

Software Requirements Specification

for

MESS AUTOMATION SYSTEM

Version <1.0>

Prepared by

Group Name: G-33

PRANIT DESHMUKH	B190553CS	pranit_b190553cs@nitc.ac.in
SUMEDH KAMBALE	B190450CS	sumedh_b190450cs@nitc.ac.in
PRINCE CHAUHAN	B190491CS	prince_b190492cs@nitc.ac.in
JITU MANGILAL BANOT	B190576CS	jitu_b190576cs@nitc.ac.in
PRANAV KRISHNA KADAM	B190437CS	pranav_b190437cs@nitc.ac.in

Instructor: Dr. K A Abdul Nazeer

Course: Database Management Systems

Date: 27-10-2021

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1	Pranit Deshmukh, Sumedh Kambale , Prince chauhan, Pranav Krishna Kadam, Jitu mangilal Banot	Initial Version - Mess Automation System SRS	25/10/2021

1 Introduction

1.1 Document Purpose

The purpose of this document is to present a detailed description of the NITC Mess automation 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 Product Scope

Objective of the system is to provide a user friendly daily mess system that is easy to manage, maintain. Our primary focus is to develop a paperless system that provides the mess contractor a way to facilitate smoother functioning of the mess system.

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 contractor. The student software allows students to login and choose the monthly mess option, view the daily mess menu, take the extras, view monthly bills, inform the mess authorities when he/she won't be eating in the mess and report a complaint. The contractor software will allow the mess contractor to make changes to the daily mess menu, approve any extras, view monthly bills, as well along with reading the complaints. The system will utilize a relational database for handling all the data such as menu items, prices, student IDs, student complaints, etc.

1.3 Intended Audience and Document Overview

The document is intended to be read by the project manager, all students and contractors. This will give an overall overview of the functionality of the Mess Automation System. This document thoroughly describes the introduction, purpose, functionality, design, dependencies, hardware and software interfaces, the use case model, and other functional and non-functional requirements. These things will give project managers and developers an idea of what all things should be considered in the making of the system.

1.4 Definitions, Acronyms and Abbreviations

Term	Definition
Database	Collection of all the information monitored by this server.

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Extras	A list of food items that will be served along with the daily meals. It will be charged separately.
Menu	A collection of all the food items which are available in the mess.
Mess Contractor	The Contractor in charge of the mess - updates the databases, uploads statistics, keeps track of orders, resets the system after every meal, etc.
Order	A collection of food items from the menu that the student wants to buy.
SMS	A message that will be sent to the students when the entry is made in the database by the mess contractor.
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 who avails the mess facilities.

1.5 Document Conventions

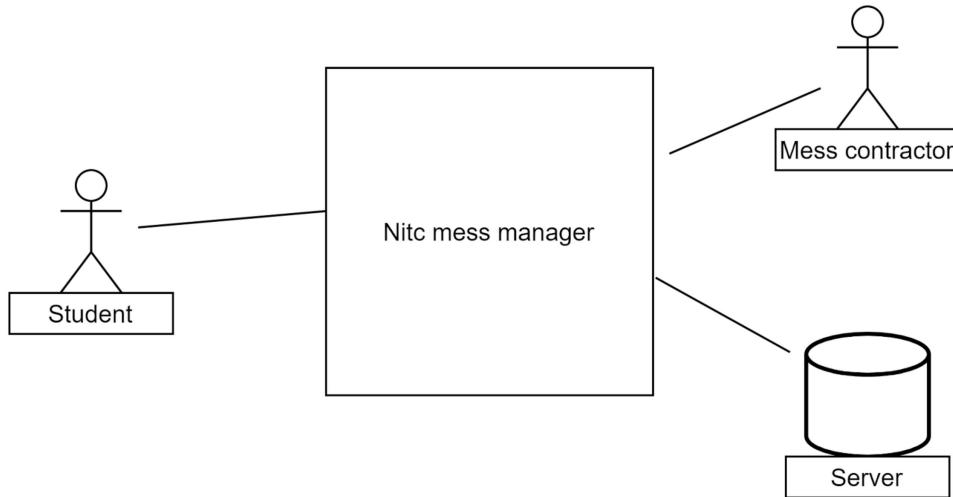
- Formatting Conventions:
 - Font : Arial(Size: 18) : Headings
 - Font : Arial(Size: 14) : Subheadings
 - Font : Arial (Size: 11) : Body

1.6 References and Acknowledgments

- <https://www.perforce.com/blog/alm/how-write-software-requirements-specification-srs-document>
- <https://www.geeksforgeeks.org/software-requirement-specification-srs-format/>
- <http://agilemodeling.com/style/useCaseDiagram.htm>
- <https://www.lucidchart.com/pages/uml-use-case-diagram>

2 Overall Description

2.1 Product Overview



The NITC mess manager has two active actors and one server. The Students use a web application to which they can login with their ID and password and avail all the facilities available. The Mess Contractor has access to a different interface on his/her end, with a login and password. A Database is used to store all the data such as list of registered students, menus with items and prices, etc.

2.2 Product Functionality

- Student Log In
- Contractor Log in
- Validate
- Log Out
- Choose Mess
- Feed Details
- View Menu
- Take food
- Take Extras
- Mark Entries
- Generate Month end Bills
- Send SMS
- Pay Bills
- File Complaints

- Resolve Complaints
- Change Password

2.3 Design and Implementation Constraints

- Easily maintainable for future updates and upgrades.
- Use of the latest Technologies in software development.
- UI/UX that is appealing to the end users.
- Design needs to be developed and checked in time.

2.4 Assumptions and Dependencies

Assumption that may significantly affect the design -

- Inclusion of any new actor
- change in the action of the actors used in the project.

The Product needs the following third party applications and frameworks for the development of project -

- React.js
- Node.js
- express
- mySQL
- Html
- CSS
- Javascript

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

The user interface for the software shall be compatible with any browser such as Google Chrome, Microsoft Edge, Mozilla Firefox, Brave by which users can access the system, and use it. And can be implemented using Javascript, PHP, or HTML and CSS. So that everyone can use it either by Mobile phone or Laptop/computer.

Login Page:- all Users whether its student or a contractor all have to verify their identity.

3.1.2 Hardware Interfaces

Since the application must run over the internet and be accessible to all the students and contractors, all the hardware shall require to connect to the internet will be a hardware interface for the system. As for e.g. WAN – LAN, Ethernet Cross-Cable, Wireless-Fidelity and mobile internet.

3.1.3 Software Interfaces

The system should have a secure database which can be implemented either using JDBC or integrating postgres and Python.

The system should be able to integrate with the SMS service provided by telecom distributors.

The system should be able to integrate with the UPI service and its client applications.

The system should integrate with email service to facilitate the sending and receiving of complaint issues and its solutions between the students and contractors.

3.2 Functional Requirements

3.2.1 F1: student_login – The student logs into the system so that he can carry on with options like choosing a mess option, filing a complaint etc. The student has to enter his ID number and password which will then be compared with the database entries to validate his login credentials.

3.2.2 F2: Contractor login -The contractor logs into the system so that he can perform tasks like feeding the data of students having food in a specific mess, mark entries of students and resolve complaints of the students. To log into the system, the Contractor needs to enter his ID

number and password which will then be compared with the database entries to validate his login credentials.

3.2.3 F3: Validate - Validation of the login details entered by the administrator. Is the given username and password valid or not ?

3.2.4 F4: Logout - The student or Contractor gets out of the system as he completes all of his queries and selections thus, to keep his account safe so that nobody other than him/her can use his credentials on the device. He needs to log out.

3.2.5 F5: Choose Mess Option - The student chooses his monthly mess option. 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.

3.2.6 F6: Feed details - At the start of each month, the mess contractors need to feed the details of students who are going to take food from that particular mess.

3.2.7 F7: View Menu - List of all the cuisines available on that particular day in the chosen mess.

3.2.8 F8: Take food - Take the food available on the particular day as per the selected mess time table.

3.2.9 F9: Take extras - The Students can choose to select extra items available in the menu. The charges will be added in the month end bills.

3.2.10 F10: Mark Entries - When students take the food, Contractor will mark entries in the system and an SMS will be sent to the respective students with marked entry and other details.

3.2.11 F11: Generate Month end Bills - The monthly bills are generated as per the marked entries by the contractor as per the regular meals and the extras taken by the student.

3.2.12 F12 : Send SMS - The SMS are sent to student whenever they take food (after the contractor marks the entries) and also at the end of the months when the Month end bills are generated

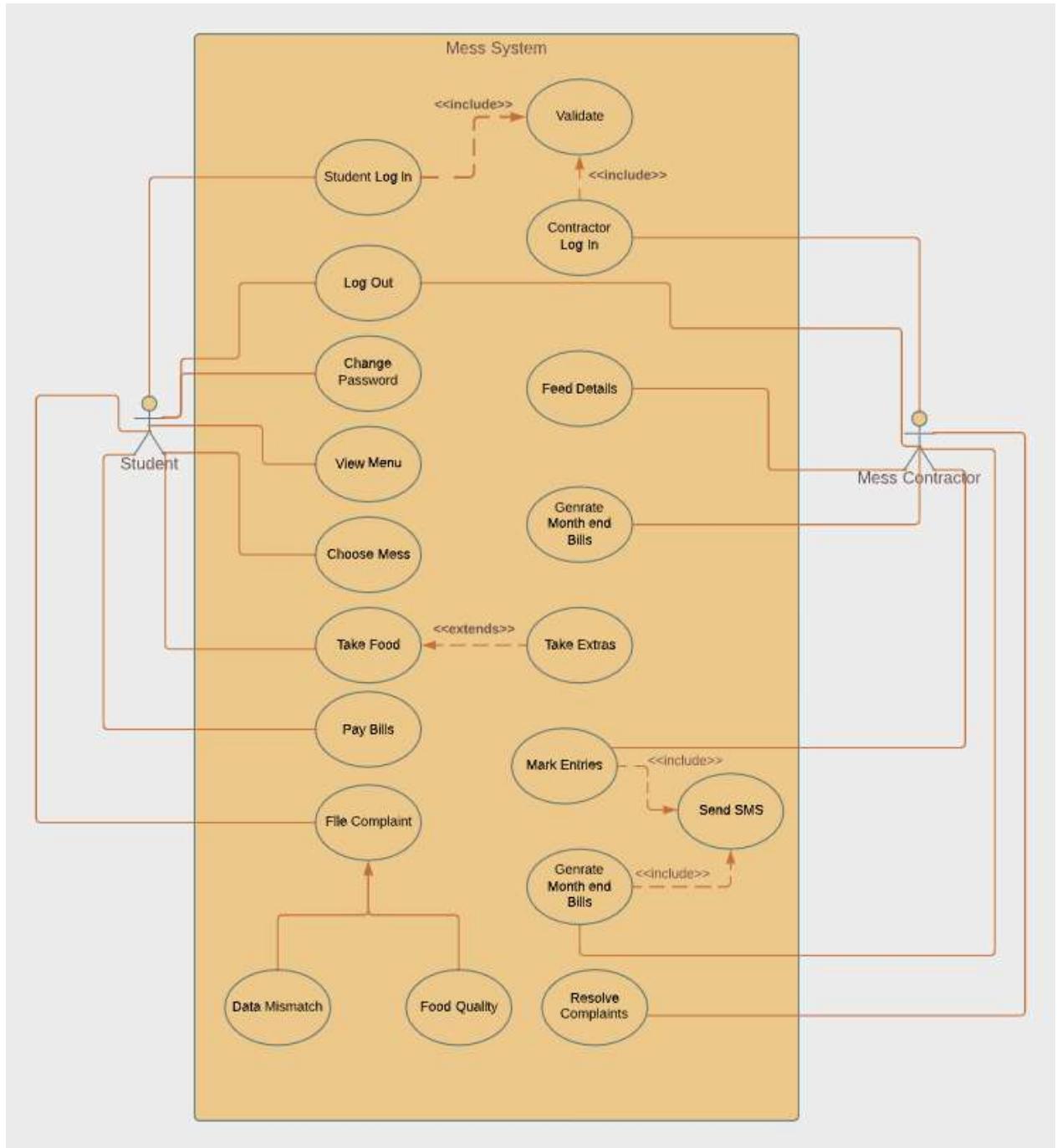
3.2.13 F13: Pay Bills - The students will have to pay the charged amount to the mess via this payment option at the end of every month. If delayed, an extra fine will be added to the bills of next month.

3.2.14 F14: File Complaints - Students can file a complaint if a wrong entry is made towards him by the mess contractor by using the data mismatch complaint option. The student can also file a complaint about the quality of food if something is found wrong with the provided food.

3.2.15 F15: Resolve Complaints - Contractor will have to look into Complaints filed by the students. He can resolve the complaint and update the complaint status in the system.

3.2.16 F16: Change Password – The user changes the current account password. To do this he/she has to retype old password so that his identity can be confirmed by matching it with database entries and after it has been validated, he has to enter a new password, which will then be updated in the database.

3.3 Use Case Model



3.3.1 Use Case #1 (Student Login - U1)

Author – Pranit Deshmukh

Purpose - The purpose of student login is to let the students use the services provided by the system by confirming his/her identity.

Requirements Traceability – F1

Priority -High

Preconditions - The Student needs to have his/her login credentials before logging into the system.

Post conditions - The Student has logged in and is taken to his account page.

Actors – Student

Flow of Events :

Basic Flow :

- The student navigates to the login page
- The student enters the username and password
- The student clicks the login button
- If the form data is empty, system shows a prompt for login details, if data is not empty, it is sent to the server
- The server compares the login data with the password stored in the database
- If login credentials are verified true, the student is logged in

Exceptions :

The student may terminate the login at any time

Includes (other use case IDs) - U3

3.3.2 Use Case #2(Contractor login - U2)

Author – Jitu Mangilal Banot

Purpose - The purpose of contractor login is to let the contractor use the services provided by the system by confirming his/her identity

Requirements Traceability – F2**Priority -High**

Preconditions - The Contractor needs to have his/her login credentials before logging into the system.

Post conditions -The Contractor has logged in and is taken to his account page.

Actors – Contractor

Flow of Events :**Basic Flow :**

- The Contractor navigates to the login page
- The Contractor enters the username and password
- The Contractor clicks the login button
- If the form data is empty, system shows a prompt for login details, if data is not empty, it is sent to the server
- The server compares the login data with the password stored in the database
- If login credentials are verified true, the Contractor is logged in

Exceptions :

The contractor may terminate the login at any time

Includes (other use case IDs) - U3

3.3.3 Use Case #3(Validate - U3)

Author – Pranav Krishna Kadam

Purpose - To validate the credentials entered by the user, e.g. to check whether given credentials are correct according to the database or not.

Requirements Traceability – F1/F2, F3

Priority -High

Preconditions - The User must enter some values in the asked fields.

Post conditions - User is logged in to his home page after entering the details correctly or wrong username/password message is shown if anything other than correct credentials is entered.

Actors – Student,Contractor

Flow of Events :**Basic Flow :**

- Whenever the user clicks on the login button, this use case is invoked
- The user enters the username and password
- The user clicks the login button
- If the form data is empty, system shows a prompt for login details, if data is not empty, it is sent to the server
- The server compares the login data with the password stored in the database
- If login credentials are verified, the user is logged in
- If credentials are not correct, the contractor is prompted to enter the login details again.

Exceptions : None

3.3.4 Use Case #4(Logout - U4)

Author – Jitu Mangilal Banot

Purpose - To take the user out of the system securely.

Requirements Traceability – F1/F2, F3,F4

Priority - Optional

Preconditions - The user must be logged in to the system.

Post conditions -The user is logged out of the system.

Actors – Student , Contractor

Flow of Events :

Basic Flow :

- The student is redirected to the login page.
- The server ends the student's current session and logs him out of the system.

Exceptions : None

3.3.5 Use Case #5(Choose Mess - U5)

Author – Pranav Krishna Kadam

Purpose - Student select this option to choose the mess of his will.

Requirements Traceability – F1,F3,F5

Priority -Low

Preconditions - The user has logged in successfully and the date is a valid one for choosing the mess option (since it can only be done in a particular time of the month).

Post conditions -The student's mess choice for the following month is updated in the database.

Actors – Student

Flow of Events :

Basic Flow :

- The student is given options in the form of the drop down menu to choose from available options.
- Once the user has selected an option, he clicks the submit button where the server receives this data.

- 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 for the rest of the month.

Alternative Flow :

- If the student clicks submit without selecting an option, the system will prompt for an option.

Exceptions :

The student may try to avail the facility when it is not available.

The student may abandon the operation at any time.

Notes/Issues - 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.

3.3.6 Use Case #06(Feed details - U06)

Author – Prince Chauhan

Purpose - To feed the details of the students at the start of the month with their respective mess details.

Requirements Traceability – F2,F3,F06

Priority -High

Preconditions - Mess has been allocated to the students.

Post conditions - All the entries of the students and their mess have been updated.

Actors – Contractor

Flow of Events :

Basic Flow :

- Contractor gets the details of the students .
- marks their entries and updates students on the change of mess menu.
- all the changes in data are updated on the database.

Alternative Flow : if no new entry is made then old menu and mess are kept and database is not updated.

3.3.7 Use Case #07(View Menu - U07)

Author – Prince Chauhan

Purpose - To view the food list available in the mess for a particular day.

Requirements Traceability – F1,F3,F7

Priority -High

Preconditions -

- The student has clicked the view menu button on the homepage of his login page.

Post conditions -

- The menu is Displayed on the Screen.

Actors – Student

Flow of Events :

Basic Flow :

- The student can choose which day's menu he wants to view.
- The choice is sent to the server where the database is queried for that particular menu.
- The server sends a response back to the client with the data about the menu.

Alternative Flow :

- The Student can also view the menu of the extras items.

Exceptions :

The student may try to view the menu of the days whose menu is not updated.

The student may abandon the operation at any time.

Notes/Issues - When a student tries to view a menu of the days whose menu is not updated yet, a blank window will appear saying “ No data available”.

3.3.8 Use Case #08(Take food - U08)

Author – Sumedh Kambale

Purpose - To take and select food and extras of the choice of the student.

Requirements Traceability – F1,F3,F5,F7,F8

Priority -Medium

Preconditions - Students must have login credentials and should be registered in any of the mess.

Post conditions - The database has been updated for the student order details on the day.

Actors – Student

Extends – (U09)Take Extras

Flow of Events :

Basic Flow :

- The menu Displays the items and extras available.
- The student selects which items he wants to take.
- The Details of the selected and the items list is sent to the server database and the database is updated.
- Student has placed and taken his selected food items.

Alternative Flow : Students can edit their items before checking out from the menu table.

Exceptions :Students can abandon the selected items any time before checking out.

3.3.9 Use Case #09(Take Extras - U09)

Author – Sumedh Kambale

Purpose - To check all the extras items taken by students

Requirements Traceability – F1,F3,F7,F8,F9**Priority -Low****Preconditions** - Students must have been allocated any mess.**Post conditions** - Students have taken the extras items.**Actors** – Student**Flow of Events :****Basic Flow :**

- Student goes to his login page.
- From there he checks the extras items available on the particular day.
- He selects the items from the extras menu.
- He specifies the quantity of each extra item chosen.

Exceptions : Process can be abandoned by the student any time before confirming the extras items list.

3.3.10 Use Case #10(Mark entries - U10)**Author – Pranit Deshmukh****Purpose** - Mark the entries of the items taken by the students.**Requirements Traceability – F2,F3****Priority -High**

Preconditions - Students must have taken the food on the day in the specific day on which the entries are marked.

Post conditions - The database and the amount of the bill has been updated on the server.

Actors – Contractor**Flow of Events :****Basic Flow :**

- Student has taken the food from the mess.

- The list of items taken and their prices are calculated.
- Data is updated on the database of the server.
- SMS is sent to students' registered mobile numbers.

Alternative Flow : - If a student has not taken the food then a message is not sent.

Includes (other use case IDs) - U12 (Send SMS)

Notes/Issues - For any of the miscalculated and wrong entries students can make a complaint.

3.3.11 Use Case #11(Generate month end bills - U11)

Author – Prince Chauhan

Purpose - To generate the bills at the end of each month.

Requirements Traceability – F2,F3,F10,F11

Priority -High

Preconditions - The contractor must be logged in with his credentials.

Post conditions -Bills of the students have been generated and sms is sent over their registered mobile number.

Actors – Contractor

Includes - U12 (Send SMS)

Flow of Events :

Basic Flow :

- Contractor gets the details of the respective student.
- system accumulates the total amount of the bill to be sent.
- Contractor approves the bill.
- sms is sent to the student mobile number.

Exception :

- If a student has filed any complaint regarding a mess bill then his bills are kept on hold until the complaint is resolved.

3.3.12 Use Case #12(Send SMS - U12)**Author – Jitu Mangilal Banot**

Purpose - To send the SMS to students' mobile after they have taken the food. The SMS is also sent at the end of the month containing the amount to be paid.

Requirements Traceability – F2,F3,F10,F11,F12

Priority -Low

Preconditions - The student must have valid login credentials along with the working phone/email on which SMS can be sent.

Post conditions - The student receives the SMS after they take food. The SMS is also received by the student at the end of the month containing the amount to be paid.

Actors – Student/Contractor

Flow of Events :

Basic Flow :

- The user enters his old and his new desired password along with his username.
- The contractor marks the entries of the students who have taken food from the mess.
- SMS is sent to the students with respective details.

Alternative Flow :- At the end of each month students receive the SMS with bill amount to be paid.

Exceptions : None

3.3.13 Use Case #13(Pay bills - U13)**Author – Pranav Krishna Kadam**

Purpose - To pay the bills generated by the system

Requirements Traceability – F1,F3,F13

Priority -High

Preconditions - Students must log in using his credentials.

Post conditions - Monthly bill has been paid.(Payment successful)

Actors – Student

Flow of Events :

Basic Flow :

- Students log in using their id .
- they check the amount of the bill at their home page.
- Then they choose the payment method from the options provided.
- The amount is paid
- The updated bill is zero for the month.

Exception : None

3.3.14 Use Case #14(File Complaint -U14)

Author – Sumedh Kambale

Purpose - To issue a complaint regarding food quality or data mismatch.

Requirements Traceability – F1,F3,F14

Priority -Low

Preconditions - Students must be logged in to the server.

Post conditions -Complaint has been sent to the respective contractor.

Actors – Student

Flow of Events :

Basic Flow :

- Students log in to the system.
- clicks on the submit a complaint button.
- selects the type of complaint.
- write all the issues regarding the complaint.
- sent it to the contractor and updated it on the database.

Exception : None

3.3.15 Use Case #15(Resolve Complaints - U15)

Author – Jitu Mangilal Banot

Purpose - To resolve the Complaints submitted by the students.

Requirements Traceability – F2,F3,F15

Priority -High

Preconditions - Contractor must login using his username and password.

Post conditions -Complaint is taken and necessary action is taken.

Actors – Contractor

Flow of Events :

Basic Flow :

- Contractor logs in to the system.
- checks the complaints of students.
- necessary action is taken to resolve the problem.

Notes/Issues - If a student has any complaint regarding a monthly bill then the bill of the student is halted for the time and remains until clarification is not given.

3.3.16 Use Case #16(Change Password - U16)

Author – Pranit Deshmukh

Purpose - Change the password of the user

Requirements Traceability – F1/F2,F3,F16

Priority -Low

Preconditions - User must login with his username and password.

Post conditions - Password is successfully changed and updated.

Actors – Student/Contractor

Flow of Events :**Basic Flow :**

- The user enters his old and his new desired password along with his username.
- The data is sent to the server if it is not empty.
- The server validates the user password then updates the password if it is validated.

Alternative Flow :-

User may click on the forget password link to reset his password if he has forgotten his password. In this case a link will be sent to the user email to reset/change password.

Exceptions :

The attempt may be abandoned at any time.

4 Other Non-functional Requirements

4.1 Performance Requirements

Performance requirements define acceptable response times for system functionality.

- The load time for user interface screens shall take no longer than two seconds.
- The log in information shall be verified within five seconds.
- Queries shall return results within five seconds.

4.2 Safety and Security Requirements

- 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.
- Relogin is required if the system is idle for more than 15 minutes.
- One time password to the registered mobile number is required if the account is not used for more than 7 days.

4.3 Software Quality Attributes

4.3.1 Usability:

The application is user-friendly. Both the student version and contractor version provide consistent user interface standards and conventions with our other frequently used systems. LogIn, choosing mess/meal functionality is easy to access. It's easy for new or infrequent users to learn to use the system.

4.3.2 Correctness:

Application is correct in terms of its functionality and navigation. The calculations used for generating bills used internally are precise which generates the correct bills at the month end.

4.3.3 Integrity and Security:

Our system integrity is sufficient to prevent unauthorized access to system functions. No one can access the system without proper and correct user credentials. All the details of students and their choices are protected in the system which is only accessible to oneself. Mess bills are also system generated and no other students have access to modify it by their will.

Appendix A – Data Dictionary

Student : -

Data Items	Type	Description	Comment
Name	text	Students Name	
Email	text	Students email	
Roll Number	text	Students Roll NO.	

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Mess	text	Chosen mess	The value will be assigned once the student chooses a mess option else default.
Password	Password	Student's Login password	

Contractor :-

Data Items	Type	Description	Comment
Name	text	Contractor's Name	
Email	text	Contractor's email	
ID	text	Contractor's ID	
Mess	text	Allotted mess	The value will be assigned once the contractor gets the tender.
Password	Password	Contractor's login password	

Choose mess :-

Data Items	Type	Description	Comment

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Roll No	text	Student's Roll No	
Mess	radio	Mess Name	Messes available for Students to choose From

View Menu :-

Data Items	Type	Description	Comment
Mess	radio	Mess Name	Messes available for Students to choose From
Day_date	date	Menu of the day	
Breakfast	text	items in the breakfast	
Lunch	text	food in lunch	
Dinner	text	foods in dinner	

Appendix B - Group Log

The group meetings were generally held on google meet which usually lasted for an hour. It was held 5 times in all. Specifics dates are as follows:

1. 20-Oct-2021
2. 21-Oct-2021
3. 22-Oct-2021
4. 23-Oct-2021
5. 25-Oct-2021