'Bachelor's Home'

A Software Project Submitted by

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A software project (SP I), submitted to the Department of Computer Science of the Faculty of Science and Information Technology, American International University – Bangladesh in partial fulfilment of the requirement for the degree of Bachelor of Science in Software Engineering.

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DECLARATION

This is to certify that this project is our original work. No part of this work has been submitted elsewhere partially or fully for the award of any other degree or diploma. Any material reported in this project has been properly acknowledged.

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APPROVAL

The project titled "Bachelor's Home" has been submitted to the following respected members of the board of examiners of the Department of Computer Science, American International University – Bangladesh [AIUB] in partial fulfilment of the requirements for the degree of Bachelor of Science in Software Engineering on August 20, 2017 and has been accepted as satisfactory.

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Last but not the least, we thank our respectable parents for educating us with aspect from both arts and sciences, for their unconditional support and encouragement to pursue our interests, even when interests went out of boundary.

Contents

PROJECT SUMMARY

For the past few decades' information and technology has spread through all over the world and playing a major role in the life of human beings. 'Information Age' is what we are talking about. In most of the cases our life depends on the information that we gather. Internet is leading the race so far. It is a powerful source for gathering knowledge. Such as people are using several social media, educational sites, learning community sites and applications and so on. But some time people do not get the actual information that they are seeking. It is also hard to predict that the sources will be reliable. That is why people are facing difficulties. Especially in educational sector students and others are facing these often. We know that there are lots of institutions in the world which are providing knowledge and information to all kinds of students. But in this modern time that is not enough. That is why some several companies and startups are doing some incredible things by providing their helpful services. We have seen that most of them has created some online learning community where students can go and seek for their information. There are lots of experts and consultants who are associated with these sites to help the students. So, we can say that these sites are the bridge between the consultants and the students. Furthermore, using these sites and applications are not that difficult to use. Moreover, most of these are available both as websites and phone applications. This project also provides the same services. Its main goal is to give the actual knowledge and a proper guidance to the information seekers. Finally, we can say that these type of applications are a great platform for gaining knowledge.

CHAPTER 1

PROJECT INITIATION

1.1 Background of the Problem

This document is the design report for an online management web application. This will help to provide an insight to the whole system design and implementation of the system.

This software has the following five main components:

1. Implementation for two different types of users: Administrators and Basic Users.
2. Implementation of post submissions, post acceptances and notifications.
3. Management of user requests and user profiles.
4. Management of meal system and rents.
5. Implementation of communication and collaboration.

This design document mainly consists of Activity Flow Diagrams, Use Case Diagrams, Block Diagrams, Class Design and Architectural design.

The main purposes of this design document are listed below:

1. Precise understanding of the requirements and constraints related with the programming language, and User Interface.
2. System decomposition into manageable units or modules.
3. Abstraction of the system implementation with the help of classes.

This report is the result of the design phase. The class diagrams and activity provide a schematic representation of the various classes used and design flow respectively. The Consolidated Activity diagram provides a model to visualize the flow in the system as a whole. The class diagrams also hold the data structures that would be used and also their data types.

We are implementing the system on the web platform using HTML, CSS programing language as front end developments, PHP for back end, business logic and server sites. MySQL server for database.

1.2 Purpose / Objectives

The purpose of this project is to create a functional web application for the bachelors living in cities away from their home who will be able to find a suitable home for them to stay. Users of this web application will be able to create an account which will supply them with an easy to use interface in order to look for a new place, check their everyday meal sheet and communicate within the people from same flat virtually. The basic requirements state that the users will be able to securely register and manage their profiles. They will also be able to navigate through other posts by category and by using a well-executed search function. There will be a web portal which will be maintained and managed by administrators. They will have the authority to approve and reject user requests and to-let posts. The administrators will monitor user actions and manage spams and other reports for security concerns.

CHAPTER 2

FUNCTIONALITY

2.1 Admin Functionality

- Add Virtual Flat
- Delete Virtual Flat
- Edit Virtual Flat
- Add To-Let post
- Edit To-Let post
- Edit To-Let post
- Add Flat Member
- Delete Flat member
- Approve member Request
- Decline member Request
- Permit Manager Role
- Create Chat Group
- Delete Chat Group
- Manage Entertainment options

2.2 User(Manager) Functionality

- Manager has the sign up in option
- Manager has the log in option
- Rent Maintenance
- Utility maintenance
- Add Bazar scheduling
- Update Bazar scheduling
- Delete Bazar scheduling
- View meal sheet
- Add meal sheet

- Edit meal sheet
-
- Join Group Chat
- Search To-Let
- Search any Flats Member & View Member Profile
- Use entertainment options

2.2 User(Member) Functionality

- Member has the sign up in option
- Member has the log in option
- View Bazar scheduling
- View meal sheet
- Join Group Chat
- Search To-Let
- Search any Flats Member & View Member Profile
- Use entertainment options

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Scope

For this project we want to define what will be done such that the final product meets expectations. With this in mind, the following are the parts that will be completed:

1. Secure registration and profile management facilities for users.

2. Users do not need to register every time to see the user posts and also for ask questions.

3. Adequate searching mechanisms for easy and quick access to particular posts and users.

4. New to-let posts will be displayed every time in the home feeds.

5. Post statuses will also be shown.

6. Implementing a very efficient post submission form with image as post service.

7. View notifications along with the access to the corresponding post.

8. Real time messaging service implementation.

9. Monitoring services for reports.

10. Moreover, keeping the system up to date in all types of data and information of posts, users and other stuffs.

In addition to the above mentioned basic functional requirements for the project, we also plan for the following supplementary requirements as well. We will provide a ranking system for the users based on their points. High ranked members will be recognized and mentioned in weekly and monthly events.

We also plan for a feedback mechanism for posts, answers and overall usage of the system. And for this there will be a web portal where administrators will control everything and also do the monitoring.

For maintaining the robustness of the system and also for the safety of customers we will ensure following in the project:

1. The application will be more user friendly to fulfill user expectations.
2. The system should be easy to maintain. We will be using object oriented programming techniques.
3. User details will be secure from outside intruders.
4. The system will remain up at all times. The hardware and software should be robust and will be tested extensively.
5. Users will get the best user experiences by using the application.

3.2 User Documentation

UD-1: The system shall provide an online hierarchical and cross-linked help system in HTML that describes and illustrates all system functions.

UD-2: The system shall provide a user manual and tutorial videos online.

UD-3: The first time a new user accesses the system and on user demand the system shall provide a demo of the application, to allow users easily get into the application.

UD-4: There will be option to send any complain, report or suggestion about user experience for improving the application.

UD-5: The system shall provide a help desk called which will be available 24/7.

3.3 User Roles

The system will be containing following users. Each user has unique roles and responsibilities:

3.3.1 Requirements for Basic Users

1. Basic account features are required for the basic users. This includes:
    a. Registration
    b. Login, Forgot/change passwords
    c. “Account Details” section containing contact details.
2. Browse and Search: User should be able to browse through the posts.
3. Post Submission: User(Managers) can post to-lets.
4. In addition to providing the above mentioned submission feature, user should also be able to post images if they want.

5. Edit profile: User should be able to manage their profile.

6. Notifications: User will be notified for each events in which they are connected.

7. Messaging: User should be able to experience the internal messaging service of the system.

8. Report: User can deliver a report on anything unusual they experience.

3.3.2 Requirement for Administrator

1. Update/modify User Information.

2. Monitoring user activities and keeping track of its status.

3. Administrator can delete user profile.

In addition to the above mentioned Administrator can do everything a user does.

3.4 Use Case Diagram

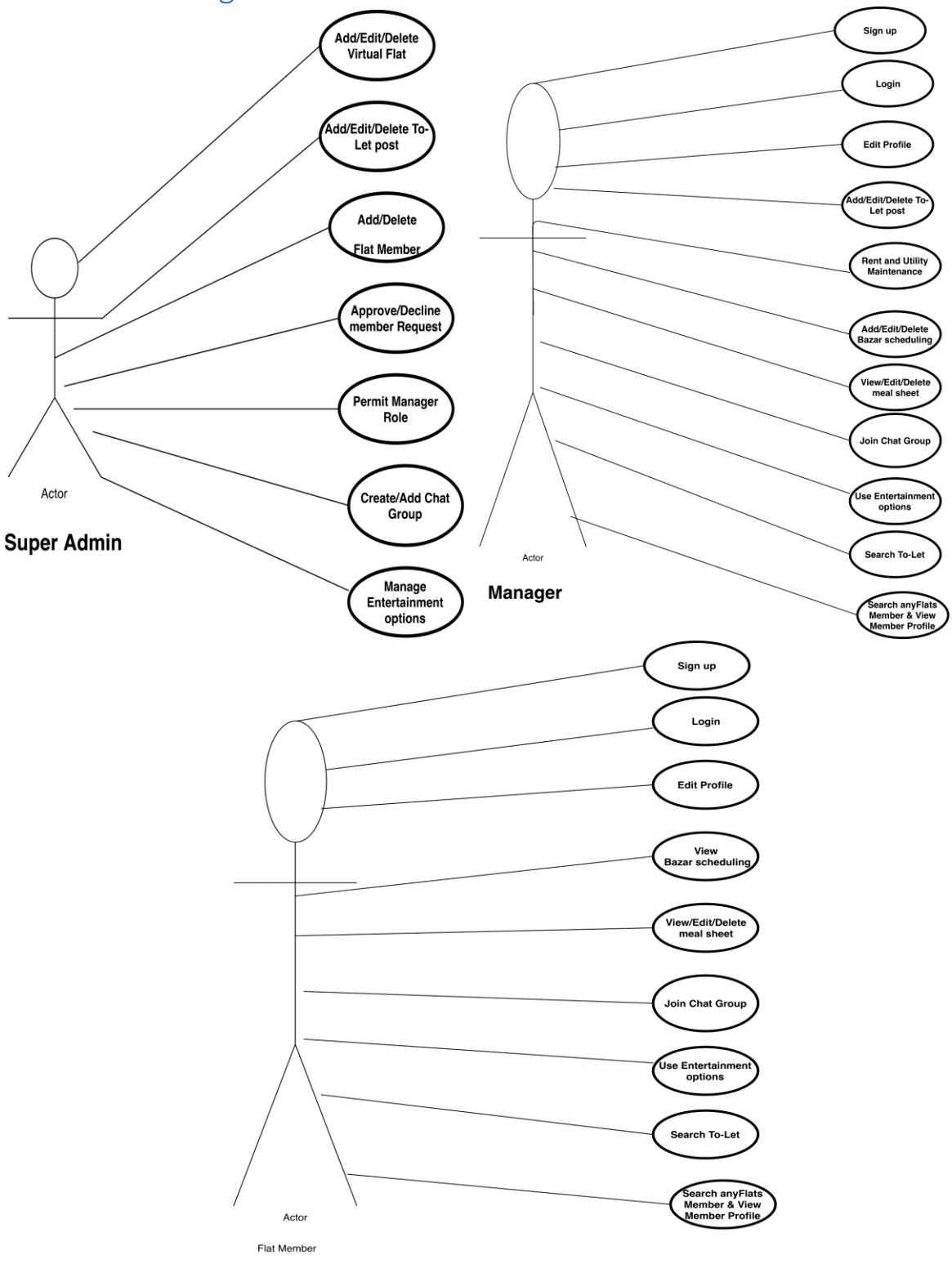

Figure 3.1: Use Case Diagram for Bachelor's Home Application.

3.4.1 Use Case Specification / Narrative

For Basic Users

A user will be able to set their personal information and also can edit them any time they want. They will be able to search for a particular problem, question or even they can search for another user. They will be able to see to-let posts. They can view everyday meal sheet. They also can communicate with other users. If they face any unauthorized events, spams or something unusual they can simply report to the admin.

For Administrator

An administrator has more privileges than regular user. Main functions of an administrator will be the management of customers. Administrators can view, modify and delete the personal information and passwords of members if necessary. They would also be able to search information about members. That means they have the privileges to access the whole internal system.

3.5 Product Perspective

This system consists of three parts:

i. Web Application

ii. Database Server

iii. Web Portal

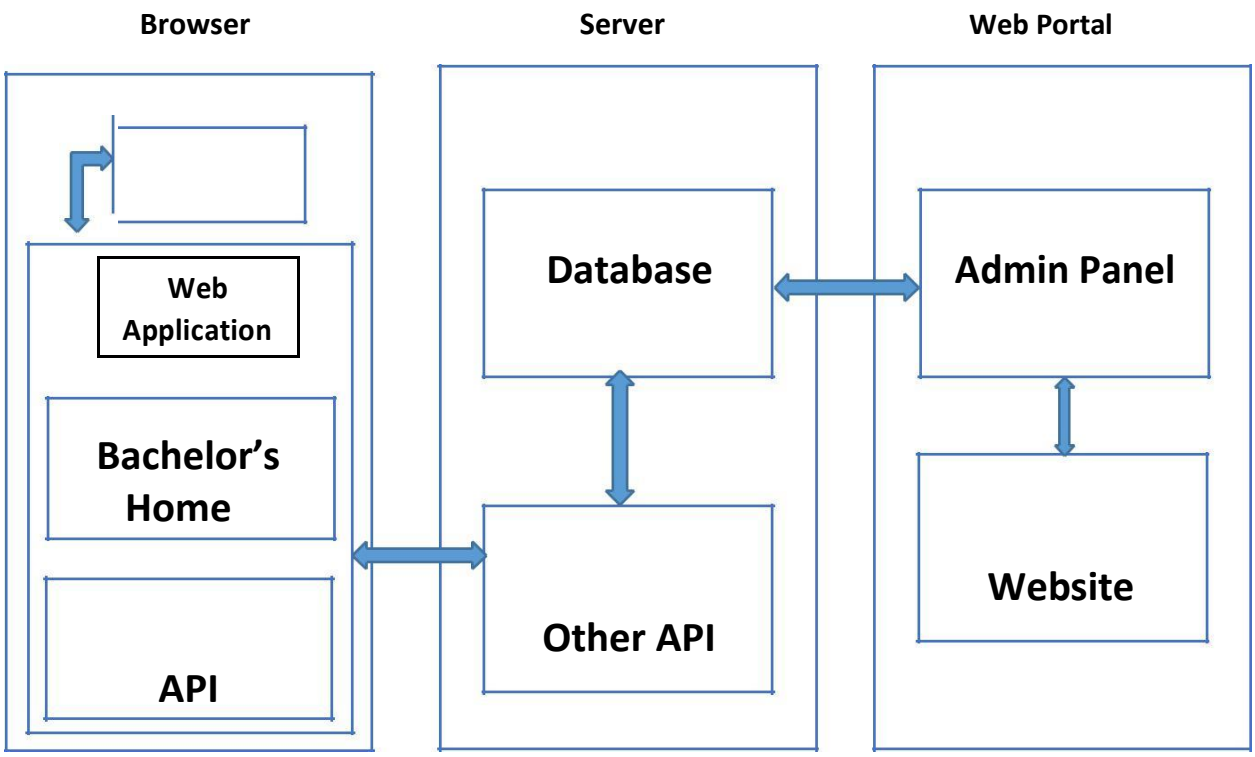

Figure 3.2: Block Diagram of Bachelor's Home Application.

Web Application: The software itself from where users get the best experiences of this applications services. The web application will work as a medium in order for the user to be able to use the functions in the application in a seamlessly manner.

Database Server: Since this is a data-centric product it will need somewhere to store the data. For that, a database will be used.

Both the web application and web portal will communicate with the database, however in slightly different ways. The web application will only use the database to get data while the web portal will also able to add and modify data. All of the database communication will go over the Internet.

Web Portal: A web platform will be provided for the administration panel. We can say that this system will also consist of another external user who are considered as admins of the whole system. Their working processes will be executed on the back end which are normally invisible to the normal users. They have the control of everything. Administration panel will monitor all the time to protect all the information from spam users and unauthorized events. Any type of unexpected occurrences will be handled and maintained by the panel.

3.6 Design and Implementation Constraints

CO-1: Only the verified users will be able to use the application due to the verification process of administration.

CO-2: This Application will be available only for web users and later on android. Any android phone supporting Jelly Bean will be able to run the application.

CO-3: The internet connection is also a constraint for the application. Since the application fetches data from the database over the internet, it is crucial that there is an internet connection for the application to function.

CO-4: Both the web portal and the web interface will be constrained by the capacity of the database. Since the database is shared between both applications it may be forced to queue incoming requests and therefore increase the time it takes to fetch data.

CO-5: This application will only available in English language.

CO-6: Application itself will ensure the total security of user data.

CO-7: To avoid problems with overloading the operating system the application is only allowed to use 20 megabytes of memory while running the application. The maximum amount of hard drive space is also 20 megabytes.

CHAPTER 4

DESIGN SPECIFICATION

4.1 General Constraints

All the resources needed are provided below.

Hardware*:*

The following hardware configurations are required for a PC to run Bachelor's Home application:

1. Minimum Internet Explorer (8.0 and above), Mozilla Firefox (3.0 and above), or Google Chrome

2. 15mb of space on memory.

3. 1GB of RAM but for better and improved performance 1.5GB is preferable.

Software:

This section lists the requirements that are needed to run the system efficiently. Minimum Internet Explorer (8.0 and above), Mozilla Firefox (3.0 and above), or Google Chrome The interface to run the application, the integrated development environment to develop the application, and the third-party tool used for editing purposes are as follows:

a. Web Brower: Internet Explorer (8.0 and above), Mozilla Firefox (3.0 and above), or Google Chrome these browsers will need to login to Admin Panel of the Bachelor's Home.

b. Drivers: Java Runtime Environment.

c. Third-Party Tool: Notepad++, Xampp.

Assumed implementation constraint can be:

System Failure

Product Failure

Implementation Constraint in SRS

The project may not meet the agreed quality parameters

The project may cause any impact on other on-going processes.

The project might not deliver on the agreed time

4.2 Data Design

The Internal Data Structures are the member variables of each class. The following are the internal data structures used in each of the classes:

Members Table

a. user_id: this is the unique identifier of each user.

b. name: the name of the user.

c. password: password of the user.

d. gender: gender of the user.

e. dob: this is the date of the birth of the user.

f. email: the unique email of the user.

g. phone: the phone no of the user.

h. address: the address of the user.

Flats Table

a. flat_id: the flat ID associated with that particular flat.

b. chatroom_id: the ID of particular chatroom.

c. manager_id: the ID of a manager of a particular flat.

d. member_list: list of members existing in a flat.

Chat_rooms Table

a. chatroom_id: the unique id generated for each chatroom.

b.flat_id: the flat ID associated with that particular flat.

c. member_list: list of members existing in a chatroom.

Utility Table

a. member_id: this is the unique identifier of each user.

b. name: the name of the user.

c. gas_charge: amount of gas charge.

d. electricity_charge: amount of electricity charge.

e. water_charge: amount of water charge.

f.internet_charge: amount of internet charge.

g.total_charge: total utility charge.

h.paid_amount: paid utility charge.

i.due_amount: due utility charge.

j.comments: comments.

Rent Table

a. member_id: this is the unique identifier of each user.

b. name: the name of the user.

c. rent_amount: amount of rent.

d. paid_amount: paid rent.

e. due_amount: due rent.

f. comments: comments.

Manager Table

a. member_id: this is the unique identifier of each user.

b. manager_id: the ID of a manager of a particular flat.

c. flat_id: the flat ID associated with that particular flat.

To_let_Board

a. manager_id: the ID of a manager of a particular flat.

b. flat_id: the flat ID associated with that particular flat.

c. to-let_id: the unique id of each to-let post.

Mealsheet Table

a. member_id: this is the unique identifier of each user.

b. name: the name of the user.

c. date: current date.

d. meal_description: details of the meal.

e. regular_meal: number of regular meals.

f. guest_meal: number of guest meals.

g.total_meal: total number of meals.

h.total_amount: total amount to be paid.

Mealsheet Table

a. member_id: this is the unique identifier of each user

b. name: the name of the user.

c. date: current date.

d. bazar_description: details of bazar.

e. amount: amount of money to be spent.

f. comments: comments.

4.2.1 Entity Relationship (ER) Diagram

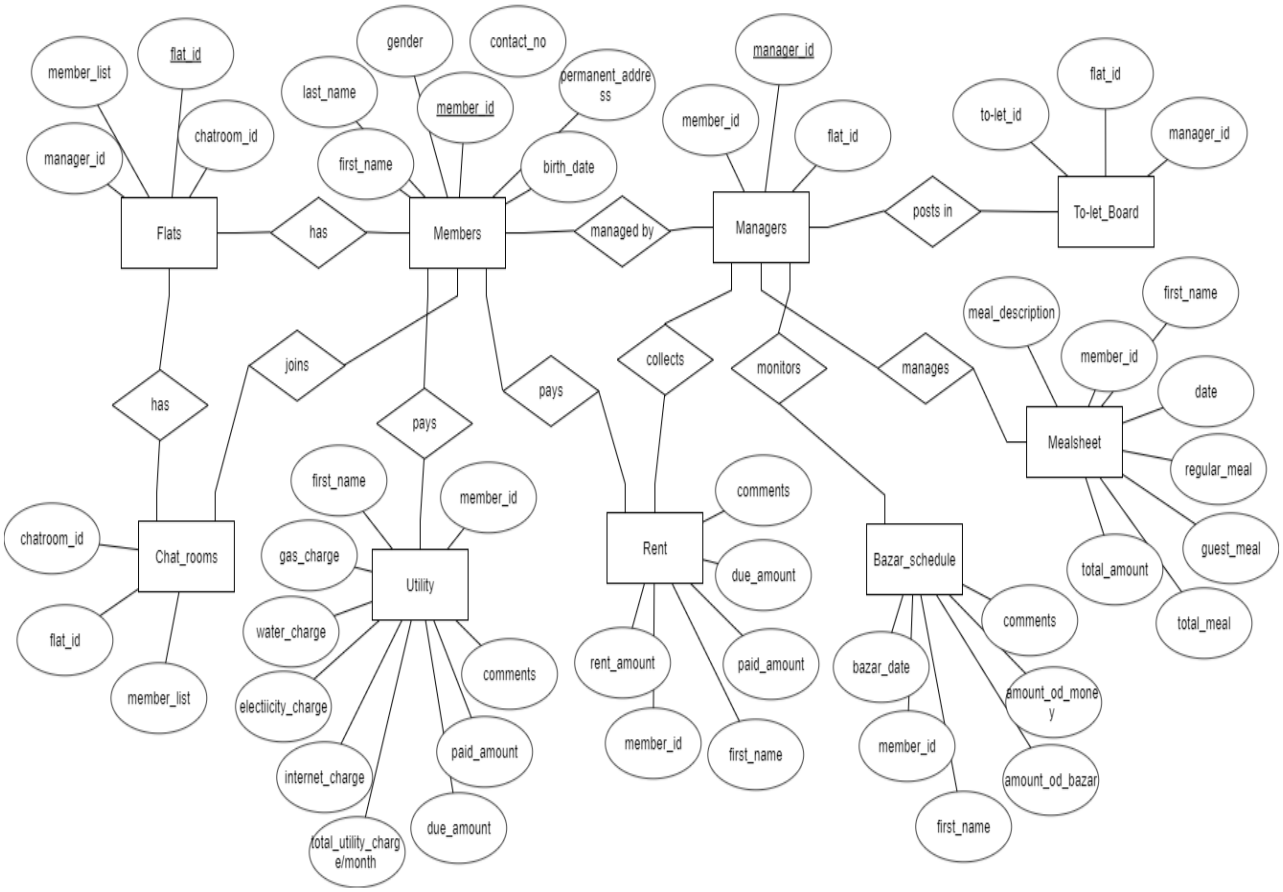

Figure 4.1: Entity Relationship Diagram for Bachelor's Home Application.

4.3 Program Structure

4.3.1 Activity Diagram

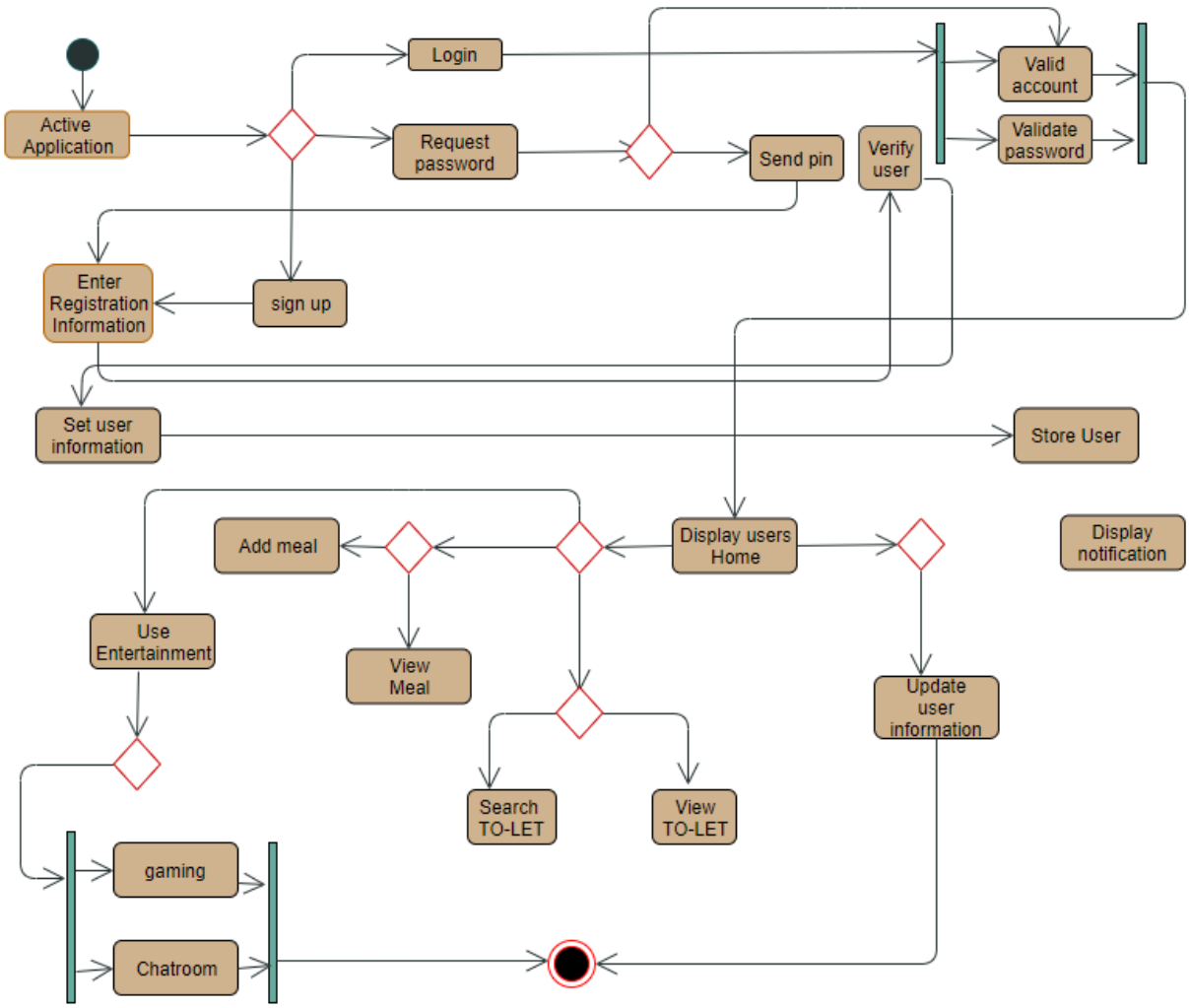

Figure 4.2: Activity Diagram for Bachelor's Home Application.

4.4 User Interface Design

4.4.1 Interface Design Rules

Our design convention are not different form other related web applications. We believe that familiarities and user friendliness makes a user happy. That is why most of the web applications use the same design approach because users strongly expect standard elements to work in a certain way when they use a new application. So, keep in mind users' perspective and vision over web applications we followed all possible design rules and making it consistent to the users. Our design elements are common enough that users expect them to work in a certain way.

4.4.2 Detailed Description

In this short period of time we tried our best in development. We built most of the front end designs of every activities and pages of the application. In our perspective our design conventions are unique and perfect. All of the activities or pages front end designs are given below.

4.4.2.1 Login and Registration Page

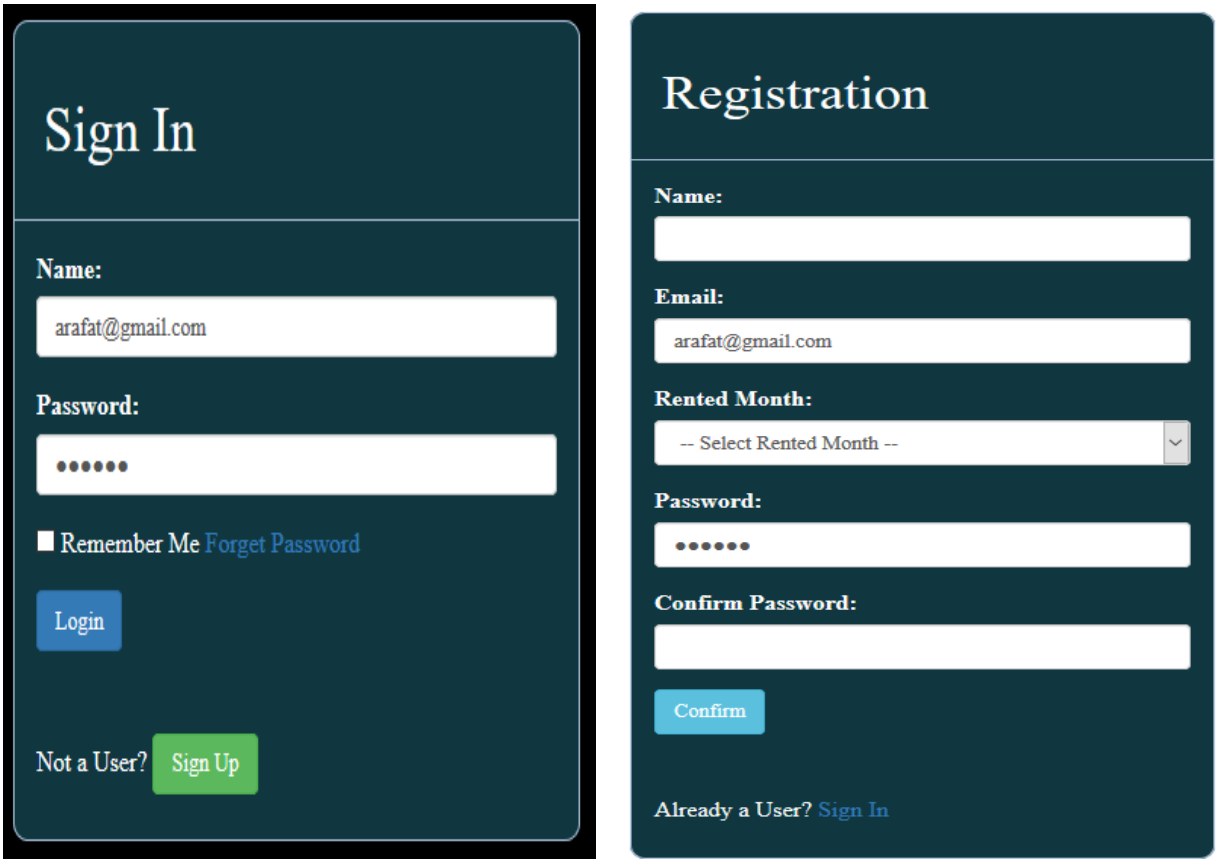

Figure 4.3: Login and Registration page of Bachelor's Home application.

4.4.2.2 Home Page

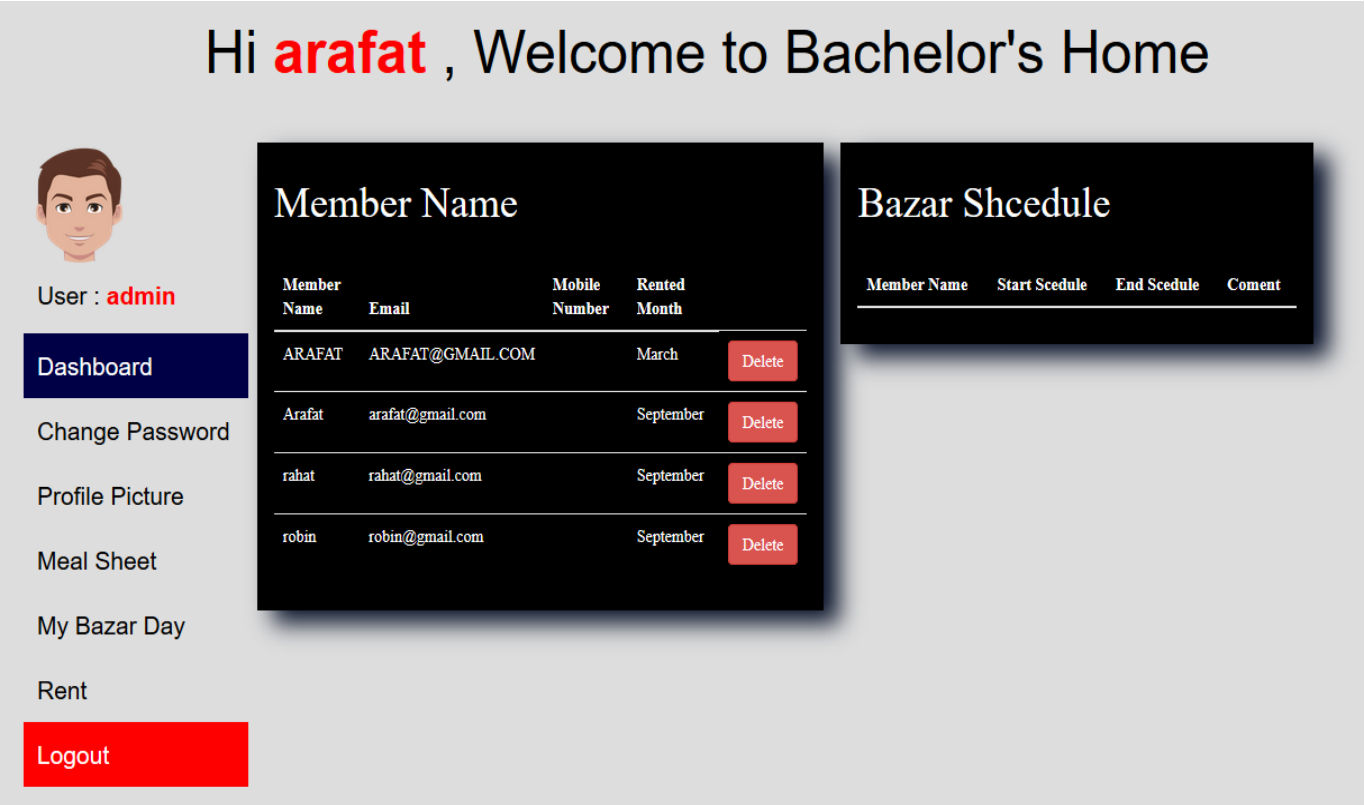

Figure 4.4: Home page of Bachelor's Home application.

4.4.2.3 Password Changing Page

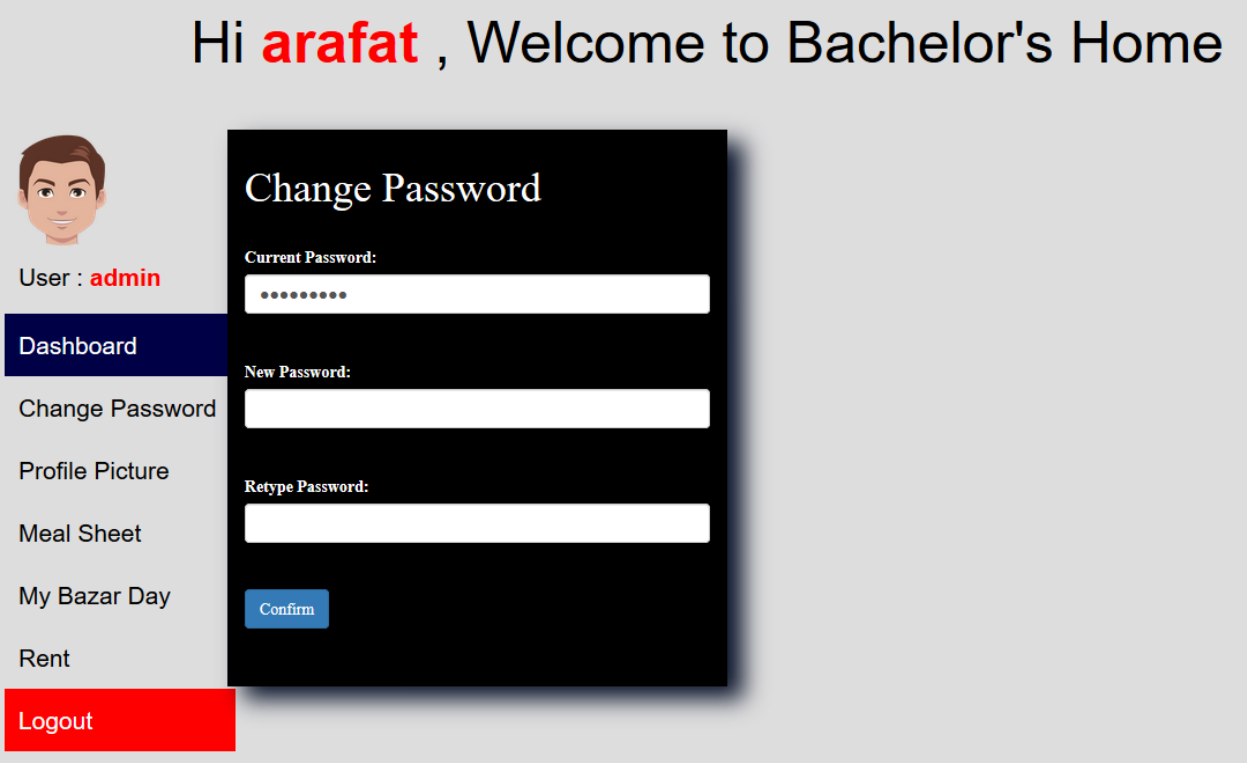

Figure 4.5: Password Changing page of Bachelor's Home application.

4.4.2.4 Profile Update Page

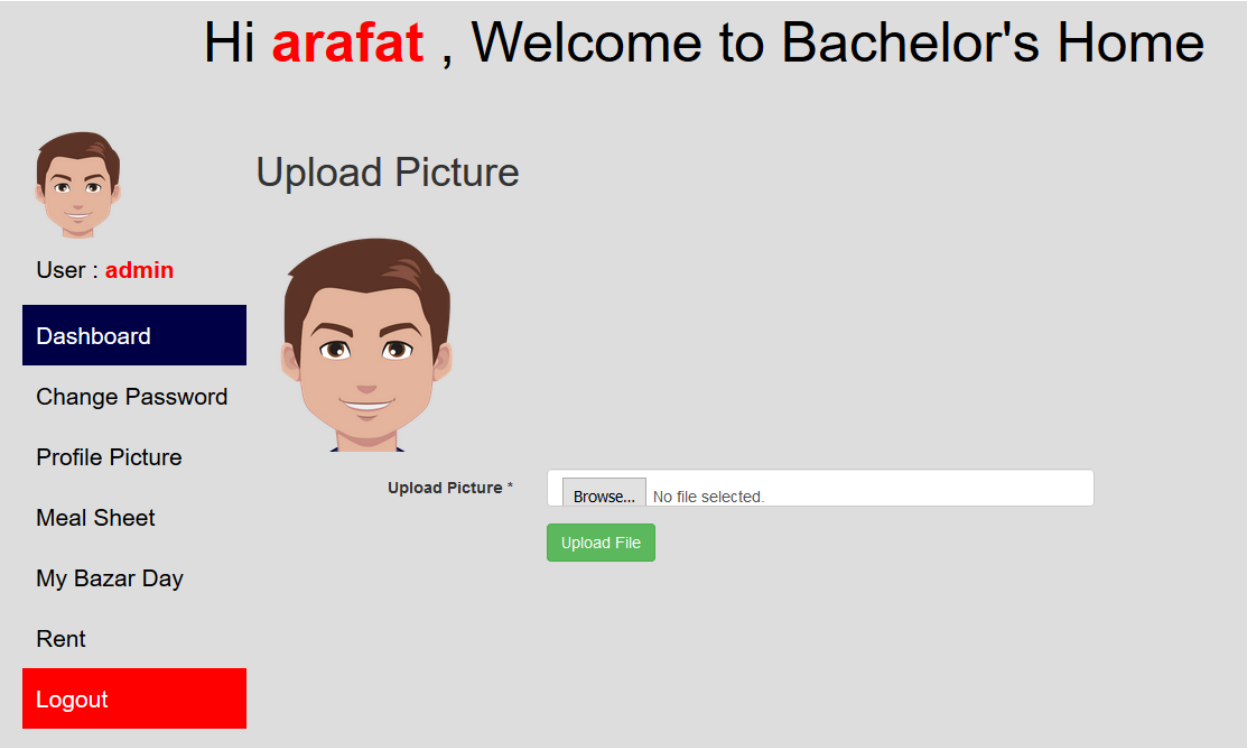

Figure 4.6: Profile Update page of Bachelor's Home application.

4.4.2.5 Meal Sheet Page

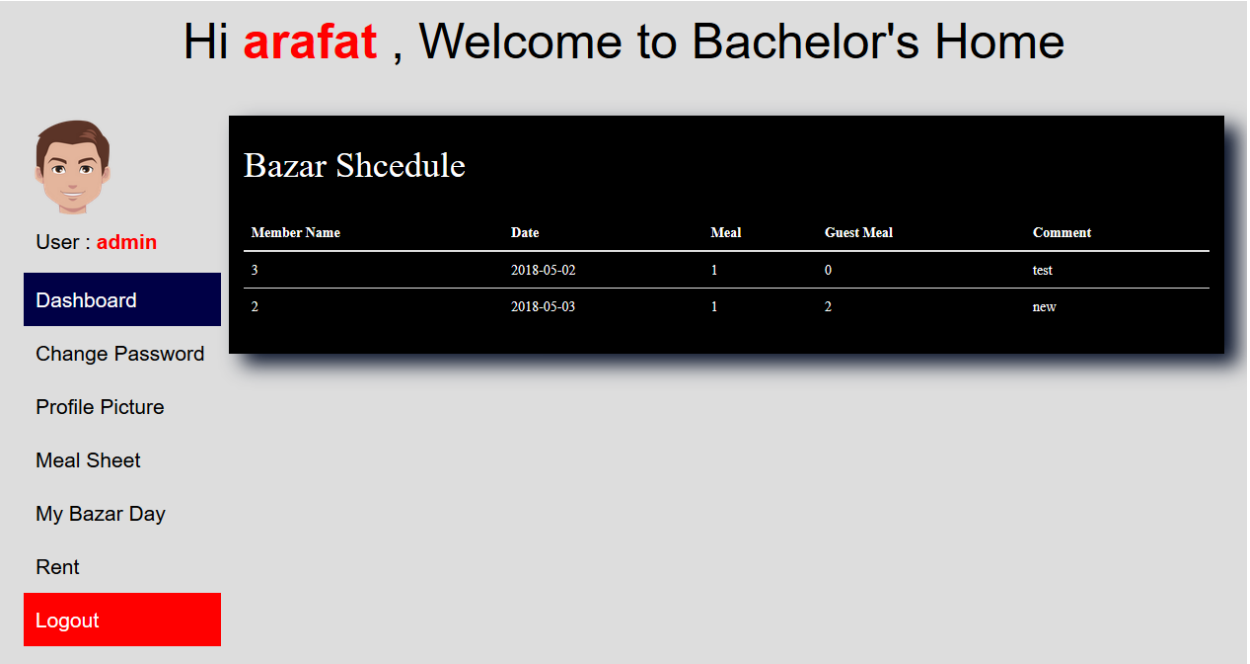

Figure 4.7: Meal Sheet page of Bachelor's Home application.

4.4.2.6 Bazar Schedule Page

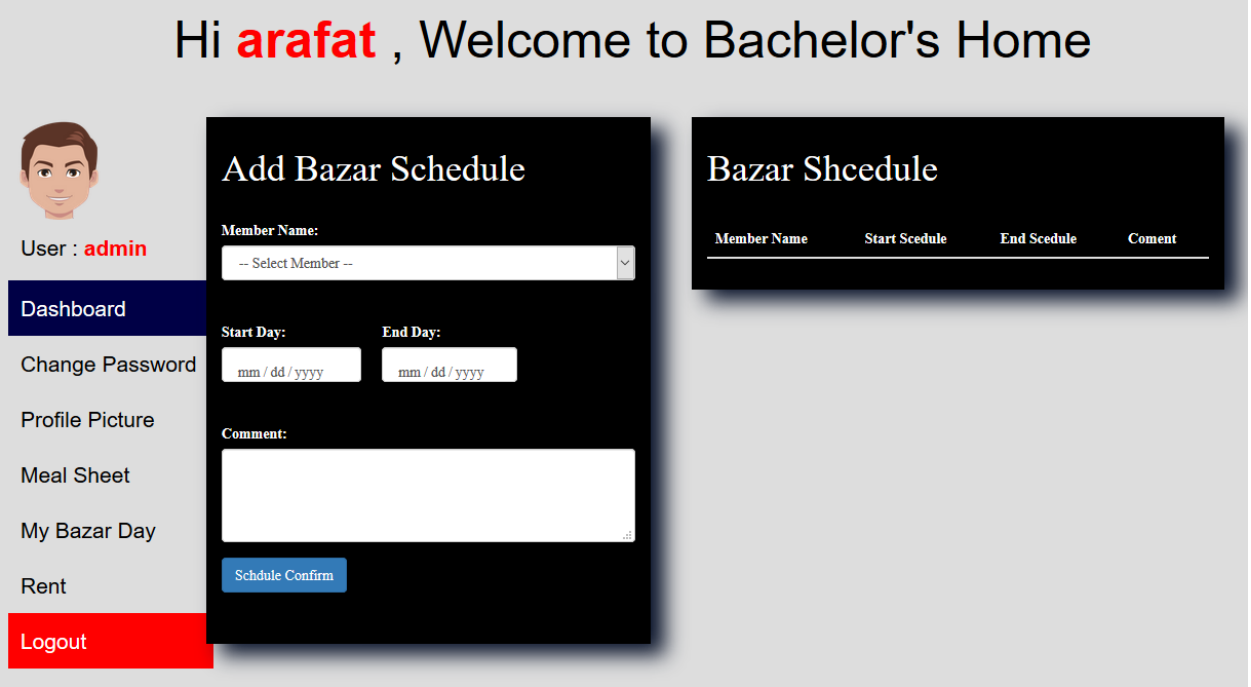

Figure 4.8: Bazar Schedule page of Bachelor's Home application.

4.4.2.7 Rent and Payment Page

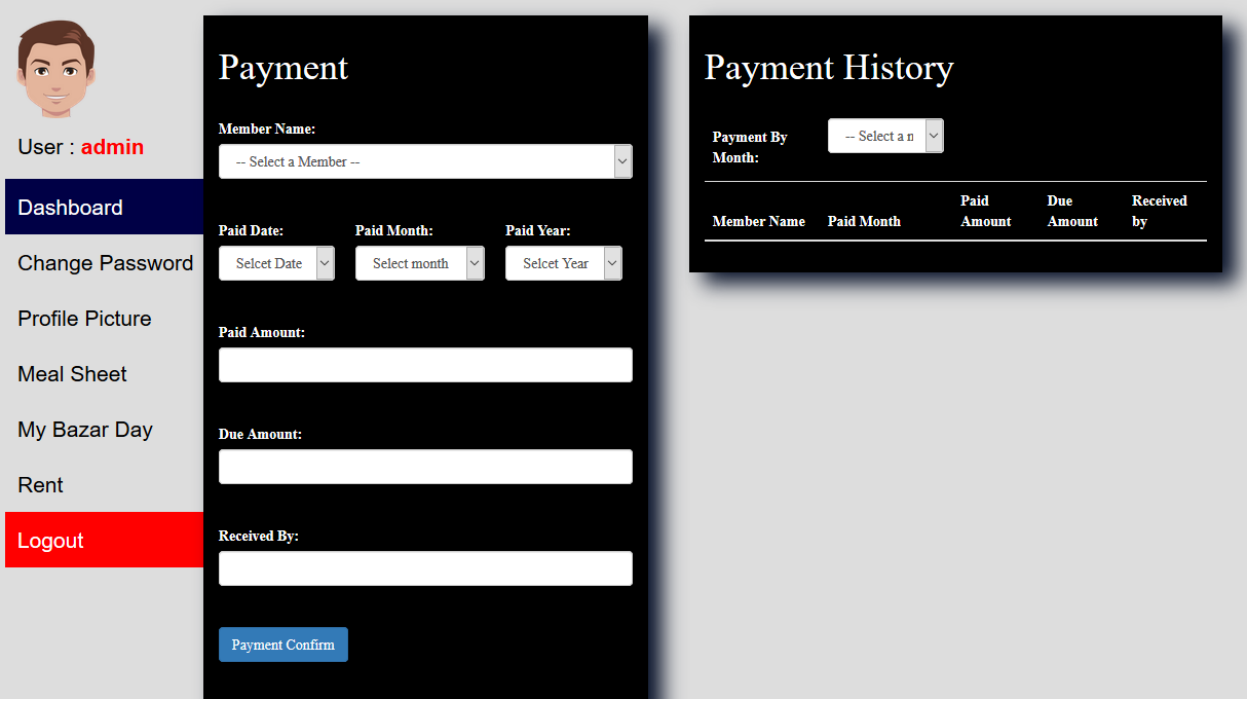

Figure 4.9: Rent and Payment page of Bachelor's Home application.

CHAPTER 5

FUTURE DEVELOPMENT

5.1 Future Development

In the current version of the system we are planning to develop the basic functionalities that we had proposed for this project. But still it lacks some of the cool features that user would like.

We have some great future plan on this project as we have a clear vision of how this project could be a great success. Some of the points we would like to mention for our future plan. The following points could be implemented in later versions:

1. Plugins: Initially we are implementing basic registration and login system where users have to set their sign up information and have to agree all the terms and conditions of the system to be a member of this service. But in future we would like to simplify the registration system. Therefore, we would like to implement registration plugins with Facebook and Google+.

2. Friends Invitation: As we are planning for a plugin registration system in this web app so we can do one more cool stuff of friend invitations form Facebook as well as google+. Again this is a great source for marketing of this service system.

3. Business: We already mentioned the point system which will be integrated in this application, and for the future we are planning of some business tricks with this point system. Such as users can use the points that the users collect from the

Web app for some awards. We haven't thought about that yet. But we would like to implement some mechanism for business purpose.

4. Best Performances: Best performance recognition among the members would be a great source for user affairs. Users will take this service seriously to get awarded weekly or monthly and will give their best performances. And what we would like to do is that we will monitor user activities and make a leaderboard for the top users and awarded accordingly.

5. Mobile App: We plan for a mobile app version of this system and in that version we have plan for finding location of friends and available flats which users can find through map.

CHAPTER 6

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