Software Requirements Specification

for

Mess Bill Management System

Version 0.1

Prepared by

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Course: **CS3004D Software Engineering**

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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
0.1	Fadi Noushad P Muhammed Shifan Mohammed Ismail c Indrajith T.S Abid Ali K.P	Original Version of the SRS.	23/02/21

1 Introduction

1.1 Document 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 Product Scope

This software system will be a mess management system which consists of two separate interfaces, one to be used by the students who eat in the mess and one for the mess administrator. The student interface allows students to login and choose the monthly mess option,view food consumption statistics including the bill, and submit complaints.
The admin interface will allow the mess administrator to make changes to the mark the food consumed by each students, upload food consumption statistics including the bill and view net profit.The system will utilize a relational database for handling all the data such as menu items, prices, student IDs, consumption statistics, student complaints,etc.

1.3 Intended Audience and Document Overview

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 languages to convey the topic.

1.4 Definitions, Acronyms and Abbreviations

1. CSS-Cascading Style Sheets
2. HTML-Hypertext Markup language
3. IEEE-Institute of Electrical and Electronics Engineers
4. MBMS-Mess Bill Management System
5. PHP-Hypertext Preprocessor

1.5 Document Conventions

In general this document follows the IEEE formatting requirements. Arial font size 11, or 12 is used throughout the document for text. Italics for comments. Document text is single spaced and maintains 1” margins.

1.6 References and Acknowledgments

1. https://www.slideshare.net/hiraakram11/hostel-management-system-srs
2. https://github.com/mohammedismailb18/Hostel-Management-System
3.https://www.scribd.com/document/426706597/Srs-Template-on-Mess-Management-System
4.https://www.coursehero.com/file/59872002/Canteen-Managemnet-System-SRSdocx/
5.https://www.coursehero.com/file/35490500/290843014-College-Management-System-SRSpdf/
6.https://github.com/KnowNo/Books-6/blob/master/Software%20Development%20and%20Professional%20Practice.pdf

2 Overall Description

2.1 Product Overview

NIT Calicut is using a traditional mess bill management system where everything is written on a piece of paper and then displayed on the notice board which can sometimes go unnoticed or could be hectic and time consuming in finding one's name . Students also don't have the provision to know how the mess bill was calculated, how they consumed etc.. Nor can they raise any dispute . In this scenario we thought it would be better if one app could take care of the needs . This was the context that led to the idea of developing this software.

This product is a new software platform to manage the mess bills from the student and the mess managers perspective . This defines two types of actors: the students and the mess managers. The datas is stored and synchronized through the database . The students have the provisions to create an account login to his/her account and then look at his mess bills, his monthly consumptions and can also raise complaints in case of any disputes. While the managers can login and then update the students consumption of any meal correspondingly.

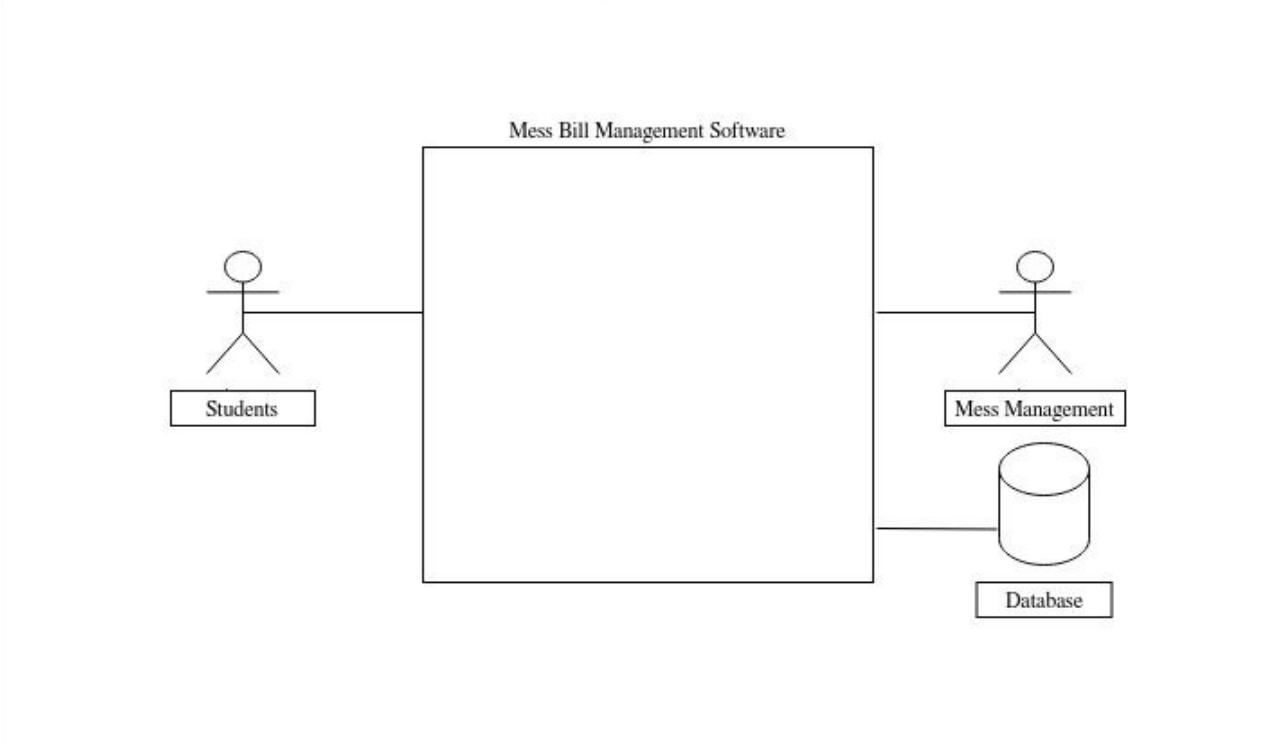


Diagram 1

The above diagram is a general view of the actors interacting with the software and the database.

2.2 Product Functionality

The software provides certain mess bill management functions . As seen from the students perspective:

- Create & Login Account
- Choose Mess
- View Mess Bill
- Complaint

As seen from the mess managers perspective:

- Login into Account
- View Students in Mess
- Mark Students on Having Meal
- Generate Total Bill
- View & Reply for Complaints

2.3 Design and Implementation Constraints

Hardware constraints :

- The database can hold a limited number of students' information.
- Does not have a dedicated server.
- Hardware to send messages to each client.

Security Constraints :

- The software doesn’t provide any secure encryption of the passwords.
- The data is discarded after every 2 months and previous datas availability is not guaranteed.

2.4 Assumptions and Dependencies

The software makes some assumptions as;

- All the users using the system belongs to NITC and are valid students
- All the messes are to follow a similar criteria in terms of the mess management and bill generation.

The dependencies are :

- The software redirects the students to other payment methods in terms of paying bills .
- The software makes use of an outside interface to provide students with the sms notifications when and all required.

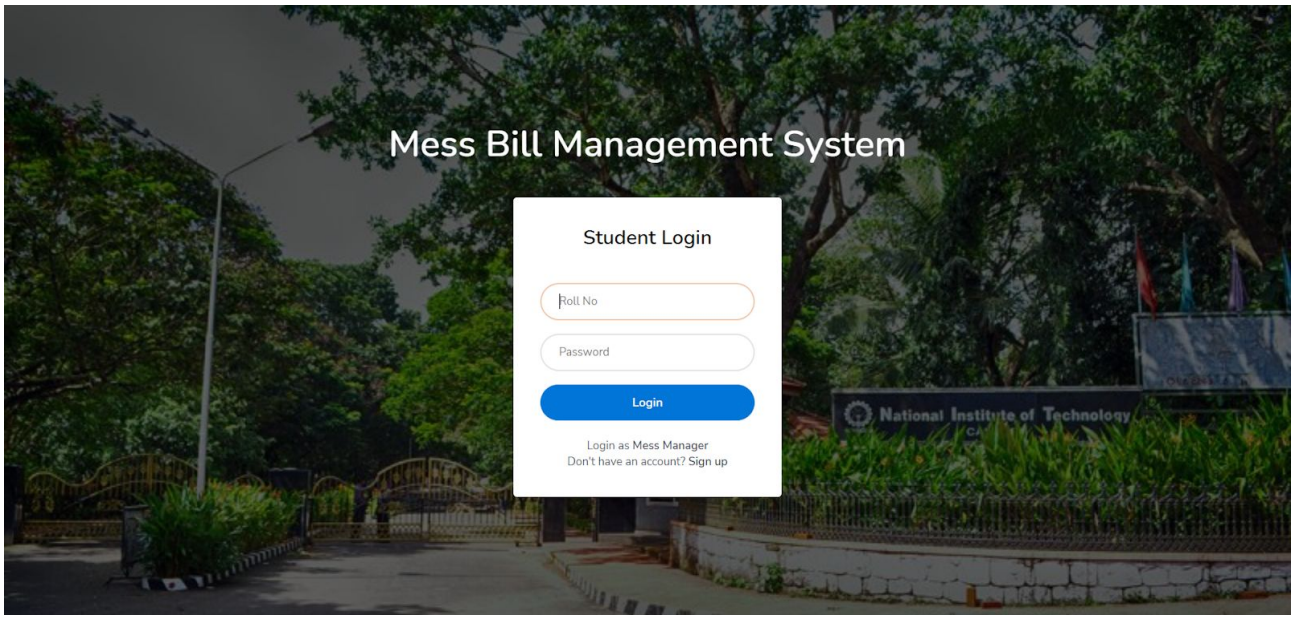
3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

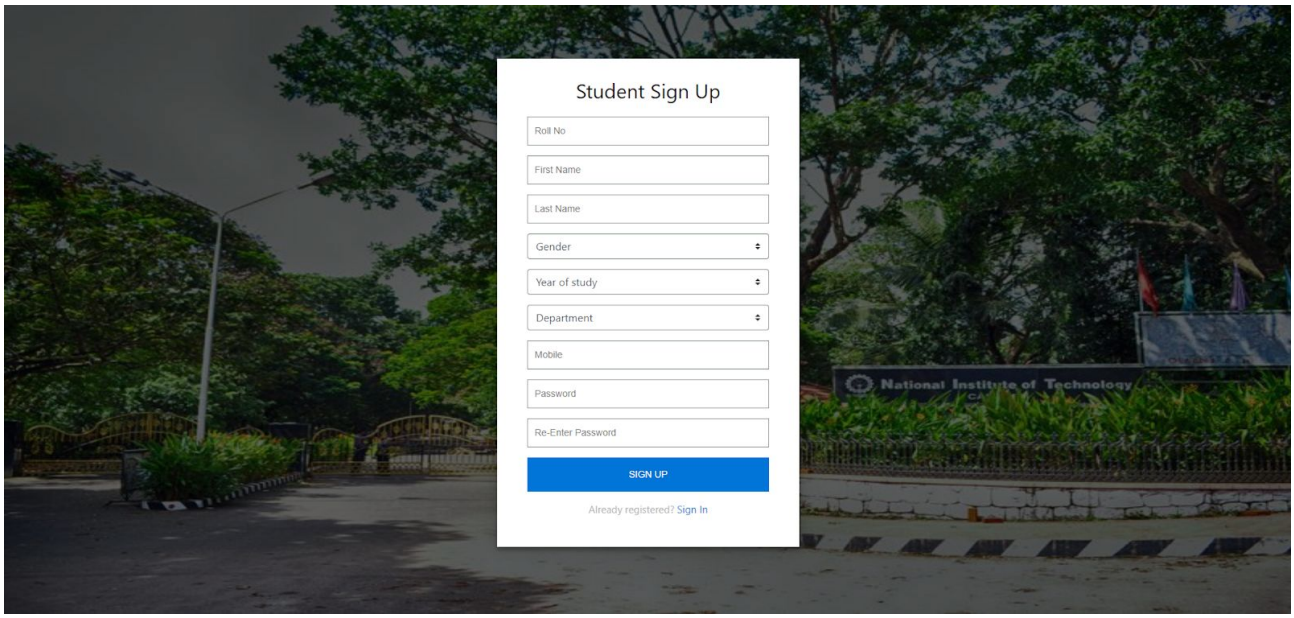
The Interface will be in the form of a webapp. It is designed to be functional and efficient. All options will be displayed in a Header of the page. HTML,PHP and CSS will be used to set up the page layout and ensure a user friendly environment.

Student Login Page



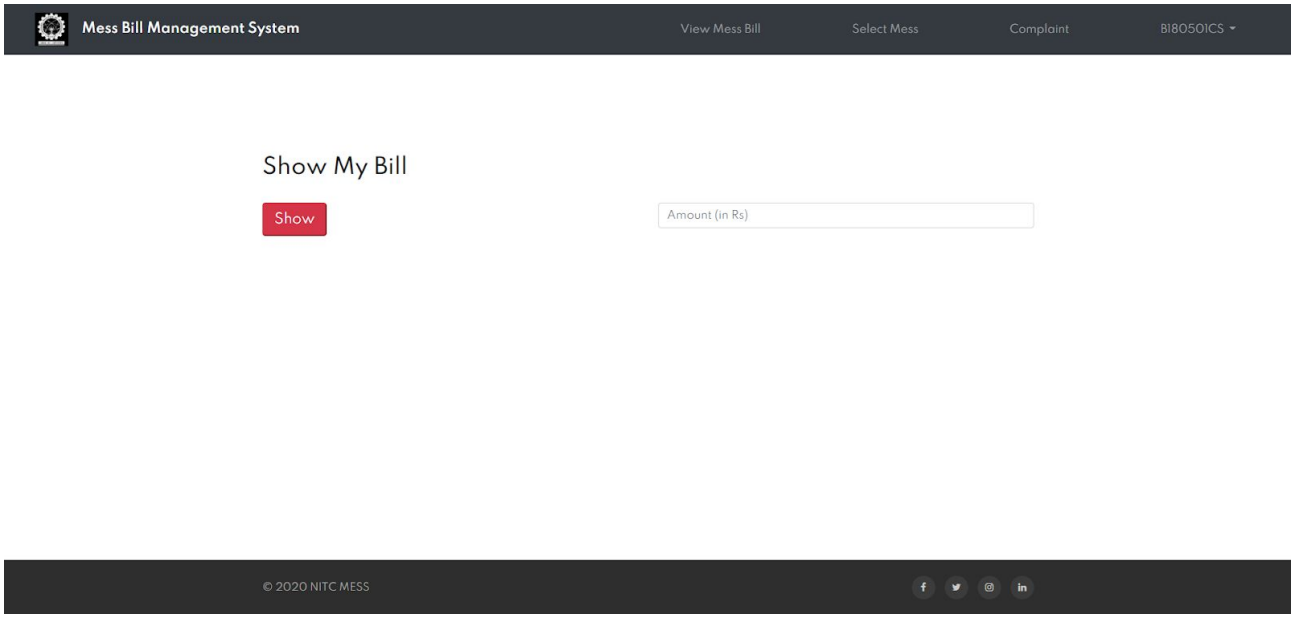
Students should Enter Rollno and password and click on the login button.

Student SignUp Page



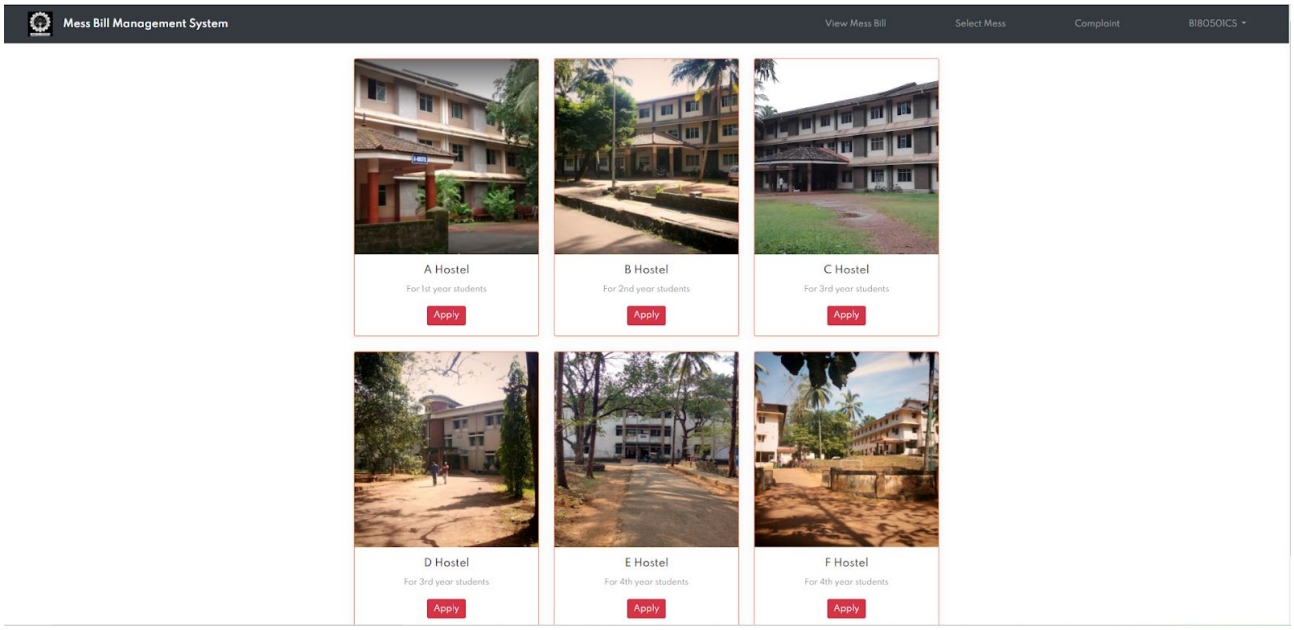
Student should Enter all necessary details and click on signup button

Student-View Mess Bill



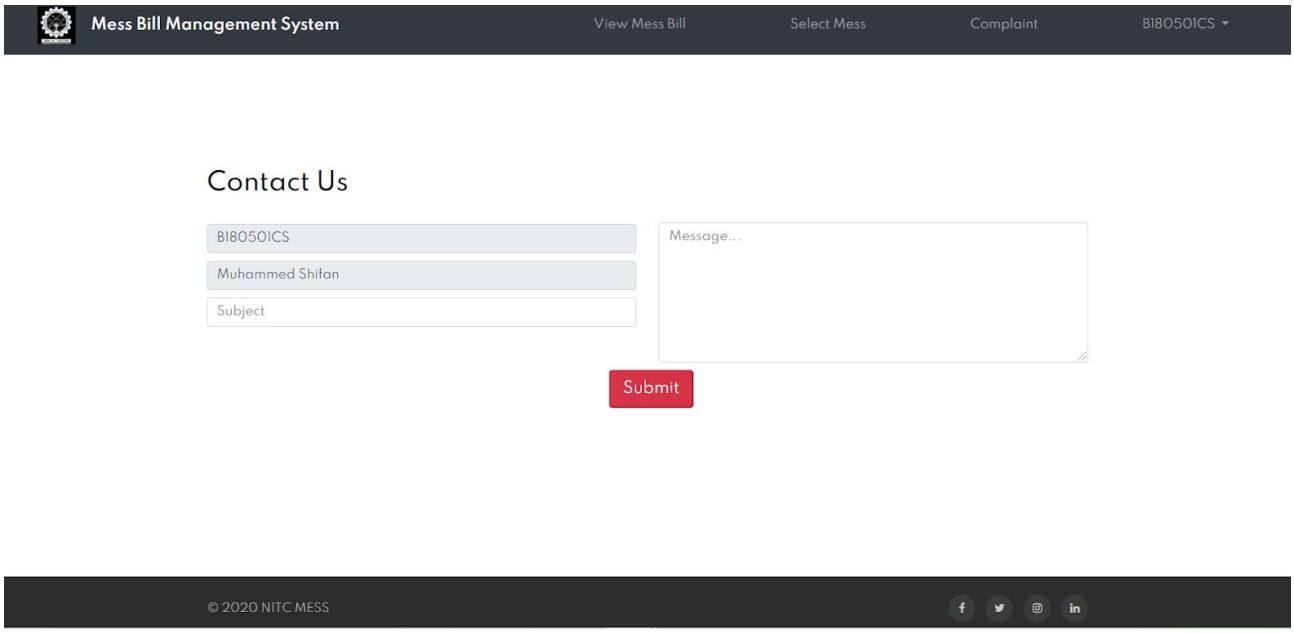
Student should Press on “View Mess Bill” and click on show button to see the bill

Student-Select Mess



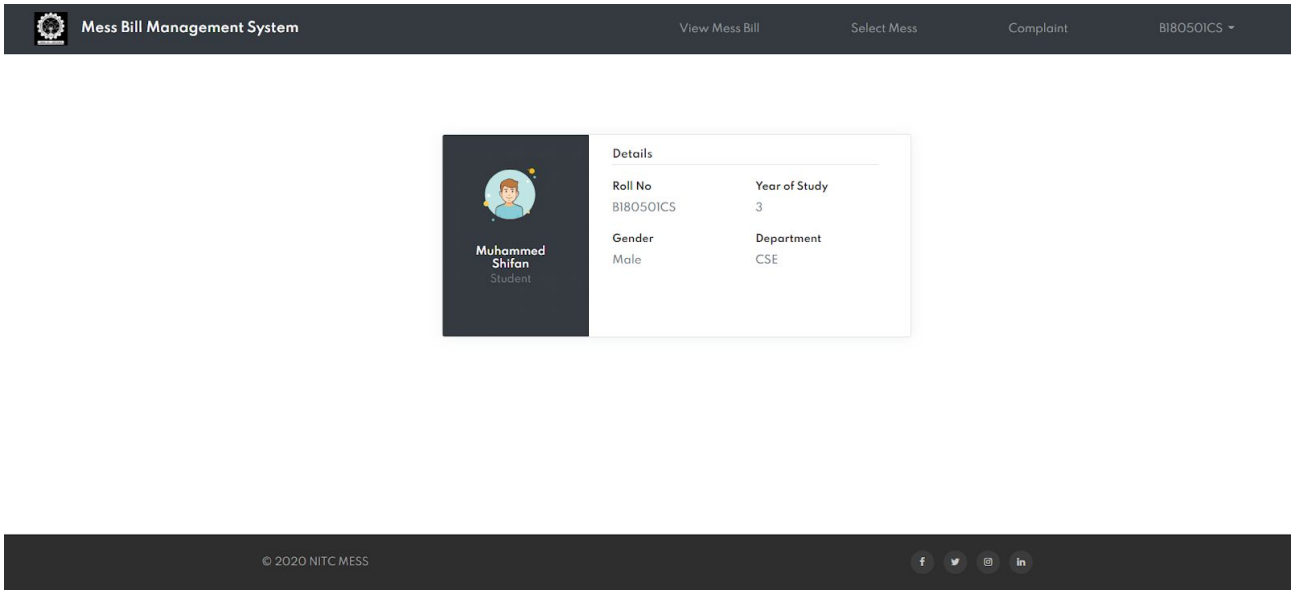
Student should Press on “Select Mess” and choose mess by click on Apply button

Student- Complaint Page



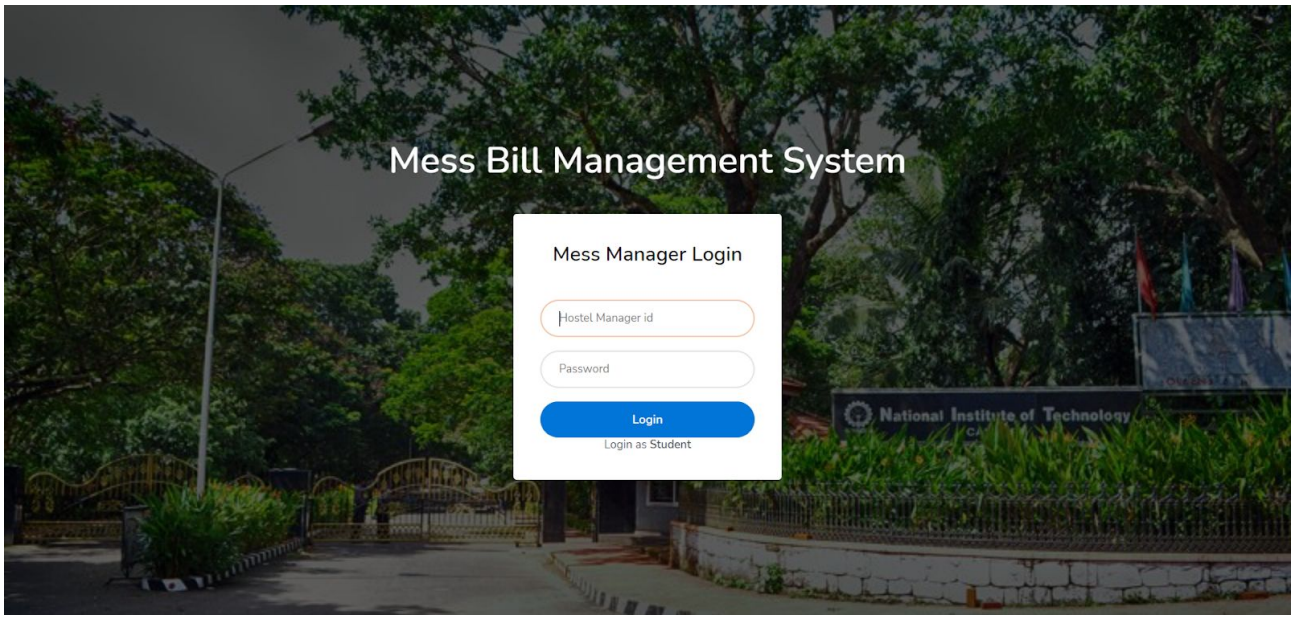
Student should Press on “Complaint” and write the required details and click on submit button

Student Profile



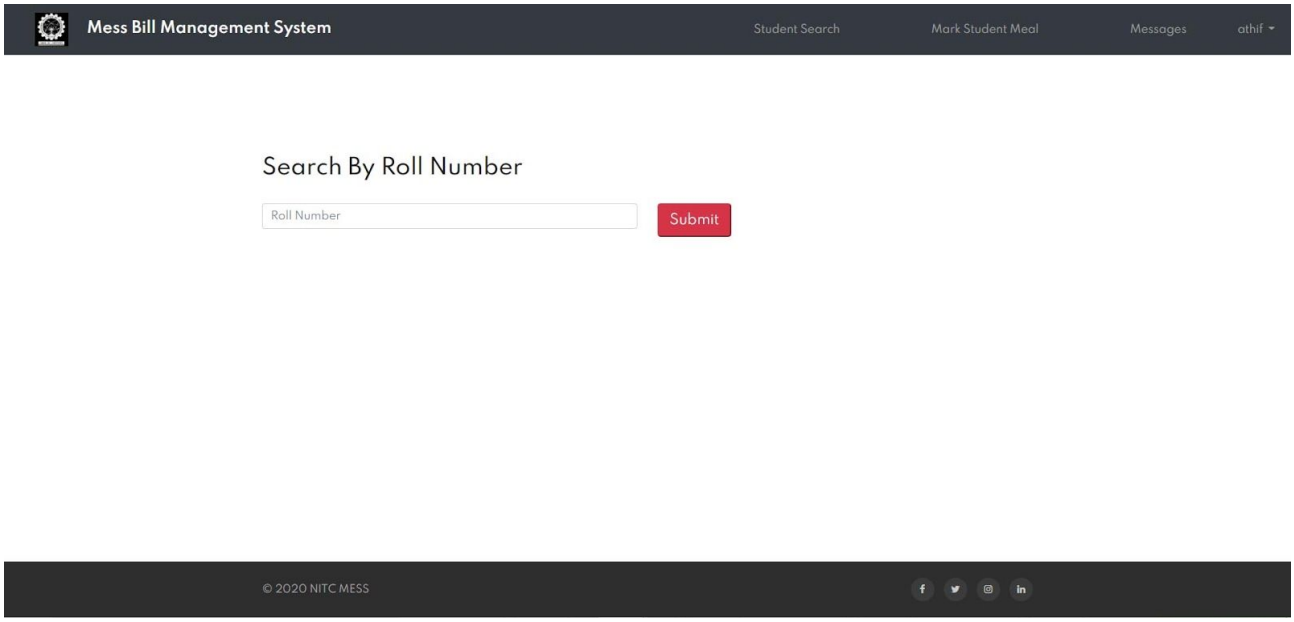
Student should Press on Roll No inorder to view the profile

Mess Manager Login Page



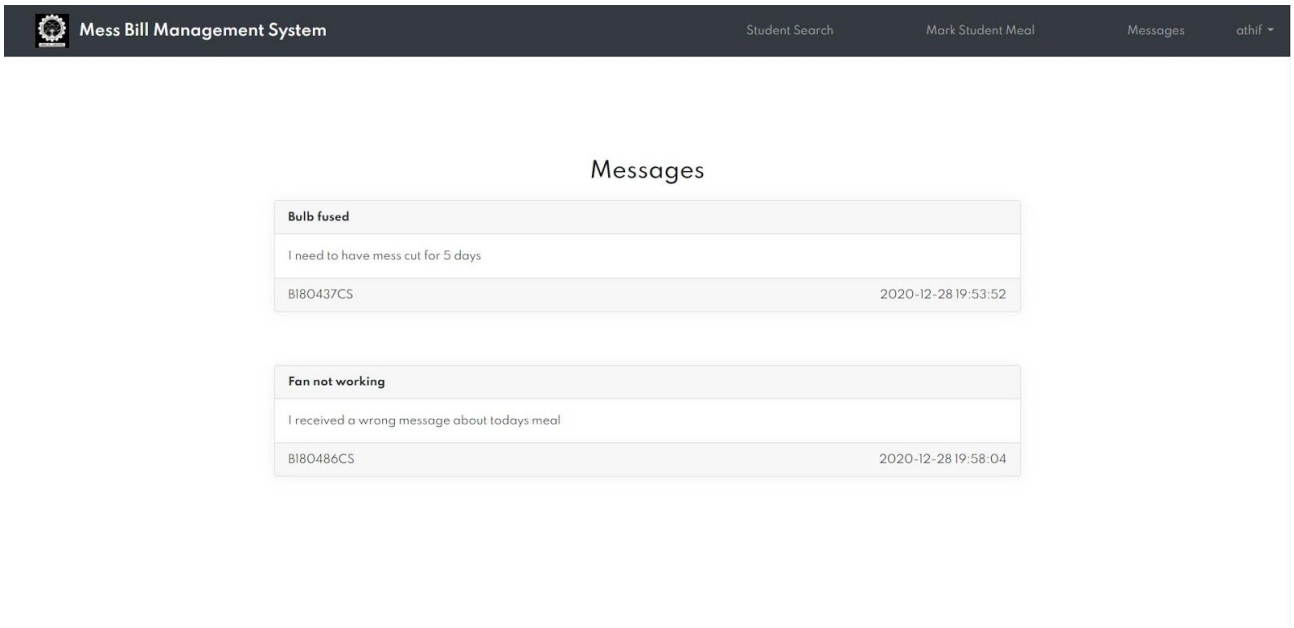
Manager should Enter Manager Id and password and click on the login button

Mess Manager-Student Search Page



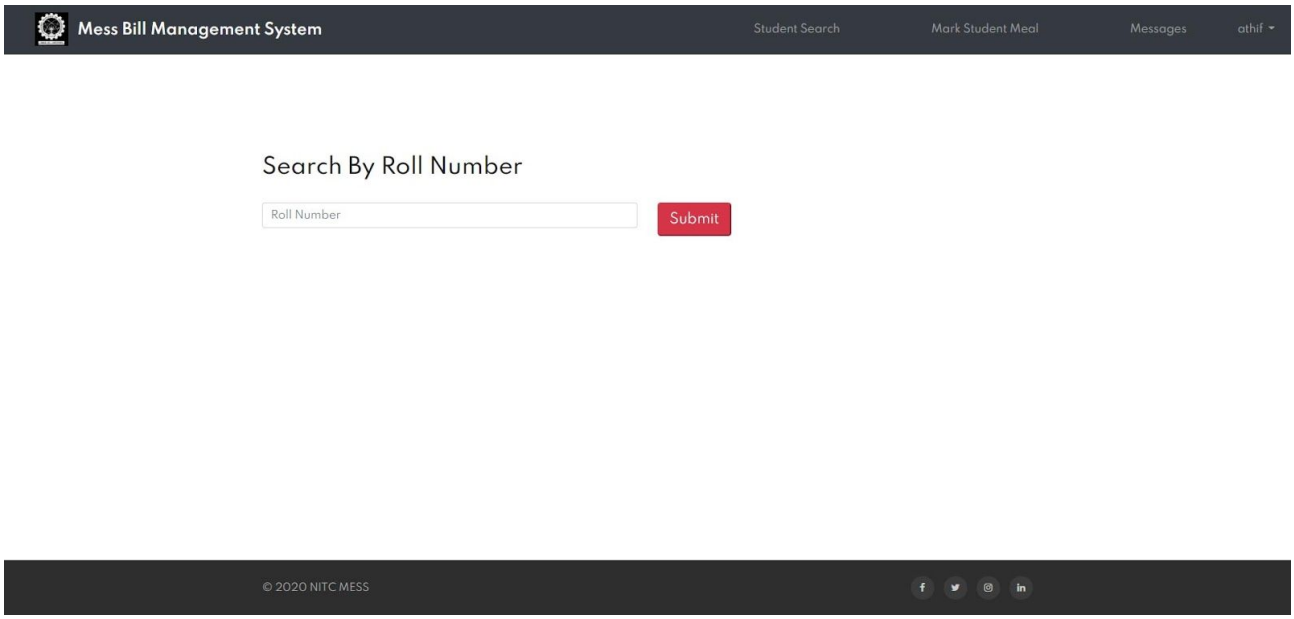
Mess Manager should Press on "Student Search" and enter student Roll No and click on submit button

Mess Manager-Complaints Received From Student



Mess Manager should Press on "Messages" to see the complaints from students

Mess Manager-Mark Student Meal Page



Mess Manager should Press on “Mark Student Meal” and enter student Roll No and click on submit button

3.1.2 Hardware Interfaces

A Web Server will be required so that the students and the mess admin can connect to it to exchange information. The server has a database to store all the data entries. There will be automatically generated messages sent to students based on their meals. The Server will have a high speed 1 Gigabit ethernet connection to the college's local network. GPS and GSM modules enable sending of SMS to students.

3.1.3 Software Interfaces

The server will be hosted using the latest version Apache Tomcat Web Server . 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.

3.2 Functional Requirements

F1: Student sign up

Every newly enrolled student can sign up to the MBMS portal. Firstly student need to navigate to the sign up page from the home screen.Then enter Roll No, First Name, Last Name, Gender, Year of Study, Department, mobile, Password and nitc mail id. After clicking the sign up button, a new account is opened. If the user has already registered, it shows an error message.

F2: Student Login

The student logs into the system so that he can carry on with other options like choosing mess, view mess bill, file any complaint about mess to the authority. The student has to enter his username and password which will be then compared with the database entries to validate his login credentials.

F3: 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.

F4: View mess bill

Students can view their live mess bill in the app up to that date. whenever a user clicks view mess bill, a query is sent to the database to calculate the total mess bill up to that time and the result is displayed.

F5: See Profile

User can navigate to the profile window to show his personal details stored in the database such as name, roll no, mess he chose. A query to show the details of that student with particular roll no is sent to the database and the result is shown.

F6: Complaint

Students have provision to file complaints against the mess to notify the issue to the hostel authority. Students need to click on the complaint bar in navigation. Then type the subject and the message. After clicking the submit button, the complaint is sent over to the database and gets stored which will be displayed in the mess manager window.

F7: Search student

The Mess manager can navigate to the student search tab to get the details of a specific student. He has to enter the Roll No of the student and click the submit button. After clicking, All details about that student will be displayed. If the student does not exist, an error message will be displayed.

F8: Mark student meal

After logging into the account, the mess manager can navigate to the mark student meal tab. Then enter the student roll number for which he has to mark the meal. Mark the corresponding columns of the meals and also mark extras if the student took it. Then click submit button, These data are updated in the database and an SMS will be sent over to the student mobile number about the meal he/she took.

F9: Generate Bill

At the end of every month, the system will generate an automated mess bill for every student starting from the previously paid date onwards. These bills are notified to every student via SMS.

3.3 Use Case Model

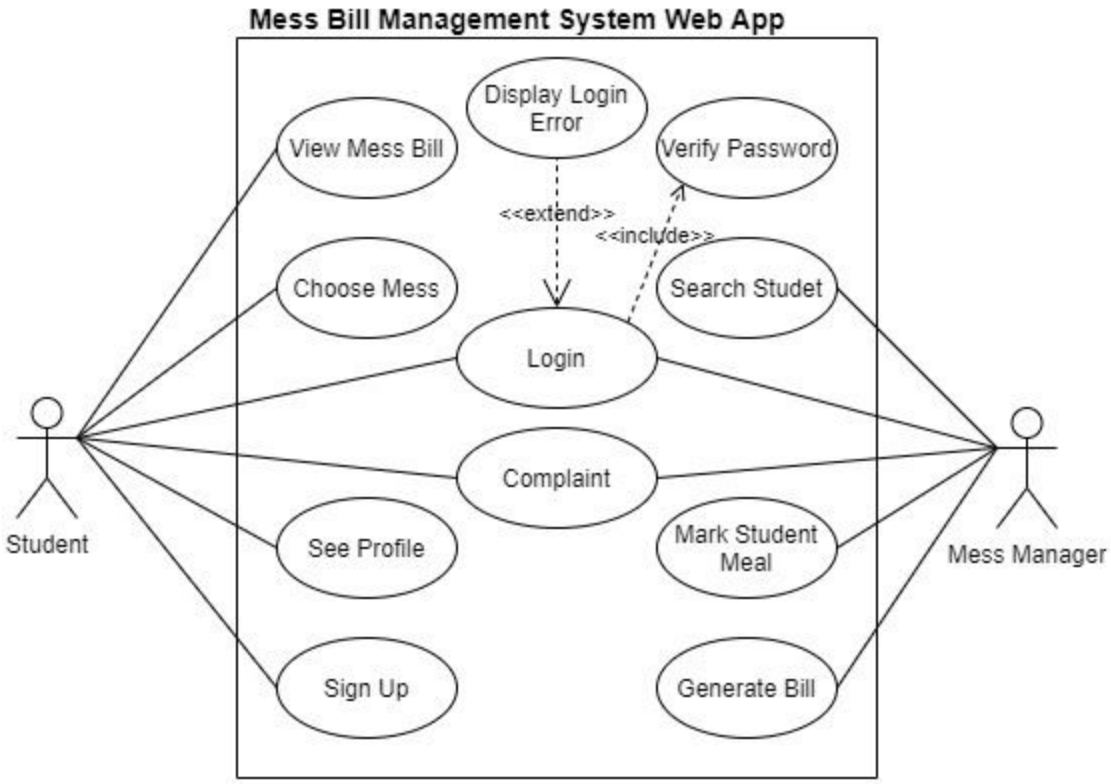


Diagram-2

3.3.1 U1 - Sign Up

Author – Mohammed Ismail C

Purpose - This enables students to create a new account in the MBMS portal.

Requirements Traceability –F1

Priority - High

Preconditions -

1.User is on the sign up page.

2. Users should have a valid nitc mail id.

Post conditions -

1. If a user already exists, Sign up error will be displayed.

2.Otherwise, A message saying account created successfully will be displayed

3.User will be redirected to his new account.

Actors – Student, MBMS

Extends – None

Flow of Events

Basic flow –

1. Student navigates to the sign up page
2. Students enter Roll No, First Name, Last Name, Gender, Year of Study, Department, mobile, Password and nitc mail id.
3. Students click the sign up button.
4. A pop up message saying "account created successfully" will be displayed.
5. User will be redirected to his new account.

Alternative Flow –

1. If the user already exists in the system, a pop up message saying "user already exists" will be displayed.

2. If the form data is empty, the system shows a pop up message informing the user to enter empty fields.

Includes – None

Notes/Issues - None

3.3.2 U2 - Login

Author – Muhammed Shifan P

Purpose - This enable user to login into the account

Requirements Traceability – F2

Priority - High

Preconditions -An entry corresponding to this student should be present in the database. That means they should sign up before logging in the account.

Post conditions - The user successfully logged into his account.

Actors – Mess Manager(regularly), Student(occasionally)

Flow of Events

Basic Flow -

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

Alternative Flow - An error message is shown if the details of the student is not present in the database.

Exceptions - The Student may terminate the login at any time.

Includes - Verify Password

Notes/Issues - None

3.3.3 U3 - Verify Password

Author – Muhammed Shifan P

Purpose - This will check whether the username and corresponding password match

Requirements Traceability – F2

Priority - High

Preconditions -

1. An entry corresponding to this student is present in the database. That means they should sign up before logging in the account.

2. The Student has entered his login details on the login page and pressed “login”

Post conditions -

If Credentials entered are correct then the user successfully logged into his account.

Actors –MBMS(regularly)

Flow of Events

Basic Flow -

1. Credentials are verified by system.

2. If details entered are correct then the user successfully logged into his account.

Alternative Flow - Display login Error Message if the Credentials are wrongly entered.

Notes/Issues - None

3.3.4 U4 - Display Login Error

Author – Muhammed Shifan P

Purpose - Display Login Error Message if Credentials are wrongly entered

Requirements Traceability – F2

Priority - High

Preconditions - Entered Credentials are wrong

Post conditions - User is not able to login into the account and gets a error message

Actors – MBMS(occasionally)

Extends – Login

Flow of Events

Basic Flow -

1. Credentials are verified by system.

2. If details entered are not correct then there will be a login error.

Alternative Flow - Logged into the account if the Credentials are correctly entered.

Notes/Issues - Absence of username in the database also gives the same error

3.3.5 U5 - Choose Mess

Author – Indrajith T S

Purpose - This allows the students to choose the mess they want for the current month.

Requirements Traceability – F3

Priority - High

Preconditions - Students must have already created an account and should have logged in.

Post conditions - Students have been allotted with a mess of their choice.

Actors – Students.

Extends – None.

Flow of Events

Basic Flow - 1. Students selects the mess of choice from the corresponding list.
2. The student is allotted the mess that he chooses.
3. The details of the mess allotted will be recorded in the student database.

Alternative Flow - 1. Error messages are displayed in case the mess is full.
2. Students are redirected to choose the mess again.

Exceptions - 1. Students can end the session or terminate the mess selection.

Includes - None.

Notes/Issues - None.

3.3.6 U6 - View Mess Bill

Author – Abid Ali Karuvally Pathikkal

Purpose - User will be able to view his/her mess bill.

Requirements Traceability – F4

Priority - High

Preconditions - The user should be logged into his account.

Post conditions - User's mess bill is displayed.

Actors – Student

Extends – None

Flow of Events

Basic Flow -

1. User clicks on the view mess bill navigation tab.
2. Then clicks on the show button.
3. Mess bill of the user is fetched from the MBMS database.
4. The fetched mess bill is displayed.

Includes – None

Notes/Issues - None

3.3.7 U7- View Profile

Author – Abid Ali Karuvally Pathikkal

Purpose - User will be able to view his/her profile details.

Requirements Traceability – F5

Priority - Medium

Preconditions - The user should be logged into his account.

Post conditions - User profile is displayed.

Actors – Student

Extends – None

Flow of Events

Basic Flow -

1. The user clicks on his/her roll number.
2. Details of the user are fetched from the database.
3. Profile details are displayed onto the page.

Includes – None

Notes/Issues - None

3.3.8 U8 - Complaint

Author – Indrajith T S

Purpose - This allows students to file complaints and mess management to reply to complaints.

Requirements Traceability –F6

Priority - Medium

Preconditions - Students and mess managers should have valid accounts.

Post conditions - Students complaints are recorded on the database. Replies for complaints sent by the mess managers are delivered to the student.

Actors – Students, Mess managers.

Extends – None.

Flow of Events

Basic Flow - Students side:

1. Student files complaints and press the dialogue button.
2. Complaints are recorded on the database .

Managers side:

1. Managers view the various complaints.
2. Manager replies for the complaints and presses sent .
3. The replies are sent to the corresponding student as an SMS.

Alternative Flow - Manager can delete the message instead of replying.

Exceptions - Student/Manager may stop sending the complaint/reply at any time.

Includes -None

Notes/Issues - Sending reply as SMS is a challenge to be solved.

3.3.9 U9 - Search Student

Author – Fadi

Purpose - This enables the concerned actors to search for a specific student

Requirements Traceability – F7

Priority - Medium

Preconditions - 1.The Mess manager has logged into his account

2.Roll number of the student should be known

Post conditions - The details of the specific student is shown

Actors – Hostel Manager

Extends – None

Flow of Events

Basic Flow - 1. Admin gets the information of the necessary student.
2.He enters it into the corresponding field.
3.The details of the student is shown.

Alternative Flow - An error message is shown if the details of the student is not present in the database.
Exceptions - The admin may abandon the operation at any time.

Includes - None

Notes/Issues - None

3.3.10 U10 - Mark Student Meal

Author – Fadi

Purpose - This enables the concerned actors to mark that a particular student has had a meal and also the extras.

Requirements Traceability – F8

Priority - High

Preconditions - 1.The Mess manager has logged into his account

2.Roll number of the student should be known

Post conditions - The student food consumption details are updated.

Actors – Hostel Manager

Extends – None

Flow of Events

Basic Flow - 1. Mess manager gets the information of the necessary student.
2.He enters it into the corresponding field.
3.He chooses the details of the meal and extras from the corresponding columns and selects it.
4.The concerning details are recorded in the database.
5. A SMS is sent to the student containing these details.

Alternative Flow - An error message is shown if the details of the student is not present in the database.
Exceptions - The admin may abandon the operation at any time.

Includes - None

Notes/Issues - None

3.3.11 U11 - Generate Bill

Author – Mohammed Ismail C

Purpose - System will generate mess bills every month which will be sent via SMS to all the users.

Requirements Traceability – F9

Priority - High

Preconditions - MBMS database should be available.

Post conditions - Sending mess bill to all the users via SMS.

Actors – MBMS

Extends – None

Flow of Events

Basic Flow -

1. system access MBMS database.
2. For all the users, calculate the total mess bill from the previous payed day onwards.
3. Send the mess bill details request to the SMS API for sending SMS.

Includes – None

Notes/Issues - Good responsive SMS API to be used which is capable of sending messages to 6000 students.

4 Other Non-functional Requirements

4.1 Performance Requirements

- Being a web based application much of the response times depends upon the user's connection.It has to be sufficiently strong to provide optimum performance of the system,a brief description of the optimum response is given.
- 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 MBMS 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. An automatic logout system will log out a student after 10 minutes.

4.3 Software Quality Attributes

4.3.1 Reliability

Being primarily a Web based application much of the reliability falls on the server handling itself as well as the storage of databases this can be achieved by providing a backup of the important data pertaining to the application itself.

4.3.2 Portability

The Mess Bill Management System has been coded in primarily php and html thus making them highly portable.The relational database management system of choice is mySQL thus the porting of relational data is done through the backup '.sql' files,

4.3.3 Reusability

The use of Bootstrap to add the user interface has allowed the code to be highly reusable in that context and changes to the UI can be done by learning the bootstrap framework.The PHP and HTML code has also been split into their respective module so as to encourage the reusability of them.

5.Other Requirements

5.1 Ease of use and Documentation

(i) The software should be designed for extensive customizability, even for people who are not used to computer programming.
(ii) The user-interface should be intuitive and easy to navigate.
(iii) There should be a proper documentation of the system. This document should be so simple yet precise so that a newly appointed faculty should do all the things on one's own and distinguish all the features. This could be given in the form of a 'help' menu associated with every activity.

5.2 Components

It is desirable that the solution must be based on, and runs on open-source infrastructure and components, such as Linux, Apache Web Server, Tomcat, MySQL. The solution can be composed from available open source components and custom developed ones. Any custom components developed should be made available to NIT Calicut in the source format with sufficient documentation.

Appendix A - Activity Log

Details of Meeting and their duration

19/02/21-6:00 pm to 7:30 pm
20/02/21-5:00 pm to 6:15 pm
21/02/21-7:00 pm to 8:30 pm
22/02/21-8:00 pm to 9:30 pm
23/02/21-4:00 pm to 5:00 pm

Individual contributions

Fadi Noushad P - Section- 1,Section- 3.3,Section- 4.1,Section 4.2
Indrajit T.S - Section- 2,Section - 3.3,Diagram - 1

Mohamed Shifan - Section- 3.1,Section- 3.3
Muhammed Ismail - Section- 3.2,Section- 3.3,Section- 4.3
Abid Ali K.P- Section- 5,Section- 3.3,Diagram-2