to ensure comprehensive coverage and accuracy:

- **Postman:** Used for creating and executing API tests, validating backend routes, and ensuring proper request handling.
- **Selenium:** Utilized for automated browser testing to validate front-end functionality and user interactions.

## 11.6 Tasks Overview

The testing tasks as detailed in our MS Project plan included:

- **Prepare Test Plan:** Developing a comprehensive test plan outlining the scope, objectives, resources, and schedule of testing activities.
- **Develop Test Cases:** Creating detailed test cases for unit, integration, system, and user acceptance testing.
- **Execute Unit Tests:** Performing unit tests to validate individual components.
- **Execute Integration Tests:** Conducting integration tests to ensure that different modules interact correctly.
- **Execute System Tests:** Carrying out system tests to evaluate the overall functionality and performance of the system.
- **Execute User Acceptance Tests (UAT):** Involving end-users in testing to ensure the system meets their needs and expectations.
- **Bug Tracking and Resolution:** Identifying, tracking, and resolving bugs discovered during various testing phases.
- **Regression Testing:** Re-running tests after bug fixes to ensure that resolved issues do not reoccur and that no new issues are introduced.
- **Final Testing Report:** Compiling a detailed report summarizing all testing activities, results, and any recommendations for further improvement.

Our thorough and structured testing approach, combined with the use of specialized tools and a detailed task plan, ensures that the First Ladies Hall Dining Management System is robust, reliable, and ready to meet the needs of its users effectively.

By adhering to this comprehensive testing strategy, we aim to deliver a high-quality dining order system that enhances the overall dining experience for the residents of First Ladies Hall.

## 12 Feature Implementation

In our project, we meticulously implemented and tested key features such as Menu Management, Order Management, and Billing and Payment. These features are crucial for the seamless operation of the dining management system. The following sections detail the implementation and associated testing tasks as outlined in our MS Project plan.

### 12.1 Menu Management

Menu Management is a core feature that allows administrators to manage meal options efficiently. The tasks and testing activities involved include:

- **Design Menu Management Interface:** Creating a user-friendly interface for adding, updating, and deleting menu items.
- **Input menu Items, update them regularly:** Input menu Items, update them regularly.
- **Categorize Menu items and set pricing:** Categorize Menu items and set pricing.
- **Review and approve menus:** Review and approve menus based on feedback.

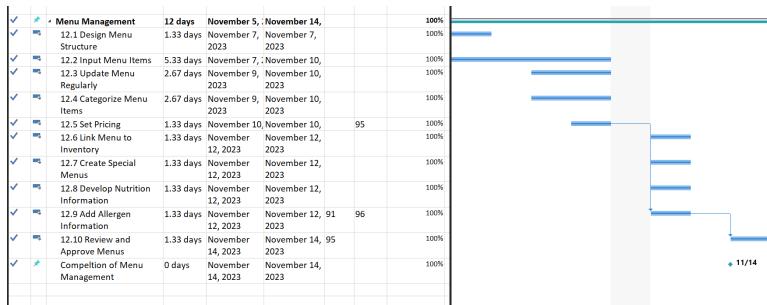


Figure 46: Menu Management and Gantt Chart

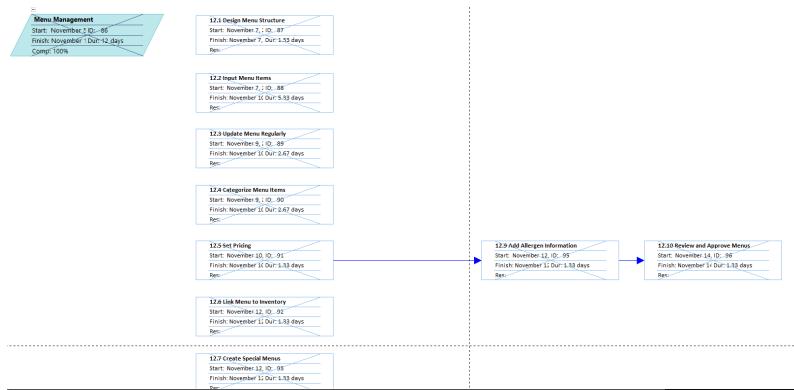


Figure 47: Network Diagram of Menu Management (after completion)

## 12.2 Inventory Management

Order Management is essential for processing meal orders from students. The implementation and testing tasks include:

- Build and Track Inventory Levels:** Developing an intuitive interface for placing, viewing, and managing orders.
- Maintaining order supply chain:** Implementing backend logic to handle order placement, modification, and tracking.
- Automate reordering and manage perishable tracking:** Automate reordering and manage perishable tracking
- Develop Inventory Reports and ensure stock accuracy:** Develop Inventory Reports and ensure stock accuracy.

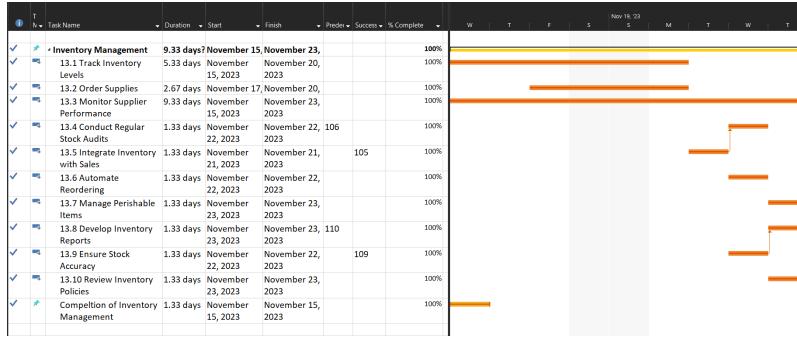


Figure 48: Inventory Management and Gantt Chart

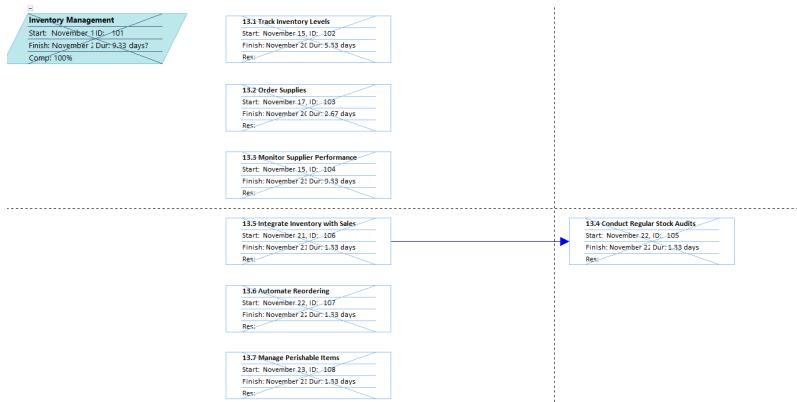


Figure 49: Network Diagram of inventory Management (after completion)

## 12.3 Order Management

Order Management is essential for processing meal orders from students. The implementation and testing tasks include:

- **Design Order Management Interface:** Developing an intuitive interface for placing, viewing, and managing orders.
- **Develop Order Processing Logic:** Implementing backend logic to handle order placement, modification, and tracking.
- **Integrate payment logic:** Integrate payment logic.
- **Track Order status and update order system regularly:** Track Order status and update order system regularly.
- **Develop order reports and manage customer feedback:** Develop order reports and manage customer feedback.

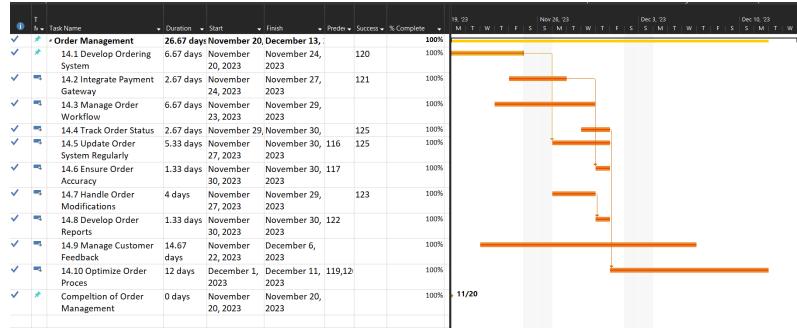


Figure 50: Order Management and Gantt Chart

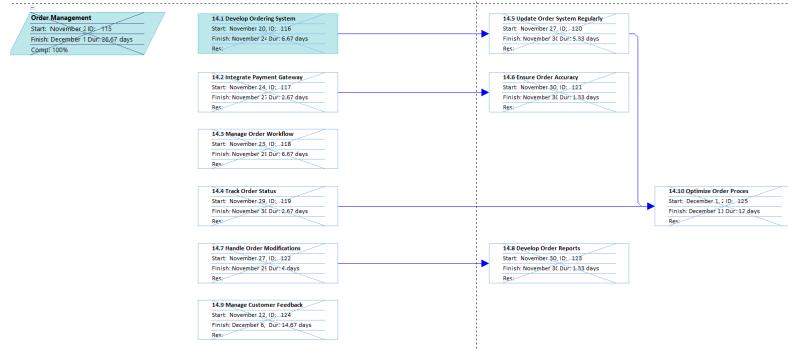


Figure 51: Network Diagram of order Management (after completion)

## 12.4 Billing and Payment

Billing and Payment is a critical feature for managing the financial transactions related to meal orders. The tasks and testing activities include:

- Design Billing Interface:** Creating a clear and efficient interface for viewing and managing bills.
- Implement Payment Gateway:** Integrating secure payment gateways to handle transactions.
- Unit Testing:** Verifying the functionality of individual billing and payment components.
- Integration Testing:** Ensuring that the billing system integrates smoothly with order management and menu systems.
- System Testing:** Performing end-to-end tests to ensure the complete billing and payment process works as intended.
- User Acceptance Testing (UAT):** Collecting feedback from users to confirm that the billing and payment system is reliable and easy to use.

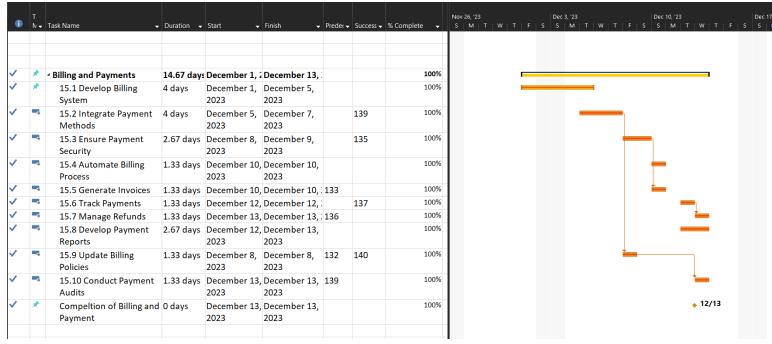


Figure 52: Billing and Payment and Gantt Chart

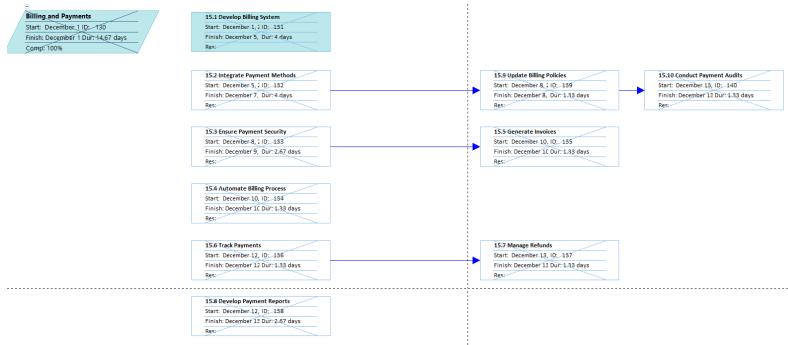


Figure 53: Network Diagram of Feature Implementation (after completion)

## 12.5 Comprehensive Testing Approach

Our comprehensive testing approach included various stages to ensure the reliability and effectiveness of each feature. The key testing tasks were:

- **Prepare Test Plan:** Developing a detailed test plan covering the scope, objectives, resources, and schedule for testing activities.
- **Develop Test Cases:** Creating specific test cases for unit, integration, system, and user acceptance testing for each feature.
- **Execute Unit Tests:** Performing unit tests to validate individual components of menu management, order management, and billing systems.
- **Execute Integration Tests:** Conducting integration tests to ensure smooth interaction between different modules.
- **Execute System Tests:** Carrying out system tests to evaluate the overall functionality and performance of the integrated system.
- **Execute User Acceptance Tests (UAT):** Involving end-users in testing to ensure the system meets their needs and expectations.

- **Bug Tracking and Resolution:** Identifying, tracking, and resolving bugs discovered during various testing phases.
- **Regression Testing:** Re-running tests after bug fixes to ensure resolved issues do not recur and no new issues are introduced.
- **Final Testing Report:** Compiling a detailed report summarizing all testing activities, results, and recommendations for further improvement.

By adhering to this structured approach, we ensured that the First Ladies Hall Dining Management System is robust, user-friendly, and capable of enhancing the dining experience for its users.

## 13 Post Implementation review

We have detailed plan for post-implementation activities with includes :

- **Conduct Performance Evaluation:** Conduct Performance Evaluation based on relative things .
- **Evaluate project success criteria:** Evaluate project success criteria based on evaluation metrices.
- **Asseses Resource Utilization:** We , three were responsible for overall resouce allocation.

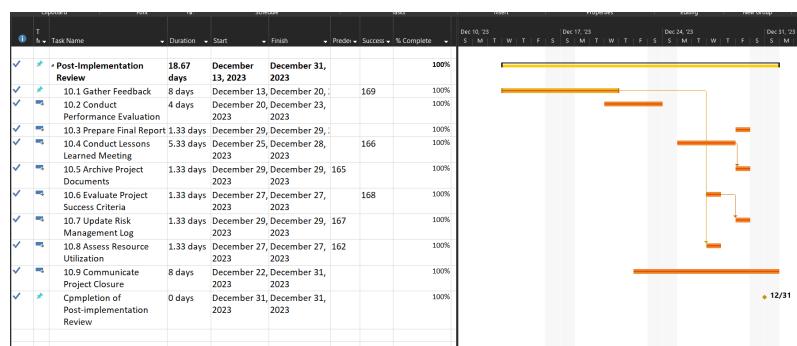


Figure 54: Post implementaion and Gantt Chart

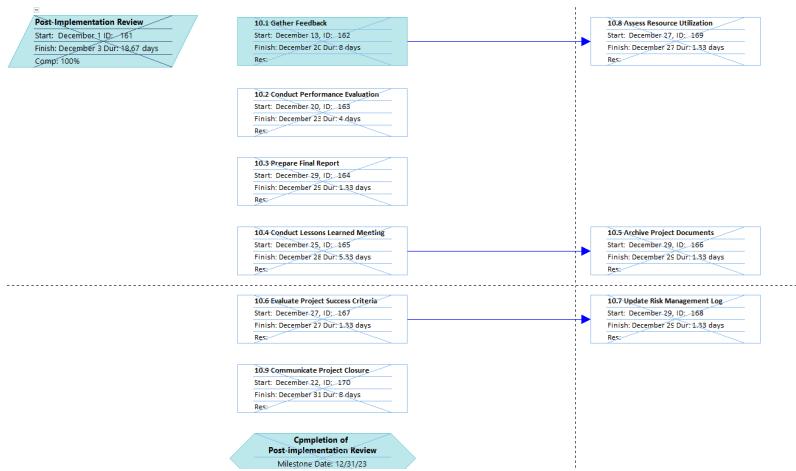


Figure 55: Network Diagram of post implementation (after completion)

## 14 Conclusion

This website will help the hall resident students to watch and order meals more easily as well as help the supervisor to coordinate the meal system for efficiently. Although we tried our best to make the system error free and user friendly, there are still some limitation exist in the website.