AMERICAN INTERNATIONAL UNIVERSITY, BANGLADESH

Faculty of Science and Technology

CSC2209 OBJECT ORIENTED ANALYSIS AND DESIGN

SUPERVISED BY: DR. MD ALAMGIR KABIR

MESS SERVICE MAINTAINING SYSTEM

Group 5

NAME	SID
NIBIR, MD. EKRAMUL HASAN	20-42740-1
SHEIKH, MD. RIYADH	20-42748-1
SHADHIN, MD. YOUSUF ALI	20-42783-1
CHOWDHURY, SANZANA IMAM	20-43437-1
REAJ, MD. ASGOR HOSSAIN	20-43999-2

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Abstract

With our project, we can replace the paperwork to an automated system. This helps mess manager to provide better services to the students. Students can get many benefits also. Such as they can choice their meal from anywhere by using this system. No need to contact with others for confirming meal. On the other hand they also can see their daily mess cost and total bill. This system will help both students and managers to sending and receiving bills, because this system contains online payment system.

Background Information

We all know that managing a mess is kind of messy thing, because maintaining students data using paper-pen, daily collect meal information and counting process is kind of hard for a mess manager. On the other hand for students also cannot correctly calculate their daily cost, monthly bills. They seem confused about their bills.

Some manager cannot control the bazar management because they are not able to record specific data of who did previous week bazar. So, they face kind of problem to selecting specific students for doing bazar. In addition managers also can fail to record bill information for many students.

Finally, we can say that maintaining a mess is not an easy thing for a manager and a time waste thing for a student. Because record all details in paper-pen system, doing weekly meeting for calculating daily cost, doing monthly meeting for calculating monthly bills is totally waste of time and increasing a huge chance to lose all data.

Objectives and Scope

This mess maintaining system is developed to establish a fair relationship between mess manager and students. This system also helps us to save valuable time for both students and manager.

- Students can view all rules and regulations for staying the mess through this system replacement of paper banner.
- Students can add their daily meal through this system database.
- Manager can easily provide weekly bazar list in this system.
- Who will go bazar next? It will remind by this automated system.
- Students can see their daily mess cost and total cost.
- Students can get reminder deadline of payment and due notice.
- By using this system's online payment method option they can pay easily and get receipt as a proof.
- Manager can access entire system for checking all is going ok or not. If necessary he can update data.

However, this system may keep all information of students and manager, and keep storing record of daily activities.

Proposed Solution

We aimed for flexibility in this system so that this system could be easy to use for both manager and students. Our system has few basic subsystems; they are listed and described below.

- *Log in system:* In this system there have two types of user. One is for manager and other is for students. By creating a manager user account manager can get access for the system. He can organize the rules and regulations, mess name etc. On the other hand students can create their user account under the manager. When new students create student user account first of all they have to fill up an information form which will be verified by manager.

- *Meal system:* In mess, meal system is one of the most important system. Depending on mess members initially they all have to pay a constant number of costs for an entire month. Both manager and students can access this system for put their regular meal record. For students this feature is only available for a constant time. If they want their meal they have to mark ok if not then mark no. By counting their total meal it will shows the total coast of meal which will automatically calculating by software.

- *Bazar:* In mess system, every week there have a day for bazar. However, one student do bazar every week it is not fair. So the rule is for bazar, it depends on total students of living in a mess. One or two students do bazar once in a month. Who will do that for next week; it will automatically generate by this software and remind him with a bazar list.

- *Online payment procedure:* By using this software students can pay their payments by using online payment system. They can see their monthly costs including gas, current, water and other bill which is automatically calculated by this software. After finished payment procedure this will be pending for manager approval. When manager approve the payment he provide a payment receipt to this student and the system store the transaction id for future help.

Risks and Constraints

Though this is an online based software application, users have to ensure internet connection. On the other hand this software doesn't have any recovery features. So, if any data get deleted it will not possible to get it back.

Use Case Diagram

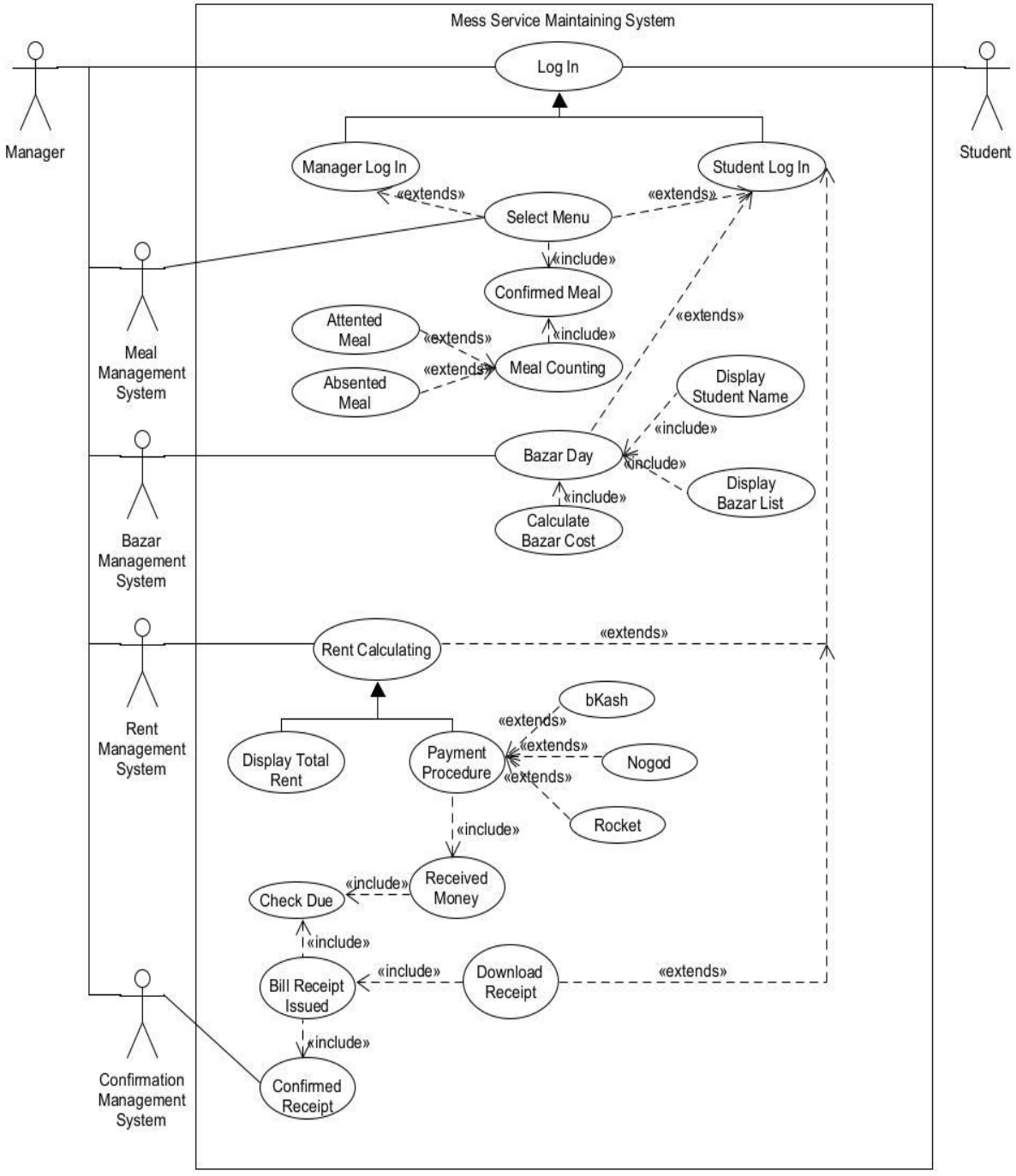

Figure 1: Use Case Diagram

Use Case Specification

Log In

Table 1: Use Case Specification for Log In

Use Case Name:	**Log In**	
Actor(s):	**Manager, Student**	
Description:	This use case illustrates the process of log in to the system where both manager and student can able to access the system.	
Reference ID:	**MSMS-1**	
Typical course of events:	**Actor Action**	**System Response**
	Step 1: Initialize the Log in process. Step 3: Select log in option. Step 4: Enter email and password Step 7: User has logged into system.	Step 2: System display the log in options, Manager or Student. Step 5: The system will check the email and passwords are correct or not. Step 6: The system will respond positive.
Alternative course of events:	5a. If system can't able to match the given email and password with record. System will respond error, Invalid password or email. And ask them "forget password?" **(Back to Step 3)**	
Precondition:	User should have remembered the email and passwords combination.	
Postcondition:	User has logged into the system.	

Menu Selection

Table 2: Use Case Specification for Menu Selection

Use Case Name:	**Menu Selection**	
Actor(s):	**Manager, Student**	
Description:	This use case describes the daily meal menu selection process. With this, mass manager and students can choose today's meal menu by voting process.	
Reference ID:	**MSMS-2**	
Typical course of events:	**Actor Action**	**System Response**
	Step 1: User click on the "Select Menu" button. Step 3: User can choose his meal and select it.	Step 2: System will show the list of meals along with select option. Step 4: System will counting the users number who selected meal. Step 5: After limited time, by counting majority vote, system will display today's meal menu.
Alternative course of events:	4a. If system got the same counted value for multiple meals, system will send notification to the manager. After that manager will choose the meal from selected list.	
Precondition:	User has been successfully login in the system.	
Postcondition:	Displayed today's meal menu.	

Bazar Day

Table 3: Use Case Specification for Bazar Day

Use Case Name:	**Bazar Day**	
Actor(s):	**Student**	
Description:	This use case demonstrates the process of mass's weekly bazar management.	
Reference ID:	**MSMS-3**	
Typical course of events:	**Actor Action**	**System Response**
	Step 1: User click on the "Bazar Day" button. Step 5: Selected students have to confirm their name by pressing "Ok" option.	Step 2: System will show the weekly bazar list along with costs. Step 3: System will auto generated two students for weekly bazar. Step 4: System will display the names of the students and display an "Ok" button. Step 6: Weekly bazar information will be recorded positively.
Alternative course of events:	5a. If the selected students won't confirm their name, after a limited time, system will go **(Back to Step 3)** and generate other students name for weekly bazar.	
Precondition:	Student has been successfully login in the system.	
Postcondition:	Displayed two students name, bazar list and recorded the data.	

Calculating Rent

Table 4: Use Case Specification for Calculating Rent

Use Case Name:	**Rent Calculation**	
Actor(s):	**Student**	
Description:	This use case displays the each student's total rent information and calculation process.	
Reference ID:	**MSMS-4**	
Typical course of events:	**Actor Action**	**System Response**
	Step 1: Student click on the "Rent Calculation" button.	Step 2: System will display the individual costs. Step 3: System will check the previous due. Step 3: System will calculate all costs. Step 4: System will display the overall rent.
Alternative course of events:		
Precondition:	Student has been successfully login in the system.	
Postcondition:	Overall rent has been displayed.	

Payment

Table 5: Use Case Specification for Payment

Use Case Name:	**Payment**	
Actor(s):	**Student**	
Description:	This use case illustrates the online payment procedure.	
Reference ID:	**MSMS-5**	
Typical course of events:	**Actor Action**	**System Response**
	Step 1: Student click on the "Payment" button. Step 3: Select payment method. Step 4: Send Money. Step 12: Student can download the receipt as prove.	Step 2: Display payment options. Step 5: System will received bill. Step 6: System will ask confirmation from Manager. Step 10: System will get the confirmation. Step 8: System will issue the bill receipt. Step 9: System will display "Download Receipt" option.
Alternative course of events:	10a. If system will not get confirmation response from manager within limited time, system will send a message to the student, "Contact with Manager."	
Precondition:	Student has been successfully login in the system.	
Postcondition:	The completed payment will be recorded.	

Activity Diagrams

Reference ID: MSMS-1

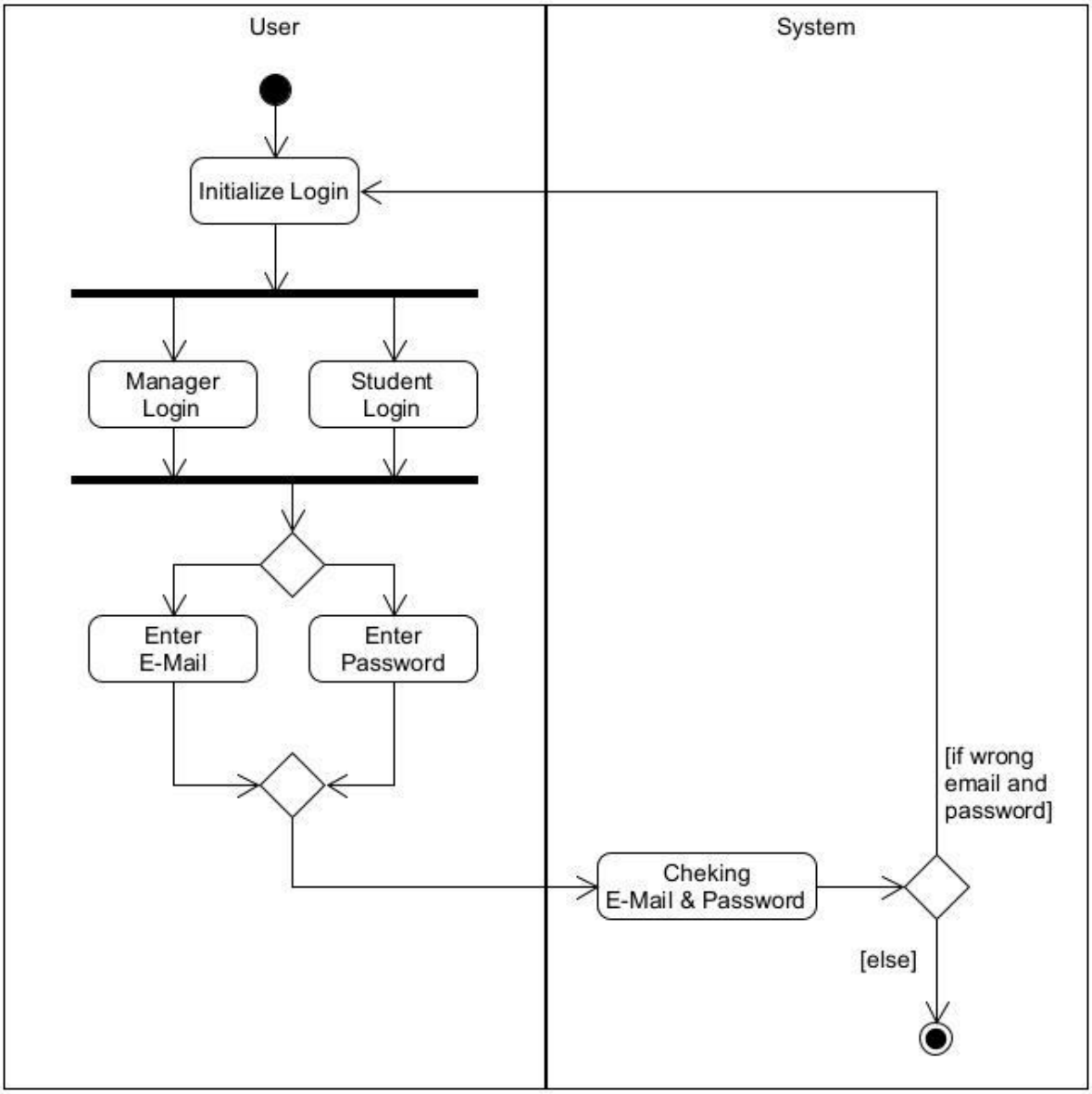

Figure 2: Activity Diagram MSMS-1

Reference ID: MSMS-2

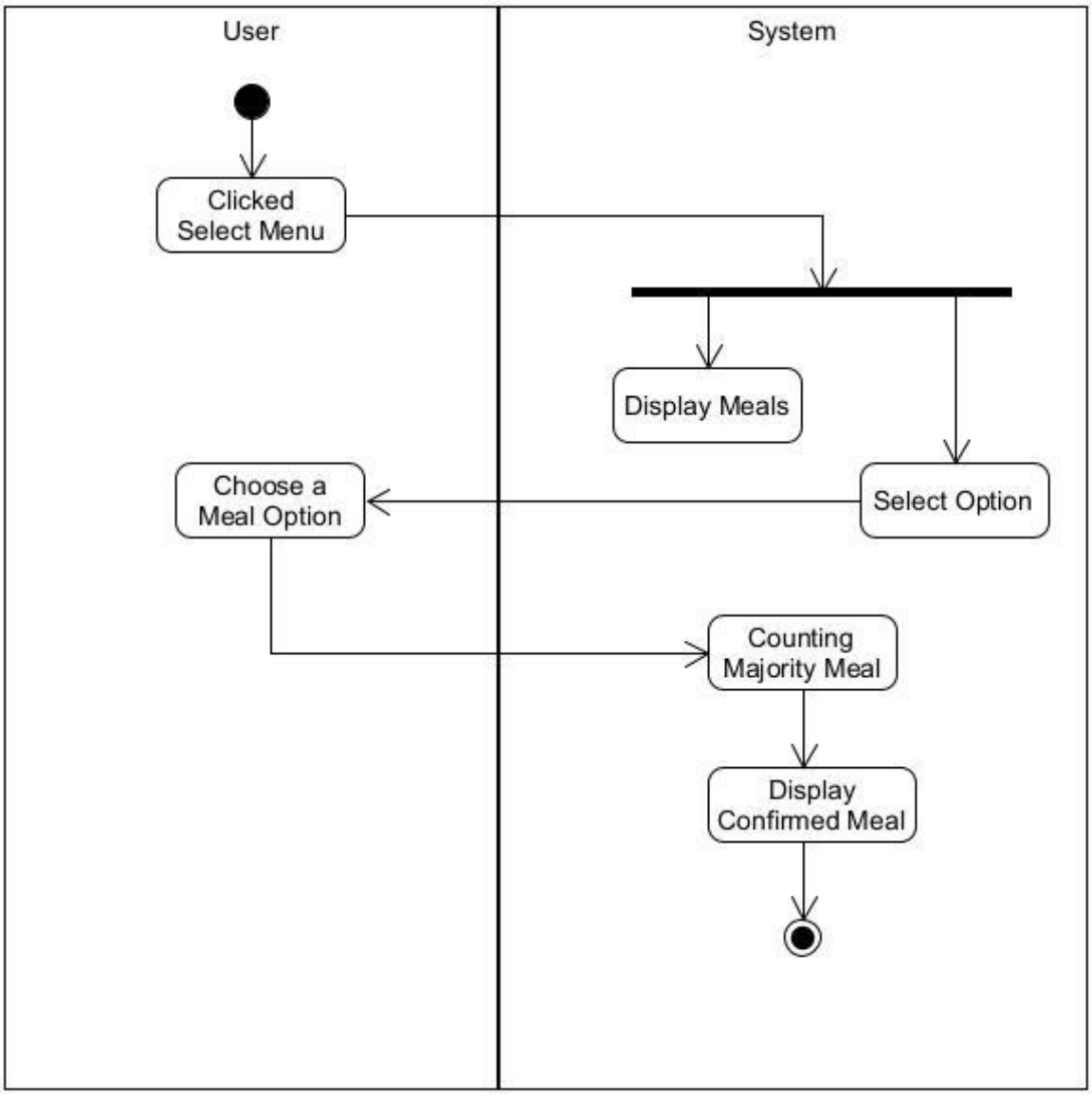

Figure 3: Activity Diagram MSMS-2

Reference ID: MSMS-3

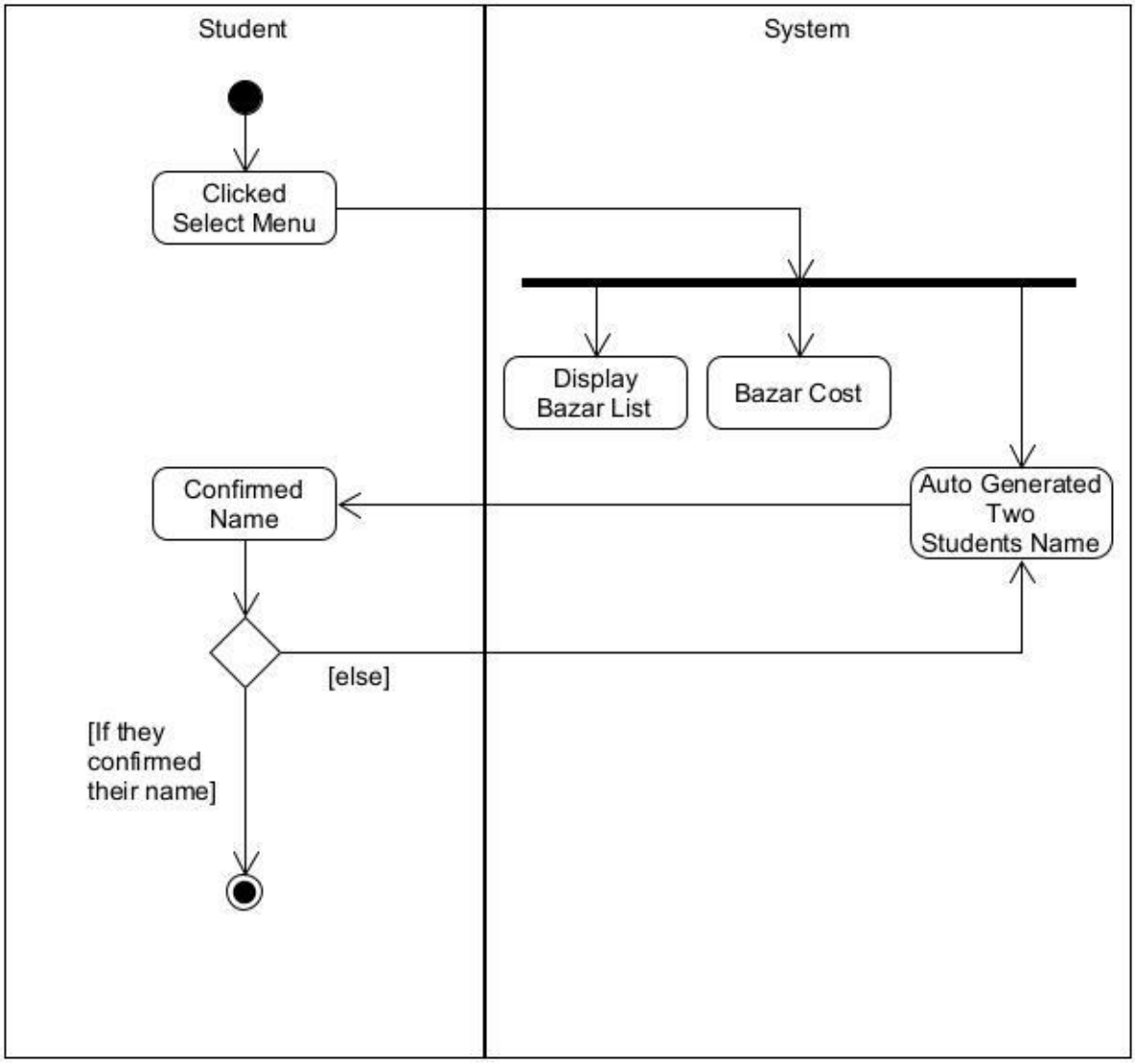

Figure 4: Activity Diagram MSMS-3

Reference ID: MSMS-4

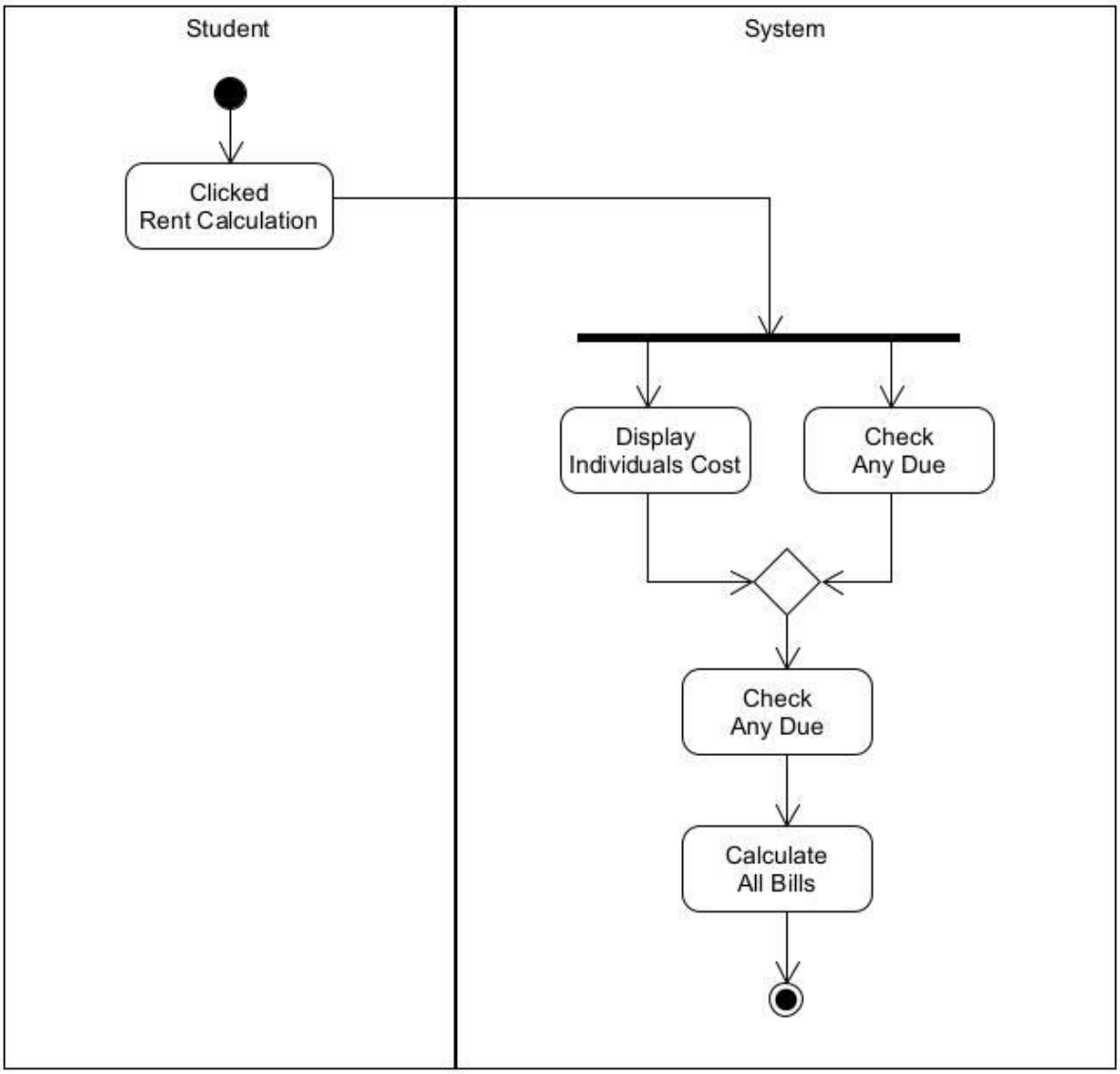

Figure 5: Activity Diagram MSMS-4

Reference ID: MSMS-5

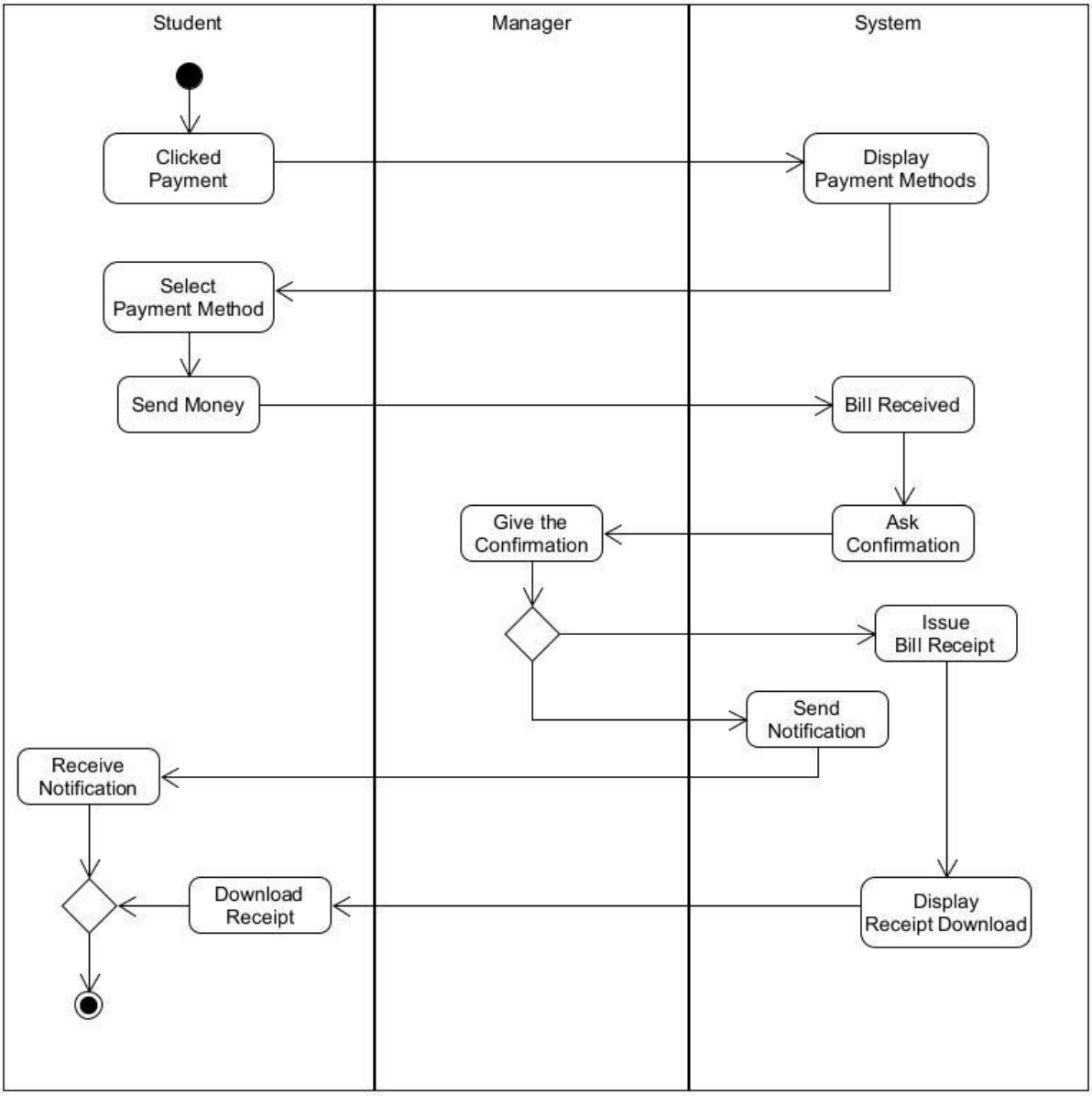

Figure 6: Activity Diagram MSMS-5

Sequence Diagrams

Log In

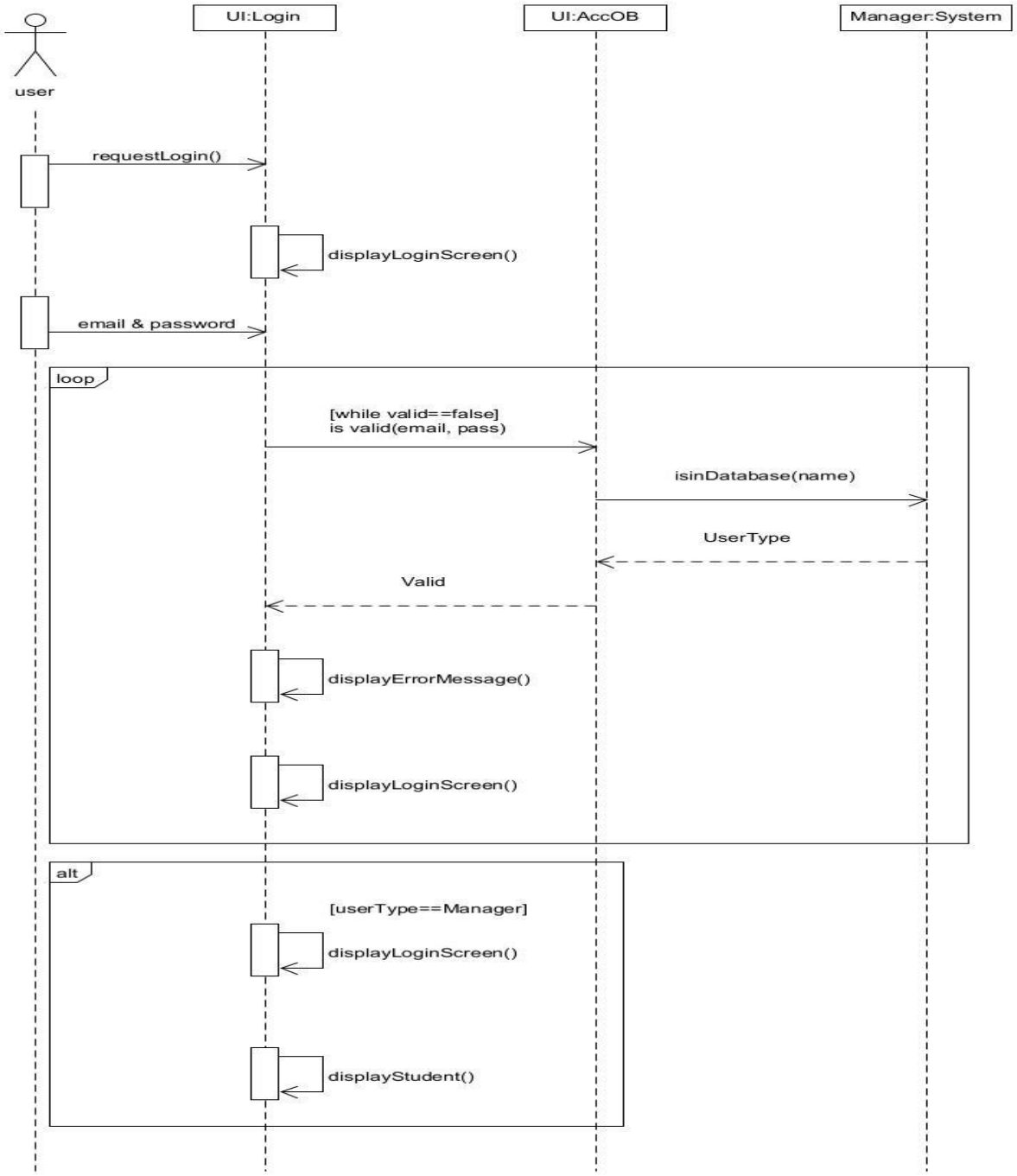

Figure 7: Sequence Diagram Log In

This sequence diagram is for user log in to the system. Firstly, the user initializes the login process; system will display the log in interface for type of user, manager or student log in. After select their user type, they have to enter email and password.

Finally, system will take the information and match with information database is the entered information valid or not. If not valid system will response negative and show user a message “forgot password or email?” and return the invalid user to login page for select his user type page. On the other hand, if all information can match with database, user can successfully log in to the system.

Meal Management

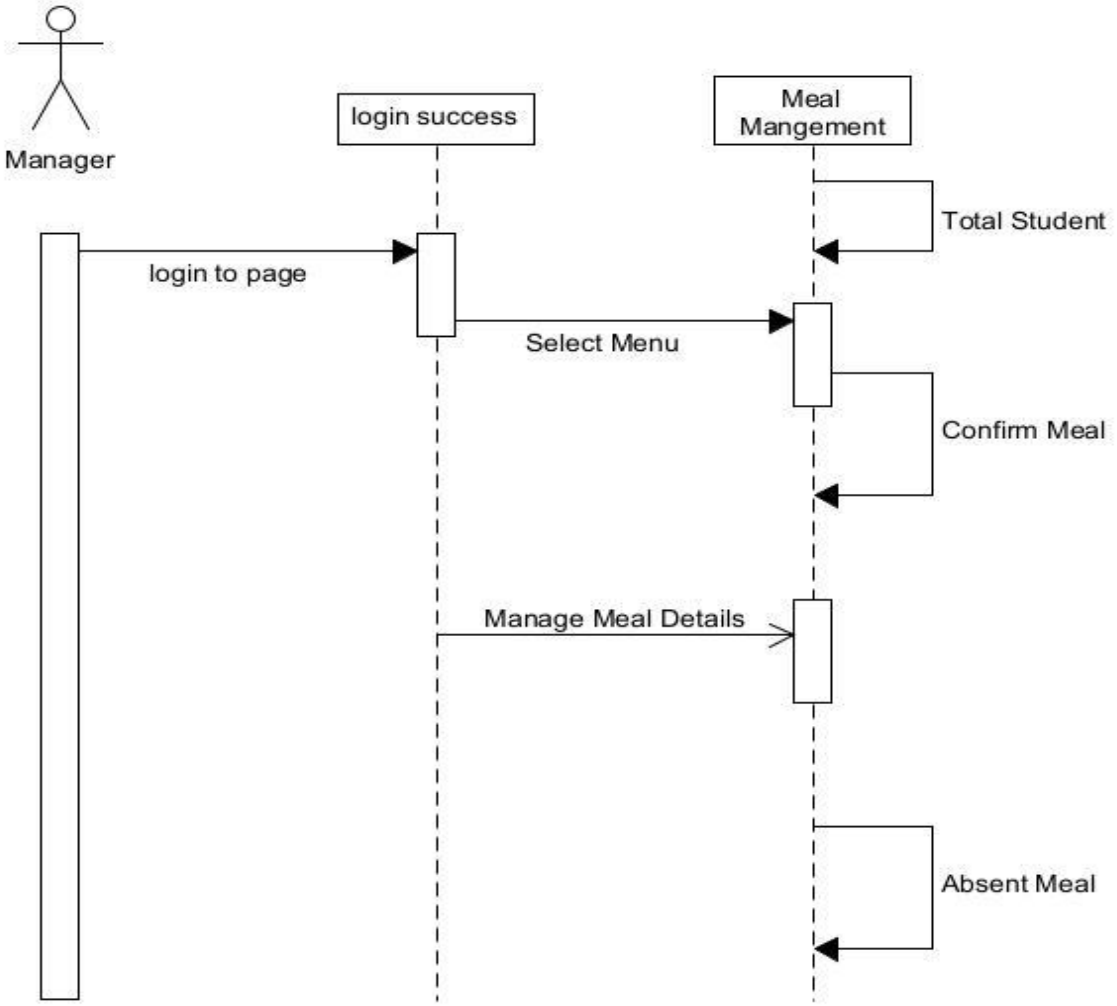

Figure 8: Sequence Diagram Meal Management

This sequence diagram refers that how meal management system will flow. Firstly, user has to log in to the system. Secondly, after successful log in, the system will show the menu selection process for users. After finishing this process, system will count the student of absent and attend the process. For this reason, system can able to display the meal which will select by majority of voting from menu selection process.

Finally, by recording all processing data and counting the daily meal, this system will finish meal management process.

Bazar Management

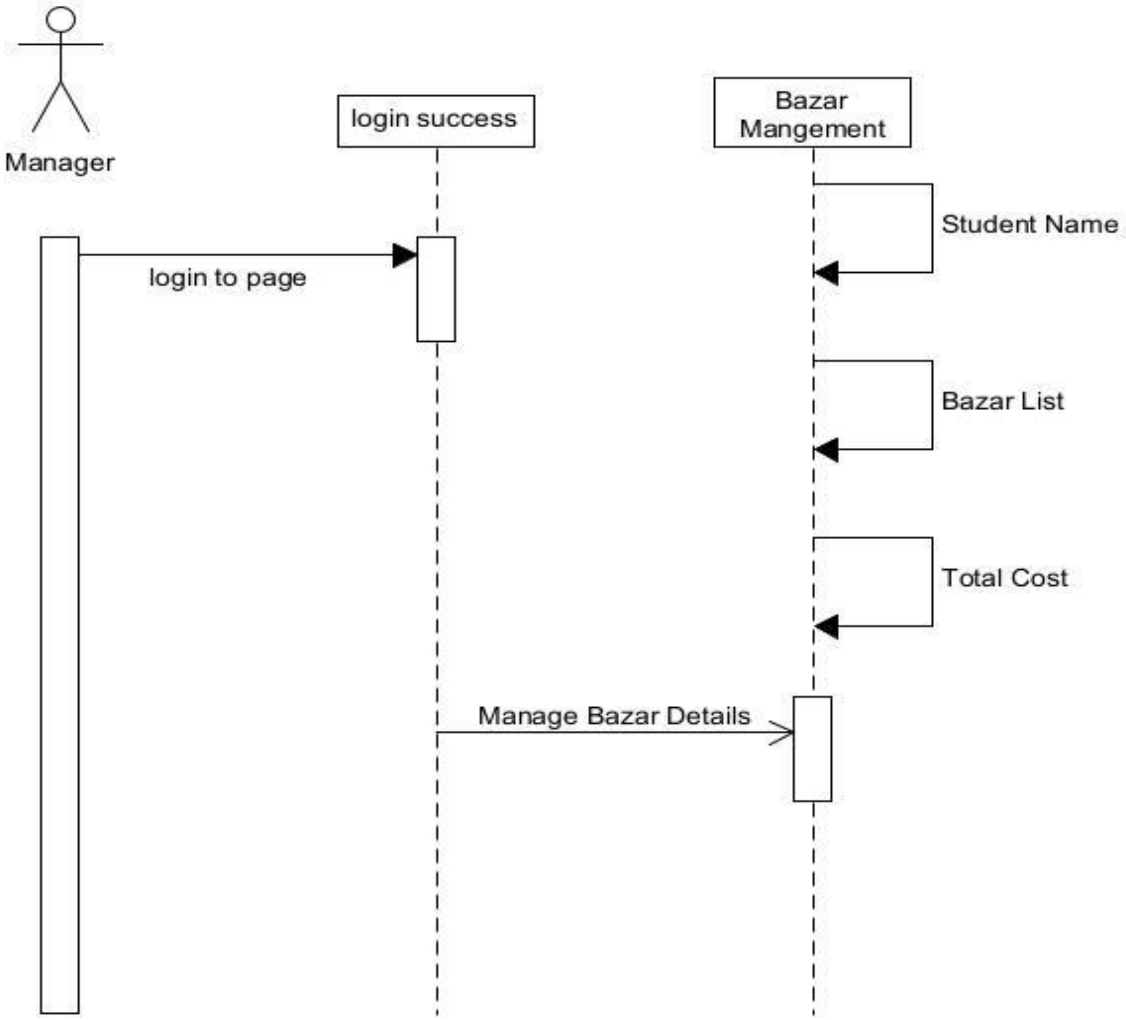

Figure 9: Sequence Diagram Bazar Management

This bazar management sequence diagram illustrates that, first of all used have to successfully log in to the system by maintaining log in process. After log in user can see the list of bazar, bazar cost, student's name. All this process will happen automatically through this system.

Rent Management

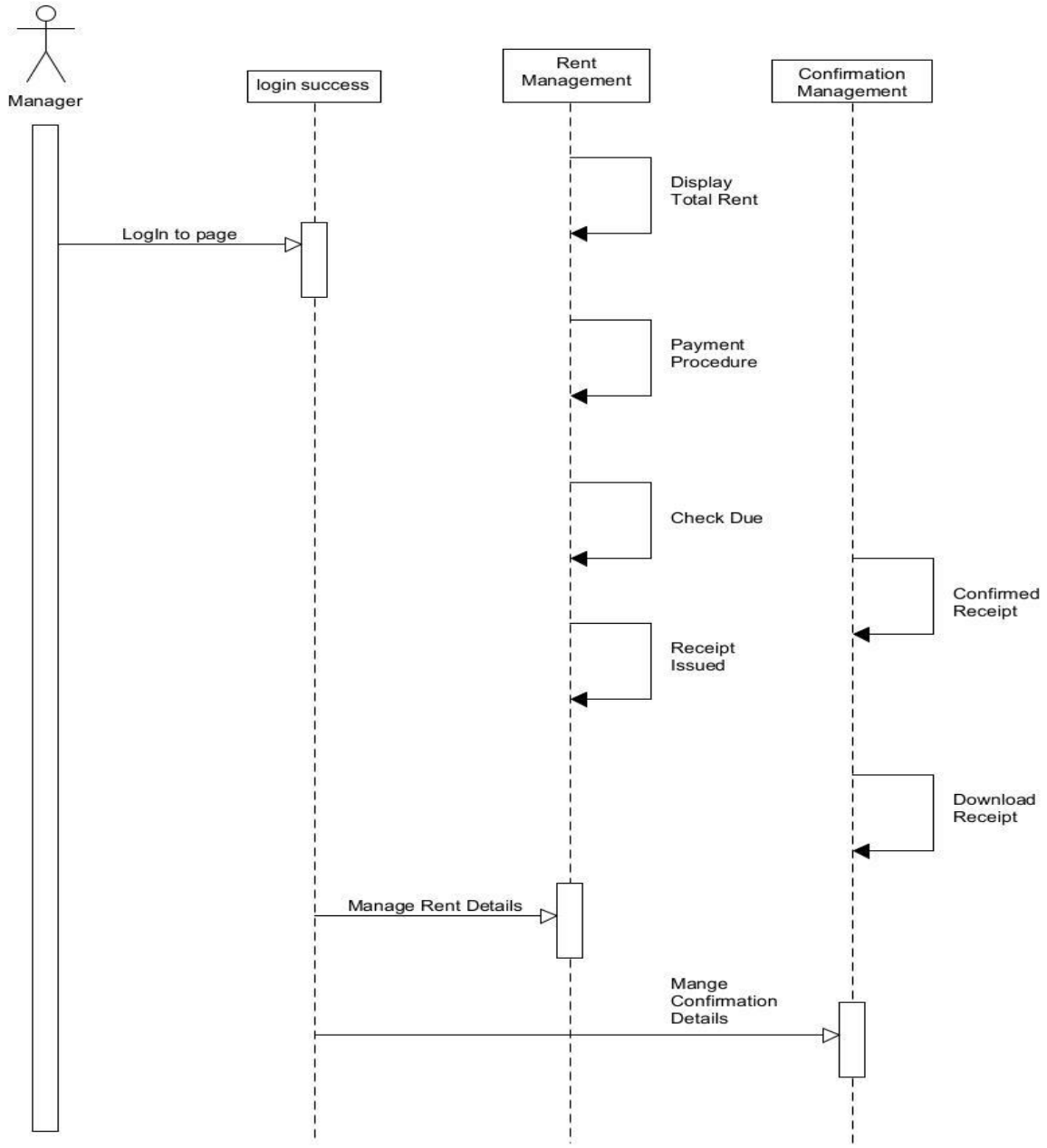

Figure 10: Sequence Diagram Rent Management

This sequence diagram showing the flow of rent management system process. To access or use this specific system user must have to log in to the base system first. A manager can manage all the rent information using this option. This rent management system will display the total rent of a student, payment procedure, payment details confirmation and downloading receipt option.

Finally, we can say that, for see the monthly total rent, individual cost and if someone pays the rent, they can also download it from there.

Payment

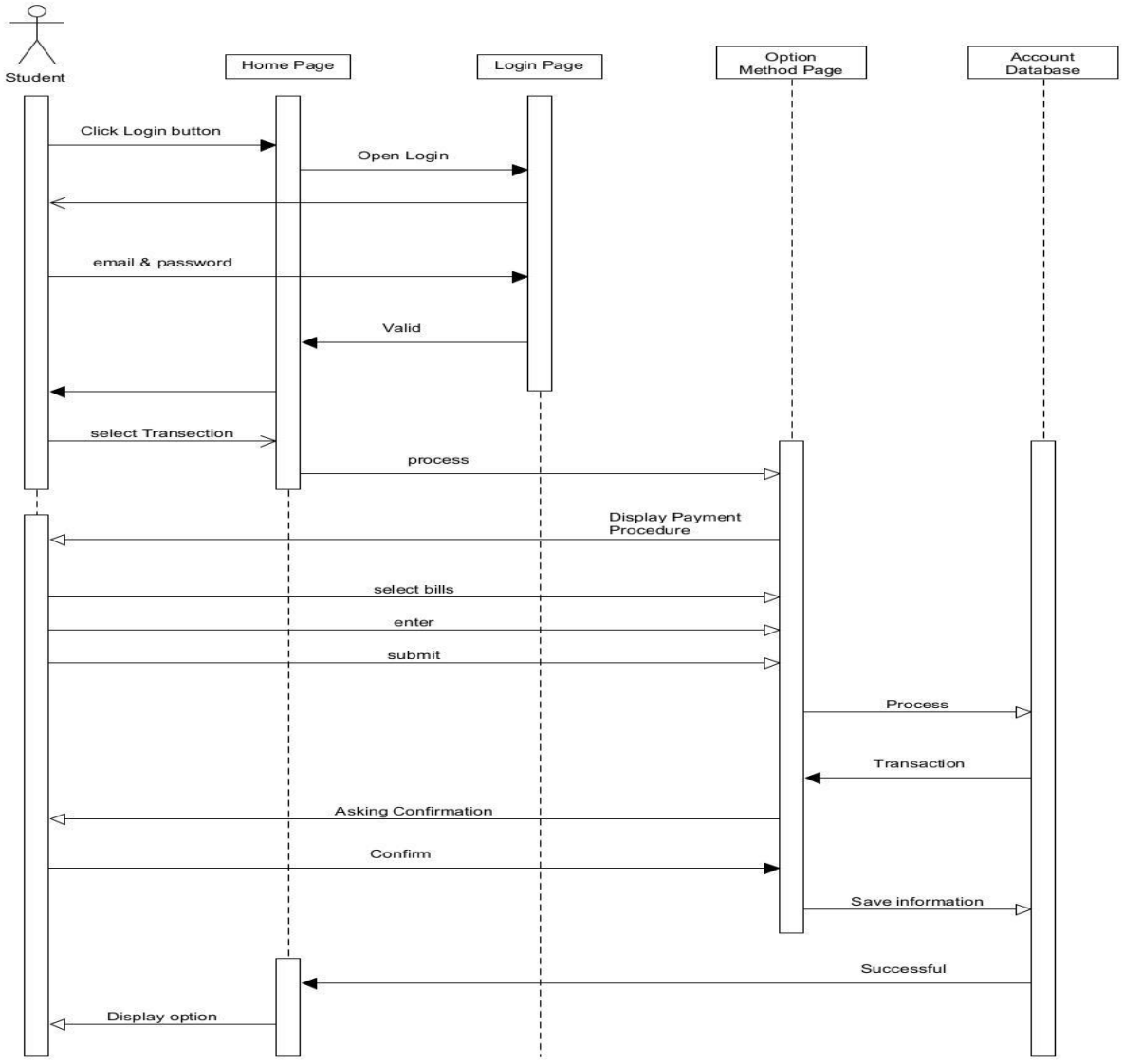

Figure 11: Sequence Diagram Payment

This sequence diagram is a sequence of rent payment procedure. This system will accept the online payment procedure system.

First of all students need to enter the system with valid log in information. Secondly they have to select payment option. Thirdly, they have to choose payment method, such as bKash, Nagad or Rocket. After pays the total bill, student's need to confirm their transaction. Systems will response positive if the manager gave confirmation after checking the payment information.

Finally, a successful payment procedure will be completed by storing all data and issuing a payment receipt.

Class Diagram

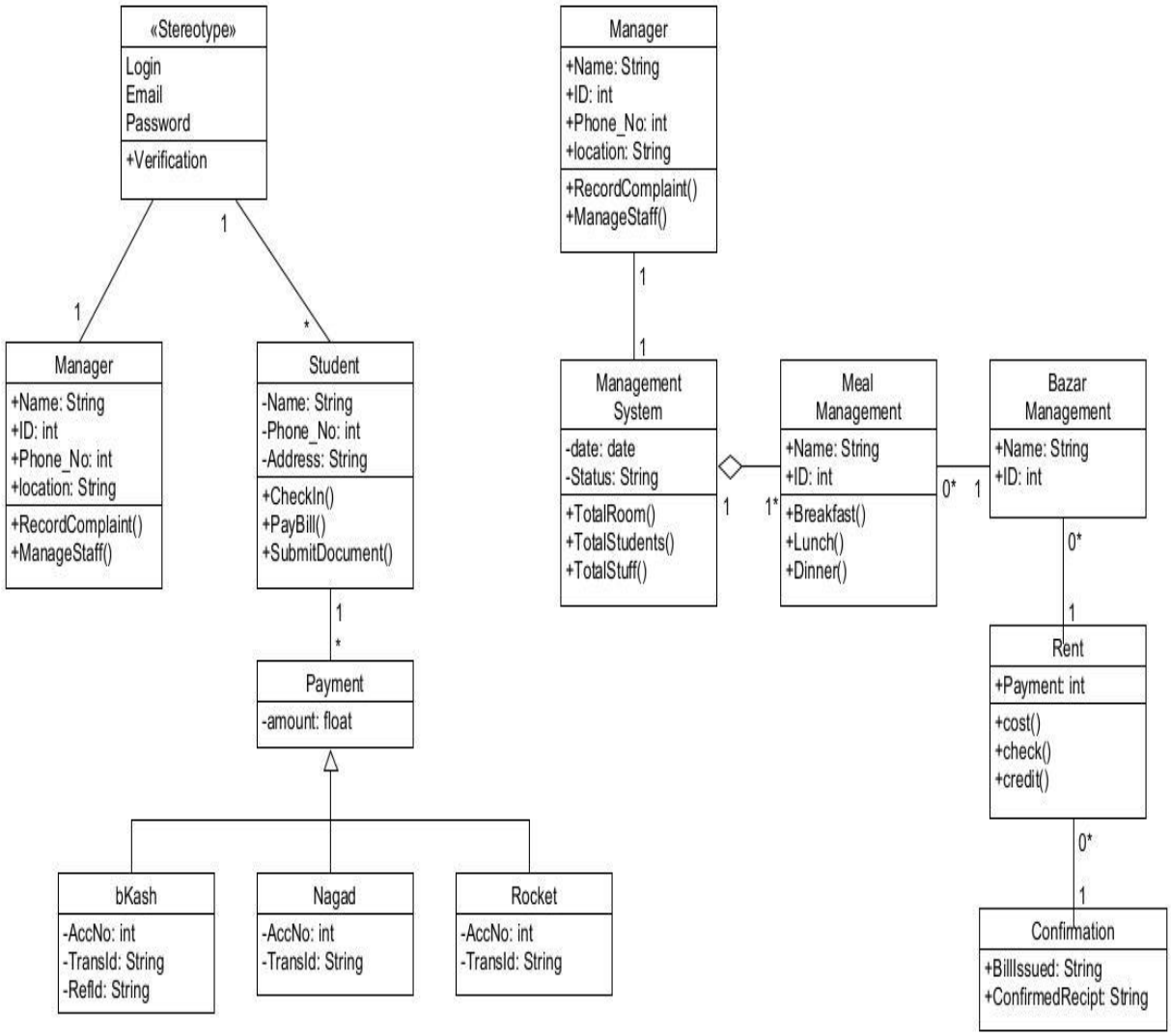

Figure 12: Class Diagram

Description of Class Diagram

For payment class, only student class will be used here, one student can pay many times. So for student and payment class is related one to many relationships. For payment system need student data from the student class. After that the variable amount from payment class will be inherited for various payment methods like bKash, Nagad and Rocket.

For manager class will be the base class for all sub management system. Such as meal management, bazar management and rent management system. However, for meal management, every user can see the selected menu for breakfast, lunch and dinner all of them will illustrates by the methods of meal management system class. For rent management the Rent class contains three methods. There have one additional class confirmation, which will confirm and provide the bill receipt after payment.

System Prototype

Log In: step 1

Figure 13: Log In: Step1

Log In: step 2a: Manager's Login

Figure 14: Log In: Step 2a

Log In: step 2b: Student's Login

Figure 15: Log In: Step 2b

Log In: step 3:

Figure 16: Log In: Step 3

Meal: Step 1

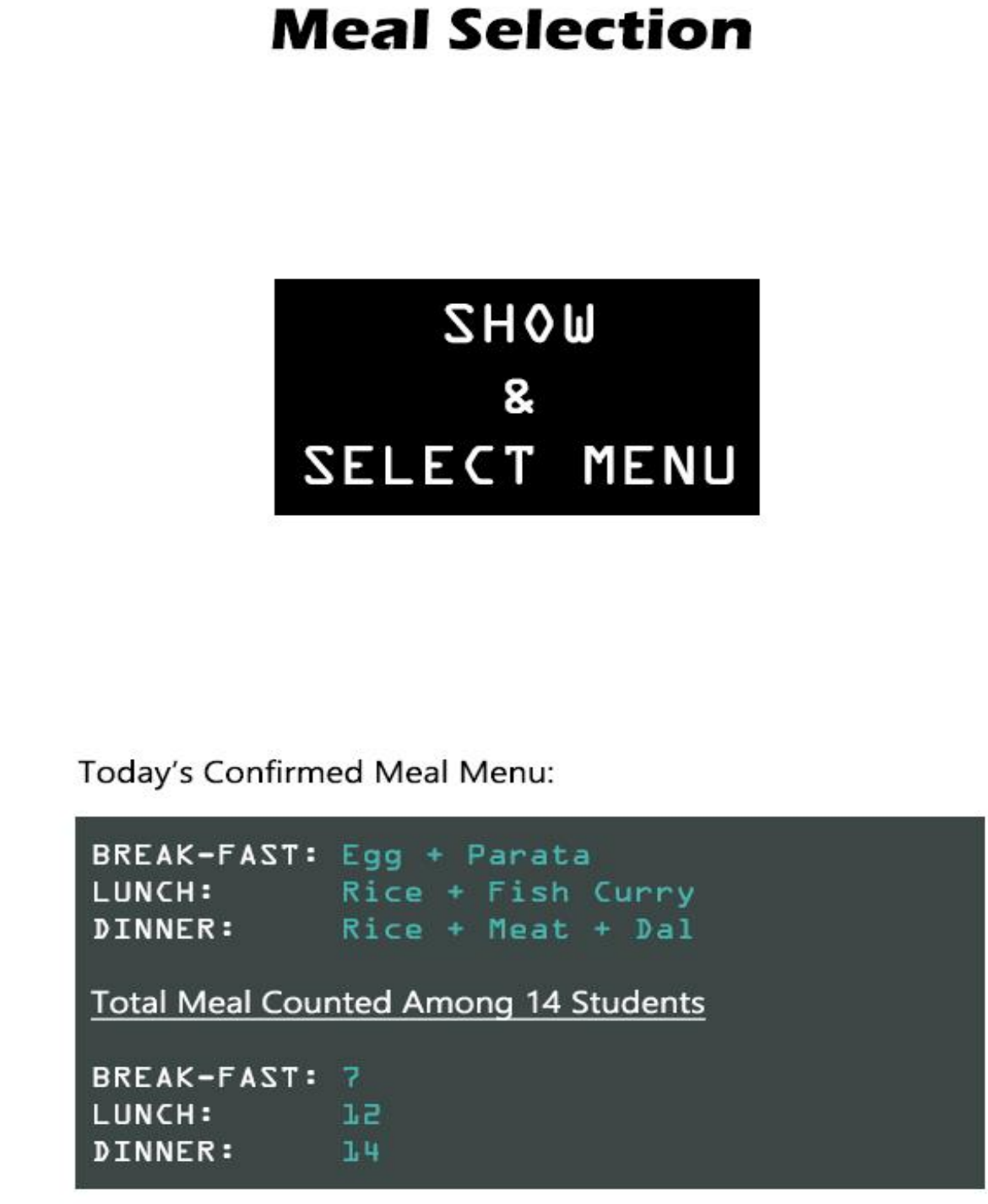

Figure 17: Meal: Step 1

Meal: Step 2: Menu Selection

Figure 18: Menu Selection

Bazar Day:

Bazar Day

Student's Name:

1. Kazi Shuvo CONFIRM

2. Fahim Morshed CONFIRM

Bazar List: (28 November, 2021)

1. Rice	20kg	1000tk
2. Oil	3lt	450tk
3. Dal	2kg	240tk
4. Egg	3Doz	360tk
4. Meat(beef)	3kg	1500tk
5. Fish	2kg	600tk
6. Onion	4kg	200tk
7. Potato	3kg	240tk
8. Vagetables		200tk
Total Cost		4550tk

BACK <-

Figure 19: Bazar Day

Rent Calculation:

Figure 20: Rent Calculation

Payment:

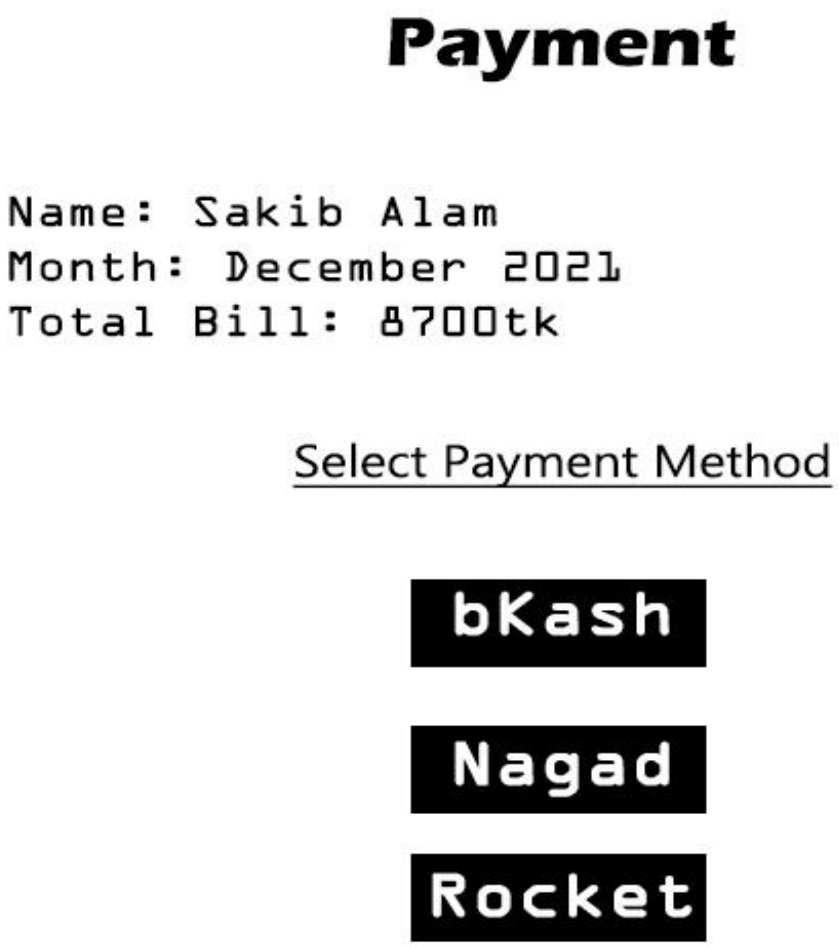

Figure 21: Payment page

bKash Payment:

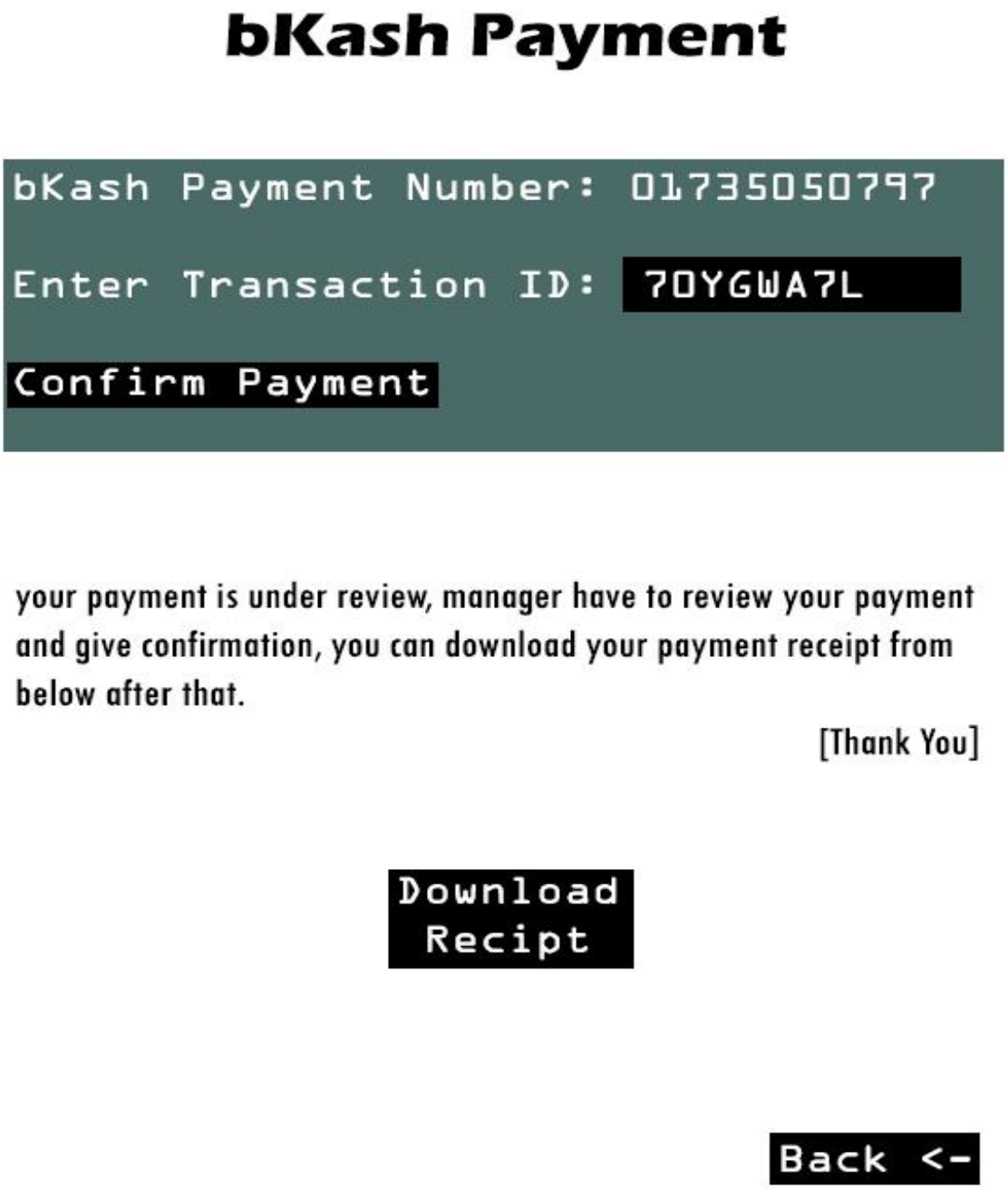

Figure 22: bKash Payment

Conclusion:

In this report, we have included the design phase of development a Mess Service Maintaining System from gathering user requirement and UML modeling. This report demonstrates our solution in order to solve the existing problems of maintaining mess service and save the time and relief from extra pressure. Since easy calculations and bill generations are done in minutes, therefore, it will lessen the load of mess managers and save time for students.

The security is maintained as the complete control of the system is only under the hands of an authorized person. This system will recorded all students' important data for future needed. This project can be merged with any major projects in future where school or college hostel's canteen system will be added. On the other hand, restoring the data back to the system is also possible in case of any failure in future. Then backing up of data can be easily taken using this software on the click of a single button.