Automated Mess Management System

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Abstract

AUTOMATED MESS MANAGEMENT SYSTEM is a software developed for managing mess's activities. Within the past few years educational institutions are increasing fast. Therefore, the need for mess is also increasing, by which accommodation is needed for the students studying in their various institutions. This project shows the design and implementation of an automated mess management system aimed at creating a database that would store and manage the mess management system data, and also creating a platform for applying and booking of rooms through the application rather than using the physical method of application, which is known to be always stressful and not as efficient as the automated method.

This particular project deals with the problems on managing a mess and avoids the problems which occur when carried manually. This project is a web-based application used to manage daily meal attendance, operating all of the functionality of a mess and calculating monthly transactions. Our primary focus is to develop a paperless system that provides the management a way to facilitate smoother functioning of the mess system.

Key Words: Mark attendance, Hostel management, Automation, Allocation, File Management, Data, Database, Data Analysis. Payroll management.

Acknowledgment

At first, we are very grateful to our Almighty that he has given us a chance to walk through final year. In our previous year of our university life, we have learnt politeness, morality and etc. For this we are thankful to all of our teachers.

We are very grateful to our parents that they always inspire us and always gives value to our opinion, given us courage and immense love. We are very grateful to our supervisor and co-supervisor sir for giving a chance to work with this project.

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INTRODUCTION

1.1 Overview

Automated Mess Management is a web-based Management System for Students, Bachelors who are searching a place to live for study or Job Matters. By getting the current status of mess & meals per day, to manage the details of Mess Owner this system keeps all information about Mess. This system has a feature of managing daily meal count, maintaining daily bazar-cost daily bazar-list etc. There is a manager who can perform of all the functionality of a mess automatically. Manager can calculate daily meals, deposit cash, and other expenses. This system will automatically set meal rate and generate a report. Members can also send meal cancellation request to manager.

1.2 Background

In our country many students, bachelors come from village for educational/job matters. So, they have to find a Place to live and for that they have to search here and there and if they find one they have to manage foods and other expenses. It is very complex and time consuming to perform managerial duty of a mess. There is a probability to produce error to perform of all the calculations and transactions. So it is very hard for them to maintain study or Job. So, it is badly need to build an automated system. That's why I proposed an idea to my supervisor. Then my teacher has given me an opportunity to work with this project.

1.3 Aim and objectives

The aim of this research is to design and implement an automated mess management. The specific objectives are to:

i. analyze the existing methods of mess management

ii. develop an application for the mess management

1.4 Benefits

Automated Mess Management is very beneficial because:

1. It consumes less time.

2. It will generate meal rate automatically.

3. Easy to calculation.

4. Easy to perform monthly transactions.

5. Easy to Use.

6. Safe & Secure.

1.5 Stakeholders

There are many members associate with this project. They have helped to develop the system directly or indirectly.

Internal Stakeholders:

1. Students

2. Bachelors

3. Manager

4. Admin

External Stakeholders:

1. Home Owner

2. Chef

1.6 Definition of terms

Accommodate: To provide someone with a place to stay

Allocate: To set aside something specifically for a person or something.

Computer data: is information processed or stored by a computer. Computer data may be processed by the computer's CPU and is stored in files and folders on the computer's hard disk.

Computer Program: This is a set of instruction that guides the computer on the action to perform.

Data: Data is any sequence of one or more symbols given meaning by specific act of interpretation, Historically, data referred to known facts that could be recorded and stored on computer media. These are facts made up of text, numbers, images, and sounds.

Databases: A systematically arranged collection of computer data, structured so that it can be automatically retrieved or manipulated. It is also called Databank.

Mess Management System: Mess Management System is a system for managing the various activities in the mess. It is used for managing the mess information. It manages the student information, room information, room allocation details, fee details, mess bill details and employee details of the mess

Management Information System (MIS): A management information system (MIS) is a computerized database of financial information organized and programmed in such a way that it produce regular reports on operations for every level of management in a company. It is usually also possible to obtain special reports from the system easily.

Mess: An inexpensive place for accommodation usually found in boarding schools

Information: Facts provided or learned about something or someone.

Management: The planning, organizing and controlling of the affairs of an organization, institution or business.

Students: Someone who studies at a school, college or university.

1.7 Organization of subsequent chapters

This work was organized in a way which this chapter one talks about the background to the study, the statement of the problem, aim and objectives, the scope of the study, the definition of terms, Chapter 2 talked about the literature review of the project, chapter 3 discussed the methodology, chapter 4 discussed the system implementation and design, chapter 5 discussed the test & result analysis and chapter 6 discussed the conclusion of this project

CHAPTER-2

LITERATURE REVIEW

2.1 Introduction

Literature review is an important part of a research paper. It is the overall review of the related works happened in the different parts of the world. It helps a researcher to know what kind of researches happened related to this work, what was their objectives, what kind of methodology used to meet their objectives, how they solve a particular problem, what type of problem faced to solve a particular problem, any alternative way to solve a problem, what their outcomes, what their findings and how their success rates. It helps a researcher to know problem areas and different methodologies. It helps to improve the efficiency and accuracy of the existing system and develop a new advanced one with extra features and facilities. Thus literature review helps to complete a good work.

2.2 Related works

Author of [1] discussed about the importance of automation of mess management system. The authors illustrated the procedure through use case diagram and flow chart. The paper has expressed the advantages like time consuming, man power reduction and also manual mistakes. Thus they explained the automated mess management in broad sense which helps in giving an idea for writing this paper. This paper has used the proposed steps and identified other steps in the process.

Author of [2] discussed about the canteen facility provided in various campus. The paper has quoted drawback in the payment process. In it, usually cash or credit card transactions are carried which has serious drawback. Some times the canteen owner records the order details on paper and bill calculation will be at the end of the month. The authors explained the process of payment with recharge card through postpaid or prepaid facility.

Author of [3] demonstrated the procedure of payment process in the canteens through RIFD cards. This eliminates the cash carry. The paper explained the drawbacks of existing system and proposed features and RTC (Real Time Clock) architecture components. It has the information about the PIR (Passive Infrared) sensor working [3].

Author of [9] develop a payroll management system which manage of leave and payroll of an organization. Using an automated leave and payroll manager or maintaining a

web portal for it can make this process much faster and better. In terms of transparency related to leave management there are some lapses. These lapses can be avoided by using this system.

Author of [11] design a database system implemented on an academic management android application that will be utilized to support the academic management information system for the advancement of institutions and education systems. The method in this study is to perform a design consisting of a proposed design to be implemented in applications such as online study materials, notifications, academic calendars and online reminder checks, online attendance records, performance records, and parent intimacy systems using Android applications.

CHAPTER-3: METHODOLOGY

3.1 Introduction

This chapter discussed the methodology used in the achievement of this project work, Requirement gathering, implemented system, database structure and development, database design, input and process design and so on, we also considered the methods used for the creation of the application that is meant to automate the allocation of the hostels for the students of the university.

3.2 Requirement gathering

The way the requirement of the system that is being used and the one that is to be created were thoroughly gathered through personal interview with the mess member, mess manager portals and other mess workers, by knowing their views and what is wrong with the current system, and what improvement that can be made to the new system that is about to be created.

3.3 Development tools

Our project is web base project. For developing our project we required the tools and programming languages which is used for web development. For development of our project, we required the following tools:

i. **IDE or Code editor:** An IDE or a code editor is required for writing code for pages. Example VS code studio, Sublime text editor, PHP storm etc.

ii. **Browser:** A browser such as Chrome, Firefox is required for displaying pages.

iii. **XAMPP:** Xampp is a free and open source cross-platform web server stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, Maria DB database, and interpreters for scripts written in the PHP and Perl programming

iv. **HTML**: A markup language which will define the structure of the webpages.

v. **CSS**: A design language which helps to give different styles to webpages.

vi. **JAVASCRIPT**: A programming language which controls dynamic behavior of webpages at client side.

vii. **PHP**: PHP (recursive acronym for PHP: Hypertext preprocessor) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML

viii. **MySQL:** MySQL is an Oracle-backed open source relational database management system (RDBMS) based on Structured Query Language (SQL). MySQL runs on virtually all platforms, including Linux, UNIX and Windows. Although it can be used in a wide range of applications, MySQL is most often associated with web applications and online publishing. SQL is a standard language for accessing databases. What can SQL do?

SQL can execute queries against a database

- SQL can insert records in a database
- SQL can retrieve data from a database
- SQL can update records in a database
- SQL can delete records from a database
- SQL can create new databases
- SQL can create new tables in a database
- SQL can create stored procedures in a database
- SQL can create views in a database
- SQL can set permissions on tables, procedures, and views

ix. **JQUERY**: It has been mainly used for giving animation effect to contents in the webpages.

x. **Operating System**: Windows 10.

3.4 Development methodology

There are many kinds of model for software development. These are Waterfall model, Spiral model, Incremental model, Agile model, Iterative model, Big-bang Model.

Different model follows different strategy for developing software. Among them, we followed Agile model for developing our project

3.4.1 Agile Model

Agile model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile method breaks the product into small incremental builds. These builds are provided in iterations. Every iteration involves cross functional teams working simultaneously on various areas like:

i. Requirement gathering and analysis

ii. Design the requirements

iii. Construction/ iteration

iv. Deployment

v. Testing

vi. Feedback

3.4.2 Agile Model Life Cycle

In Agile model, each iteration is completed through six different phases. Different kinds of activities are performed in each phases. The activities in each phases are discussed below:

i. **Requirement gathering and analysis:** In this phase, you must define the requirements. You should explain business opportunities and plan the time and effort needed to build the project. Based on this information, you can evaluate technical and economic feasibility.

ii. **Design the requirements:** When you have identified the project, work with stakeholders to define requirements. You can use the user flow diagram or the high-level UML diagram to show the work of new features and show how it will apply to your existing system.

iii. **Construction/ iteration:** When the team defines the requirements, the work begins. The designers and developers start working on their project. The aims of designers and developers deploy the working product within the

estimated time. The product will go into various stages of improvement, so it includes simple, minimal functionality.

iv. **Development:** In this phase, the team issues a product for the user's work environment.

v. **Software Testing:** In this phase, the Quality Assurance team examine the product's performance and look for the bug.

vi. **Feedback:** After releasing of the product, the last step is to feedback it. In this step, the team receives feedback about the product and works through the feedback

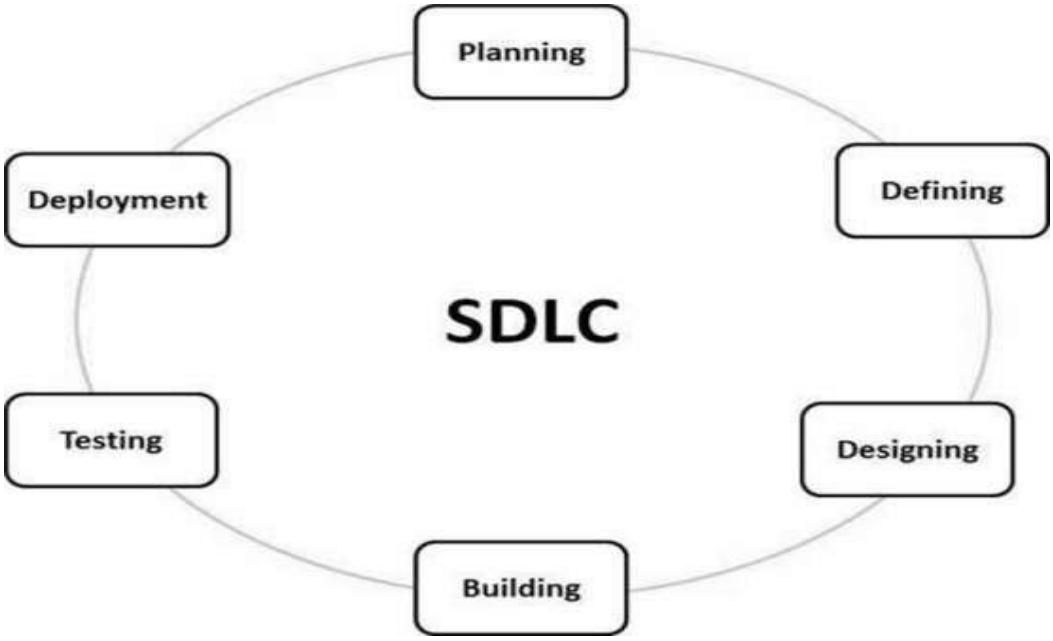

Fig 3.1: Software Development Life Cycle

3.5 Database structure & development

A database is a collection of interrelated date stored with minimum redundancy to serve many users quickly and efficiently. The general objective is to make data access easy, quick inexpensive and flexible for user. Relationships are established between the data access easy, quick, inexpensive and flexible for the user Relationships are established between the data items and unnecessary date items are removed. Normalization is done to get an internal consistency of data and to have minimum redundancy and maximum stability. This ensures minimizing data storage required, minimizing chances of data

inconsistencies ad optimization for updates. The MySQL database was chosen for developing relevant databases. In the creation of the database for this project, the most suitable database platform to use for this project was MYSQL (My structured query language) which was used to store username and passwords for the different modules (i.e. the Admin and the Student module), Also the use of PHP (Hypertext processor) would be used to connect to the SQL database.

3.5.1 Database design (the table structure)

A database table is a collection of related data held in a table format within a database. It consists of columns and rows. In our system, when admin will create a new class, eight different database tables will be created dynamically associated with that class. Number of database tables continuously will increase with the increase of new class. For our project, we will need the following entity sets and attributes for each class:

Table 3.1: admin

COLUMN NAME	NULL/NOT NULL	TYPE	KEY
user_name	NOT NULL	VARCHAR(100)	
email	NOT NULL	VARCHAR(100)	PRIMARY KEY
Password	NOT NULL	VARCHAR(20)	

Table 3.2: manager

COLUMN NAME	NULL/NOT NULL	TYPE	KEY
sl_no	NOT NULL	INT(10)	PRIMARY KEY
user_name	NOT NULL	VARCHAR(100)	
email	NOT NULL	VARCHAR(100)	
password	NOT NULL	VARCHAR(100)	
phone	NOT NULL	VARCHAR(100)	
room_no	NULL	INT(10)	
Entry_Date	NOT NULL	DATE	

Table 3.3: member table showing member details

COLUMN NAME	NULL/NOTNULL	TYPE	KEY
sl_no	NOT NULL	INT(10)	PRIMARY KEY
name	NOT NULL	VARCHAR(100)	
Email	NOT NULL	VARCHAR(100)	
password	NOT NULL	VARCHAR(20)	
phone	NOT NULL	VARCHAR(20)	
address	NOT NULL	VARCHAR(150)	
room_no	NULL	INT(10)	
Joining_date	NOT NULL	DATE	

Table 3.4: mealcount table showing daily attendance details

COLUMN NAME	NULL/ NOT NULL	TYPE	KEY
Phone	NOT NULL	VARCHAR(10)	PRIMARY KEY
Date	NOT NULL	DATE	
Meal	NOT NULL	INT(10)	

Table 3.5: deposit table showing monthly deposit details

COLUMN NAME	NULL/ NOT NULL	TYPE	KEY
Name	NOT NULL	VARCHAR(10)	
room_no	NULL	INT(10)	
Phone	NOT NULL	VARCHAR(100)	PRIMARY KEY
Date	NOT NULL	DATE	
Amount	NOT NULL	INT(10)	

Table 3.6: bazarcost table showing daily bazar-cost details

COLUMN NAME	NULL/ NOT NULL	TYPE	KEY
Id	NOT NULL	INT(10)	
date	NOT NULL	DATE	
amount	NOT NULL	INT(10)	

Table 3.7: bazardate table showing daily bazar-date details

COLUMN NAME	NULL/ NOT NULL	TYPE	KEY
Id	NOT NULL	INT(10)	PRIMARY KEY
Date	NOT NULL	DATE	
Name	NOT NULL	VARCHAR(100)	
room_no	NULL	INT(10)	
phone	NOT NULL	VARCHAR(100)	

Table 3.8: extracost table showing extra-cost details

COLUMN NAME	NULL/ NOT NULL	TYPE	KEY
Id	NOT NULL	INT(10)	PRIMARY KEY
Date	NOT NULL	DATE	
description	NOT NULL	VARCHAR(200)	
amount	NOT NULL	INT(10)	

Table 3.9: chat table showing daily chat details

COLUMN NAME	NULL/ NOT NULL	TYPE	KEY
user_name	NOT NULL	VARCHAR(100)	
message	NOT NULL	VARCHAR(450)	
Datetime	NOT NULL	DATETIME	
Phone	NOT NULL	VARCHAR(20)	

3.6 Input design

The design of input focuses on controlling the amount of input required, detecting errors, avoiding delay, avoiding extra steps and keeping the process simple. The system needs data regarding the asset items, depreciation rates, asset transfer, verification/validation checks, calculation and report generation. The error detection method included in the software helps to raise flag when wrong entry is fed into the system

3.7 Process design

Process design plays an important role in project development. In order to understand the working procedure, process design is necessary. We employed data flow diagram tool for process design. Data Flow Diagram is the logical representation of the data flow in the system. The DFD is drawn using various symbols. Every process has a source and a destination. The process is represented using circles and source and destination are represented using squares, also arrows are used to represent data flow.

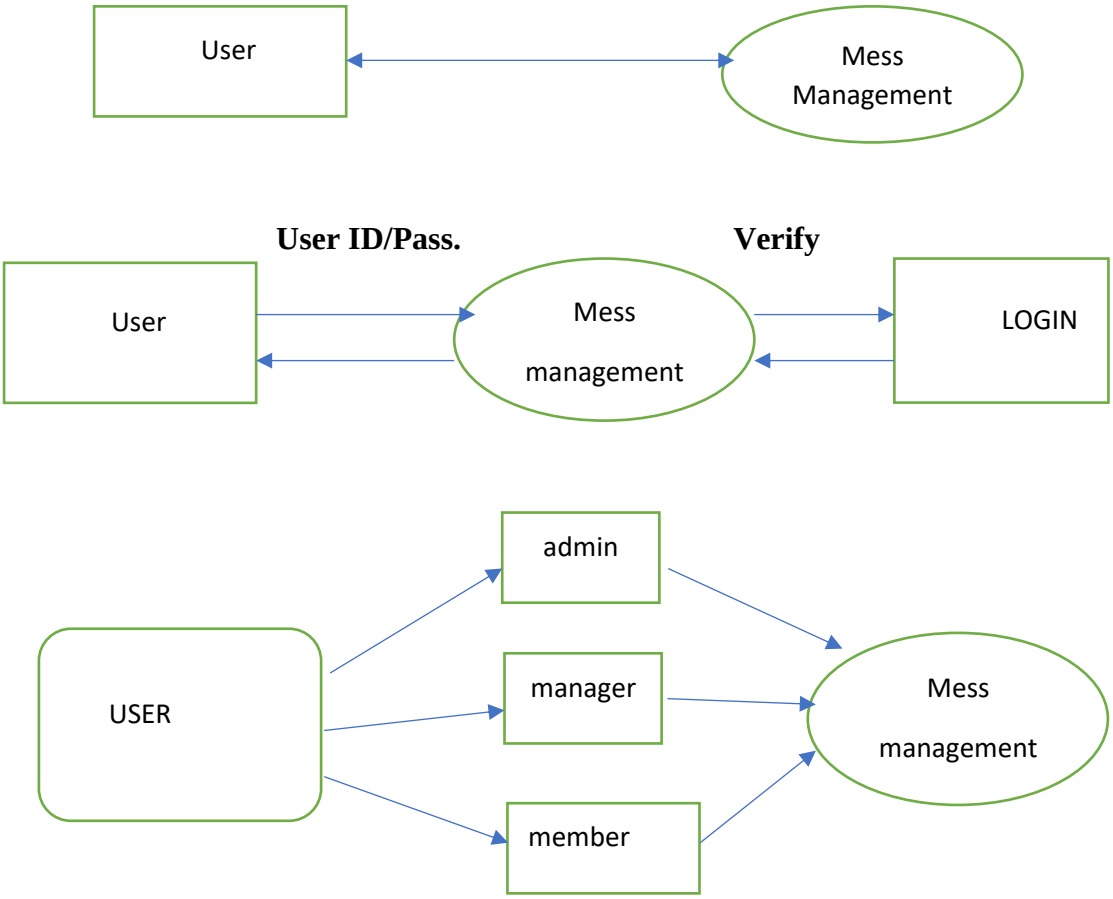

Figure 3.2 Context-level DFD

3.8 System design

This section talks about the implantation of this project, this chapter discussed about the system design and analysis, it includes pictures from the application and the interfaces involved in the development of the application and also the methods used in the development, the whole object is building a system which are set of things working together as. parts of a mechanism or an interconnecting system, it is a set of interacting or interdependent component forming an integrated whole or a set of elements to other elements.

Some characteristics of a system include:

i. A system has a particular behavior; it contains processes that transforms inputs to outputs.

ii. A system has interconnectivity, the parts and processes are connected by structural and behavioral relationship

3.8.1 Objective

The automated mess management system is a software application that would offer help and assist the members in an effective way, which would give them less stress and trouble**.**

The system design is majorly the implementation of the application to be developed and this is divided into 3 parts:

i. Logical design

ii. Conceptual design

iii. Physical design

3.8.2 Logical design

This model was developed indicating all the vital steps the system development went through. In this step, used case tools like flow charts and data flow diagrams were used. These models were vital and important in the development of the system. This stage included the graphical user interface design, input design in which the user inputs in data, the output design which displays the results of what a user would or have entered and database design where data is stored for easy management. These designs provided the technical blueprint from which the system was built. A combination of layout tools

such as hand sketches and CASE tools were used to come up with both input, output designs and the view of the system. The database management system employed was MySQL.

3.8.3 Conceptual design

This was just a description of the proposed system in terms of a set of integrated ideas and concepts about what the system is expected to do, behave and look like, that would easily be comprehended by the users in the manner intended. This process was started by identifying several entities required by the users and also identifying all the important relationships that exist between the entities. The result was the model of the user interface that has been developed.

3.8.4 Physical design

This was the physical realization of logical design. Forms, reports and tables were created and relationships defined among these tables and security constraints set. During the physical the expected schemas were translated into actual database structure.

3.9 System requirement and model

Usually, when developing software, it is expedient to develop it around the target users of the software. Member of the mess would use this software, so it is important that it requires minimal experience or know-how on their part order to be able to use this system.

Our hall allocation system was implemented using HTML and CSS for the front end of the application and MYSQL database end was incorporated. It is noteworthy to state that the system is designed to be used in a networked environment. To this end, we shall discuss the different specific requirements of the system

3.9.1 Software requirement and specification

The database end was developed using MYSQL (my structured query language). This invariably implies that the local machine must have XAMPP server installed. The good thing about XAMPP is that prior versions would support databases built in more recent versions. So this software would run perfectly.

3.9.2 Hardware platform

The section of hardware configuration is an important task related to the software development insufficient random access memory may affect adversely on the speed and efficiency of the entire system. The process should be powerful to handle the entire operations. The hard disk should have sufficient capacity to store the file and application.

i. Processor: Pentium IV and above

ii. Processor speed: 1.4 GHz Onwards

iii. System memory: 128 Mb minimum 256 Mb recommended

iv. Cache size: 512 KB

v. RAM: 512 MB(Minimum)

vi. Network card: Any card can provide a 100mbps speed

vii. Network connection: UTP or Coaxial cable connection

viii. Printer: Inkjet/Laser Color printer provides at least 1000 Dpi

ix. Hard disk: 80Gb

x. Monitor: SVGA Color 15”

xi. Mouse: 104 keys US Key Serial, USB or PS/2

xii. Modem: 56.6 Kbps

CHAPTER-4

RESULT ANALYSIS

4.1 Introduction

Result is the output of a research work or a project. By using different kinds of tools, method, data and programming language we implement our desired system. We always expect to get our desirable and useful result after implementing. Result analysis is the process which describes how we get our expected output and what its background procedures and techniques and data flows to get the output.

4.2 Application interfaces

4.2.1 Homepage

This is the welcome page of the project, it is opened when the URL of the mess management system is opened, when you open this page, it would bring the User registration, User login, the Admin login and Manager login interfaces.

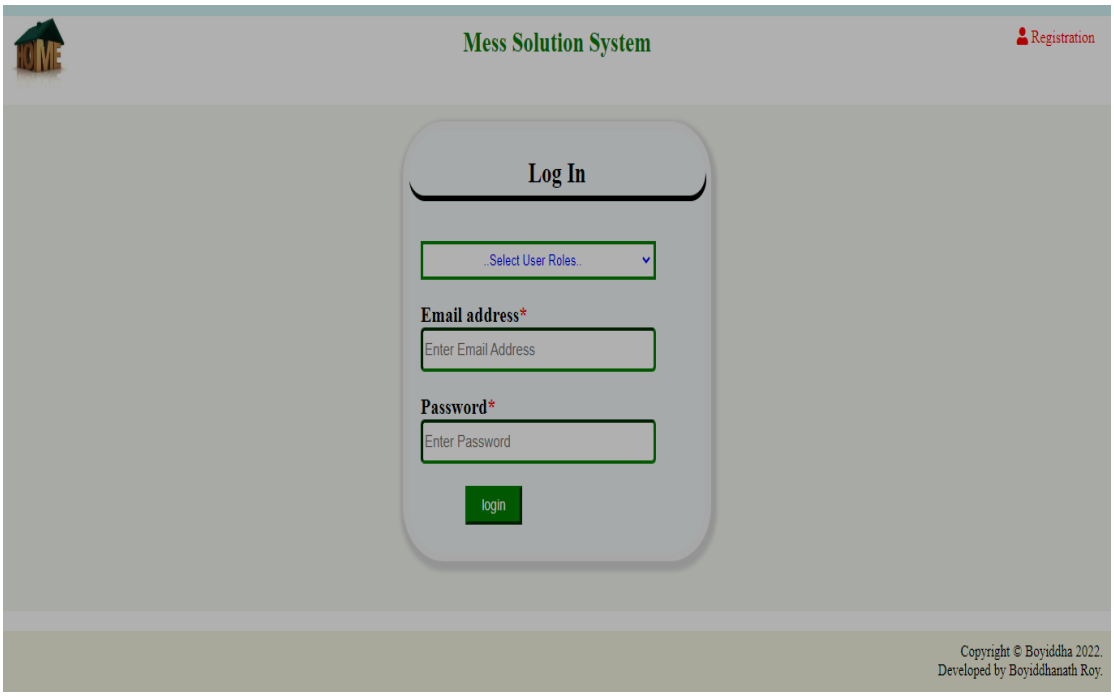

Figure 4.1: Homepage

4.2.2 Member registration

Before a user can login into the application interface, he/she has to create an account, that is, he/she has to register, this page includes the name, email, password, phone number, address and room number.

Figure 4.2: Registration form

4.2.3 Admin section

(a) Enroll new admin

Admin Can enroll new admin to control this website.

Figure 4.3: Enroll new admin

(b) Enroll new manager

Admin can delete the previous month's manager and assign new manager.

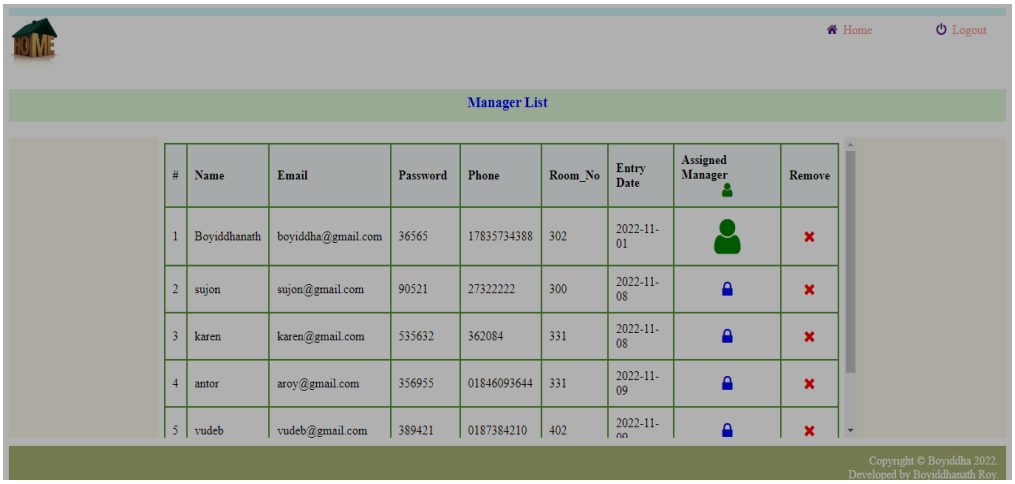

Figure 4.4: Enroll new manager

(c) Set new rules

Admin can update any rules & regulations of the mess and also entry new rules.

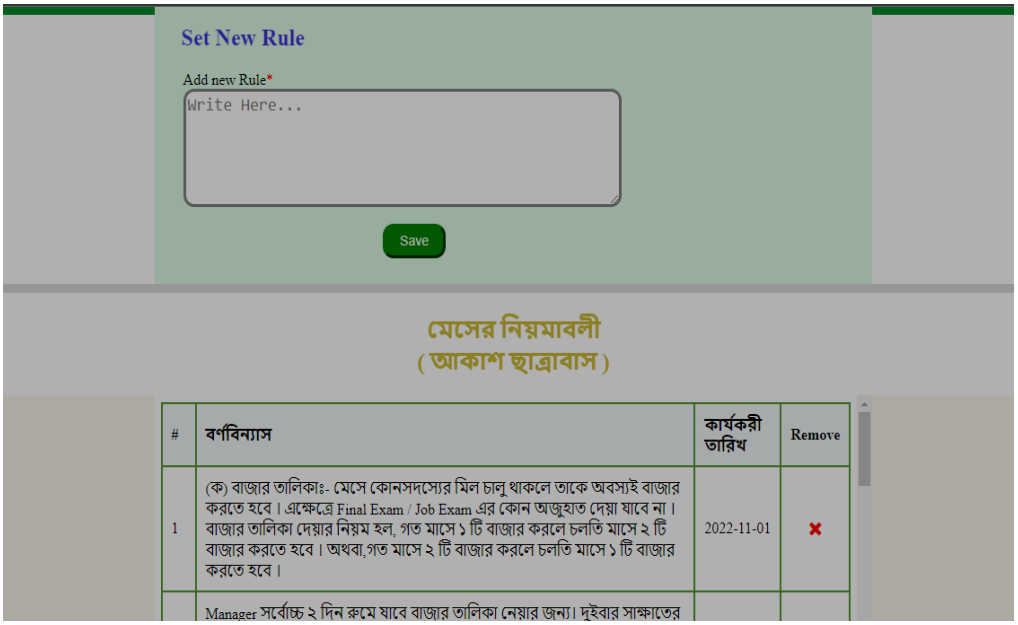

Figure 4.5: Update rules

(d) Archive

Admin can be monitoring the files of past transactions.

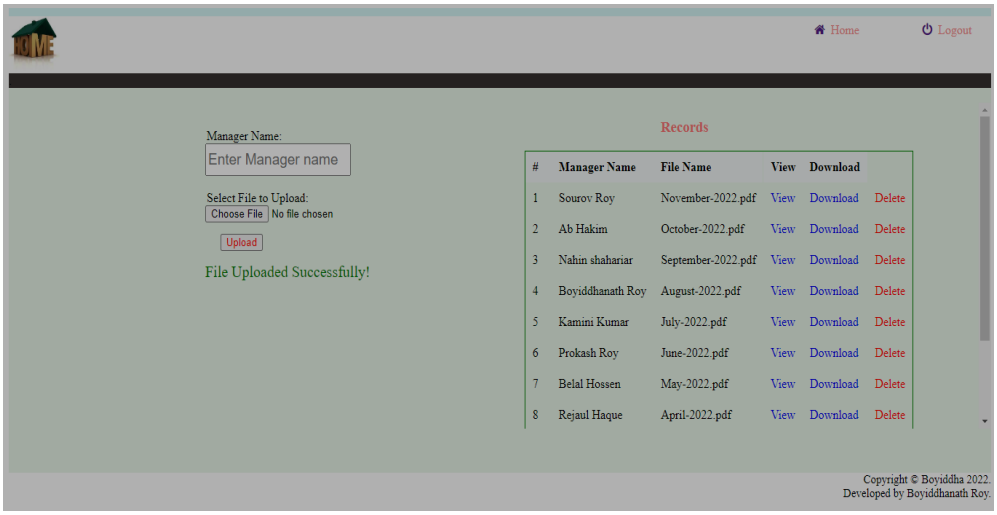

Figure 4.6: Archived files

(e) Register new member

Admin can also register a new member and update their information.

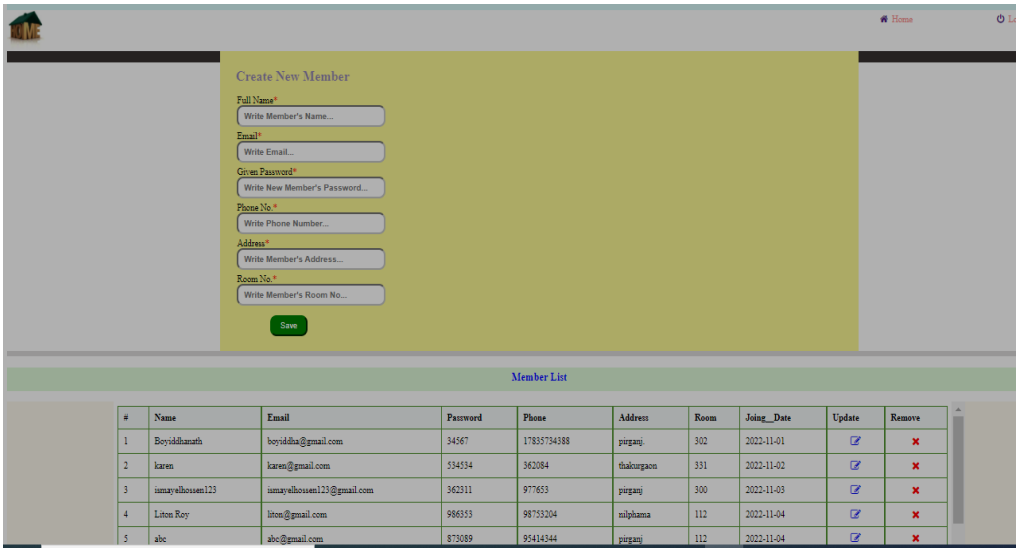

Figure 4.7: register new member

5.2.4 Manager section

(a) Manager home page

This is the welcome page of a manager; it is opened when a manager login into the website. It would bring the Manager to perform of all the functions as a mess manager.

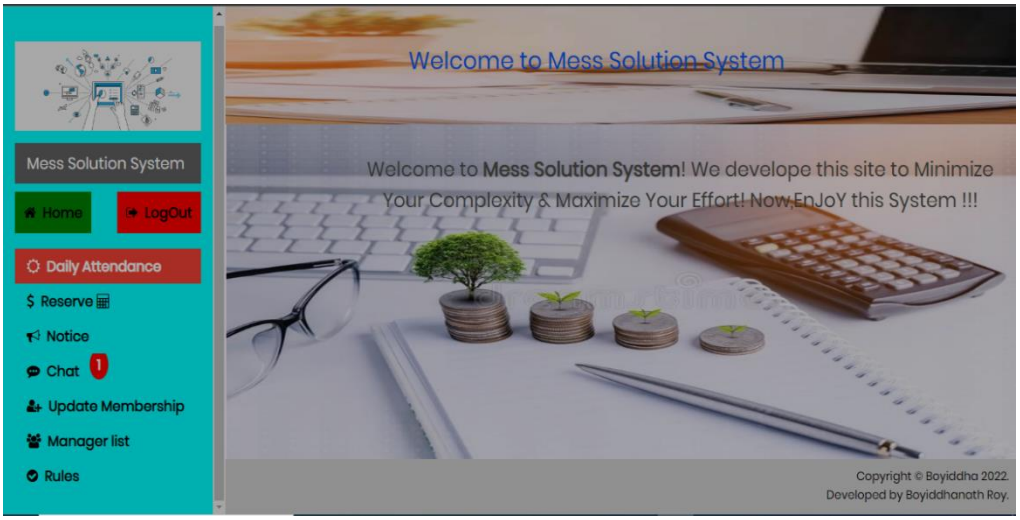

Figure 4.8: manager home page

(b) Update member

Manager can update add new member and also update their information**.**

#	Name	Email	Password	Phone	Room_No	Address	Joing Date	Update	Remove
1	Boyiddhanath	boyiddha@gmail.com	34567	17835734388	302	pirganj.	2022-11-01		
2	karen	karen@gmail.com	534534	362084	331	thakurgaon	2022-11-02		
3	ismayelhossen123	ismayelhossen123@gmail.com	362311	977653	300	pirganj	2022-11-03		
4	Liton Roy	liton@gmail.com	986353	98753204	112	nilphama	2022-11-04		
5	abc	abc@gmail.com	873089	95414344	112	pirganj	2022-11-04		
6	motaleb	motaleb@gmail.com	523967	7413311	112	pirganj	2022-11-05		
7	masud	masud@gmail.com	9871000	3098765541	300	pirganj	2022-11-06		

Figure 4.9: update member

(c) Daily meal attendance

Manager can take attendance of each mess’s member.

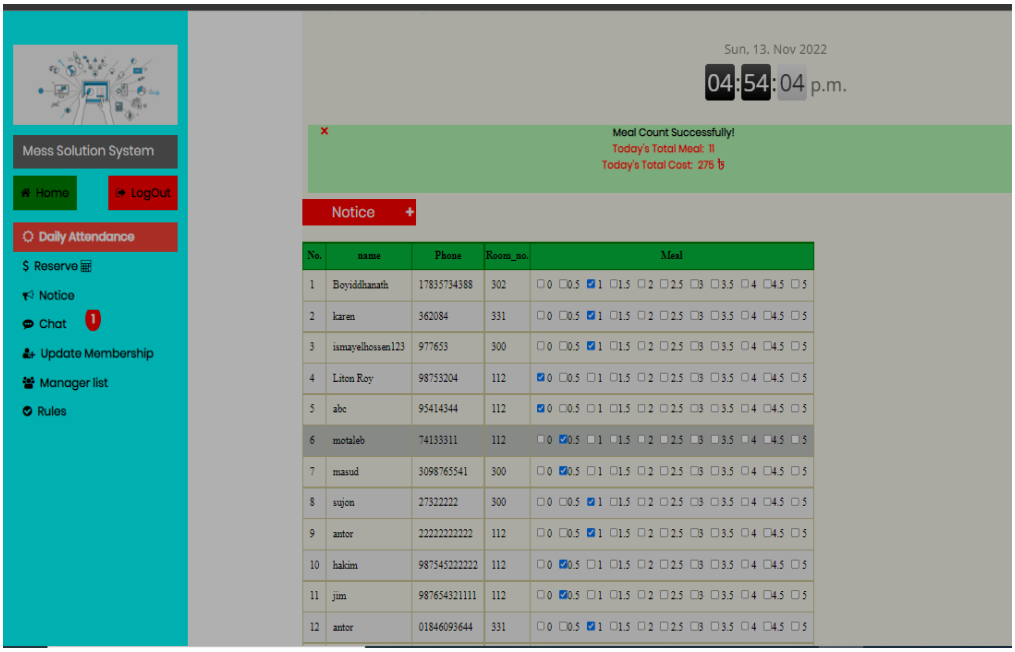

Figure 4.10: daily attendance

(d) Update meal attendance

Manager can also update previous attendance.

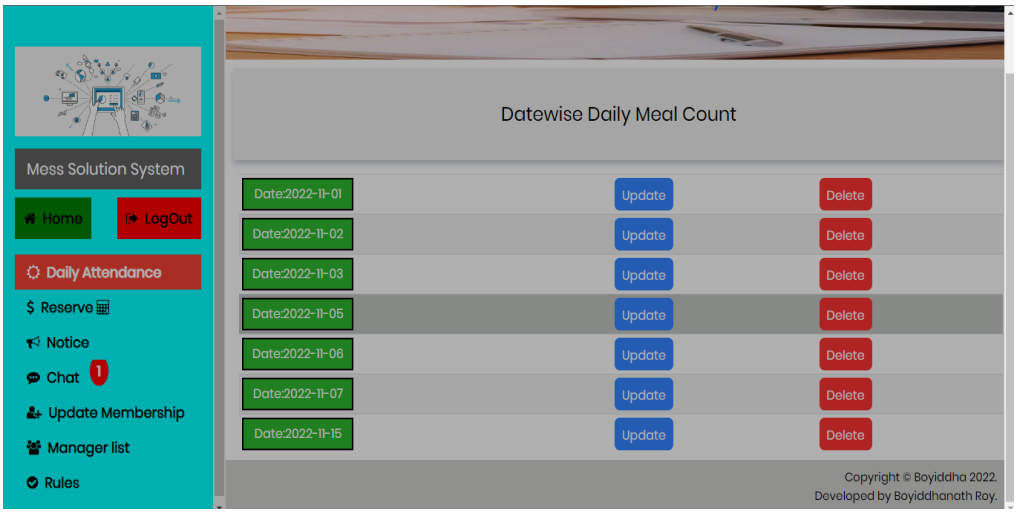

Figure 4.11: update attendance

(e) Deposit

Manager can record the deposit amount of each member.

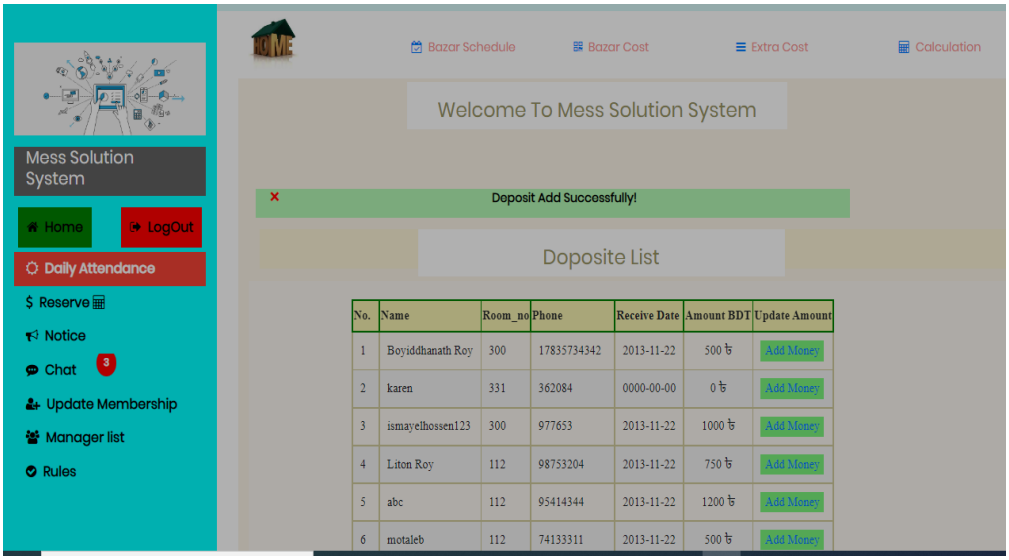

Figure 4.12: deposit amount

(f) Cost

Manager can record the daily bazar-cost.

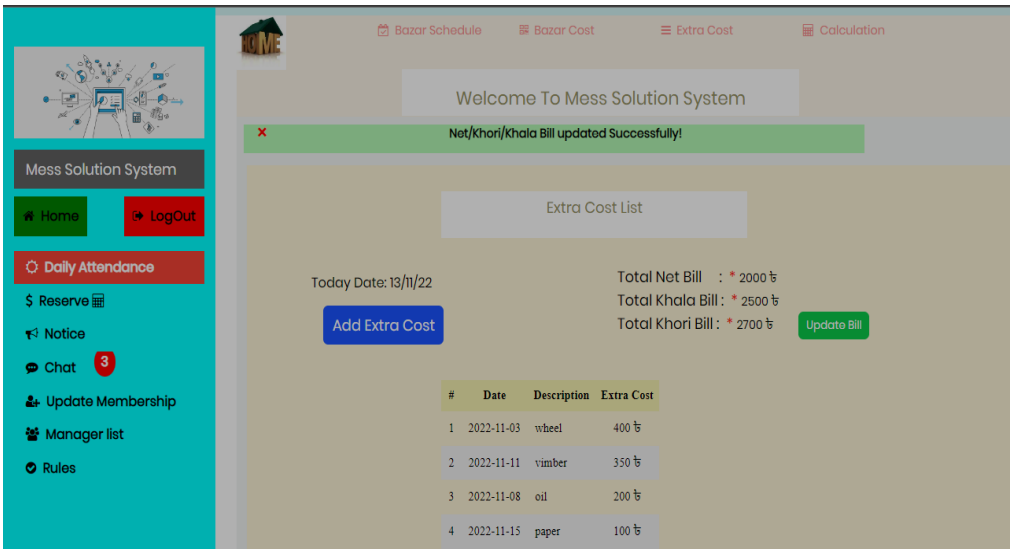

Figure 4.13: bazar-cost

(g) Chat

Manager can on/off the meal attendance of a member if he/she notify through the chat box.

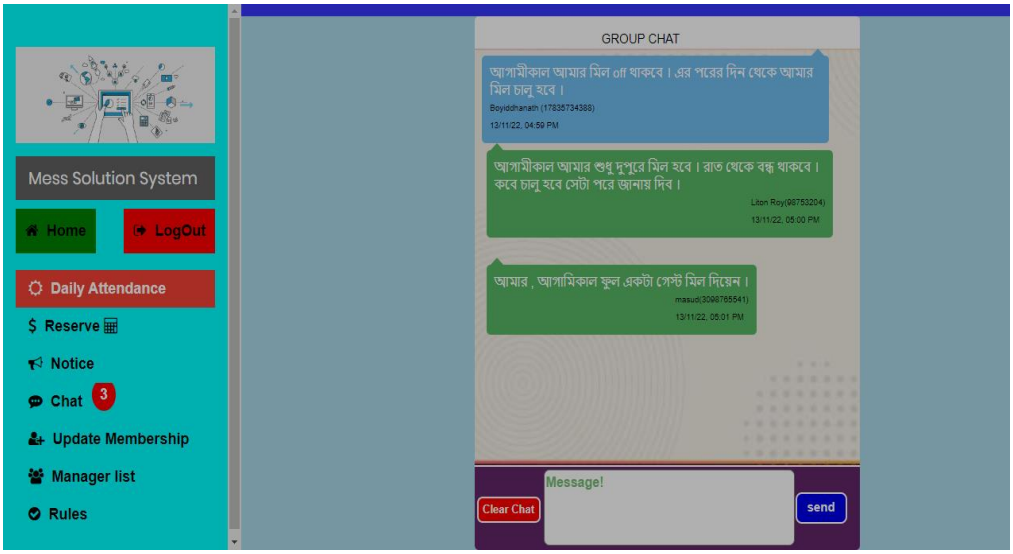

Figure 4.14: chat history

(h) Notice board

Manager can notify important information through the notice board.

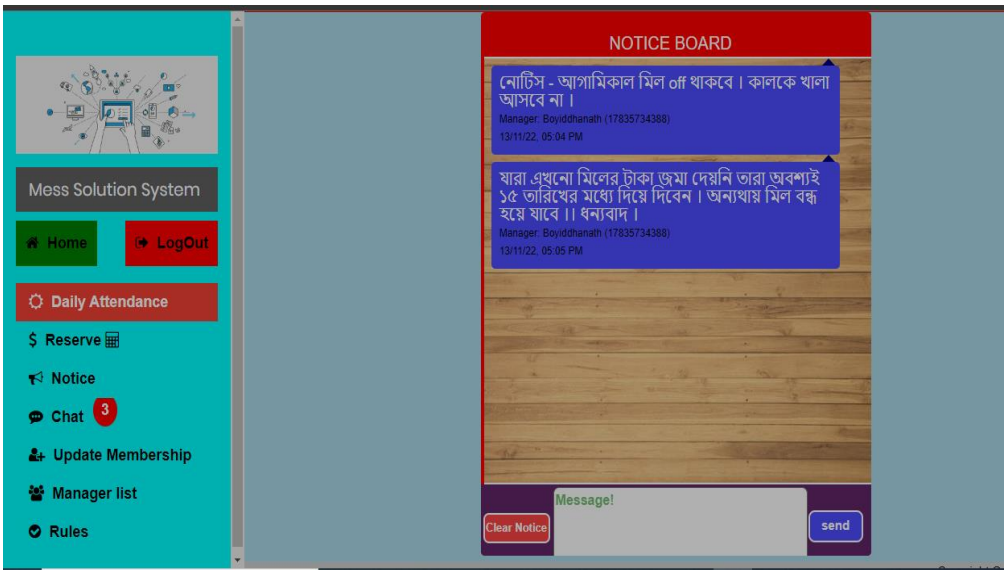

Figure 4.15: notice board

(i) Calculation

Manager can calculate current month's transactions and also generate a PDF of this transaction.

Figure 4.16: monthly transaction

4.2.5 Member section

(a) Member home page

This is the welcome page of a member; it is opened when a member login into the website. It would bring the Member to on/off their attendance through the chat box, see notification coming from manager and also see the past month's transactions as PDF format.

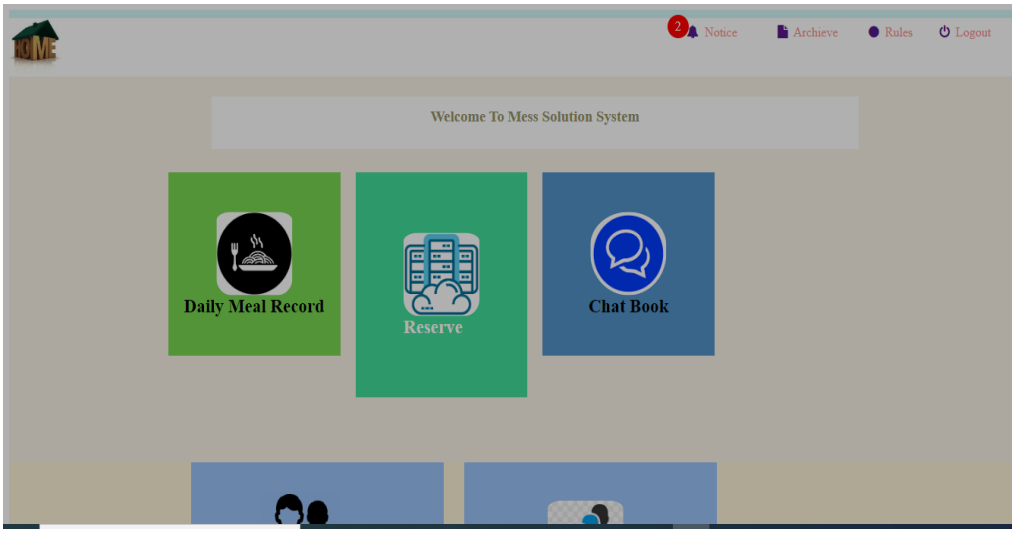

Figure 4.17: member home page

(b) Daily attendance

Member can track their own previous attendance.

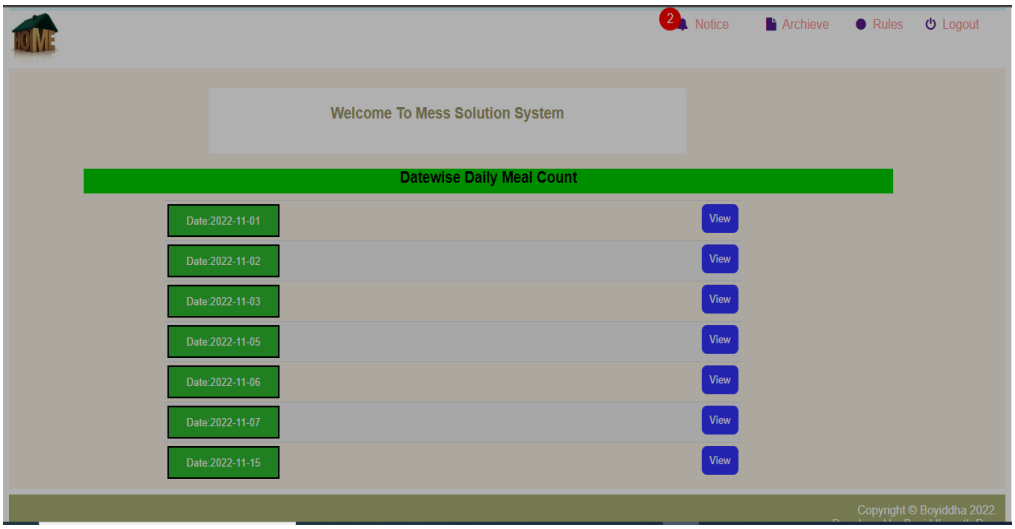

Figure 4.18: attendance tracking

(c) Chat

Member can on/off their meal attendance through the chat box.

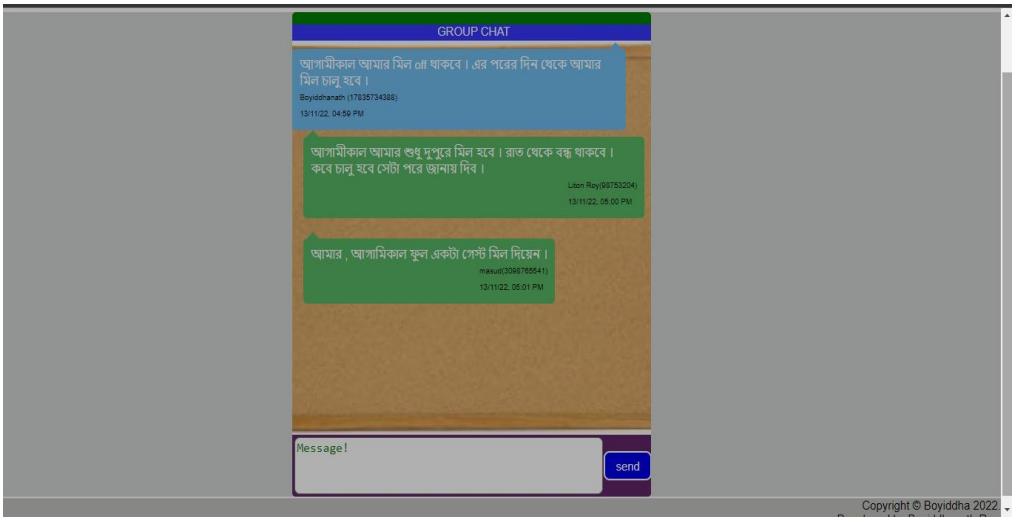

Figure 4.19: meal on/off request

(d) Notice board

It showing the notification message coming from the manager.

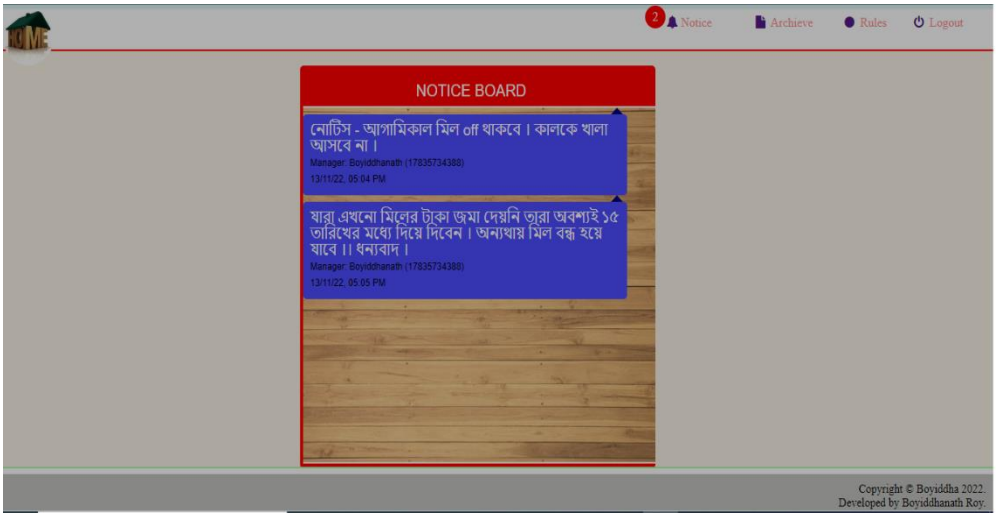

Figure 4.20: member home page

(e) Archive

Member can see the past month’s transaction and record.

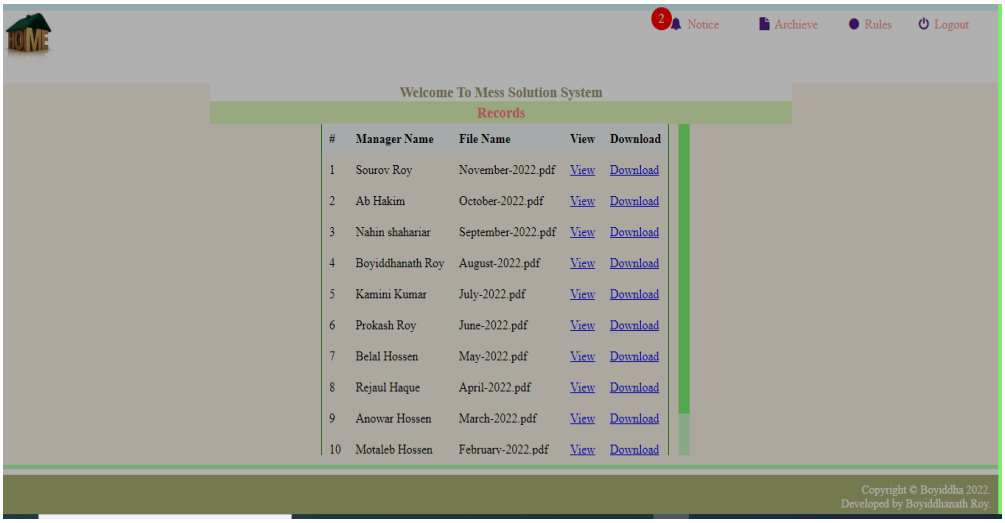

Figure 4.21: record

CHAPTER-5:

CONCLUSION

5.1 Project summery

This project has been started from May. From that beginning time We have to work hard to know the requirement clearly. After that We proposed a design to my supervisor. She appreciated and said to start developing the project. Then We started to develop the project. From then We gradually develop the project. To build an automated mess management software is typically hard. We think storing the data in database neatly is very important. That's why We did this first and made a relationship with the tables. After that We design the UI. This project's UI is very simple and clean which is very help for the user's experience. Then We started coding and executing the project.

If We did not test this project there will stay some bug on this project which will ruin the full project. That why give importance to test this project and then We solved some bug which We got after testing this project.

5.2 Limitations

It is very hard to develop something without any limitations. This project has some limitations.

Limitation are as follows:

- Not fully responsive
- Not highly secure
- Without the internet, this system cannot be used

5.3 Obstacles and achievements

To walk in the good way one's have to face many obstacles. By facing obstacles, one will get some achievements. To store the data with month wise and to get the data in a correct format was an obstacle for us. Although I have done it by taking help from my supervisor, friends and by searching the solution from google. Some obstacles and achievement are as follow:

• **Scope Change:** Sometimes We was asked to add some features. Then We had to redesign the system. It made us sometimes hopeless.

• **Resource Deprivation:** In some cases we did not get proper resource to handle that situation.

5.4 Future Scopes

By working with this project, We have learnt many things and meet with some great person. This project will give us some opportunity to work with this type of similar project.

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