
Design Document

for

Mess Bill Management System

Version 0.1

Prepared by Team 24:
(Based on SRS Version 0.1)

Fadi Noushad Puzhakkothodi	B180492CS	fadi_b180492cs@nitc.ac.in
Mohammed Ismail C	B180437CS	mohammedismail_b180437c s@nitc.ac.in
Indrajith T S	B180486CS	indrajith_b180486cs@nitc.ac .in
Muhammed Shifan P	B180501CS	muhammedshifan_b180501c s@nitc.ac.in
Abid Ali KP	B180466CS	abidali_b180466cs@nitc.ac.i n

Course: CS3004D Software Engineering

Date: 08/04/21

Glossary

CSS	Cascading Style Sheets
HTML	Hypertext Markup language
IEEE	Institute of Electrical and Electronics Engineers
MBMS	Mess Bill Management System
PHP	Hypertext Preprocessor

Table of contents

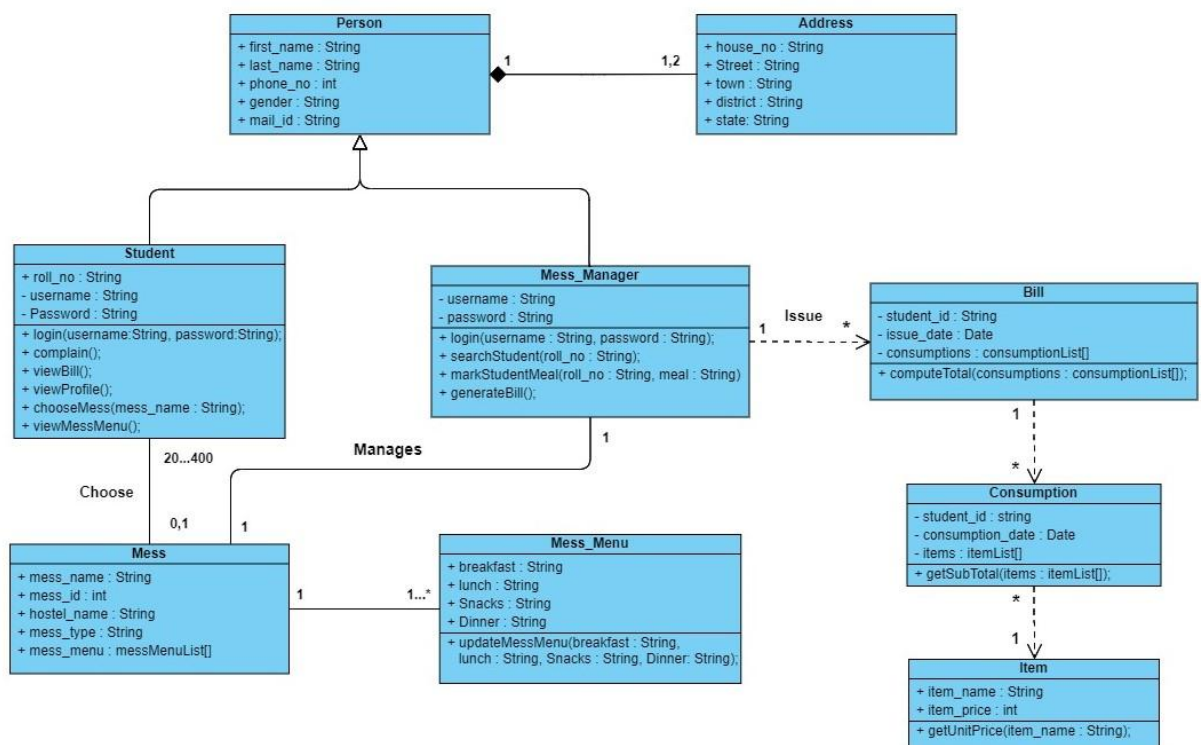
Glossary	2
Table of contents	3
Detailed Design through UML diagrams	4
1.1 System model using Class Diagram	4
1.1.1 Class Diagram	4
1.2 Responsibilities - Use Case Diagram	5
1.3 Static snapshot of the system - Object Diagram	6
1.4 System Interactions through Sequence Diagrams	7
1.4.1 Login - Abid Ali KP	7
1.4.2 View Bill - Muhammed Shifan P	8
1.4.3 Complaint - Indrajith T S	8
1.4.4 Mark Student Meal- Fadi Noushad	9
1.4.5 Generate Bill - Mohammed Ismail C	10
1.5 Control and Data Flows through Activity Diagrams	11
1.5.1 Login - Abid Ali KP	11
1.5.2 View Bill - Muhammed Shifan P	12
1.5.3 Complaint - Indrajith T S	13
1.5.4 Mark Student Meal - Fadi Noushad	14
1.5.5 Generate Bill - Mohammed Ismail C	15
Database Design	16
2.1 ER Diagram	16
Implementation Plans	16
3.1 Technology Stack	16
3.2 Work Estimates	18
Reference	18
Appendix A - Activity Log	18

1. Detailed Design through UML diagrams

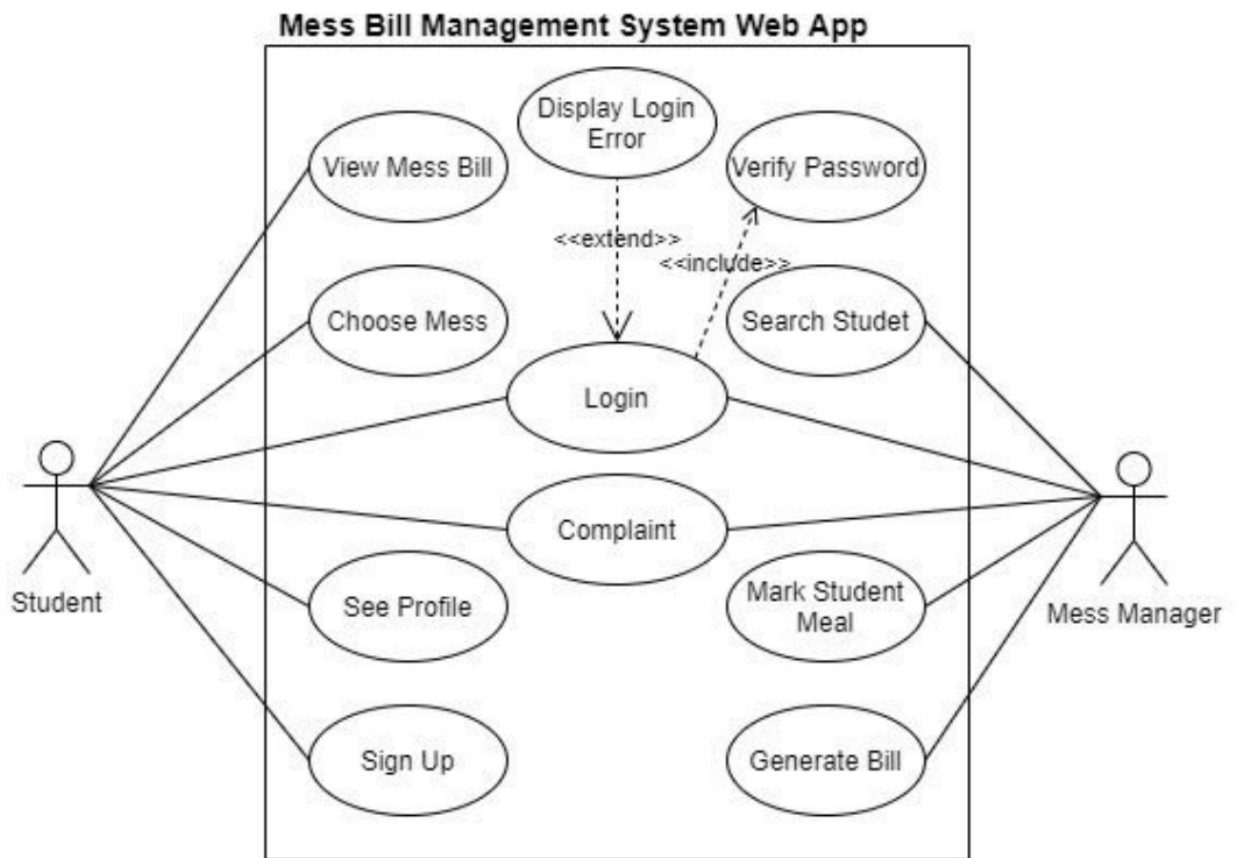
1.1 System model using Class Diagram

Class Diagram in the Unified Modelling Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods) and the relationships among classes.

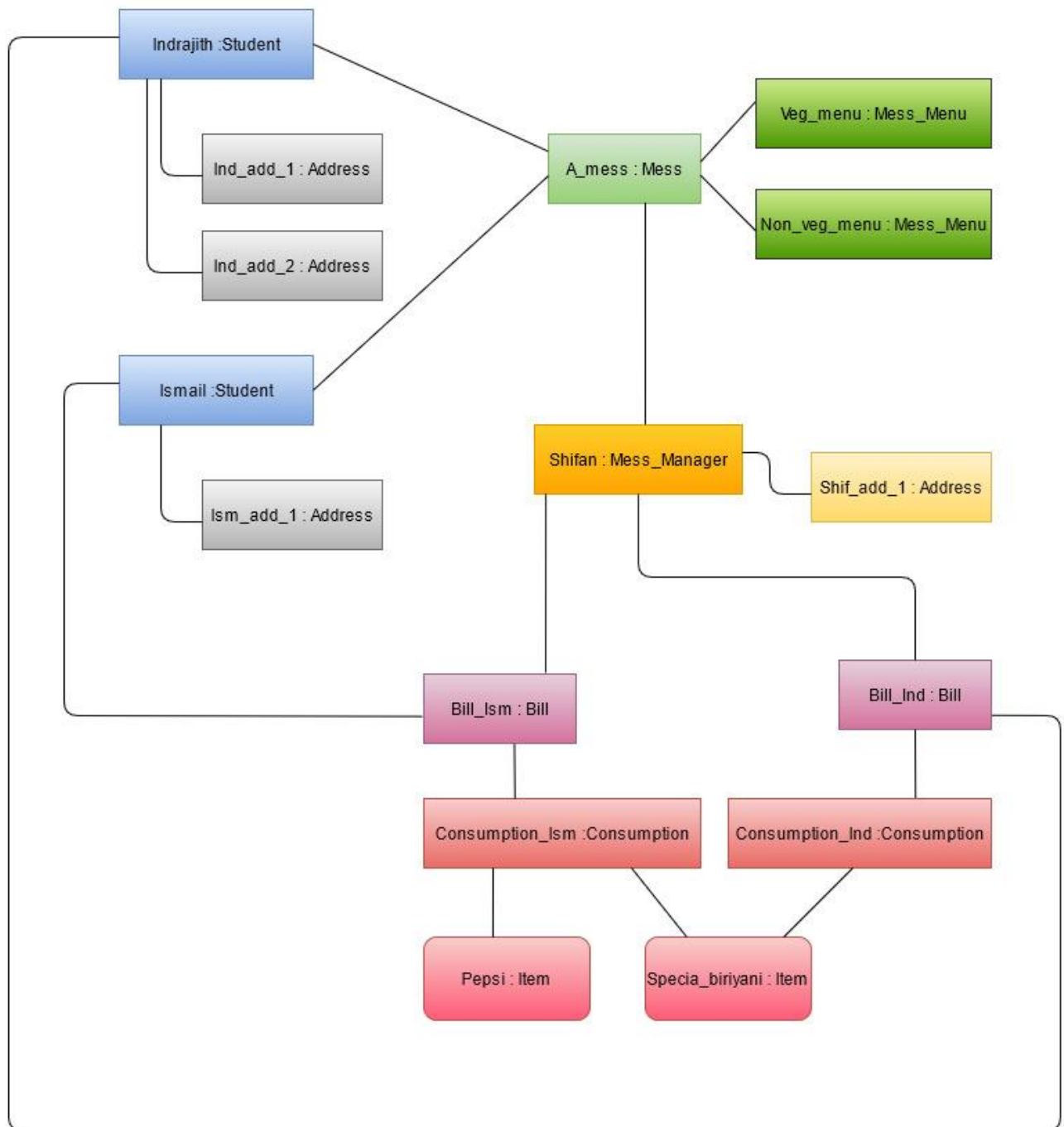
1.1.1 Class Diagram



1.2 Responsibilities - Use Case Diagram



1.3 Static snapshot of the system - Object Diagram

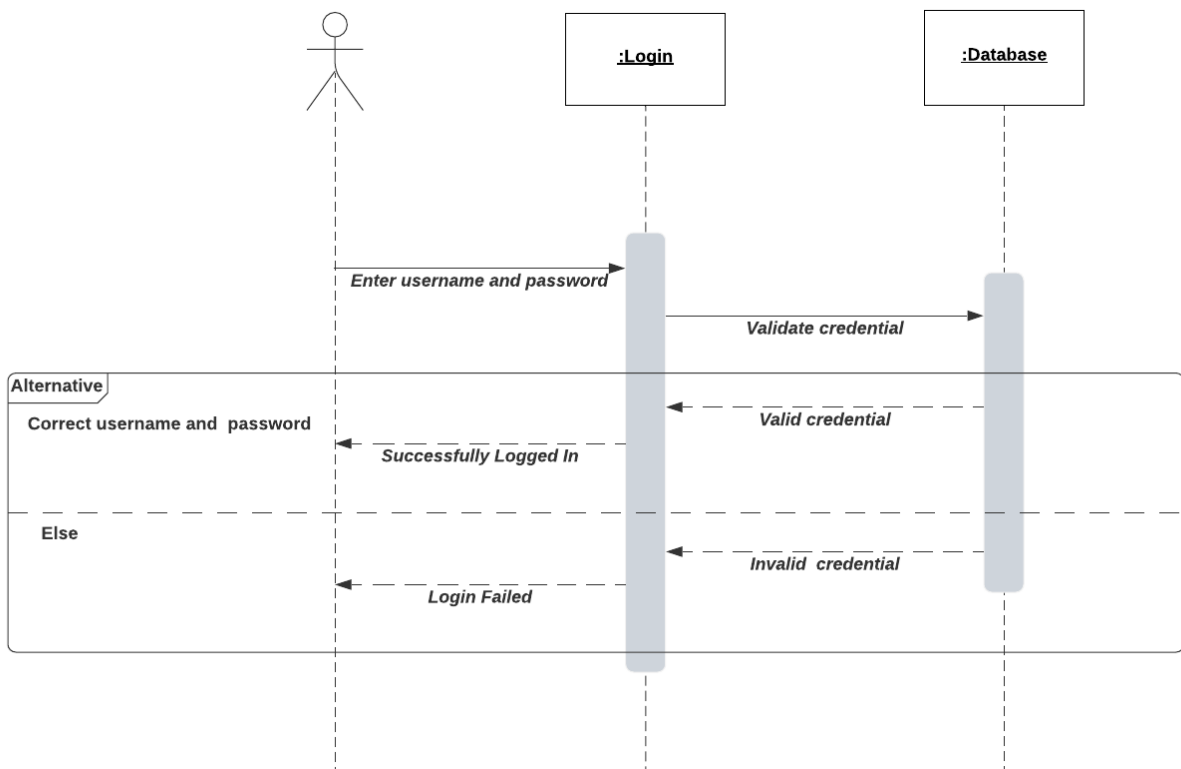


1.4 System Interactions through Sequence Diagrams

Sequence diagrams are interaction diagrams that show the sequence of messages exchanged by the set of objects performing a certain task. A sequence diagram shows, as parallel vertical lines (lifeline), different processes or objects that live simultaneously, and as horizontal arrows, the messages exchanged between them, in the order in which they occur.

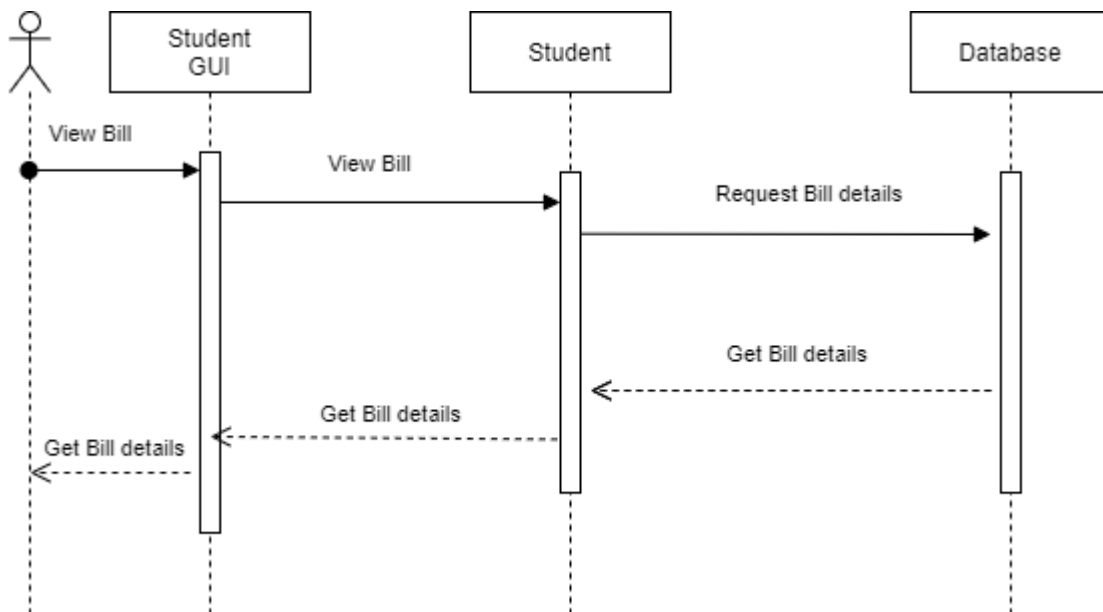
1.4.1 Login - Abid Ali KP

Student and Manager are actors here. They enter username and password to log into the app. The credentials are validated at the database.



1.4.2 View Bill - Muhammed Shifan P

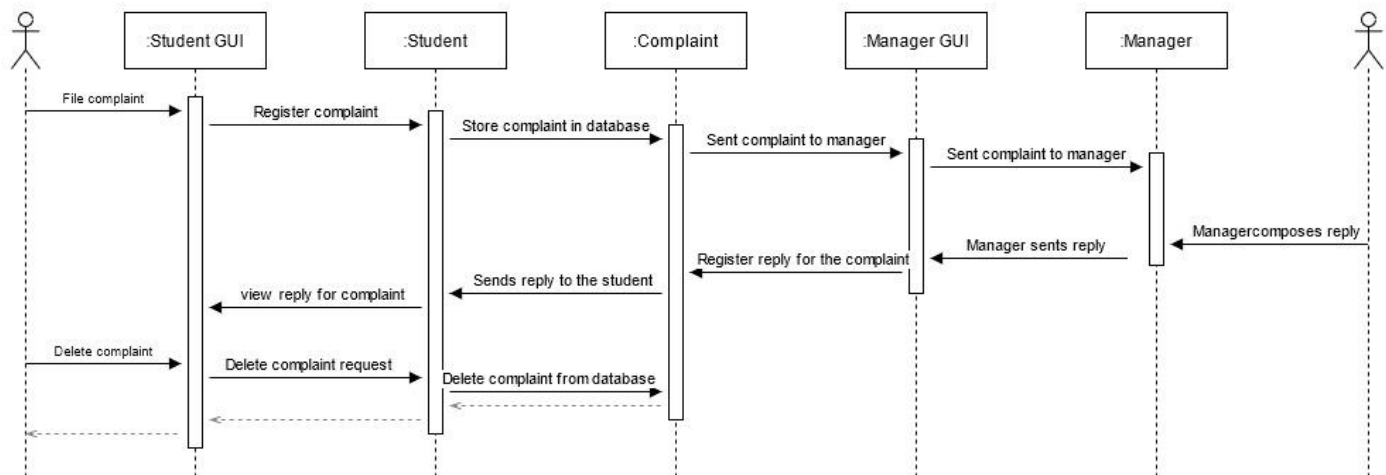
Student is the actor involved in viewing the Mess Bill. Student class basically requests for the bill information from the database and the database sends the bill details to the student.



1.4.3 Complaint - Indrajith T S

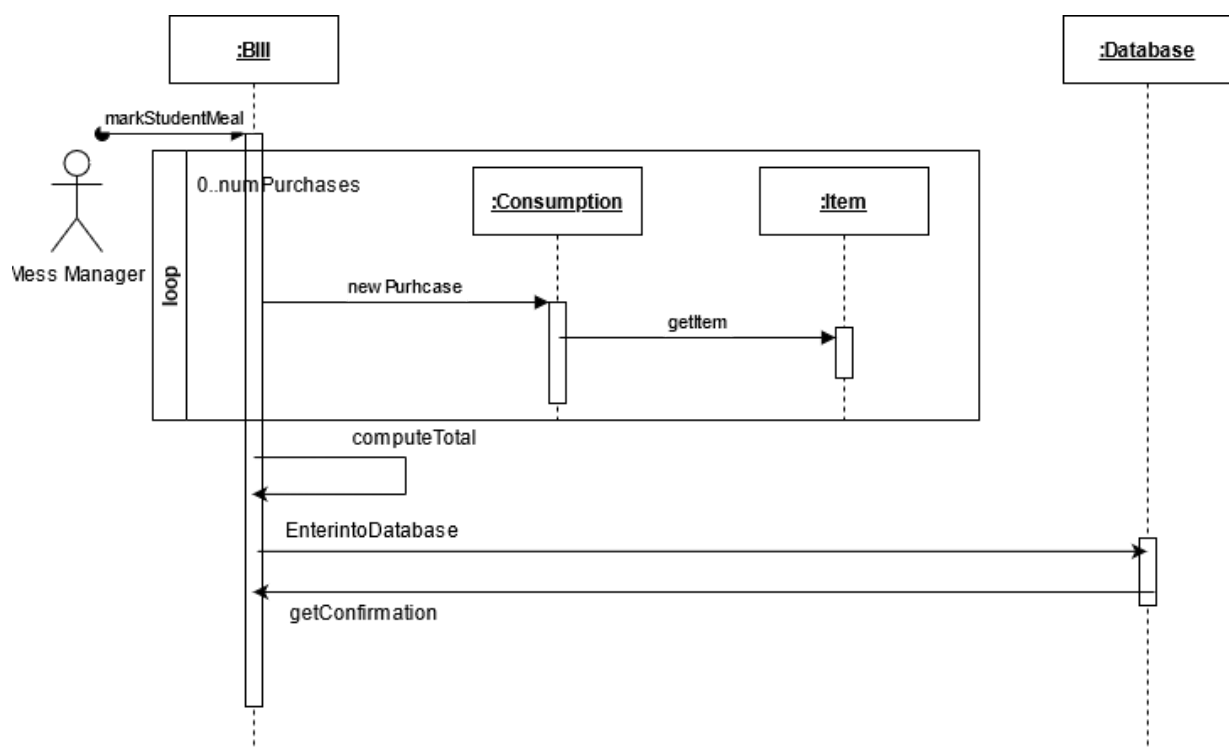
Complaints can be filed by the students which will be visible to the corresponding mess manager and the corresponding mess manager can look at the complaints and then create and send a reply for the same. So as given in the sequence diagram the student files a complaint which gets stored in the database as a complaint then forwards it to the mess manager. Mess manager upon viewing the complaint creates a reply then sends the reply which gets stored in the database and then the system forwards it to the student and also an sms is sent to the student.

Then the student views the reply then generates a request to delete the complaint and then sends it to the system and the system removes that complaint from the database.



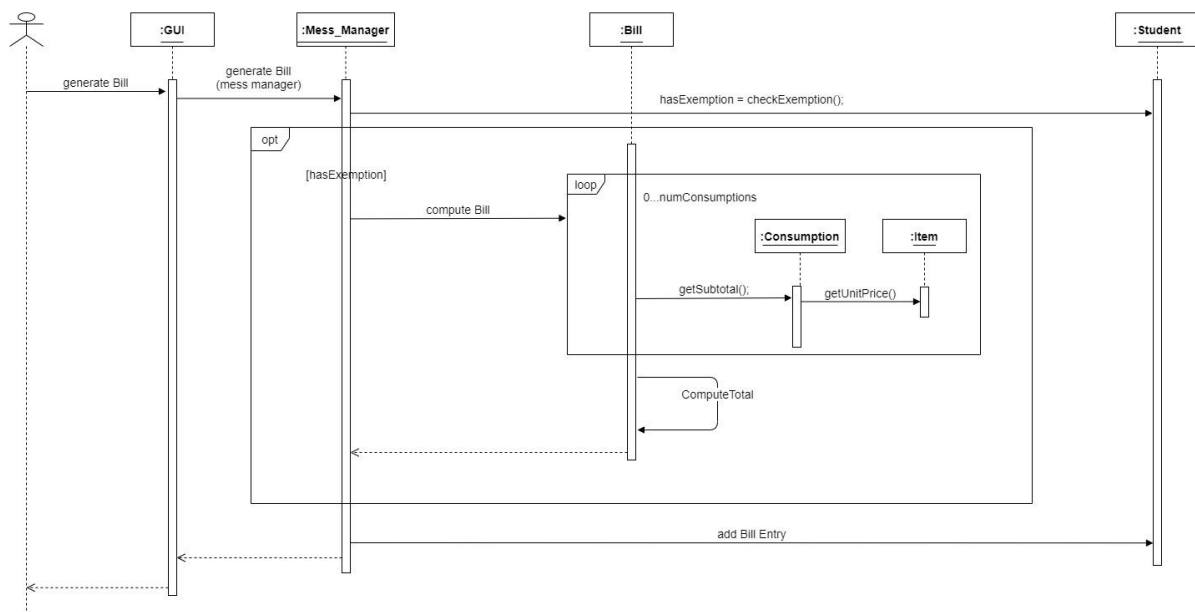
1.4.4 Mark Student Meal- Fadi Noushad

Mess Manager is the actor who is involved in Marking the Student meal the mess manager interacts with the Bill class and initiates the process of marking he specifies each purchase and the corresponding item present then the Bill class computes the total and then Enters it into the Database and then gets the confirmation.



1.4.5 Generate Bill - Mohammed Ismail C

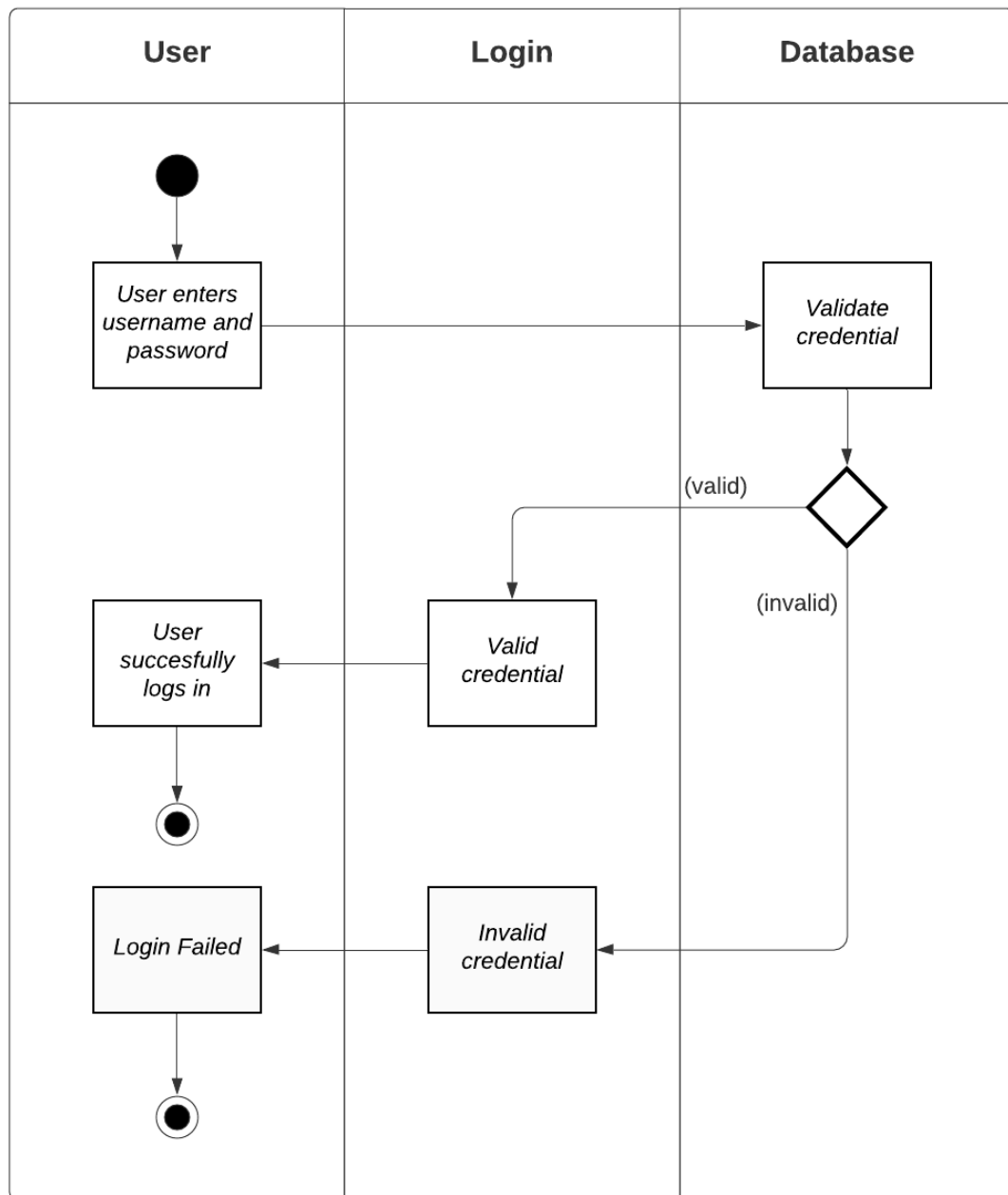
Mess manager is the actor involved in generating bill who initiate a generate bill request to the graphical user interface. Then that request is forwarded to the Mess Manager object. From the mess manager pass a message to the student object for checking whether the student has any exemption in the mess bill. If he/she has, then the process will be terminated. Otherwise a compute Bill request is passed to Bill. From the bill, it iteratively calculates bill amount by evaluating the unit price of each consumption item. After evaluating, This bill is added to the student bill entry and the process is completed.



1.5 Control and Data Flows through Activity Diagrams

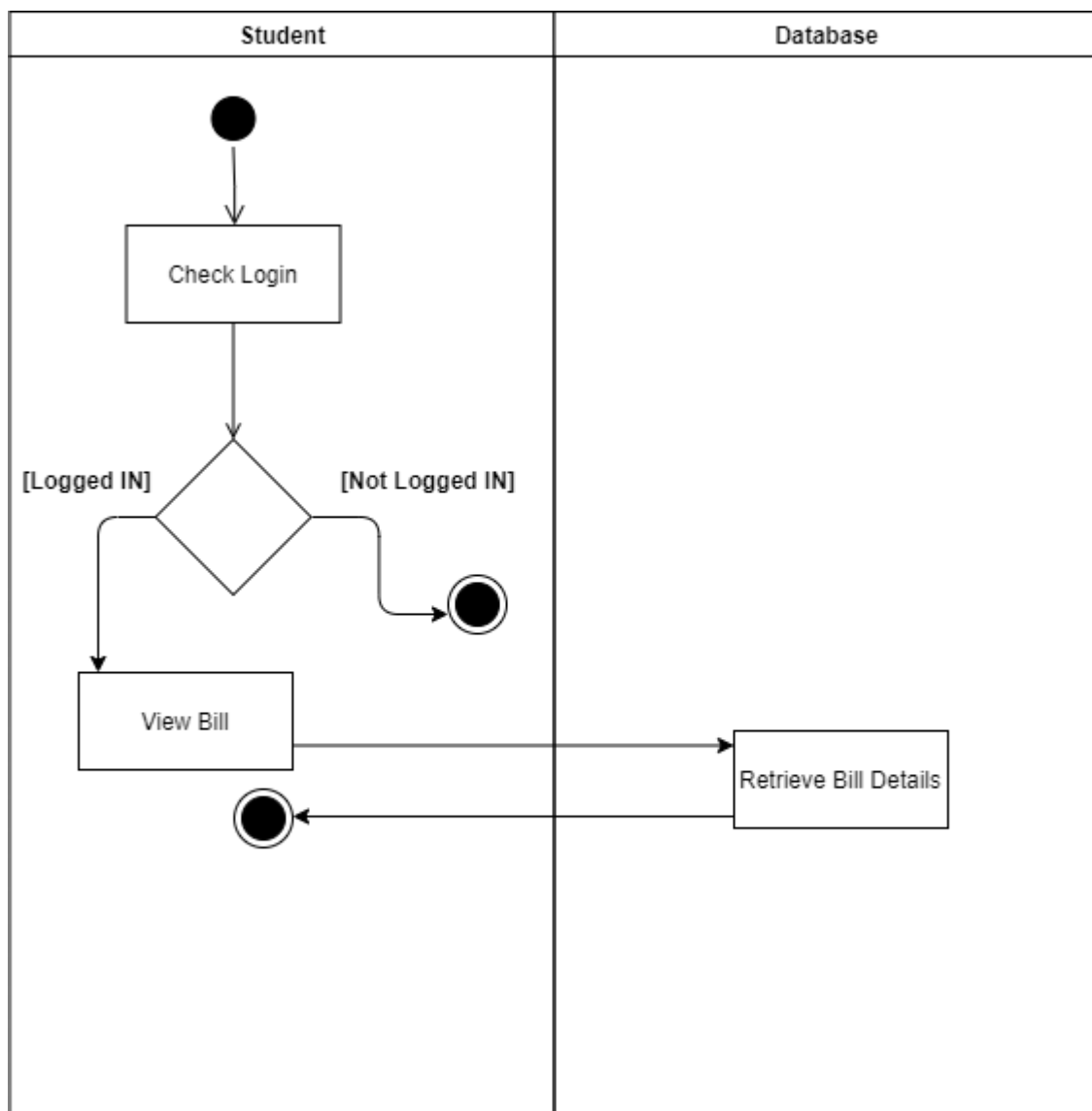
1.5.1 Login - Abid Ali KP

Here the activity diagram of logging into the application is depicted. User enter username and password. The credentials are validated at the database. If it is valid, the user successfully logs in. Else, the user has failed in logging in.



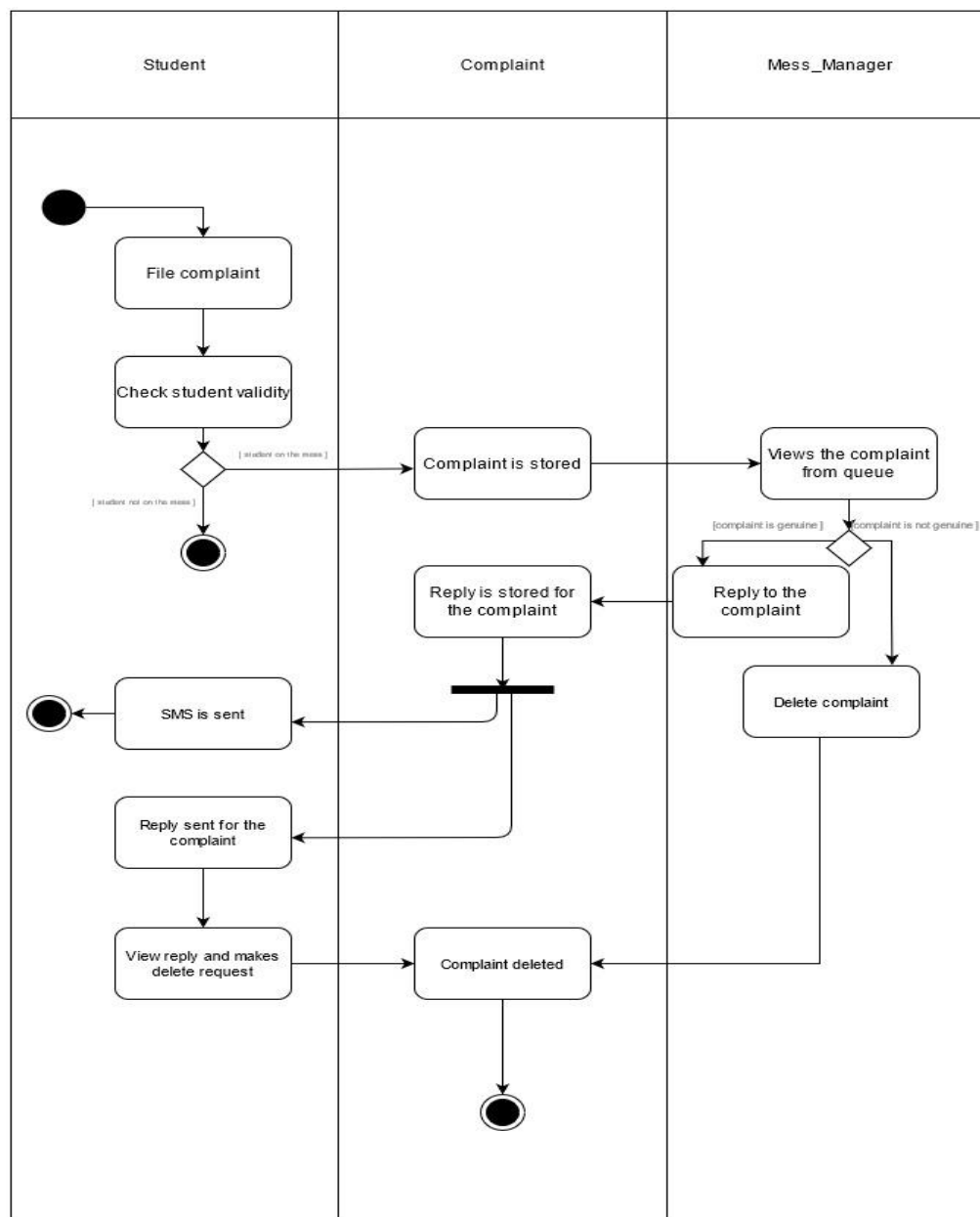
1.5.2 View Bill - Muhammed Shifan P

Initially login Credentials of students is verified. If it is logged in, then the student can choose the “View Bill” option. Then the bill details are retrieved from the database and displayed to student and we end our activity.



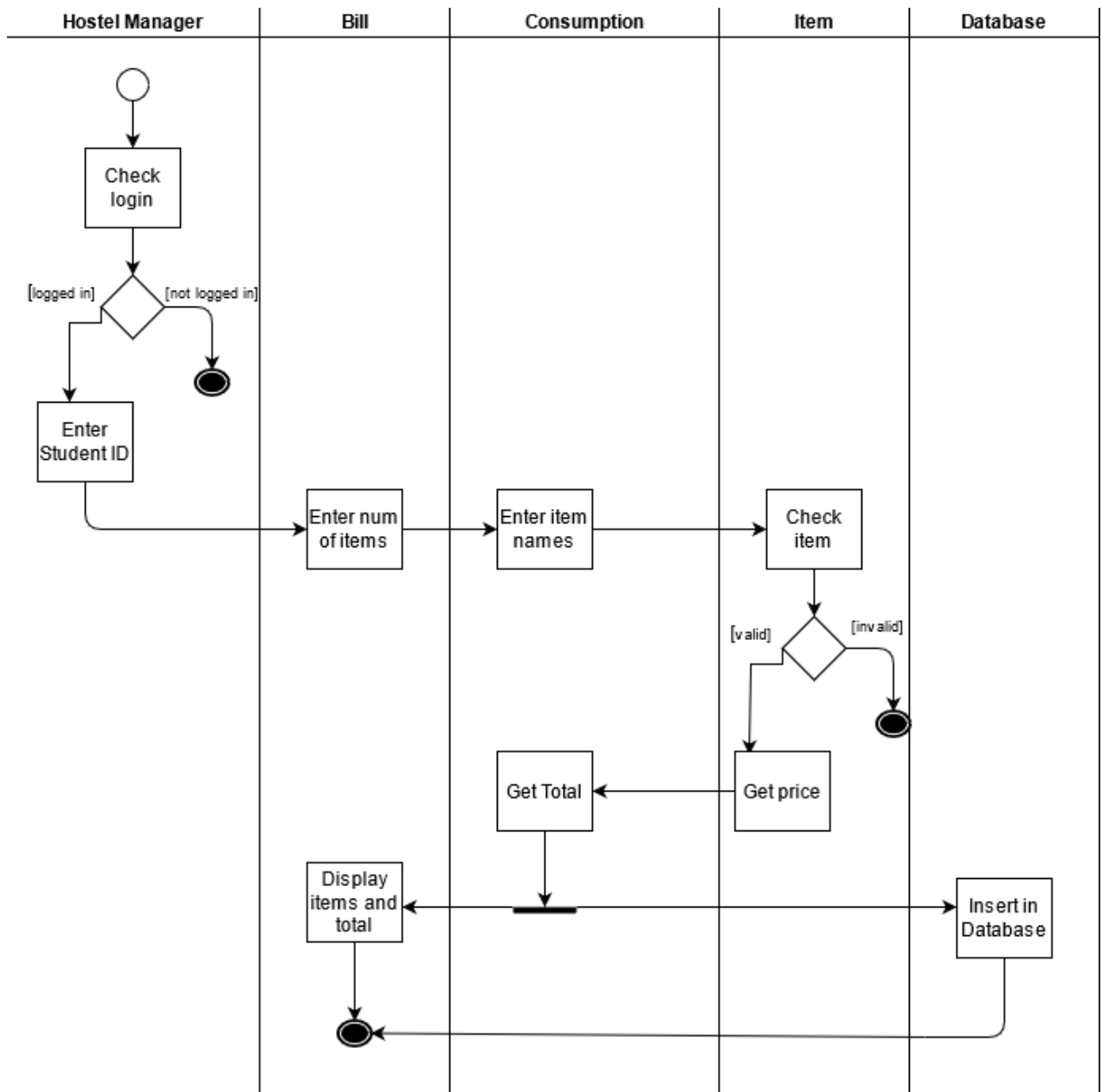
1.5.3 Complaint - Indrajith T S

Here the student files a complaint and then the validity of the student is checked i.e whether he belongs to a mess or not . If not then his complaint register request is dropped else the complaint is forwarded and stored at the database. Then the mess manager of the corresponding mess views the complaint . If the complaint is verified as not genuine then he can initiate deletion of the complaint . Else he composes a reply and then attaches it to the complaint. Which is then stored in the database. Then the system sends the reply to the corresponding student as sms and to his portal simultaneously. Then the student views the reply and generates the request for the deletion of the complaint . Then the corresponding complaint is deleted.



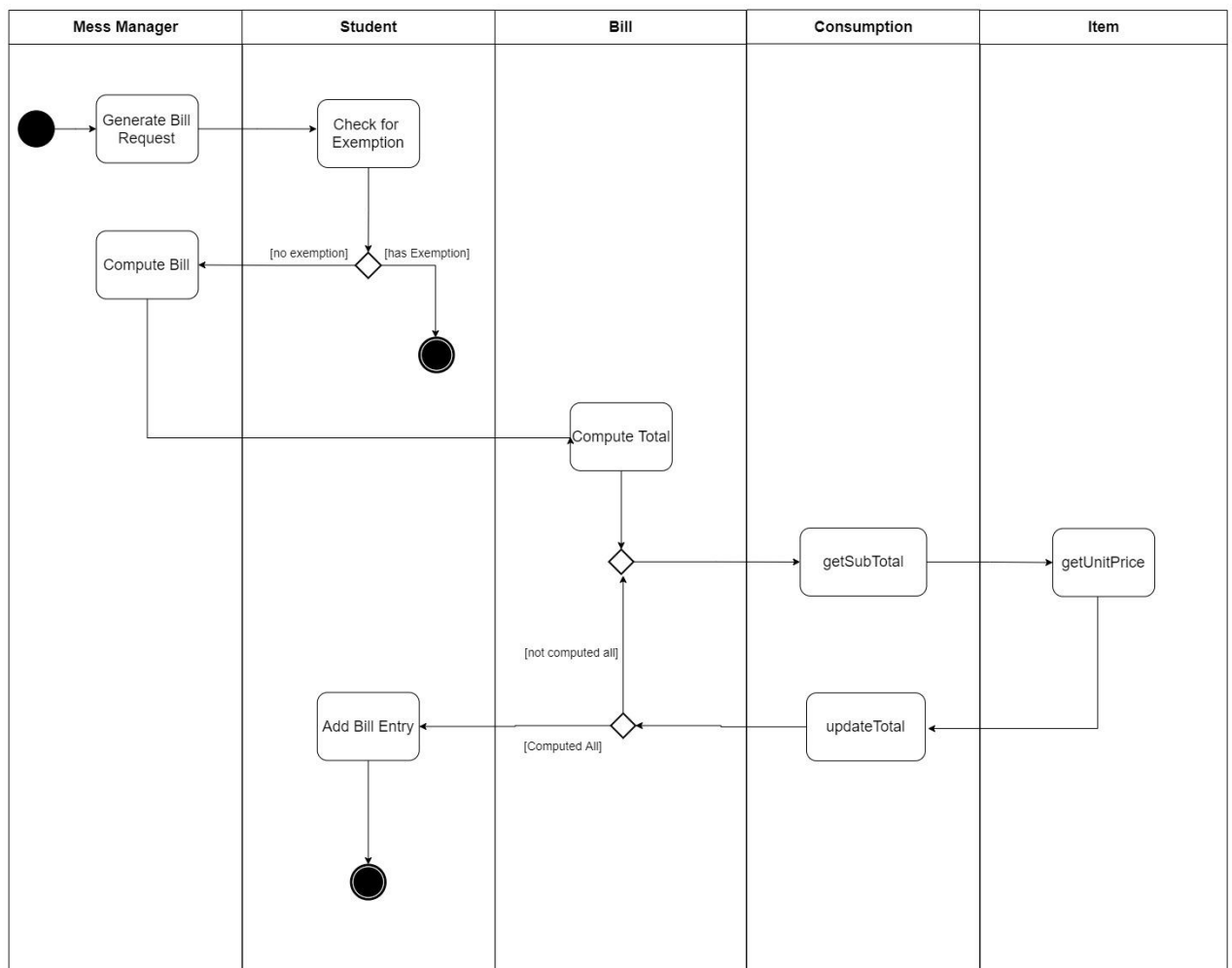
1.5.4 Mark Student Meal - Fadi Noushad

Here first off the login status of the Hostel Manager is checked, if it is logged in then the prompt to Enter the Student ID is given then it moves onto the bill class where we enter the items, then we enter the item names in the consumption class then we check if the given item name is valid if so we get the price and get the total at which time we display the items and total simultaneously entering into the database at which point we end the activity.



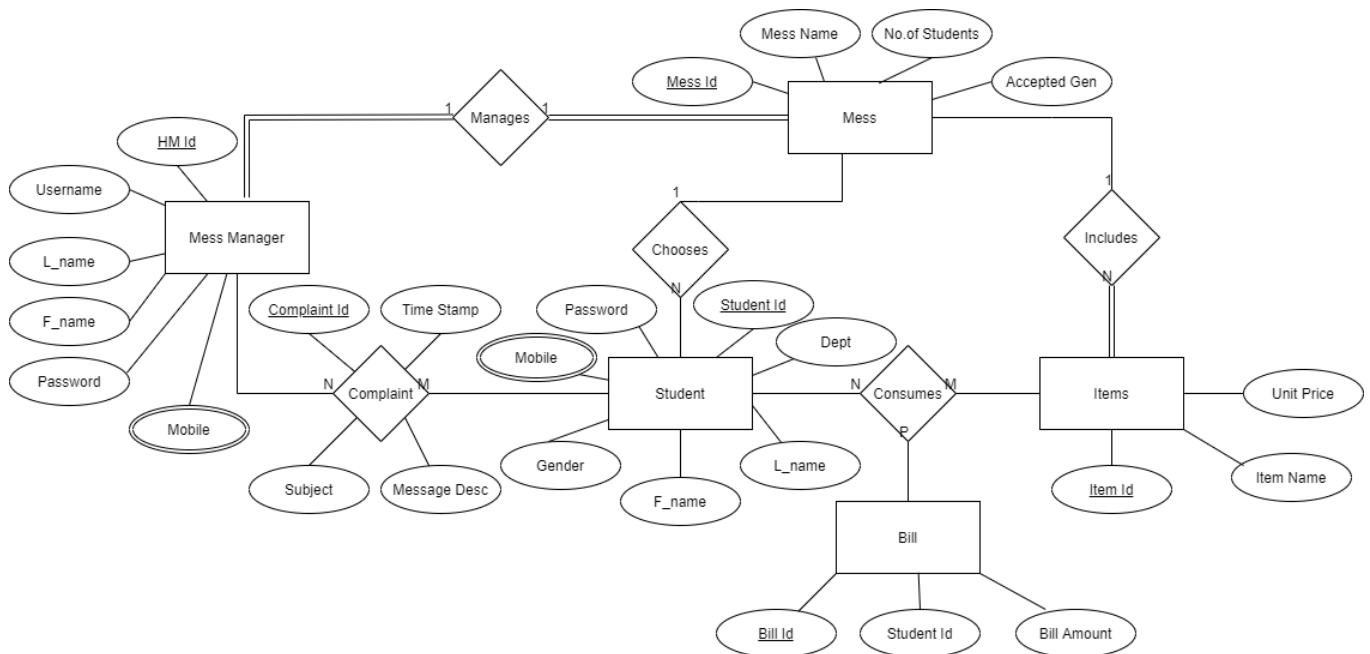
1.5.5 Generate Bill - Mohammed Ismail C

Here the mess manager initiates the generate bill request. Firstly we check whether the student has exemption in mess fee, if he has exemption then the process will be terminated. Otherwise mess manager initiate for compute Bill. Then the compute Total function will start the calculation of the mess bill. It calculates in an iterative manner where it fetches the subtotal of the consumption list and updates that total. After updating the total value, it checks whether the consumption list of that particular student finished or not. If not finished, the loop iterates for the next consumption list. If finished, this total bill is passed to Add Bill Entry in the Student object and the process will be finished.



2. Database Design

2.1 ER Diagram



3. Implementation Plans

3.1 Technology Stack

3.1.1 HTML and CSS

HTML stands for Hypertext Markup Language, and it is the most widely used language to write Web Pages. Hypertext refers to the way in which Web pages (HTML documents) are linked together. Thus the link available on a webpage are called Hypertext. As its name suggests, HTML is a Markup Language which means you use HTML to simple "mark up" a text document with tags that tell a Web browser how to structure it to display.

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language. Although most often used to set the visual style of web pages and user interfaces written in HTML and XHTML, the language can be applied to any XML document, including plain XML, SVG and XUL, and is applicable to rendering in speech,

or on other media. Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications. CSS is designed primarily to enable the separation of document content from document presentation, including aspects such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple HTML pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

3.1.2 PHP

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. PHP code may be embedded into HTML code, or it can be used in combination with various web template systems, web content management system and web frameworks. PHP code is usually processed by a PHP interpreter implemented as a module in the web server or as a Common Gateway Interface (CGI) executable.

3.1.3 Apache

The Apache HTTP Server, is the world's most used web server software. Apache supports a variety of features, many implemented as compiled modules which extend the core functionality. These can range from server-side programming language support to authentication schemes.

3.1.4 MYSQL

MySQL is the world's most popular open source database. With its proven performance, reliability and ease-of-use, MySQL has become the leading database choice for web-based applications. It is also open source.

3.1.5 Javascript

JavaScript is a lightweight, interpreted, object-oriented language with first class functions and is best known as the scripting language for Web pages. JavaScript runs on the client side of the web, which can be used to design / program how the web pages behave on the occurrence of an event. JavaScript is an easy to learn and also powerful scripting language, widely used for controlling web page behavior.

3.2 Work Estimates

<u>Description</u>	<u>Time Estimate (Hours)</u>
Student GUI	10
Hostel Manager GUI	12
Student Backend	14
Hostel Manager Backend	15
Database Configuration	2

Reference

Donald , Bell . (2004) *UML basics: The sequence diagram* , IT Architect, IBM Corporation , <http://www.csun.edu/~twang/380/Slides/SequenceDiagram.pdf>

OMG Unified Modeling Language™ (OMG UML), Superstructure (2011)
<https://www.omg.org/spec/UML/2.4.1/Superstructure/PDF/>

<https://github.com/mohammedismailb18/Hostel-Management-System>

Appendix A - Activity Log

Details of Meeting and their duration

04/04/21-6:00 pm to 7:30 pm
 05/04/21-5:00 pm to 6:15 pm
 06/04/21-7:00 pm to 8:30 pm
 07/04/21-8:00 pm to 9:30 pm
 08/04/21-4:00 pm to 5:00 pm

Individual contributions

Fadi Noushad P - Section- 1.4.4,Section- 1.5.4,Section- 3.2
 Indrajit T.S - Section- 1.3,Section - 1.4.3,Section - 1.5.3
 Mohamed Shifan - Section- 1.4.2,Section- 1.5.2,Section- 2.1,Section- 1.2
 Mohammed Ismail C - Section- 1.1.1,Section- 1.4.5,Section- 1.5.5,Section - 3.1
 Abid Ali K.P- Section- 1.4.1,Section- 1.5.1

04/08/2021