Software Requirements Specification

Version 1.0
<<Annotated Version>>

October 29, 2014

Mess Management System

Sanket Gupte
Akshay Damle
Sarang Agarwal
Ravi Bhushan
Nikhil Desai
Shivank Mehra

Submitted in partial fulfillment
Of the requirements of
CS F213 Object Oriented Programming

<<Any comments inside double brackets such as these are *not* part of this SRS but are comments upon this SRS example to help the reader understand the point being made.

Refer to the SRS Template for details on the purpose and rules for each section of this document. >>

Table of Contents

List of Figures

1.0. Introduction

1.1. Purpose

The purpose of this document is to present a detailed description of the Mess Management System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and what kind of system interactions take place.

1.2. Scope of Project

This software system will be a mess management system which consists of two separate softwares, one to be used by the students who eat in the mess and one for the mess administrator. The student software allows students to login and choose the monthly mess option, place orders for the night canteen online, book the mess for special occasions, view the daily mess menu and the night canteen (NC) menu, view food consumption statistics, inform the mess authorities when he/she won't be eating in the mess and submit feedback. The admin software will allow the mess administrator to make changes to the daily mess menu, upload food consumption statistics and view net profit, view orders for the night mess and approve any special lunch orders as well along with reading feedback. The system will utilize a relational database for handling all the data such as menu items, prices, student IDs, consumption statistics, student feedback, etc.

1.3. Glossary

Term	Definition
Database	Collection of all the information monitored by this system.
Mess Admin	The administrator in charge of the mess - updates the databases, uploads statistics, keeps track of orders, resets the system after every meal, etc.
Software Requirements Specification	A document that completely describes all of the functions of a proposed system and the constraints under which it must operate. For example, this document.
Student	A student avails the mess facilities.
Menu	A collection of all the food items which are available in the mess.
Order	A collection of food items from the menu that the student wants to buy.
Special Order	A list of meal preferences along with other data such as the date and time of the special lunch. A special order will typically be made for a club/department meeting or for special occasions such as festivals.
NC	Night Canteen (open from 11:15pm to 2:00 am), sells items which are not on the daily mess menu in a pay-and-eat system.

1.4. References

IEEE. *IEEE Std. 830-1998 IEEE Recommended Practice for Software Requirements Specifications.* IEEE Computer Society, 1998.

1.5. Overview of Document

The next chapter, the Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next chapter.

The third chapter, Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

Both sections of the document describe the same software product in its entirety, but are intended for different audiences and thus use different language.

2.0. Overall Description

2.1 System Environment

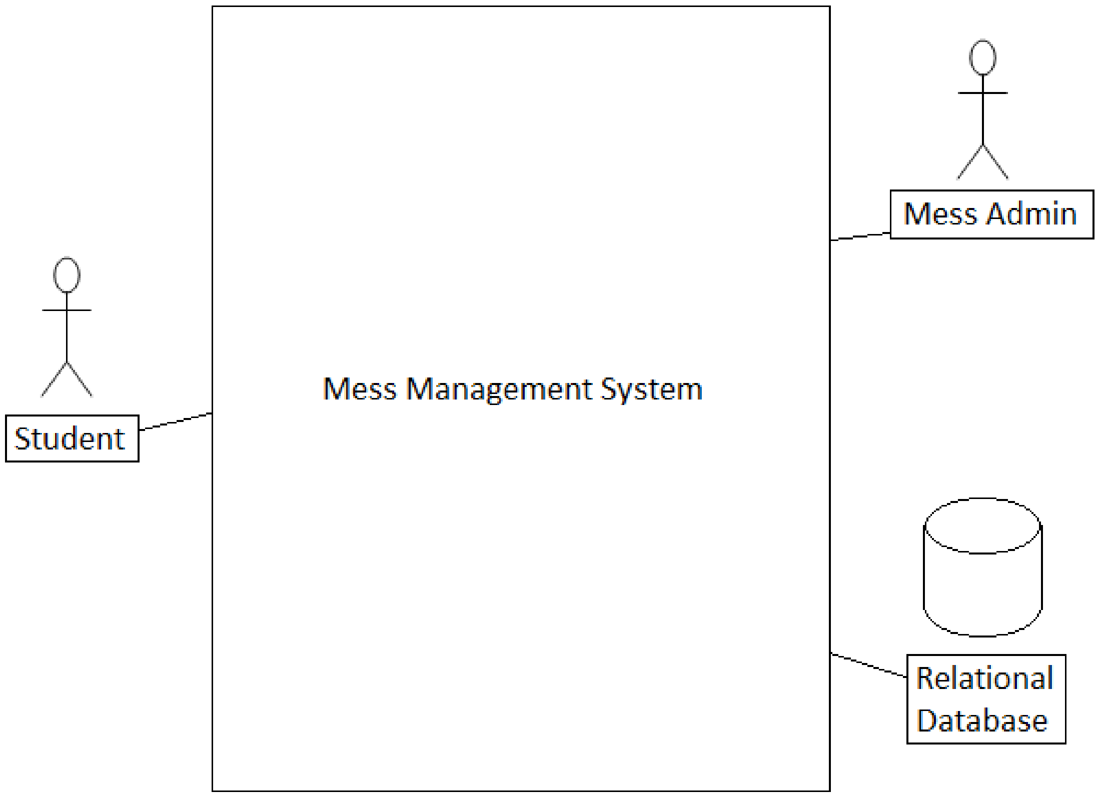

Figure 1 - System Environment

The Mess Management System has two active actors and one relational database.

The Students use a web portal to which they can login with their ID and password and avail all the facilities available. The Mess Admin has access to a different interface on his/her end, with a login and password. A relational database is used to store all the data such as feedback, consumption statistics, list of registered students, menus with items and prices, etc.

2.2 Functional Requirements Specification

This section outlines the use cases for each of the actors separately. The Students have a different set of use cases (which are related to availing the mess facilities) than the Mess Admin (which are related to managing the various aspects of the mess such as special orders, NC orders, student mess option, menu updates, etc.).

2.2.1 Student Use Cases

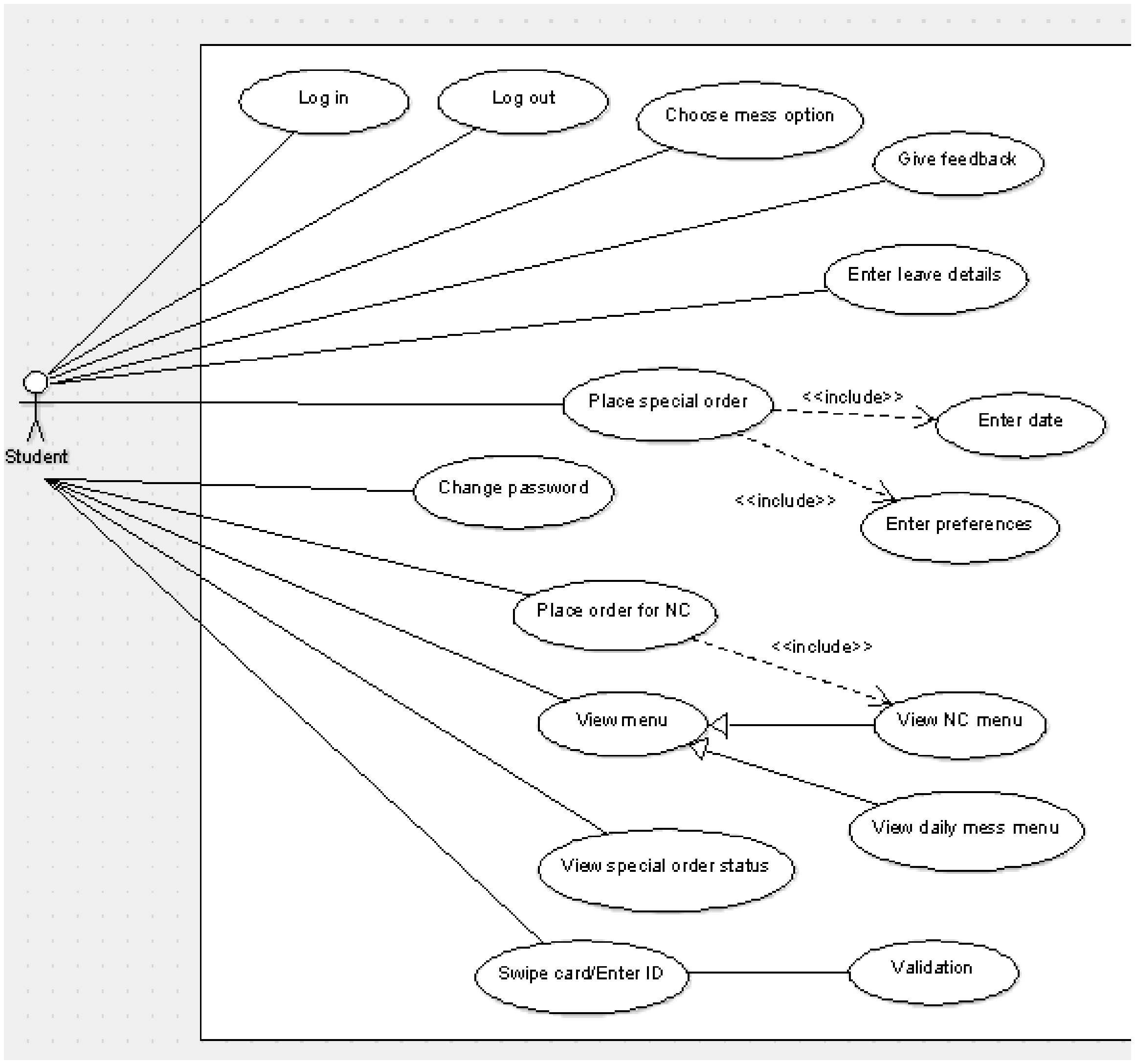

Figure 2 - Student Use Cases

A brief description of all the Student Use Cases:

1) **Login** – The student logs into the system so that he can carry on with other options like choosing mess option or placing orders for the night canteen. The student has to enter his ID number and password which

will be then compared with the database entries to validate his login credentials.

2) **Change Password** – The student changes the current account password. To do this he has to retype old password so that his identity can be confirmed by matching it with database entires and after it has been validated, he has to enter a new password, which will then be updated in the database.

3) **Choose Mess Option** – The student chooses his monthly mess option, A or C mess. His choice is then sent to the database where it is updated. This option is only available for fixed dates in a month and cannot be changed on any other days. If no option is chosen, one will be randomly selected.

4) **View Menu** – The student gets to view the menu for the week. He can also choose to view a particular menu like Monday's lunch menu or the Night mess menu. The query from the student is sent to the database where the data is read and is sent back to the student to be displayed on the screen.

5) **View Statistics** – The student's query for Statistics is sent to the database on the server where the relevant data is read and sent back to the student. The statistics include the food consumption and can be viewed in a daily, weekly or monthly format and shows what percent of people ate and how much food was consumed and wasted.

6) **Book NC order** – The student can view the night mess menu and choose items from it to preorder online. This saves a lot of time and is more efficient than standing in a queue. The student's order is sent to the database where it is processed by the system. The student can also view the current order status and collect it when it is ready.

7) **Book Special Order** – This option is meant for clubs and departments or any group of students who want to book the mess for a particular time and date and have a special lunch or dinner. It involves submitting the requirements of the order to the mess admin who has to approve it and provide a quotation for the amount. The system has to

validate the order by checking if the mess hasn't already been booked for that time.

8) **Swipe Card / Enter ID** – When the student goes to the mess, he has to either swipe the card or enter his ID. The Id entered will be looked up in the database to check if the student has registered for that mess and if he has already eaten or not. This will be reset after each meal. A failure or success message will be displayed based on the validation result.

9) **Logout** – The student logs out of the system so that nobody else can modify his mess option or book orders from his account.

2.2.2 Mess Admin Use Cases

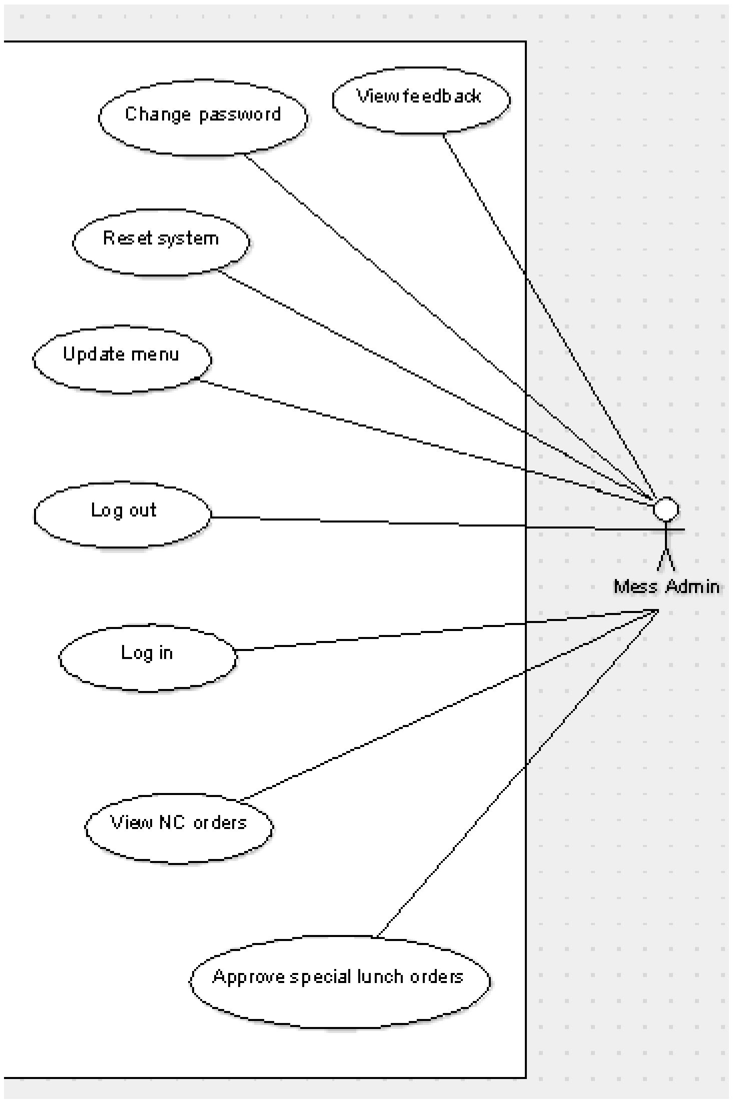

Figure 3 - Mess Admin Use Cases

A brief description of the Mess Admin Use Cases:

1) **Login** – The administrator has to login to the system so that he can carry on with the other activities such as updating the mess menu, approving special orders, viewing and uploading statistics, viewing NC orders etc. The data entered will be matched with the fields in the database to validate the admin's credentials.

2) **Change Password** – The admin changes the current account password. To do this he has to retype old password so that his identity can be confirmed by matching it with database entires and after it has been validated, he has to enter a new password, which will then be updated in the database.

3) **Update Menu** – The administrator can update the menu for any meal for any day of the week or the might mess menu by selecting new food items to add to the menu or by removing unpopular food items. The changes after the updation are saved in the database so that the students can see the updated menu.

4) **View NC Orders** – The admin can check the number of orders received for the night mess and also pass along that to the kitchen staff so that they can prepare the meals accoring to those specifications. The admin can then update the order status in the database to completed so that the student can come and pick it up after which its status will be delivered.

5) **Approve Special Orders** – The admin can view the Special orders submitted by a group of students, provide a quotation for the special meal and if that is acceptable to the group, he can approve the order so that on that day, food for the special order will be prepared for that group of students. These changes will be updated in the database so that the student can view the order status and total cost.

6) **View Feedback** – The mess admin can view the feedback submitted by the students. The database will be queried for feedback and complaints and the admin can check all these forms and take the

required action on them. He can also update the feedback status as read or the complaint status as per its current state.

7) **Reset System** – The mess admin can trigger a hard reset of the system where the list of people who have eaten their meal is erased. This will typically occur automatically after every meal and so this hard reset will seldom be used.

8) **Logout –** The mess admin can log out safely while he/she is not using the software in order to avoid any misuse.

2.3 User Characteristics

The Students and Mess Admin are expected to have a basic working knowledge of a computer in order to use this software. The User Interface will be quite intuitive, so any advanced knowledge will not be necessary.

2.4 Non-Functional Requirements

The physical machine to be used in the mess needs to have internet access in order to connect to the database. This software will not assume that a code scanner hardware is available on the machine, and so the ID input will be done via keyboard. Students need internet access on their devices as well, since all the data will be stored on the database which the software will need to connect to.

3.0.Requirements Specification

3.1 External Interface Requirements

3.11 User Interfaces : The Interface will be in the form of a webapp. It is designed to be functional and minimal in its styling. All options will be displayed in a menu based format. HTML and CSS will be used to setup the page layout and add minimal styling to make the interface user friendly.

3.12 Hardware Interfaces : A webserver will be required so that the students and the mess admin can connect to it to exchange information. The server have a database to store all the data entries. The Server will have to have a highspeed 1 Gigabit ethernet connection to the college's local network.

3.13 Software Interfaces : The server will be hosted using Apache Tomcat Webserver (Version 8.0.14). It will also have a MySQL relational database. The main backend processing will be done using Java Server Pages (JSP) including connecting to and accessing the database and processing requests.

3.14 Communications Interfaces : The main communication protocol will be Hyper Text Transfer Protocol (HTTP). This will be used to transfer information back and forth from the client to the server.

HTTP GET and POST will be used to send the information.

3.2 Functional Requirements

3.2.1 Student Login

Use Case Name	Login
Trigger	The Student clicks on the login button on the login page
Precondition	The Student has entered his login details on the login page
Basic Path	1. The student navigates to the login page 2. The student enters the username and password 3. The student clicks the login button 4. If the form data is empty, system shows a prompt for login details 5. If data is not empty, it is sent to the server 6. The server compares the login data with the password stored in the database 7. If login credentials are verified, the student is logged in 8. If not, the student is prompted to enter the login details again
Postcondition	The Student is logged in and is taken to his account page
Exception Paths	The Student may terminate the login at any time.

3.2.2 Change Student Password

Use Case Name	Change Password
Trigger	The student clicks on the change password button on his account page
Precondition	The student has logged in and is on his account page
Basic Path	1. The student enters the previous password and the new desired password. 2. The data is sent to the server if it is not empty 3. The server validates the user's password and then updates his password in the database

Alternative Paths	The student may click on the forgot password link on the login page to have his password changed after having it emailed to him
Postcondition	The user's password is updated in the database
Exception Paths	The attempt may be abandoned at any time.

3.2.3 Choose Mess option

Use Case Name	Choose Mess option
Trigger	The user clicks the choose mess option button on his account page
Precondition	The user has logged in and the date is a valid date for selecting mess option (since it can only be done in a particular time of the month)
Basic Path	1. The student is given two options in the form of radio button to choose from 2. Once the user has selected an option, he clicks the submit button where the server receives this data 3. The server updates his mess choice in the database and also updates that he has chosen an option so that he cannot change it again
Alternative Paths	If the srudent clicks submit without selecting an option, the system will prompt for an option
Postcondition	The student's mess choice for the following month is updated in the database
Exception Paths	The student may abandon the operation at any time.
Other	Date and time validity needs to be checked. Also if no option is selected in that time period, the system will automatically assign a random choice

3.2.4 View Menu

Use Case Name	View Menu
Trigger	The student clicks the view menu button
Precondition	The student has clicked the view menu button on the home page of the mess management system
Basic Path	1. The student can choose which day's menu he wants to view 2. The choice is sent to the server where the database is queried for that particular menu

	3. The server sends a response back to the client with the data about the menu 4. The response XML is parsed and formatted into an easy to read menu format
Alternative Paths	The student can also choose to view the night mess menu along with the cost of the food items
Postcondition	The Menu is displayed on the screen
Exception Paths	The student may abandon the operation at any time.
Other	Menu consists of the menu items and their details

3.2.5 Place NC order

Use Case Name	Place NC order
Trigger	The student clicks the place NC order button on his account page
Precondition	The student has logged in
Basic Path	1. The System displays the NC menu 2. The student selects which items he wants to add to order 3. The he chooses the quantity and can add more items or checkout 4. The order details are sent back to the server which stores them in the database 5. Order status is updated on the screen
Alternative Paths	The student can go back and edit his choices or preferences at any time before checking out but not once the order has been placed. He can also check order status
Postcondition	The database has been updated with the student's order.
Exception Paths	The user may abandon the order at any time before submitting

3.2.6 Place special order

Use Case Name	Place special order
Trigger	The student clicks the place special order button on his account page
Precondition	The student has logged in and is on his account page
Basic Path	1. The student is presented with a text box where he has to specify the details of his special order 2. The form is submitted to the server which stores it

	in the database 3. The user can then check periodically to view the order status
Postcondition	The student's special order has been submitted
Exception Paths	If the booking dates and times are clashing in the database, then the system informs the student to pick another date

3.2.7 Give Feedback

Use Case Name	Submit Feedback
Trigger	The student clicks the give feedback button on his account page
Precondition	The student has logged in to his account page
Basic Path	1. Student is presented with a text form to write his feedback 2. The feedback is submitted to the server where it is stored in the database
Postcondition	The database has been updated with the student's feedback
Exception Paths	The Student may abandon the operation at any time.
Other	The feedback also has a status associated with it so that the user can track if it has been acted upon or not

3.2.8 Swipe Card/ Enter ID

Use Case Name	Swipe card / Enter ID
Trigger	The Editor has selected to check status of all active articles.
Precondition	The mess admin has accessed the student entry page
Basic Path	1. There is a text box where the student has to type his ID number. 2. The ID is sent to the server where it checks if the student has opted for this mess and if he has already eaten 3. The student's details like name and photo are shown on screen and he is allowed to take a plate
Alternative Paths	If authentication fails, the system will show an error message
Postcondition	The database is updated to reflect the changes made
Exception	Invalid ID's can cause exceptions

Paths	
Other	The Mess admin has to take care the the photo shown by the sytem matches the student or else he may log in with false credentials

3.2.9 Logout

Use Case Name	Logout
Trigger	The Student clicks the logout button
Precondition	The Student has already logged in
Basic Path	1. The student is redirected to the login page 2. The server ends the student's current session and logs him out of the system
Alternative Paths	None.
Postcondition	The Student is logged out of the system
Exception Paths	If the student has logged in from multiple devices, there might be a conflict
Other	None

3.2.10 Mess admin login

Use Case Name	Login
Trigger	The Admin clicks on the login button on the admin login page
Precondition	The admin has entered his login details on the login page
Basic Path	1. The admin navigates to the login page 2. The admin enters the username and password 3. The admin clicks the login button 4. If the form data is empty, system shows a prompt for login detail 5. If data is not empty, it is sent to the server 6. The server compares the login data with the password stored in the database 7. If login credentials are verified, the student is logged in 8. If not, the admin is prompted to enter the login details again
Postcondition	The admin is logged in and is taken to his account page
Exception	The admin may terminate the login at any time.

Paths	

3.2.11 Change Admin Password

Use Case Name	Change Password
Trigger	The admin clicks on the change password button on his account page
Precondition	The admin has logged in and is on his account page
Basic Path	4. The admin enters the previous password and the new desired password. 5. The data is sent to the server if it is not empty 6. The server validates the admin's password and then updates his password in the database
Alternative Paths	The admin may click on the forgot password link on the login page to have his password changed after having it emailed to him
Postcondition	The admin's password is updated in the database
Exception Paths	The attempt may be abandoned at any time.

3.2.12

Use Case Name	Update Menu
Trigger	The admin clicks the update menu button on his account page
Precondition	The admin ahs logged into his account
Basic Path	1. The admin gets a screen of the current menu 2. He can then create new items which will be added to the database 3. Using these food items, the admin can make changes to the men 4. The changes made will be sent to the server 5.The server reflects these changes by updating the menu database
Alternative Paths	The admin can also choose to edit the Night mess menu in the same way
Postcondition	The updated menu is saved in the database
Exception Paths	The admin may abandon the operation at any time in which case no changes will be made.
Other	Menu consists of the menu items and their details

3.2.13 View Orders

Use Case Name	View NC order, View Special orders
Trigger	The admin clicks the view orders button on his account page
Precondition	The admin has logged in
Basic Path	1. The admin sends a query to the database for a list of the orders 2. The list is sent from the server back to the admin 3. The admin can then pass on the order information to the kitchen staff 4. Once the order is completed the admin can mark the order status as complete or deliverd
Alternative Paths	The admin can view the special orders in the same way and approve them similarly
Postcondition	The Order queue is updated along with the order status in the datbase
Exception Paths	The admin may abandon the operation at any time.
Other	The changes made in the database will allow the students to check order status and collect their food accordingly

3.2.14 View Feedback

Use Case Name	View Feedback
Trigger	The admin clicks the view feedback button on his account page
Precondition	The admin has logged in to his account page
Basic Path	1. The server reads the database and send over a list of the feedback forms to the admin 2. The admin can read each one of them and then mark them as read, unread or to be acted upon 3. These changes are then sent to the database
Postcondition	The database has been updated with the feedback status
Exception Paths	The admin may abandon the operation at any time.
Other	The feedback status will be used to store all unread forms and only a the most recent ones which have been acted upon

3.2.15 Reset System

Use Case Name	Reset System
Trigger	The admin clicks the reset system button on his account page
Precondition	The admin has logged in to his account page
Basic Path	1. The admin's command is relayed to the server 2. The server deletes the record of students who have eaten in the mess for that meal from the database
Postcondition	The database entries of status of students are deleted from the system
Exception Paths	This operation can cause issues since wiping data manually is not recommended
Other	This option should only be used in special circumstances since the system automatically resets after each meal

3.2.16 Logout

Use Case Name	Logout
Trigger	The admin clicks the logout button
Precondition	The admin has already logged in
Basic Path	1. The admin is redirected to the login page 2. The server ends the admin's current session and logs him out of the system
Alternative Paths	None.
Postcondition	The admin is logged out of the system
Exception Paths	None
Other	None

3.3 Detailed Non-Functional Requirements

3.3.1 Logical Structure of the Data

Data Entries in the Database

Student Data Entity

Data Item	**Type**	**Description**	**Comment**
Name	Text	Name of Student	
Email Address	Text	BITS Email Id of student	
Mess Option	Text	A or C mess	
ID number	Text	BITS ID number	
Password	Text	Password of student	Encrypted form
Has Eaten	Boolean	Whether student ahs eaten in mess	Resets automatically after each meal

Admin Data Entity

Data Item	**Type**	**Description**	**Comment**
Name	Text	Name of the Admin	
Password	Text	Password of Admin	Encrypted form
Email Address	Text	Email Id of Admin	

Menu Item Data Entity

Data Item	**Type**	**Description**	**Comment**
Name	Text	Name of Item	
Type	Text	Regular or NC	
Price	Number	Price of NC menu item	Optional

Menu Data Entity

Data Item	**Type**	**Description**	**Comment**
Day	Text	Day of the week	
Meal	Text	Lunch, Dinner etc	
Type	Text	Regular or NC menu	

Order Data Entity

Data Item	**Type**	**Description**	**Comment**
ItemList	Text	A list of item ordered	
Quantity	Text	A list of quantities	
Status	Text	The order status	
Student ID	Text	ID of student who ordered it	
Order number	Number	A sequence number	

Feedback Data Entity

Data Item	**Type**	**Description**	**Comment**
Content	Text	Feedback content	
Status	Text	Current feedback status	Read, unread or processed
Student ID	Text	ID of student	

3.3.2 Security

The server on which the Mess Management resides will have its own security to prevent unauthorized *write/delete* access. There is no restriction on *read* access. In case a password is forgotten, a new one will be emailed to that user's email ID. In addition, the passwords will be MD5 hashed for security. An automatic logout system will log out a student after 10 minutes.