

PROJECT REPORT

Project Semester – December 2018 to June 2019

HOUSING MANAGEMENT SYSTEM

Submitted by

LESTER CARDOZ 17070122506

Under the Guidance of

Meeta Kumar

Professor

Binu Jayabalan Consultant, MS Solutions

Department of Computer Science Engineering SYMBIOSIS INSTITUTE OF TECHNOLOGY, PUNE

Academic Year 2018-2019

DECLARATION

I hereby declare that the project work entitled <u>Housing Management System</u> is an authentic record

of my own work carried out at IMTAC (Industrial Management Technology & Contracting LLC)

as requirements of six months project semester for the award of degree of B. Tech in Computer

Science Engineering, Symbiosis Institute of Technology, Pune, under the guidance of Mrs. Binu

Jayabalan and Ms. Meeta Kumar, during January to June, 2019.

Lester Cardoz

17070122506

Date: _____

Certified that the above statement made by the student is correct to the best of our knowledge and

belief.

Meeta Kumar

Professor Faculty Mentor Binu Jayabalan

Consultant, MS Solutions Industry Mentor

2

Experience Certificate from Company / Certificate on Company Letter Head
(Student may attach a Scanned Copy / Xerox Copy of certificate, retain original for your Resume.)

ACKNOWLEDGEMENT

This successful internship has been made possible through the direct co-operation and guidance of various people for whom I wish to express my appreciation and gratitude.

First of all, I would like to express my sincere gratitude to my department that has given me an opportunity and special thanks to my college guide, **Prof. Meeta Kumar** who has always provided me guidance whenever needed.

I extend my wholehearted thanks to my external guide, **Ms. Binu Jayabalan** who has given me an opportunity to work under her and help me to complete my project in IMTAC. I would also like to acknowledge the advice and suggestion of all the staff member of <u>IMTAC</u> who have directly or indirectly helped me in the project.

Last but not the least, I would also like to offer my sincere gratitude to my family and friends for their encouragement.

TABLE OF CONTENTS

SR.	SUBJECT	PAGE
NO.		NO.
1	Introduction	7
2	Work-Industry Review	8
3	Purpose of the Assignment	8
4	Job Description	9
5	Training	10
6	Software Requirements Specification	11
	1. System Specifications	11
	2. Software Tools	11
	3. Hardware Tools	11
	4. Functional Requirements	12
	5. Non- Functional Requirements	13
7	Project Design	14
	1. Web Application Architecture	14
	2. Use Case Diagram	15
	3. E-R Diagram	16
	4. Database Design	17
	5. Activity Diagram	22
	6. Test Cases	24
	7. Screenshots	28
8	Conclusion	32
9	Future Scope of Work	33
10	References	34

FIGURES

FIG NO.	SUBJECT	PAGE NO.
1	Web Application Architecture	14
2	Use Case Diagram	15
3	E-R Diagram	16
4	Database of User	17
5	Database of House	18
6	Database of Society	18
7	Database of Complaint	19
8	Database of Rent	19
9	Database of Sell	19
10	Database of Images	20
11	Database of Message	20
12	Database of Notifications	20
13	Database of ContactUs	21
14	Database of ContactDetails	21
15	Activity Diagram of Admin	22
16	Activity Diagram of Member	23

TABLES

FIG NO.	SUBJECT	PAGE NO.
1	Test Cases of Login Form	24
2	Test Cases of Admin	25
3	Test Cases of Member	26

1. INTRODUCTION

This system is developed to manage day-to-day activities of a co-operative housing society. Generally, in society all work is manual. As all work is done on paper, it is very difficult to manage and keep track of all the work expenses in the society. The Housing Management System will computerize all day to day operation in the society. Currently, there is no automated system for doing all the things that generally takes place in society that allow members to know what is happening. This website notifies members about meetings, sends notices to the residents as well as direct complaints to the admin. Thus, this website can provide a smarter and efficient way of communication between society residents and higher authorities. In other words, it is a generalized system architecture where the admin has access to meetings, notices, etc. which will be stored in the database through which the user can absorb such information.

2. WORK-INDUSTRY REVIEW

Industrial Management Technology & Contracting (IMTAC) LLC, established in 1984, is a limited liability company headquartered in the Sultanate of Oman. IMTAC's holding company, Services & Trade Investment Holding LLC, is the investment arm of a large diversified conglomerate with business interests across 14 countries in the Middle East, Asia and Africa.

Starting as a sole partner of Hewlett-Packard (HP) in 1984, IMTAC has emerged as one of the largest technology companies in the GCC region and a brand name synonymous with innovative solutions and Industry leading services.

IMTAC's knowledge of business needs in the local markets, a large pool of domain/technical expertise and partnership with industry leading partners gives the company a distinctive position for large system integration projects.

The company's business has been built on the principle of providing outstanding service value for customers across the region and sectors.

3. PURPOSE OF THE ASSIGNMENT

The housing management system is a web application that manages societies and its houses, with all the member details assigned to each house. This application provides platform to the society to register on the system, and there are many houses according to each society. Each house is allocated to the owner of the house and all the owners are members of the project. After becoming a member, they can login to give their house on rent or to sell. Users can easily find a house to rent or buy in the society and get the contact information of the owner of the house by visiting the website. Members can also make online complaints related to their homes on the housing management system.

In this housing management system, the society is categorized by the number of houses. The people residing in these houses may either be the owner or tenant of the house. In this era, people are very busy with their routine work giving them very little time the file small complaints related to their houses. To solve this, a system was developed allowing members to make complaints anywhere and anytime.

In this housing management system, there are three types of users namely, admin, member of the website and the outside users who are looking to rent or buy a house i.e., the guest users.

4. JOB DESCRIPTION

.NET Developer -

A .NET developer is responsible of designing, tailoring and developing software applications according to a business' needs. In addition to determination and analysis of prerequisites for software, its responsibilities include support and continuous development. The daily job is about the development and execution of appropriate application programs as well as specified products, programming languages, frameworks, technologies and tools which are directly or indirectly merged with the collective term .NET.

Responsibilities and Tasks –

Responsibility for the design, corresponding implementation and further development of software is a part of the .Net Developer Job. In addition, a .NET Developer is in charge of the analysis of specific problems, potentially providing or developing the appropriate system requirements.

Normally, this involves the development of software solutions based on various technologies. Additionally, a .NET developer programs' .NET application, supports various tasks depending on the field of activity. A variety of tasks can be conducted, from bug fixes on an existing product or app, to completely building a new one from scratch.

Tasks that were accomplished:

- Design, implementation and development of software
- Analysis of existing problems and identification or development of system requirements
- Design of interfaces and components
- Programming .NET applications

5. TRAINING

As I had no prior knowledge about .NET, Visual Studio, SQL Server, C# and JavaScript. And also, very less knowledge about HTML and CSS. The training phase was for a duration of 2-3 months. The training consisted of many theoretical tasks, such as, getting my prior programming concepts up to date, reading some main concepts, learning about the .Net Framework and various technologies of .NET (ASP.NET, ADO.NET, AJAX Toolkit, etc.)

The other part of the training was more practical, which consisted of working on a practice project "Student Management System".

The Student Management System was a web application which worked on Visual Studio with the help of SQL Server for its database services. The project was a simple .Net web application in which a student could login by using his/her login credentials. On logging in, the student can then update its details and display picture, check their marks and enter their parents' details.

It also had another set of users, that is, teachers, in which the teachers could register themselves using the registration form. They could register students through their login credentials, they could also update and delete the students. The teachers could enter the student's marks or update them.

The "Student Management System" helped me get accustomed with the .Net Framework, handling data and various tools, such us, standard toolbox, gridview and its tasks, ajax toolkit, reporting, etc. that I could use in order to accomplish my main project.

6. SOFTWARE REQUIREMENTS SPECIFICATION

6.1 SYSTEM SPECIFICATIONS

Hardware Requirements –

- o Pentium-IV (Processor).
- o 256 MB Ram
- o 512 KB Cache Memory
- o Hard disk 10 GB

Software Requirements –

- o Operating System: Windows 10
- o <u>Programming language:</u> .NET Framework
 - 4.5, Visual Studio 2015
- o Web-Technology: ASP.NET
- o Database: SQL SERVER 2015
- Web Server: Internet Information Services (IIS)

6.2 SOFTWARE TOOLS

The software tools and languages used for Housing Management System are:

- Visual Studio 2015
- SQL Server 2005
- C#
- SQL

- Google Chrome
- HTML
- CSS
- JavaScript

6.3 HARDWARE TOOLS

The hardware tools used for Housing Management System are:

- Computer: Acer Aspire E 15
- Internet
- Server: ISS

6.4 FUNCTIONAL REQUIREMENTS –

Admin:

The admin can manage the system by logging in with his username and password. He can register or add detail of society and create or add detail of the number of houses of the particular society. After creating a house, he can allocate the house to a member and generate username and password for all the members of this system. The member is an owner of house. The admin is responsible for resolving a complaint made by any member of the system. He can also manage society, houses, members and complaints.

Member:

In the housing management system, the admin allocates the house to a member and member is the owner of the house. Members can put houses on rent or sale whenever they want. Members can make any complain related to a house by logging in to their account and changing the account detail and contact detail. Members receive messages from users regarding rent or sale of their house in their message box.

Guest User:

Guest users are the people who just browse the website. They can also browse through all the properties that are put up for rent/sale. Users can easily find details of houses or get address of the houses by providing member name or society name from the search page.

6.5 NON- FUNCTIONAL REQUIREMENTS –

I. Error handling:

Authentication of the user credentials is very important. Moreover, the housing management system should be error-free or at least close to it. The system should notify the user if there may be any error while using it.

II. Performance:

Performance of the system depends on the speed and the time it requires to process different tasks. Performance is a key to a better online system and hence, it should always be working towards reducing the process time.

III. Availability:

Availability declares that the online system needs to always be easily accessible and that is another major requirement. Additionally, if there are any problems in the system, the system should be able to recover from it as soon as possible.

IV. Usability:

The system should always make help and support easily available to the users. Navigation bar is provided in for improved usability. Also, it helps the user to have a better interaction with interface by the online system.

V. Security:

Security is always a major requirement. There are certain details that are very confidential and can affect the users if leaked and fallen into wrong hands. The system should be able to differentiate between the fake and the authenticated users and hence, keep the online system secured.

7. PROJECT DESIGN

7.1 WEB APPLICATION ARCHITECTURE -

Web application components are divided into two groups, user's interface and the structure. These components are the basics of web application architecture. The components of the structure link the internet browser or client, the application server, and the database server. The user or the internet browser deals with the app performance of interaction with the client. It is functioned by applying JavaScript, HTML or CSS. The user or the browser is like the interaction channel for the clients. The server is the control center to manage layered applications. Here the language used is ".Net". They will help to manage data persistence and business logic. The tasks of the database server are to arrange and store consistent information inside the web-app.

Administration Tool Administration Layer API Administration Management Documentation Clients Recommender Server Generator Server API Layer Application Layer Database Layer Datamining Layer Client Layer Online Action-Based Client Recommender DB Generators Application 1 Services (Actions) Web Service AP Content-Based Client Action Generators Application 2 Service Offline DB 3rd Party Client Recommender (Association Metadata Application N Services Rules)

Fig 1. Web Application Architecture www.wikipedia.com

7.2 USE CASE DIAGRAM –

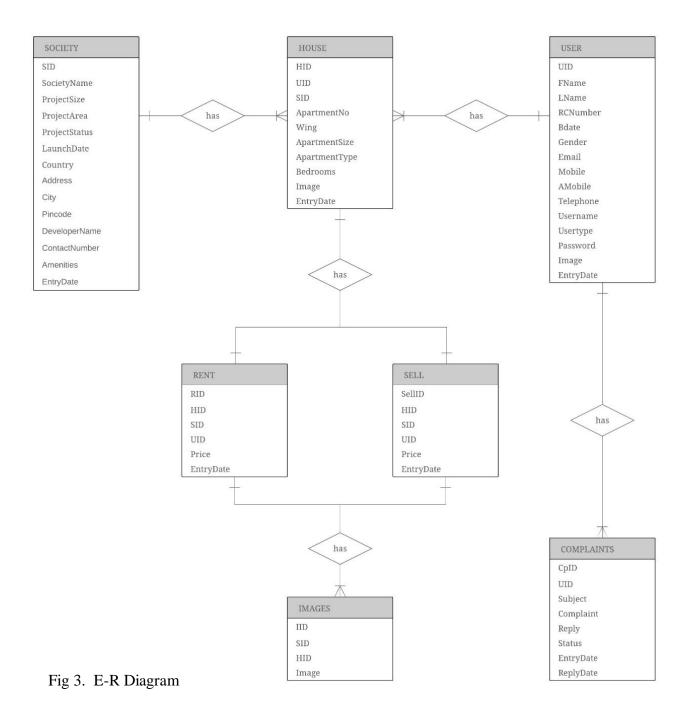
The use case diagram is usually referred to as behavior diagram used to describe the actions of all user in a system. All user describe in use case are actors and the functionality as action of system. The use case diagram is a collection of diagram and text together that make action on goal of a process. In housing management system, there are three actors that can do the activities to run the system. Admin, user and guest of system.



Fig 2. Use Case Diagram

7.3 E-R DIAGRAM -

E-R (Entity-Relationship) Diagram is used to represents the relationship between entities in a table. ER diagrams represent the logical structure of databases. ER Diagram represent relationship between two database tables.



7.4 DATABASE DESIGN –

The general theme behind a database is to handle information as an integrated whole. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and effectively. After designing input and output, the analyst must concentrate on database design or how data should be organized around user requirements. The general objective is to make information access, easy quick, inexpensive and flexible for other users.

Table 1: User

The table stores all the details of user.

	Column Name	Data Type	Allow Nulls
P	UID	int	
	FName	nvarchar(50)	abla
	LName	nvarchar(50)	\checkmark
	RCNumber	nvarchar(50)	
	Bdate	datetime	
	Gender	char(1)	
	Email	nvarchar(50)	
	Mobile	nvarchar(50)	
	AMobile	nvarchar(50)	
	Telephone	nvarchar(50)	
	Username	nvarchar(50)	
	Usertype	char(1)	
	Password	nvarchar(50)	
	lmage	image	
	EntryDate	datetime	

Fig 4. User

Table 2: House

The table stores the details of the houses/apartments.

	Column Name	Data Type	Allow Nulls
8	HID	int	
	UID	int	
	SID	int	
	ApartmentNo	int	
	Wing	nvarchar(50)	
	ApartmentSize	nvarchar(50)	
	ApartmentType	nvarchar(50)	
	Bedrooms	nvarchar(50)	
	Image	image	
	EntryDate	datetime	

Fig 5. House

Table 3: Society

The table stores the details of the society.

	Column Name	Data Type	Allow Nulls
8	SID	int	
	SocietyName	nvarchar(50)	abla
	ProjectSize	int	\checkmark
	ProjectArea	nvarchar(50)	\checkmark
	ProjectStatus	nvarchar(50)	
	LaunchDate	nvarchar(50)	
	Country	nvarchar(50)	
	Address	nvarchar(100)	
	City	nvarchar(50)	
	Pincode	nvarchar(50)	
	DeveloperName	nvarchar(50)	
	ContactNumber	nvarchar(50)	$ \mathbf{\nabla}$
	Amenities	nvarchar(200)	
	EntryDate	datetime	\square

Fig 6. Society

Table 4: Complaint

The table stores all the complaints raised by the user and the details of the reply to the complaints attended by the admin.

	Column Name	Data Type	Allow Nulls
P	CpID	int	
	UID	int	\checkmark
	Subject	nvarchar(200)	\checkmark
	Complaint	nvarchar(500)	\checkmark
	Reply	nvarchar(200)	\checkmark
	Status	nvarchar(50)	\checkmark
	EntryDate	datetime	\checkmark
	ReplyDate	datetime	\checkmark

Fig 7. Complaint

Table 5: Rent

The table stores the details of the houses that being displayed on Rent.

	Column Name	Data Type	Allow Nulls
8	RID	int	
	HID	int	$\overline{\mathbf{z}}$
	SID	int	\checkmark
	UID	int	$\overline{\mathbf{v}}$
	Price	float	\checkmark
	EntryDate	datetime	\square

Fig 8. Rent

Table 6: Sell

The table stores the details of the houses that being displayed on Sale.

	Column Name	Data Type	Allow Nulls
P	SellID	int	
	HID	int	abla
	SID	int	
	UID	int	
	Price	float	
	EntryDate	datetime	

Fig 9. Sell

Table 7: Images

The table stores the images societies and of the houses that being displayed on Rent/Sale.

	Column Name	Data Type	Allow Nulls
P	IID	int	
	SID	int	\checkmark
	HID	int	\checkmark
	Image	nvarchar(50)	\checkmark

Fig 10. Images

Table 8: Message

The table stores the enquiry messages regarding the ads displayed.

	Column Name	Data Type	Allow Nulls
P	MID	int	
	UID	int	\checkmark
	HID	int	\checkmark
	FullName	nvarchar(200)	\checkmark
	Mobile	nvarchar(50)	\checkmark
	Email	nvarchar(50)	\checkmark
	City	nvarchar(50)	\checkmark
	Subject	nvarchar(200)	\checkmark
	Message	nvarchar(500)	\checkmark
	EntryDate	datetime	\checkmark

Fig 11. Message

Table 9: Notifications

The table stores the notifications of every action that takes place on the website.

	Column Name	Data Type	Allow Nulls
P	NID	int	
	UID	int	\checkmark
	Usertype	char(1)	\checkmark
	Notiftype	nvarchar(50)	\checkmark
	Notification	nvarchar(500)	\checkmark
	EntryDate	datetime	\checkmark

Fig 12. Notifications

Table 10: ContactUs

The table stores the details and the messages of the guest users who have enquiries.

	Column Name	Data Type	Allow Nulls
8	CID	int	
	FullName	nvarchar(50)	\checkmark
	Mobile	nvarchar(50)	\checkmark
	Email	nvarchar(50)	\checkmark
	City	nvarchar(50)	\checkmark
	Subject	nvarchar(50)	\checkmark
	Message	nvarchar(500)	\checkmark
	EntryDate	datetime	\checkmark

Fig 13. ContactUs

Table 11: ContactDetails

The table stores the details of the guest users who have enquired about the society.

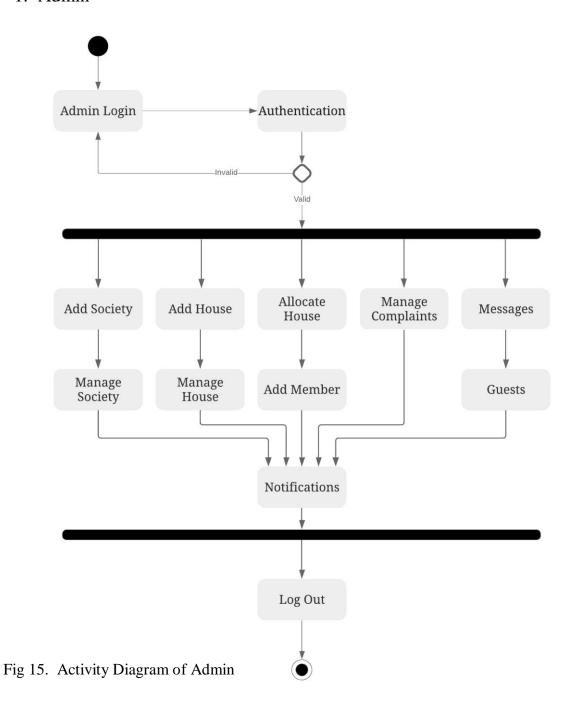
	Column Name	Data Type	Allow Nulls
P	CdID	int	
	FullName	nvarchar(50)	\checkmark
	Mobile	nvarchar(50)	\checkmark
	Email	nvarchar(50)	\checkmark
	EntryDate	datetime	\checkmark

Fig 14. ContactDetails

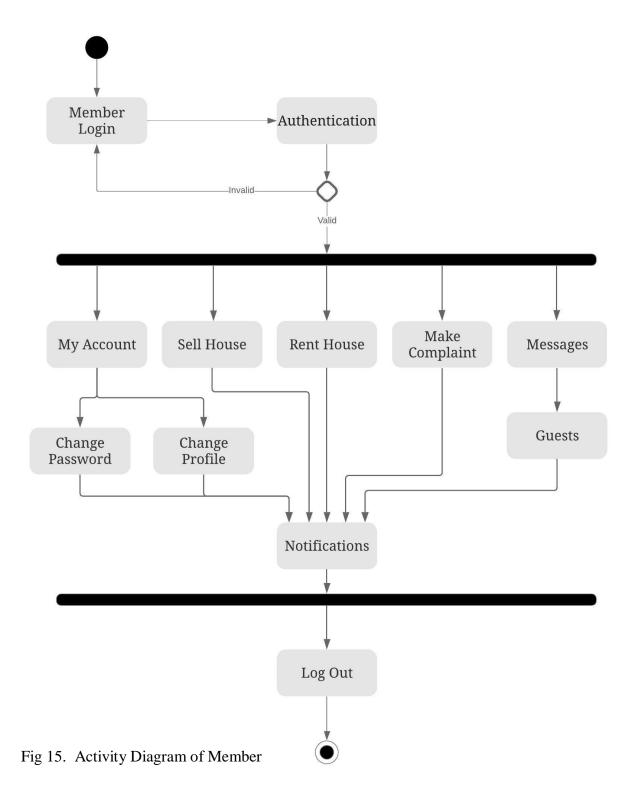
7.5 ACTIVITY DIAGRAM -

The activity diagram is used to describe flow of activity through a series of actions. Activity diagram is an important diagram to describe the system. An activity diagram shows the overall flow of control.

1. Admin



2. Member



7.6 TEST CASES –

Member and Admin Login Form

	TC ID	TC NAME	TC DETAIL	STEP	EXPECTED RESULT	ACTUAL RESULT	TC STATUS
1	Login Member	Validate login	To verify that login email & password on login page	Enter the login email and password and click login button	Login successful or an error message "in valid email or password" must be displayed	Login successful	Pass
2	Login Admin	Validate login	To verify that login email & password on login page	Enter the login email and password and click login button	Login successful or an error message "in valid email or password" must be displayed	Login successful	Pass
3	Password	Validate password	To verify that password on login page	Enter password and login name click login button	An error message "password invalid" must be displayed	An error message "password invalid" must be displayed	Fail

Table 1. Test Cases of Login Form

Admin User Interface

	TC ID	TC NAME	TC DETAIL	STEP	EXPECTED RESULT	ACTUAL RESULT	TC STATUS
1	Add Society	Validate Society form	To create a new society	Details entered and click submit button	An error message must be displayed or details must be inserted	Inserted successfully	Pass
2	Add House	Validate House	To create a new house	Nothing entered and click submit button	An error message must be displayed	An error message appears	Pass
3	Reply Complaint	Enter Complaint Reply	To verify that the complaint reply is successful	Enter Complaint Message	An error message or the message should be sent	Complaint sent.	Pass

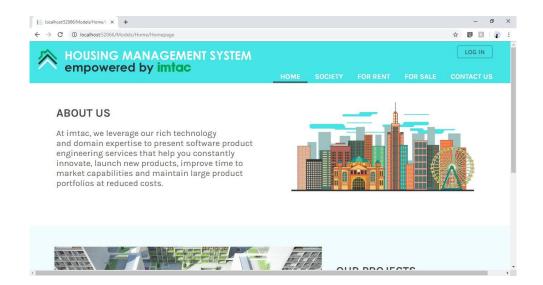
Table 2. Test Cases of Admin

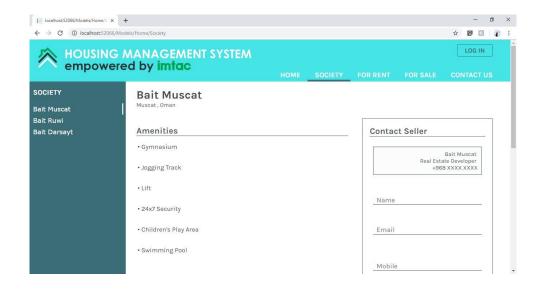
Member User Interface

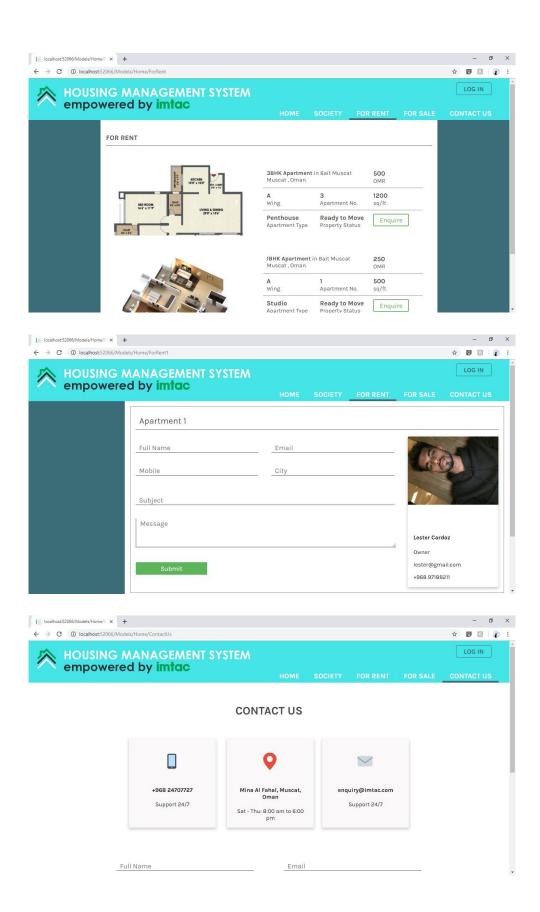
	TC ID	TC NAME	TC DETAIL	STEP	EXPECTED RESULT	ACTUAL RESULT	TC STATUS
1	Change Password	Validate Password	Change Password	Details entered and click submit button	An error message must be displayed or password must be changed	Password Changed	Pass
2	Display Rent/Sell Ad	Display Ad	Ad must be displayed so that guest users can browse	Click on Rent/Sell Button	Ad must be displayed	Ad is displayed	Pass
3	Make a Complaint	Enter Complaint	To verify that the complaint is successful	Enter Complaint Message	An error message or the message should be sent	Complaint sent	Pass

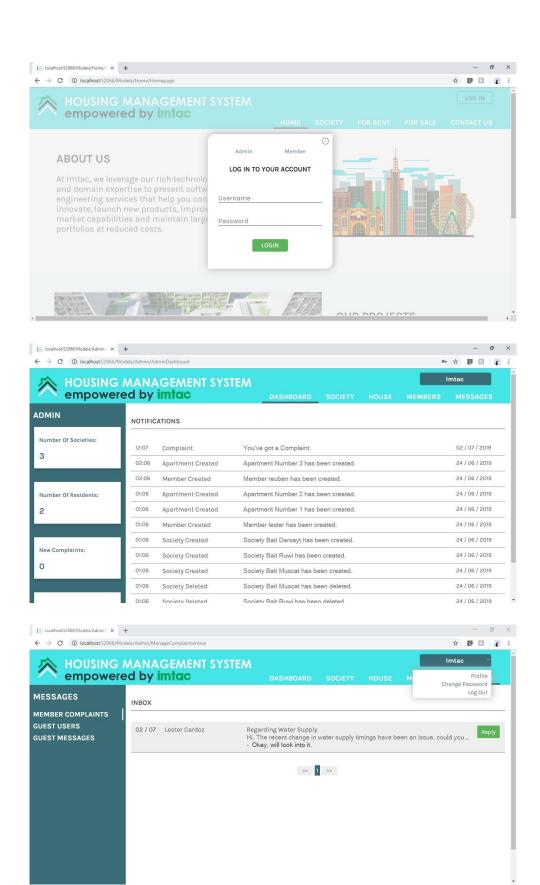
Table 3. Test Cases of Member

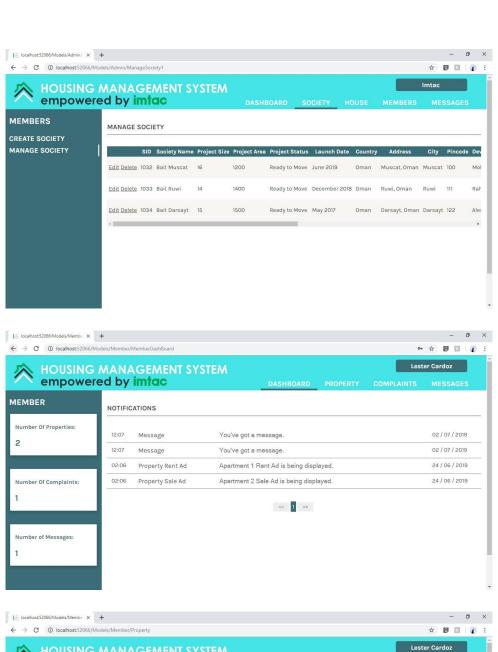
7.7 SCREENSHOTS -

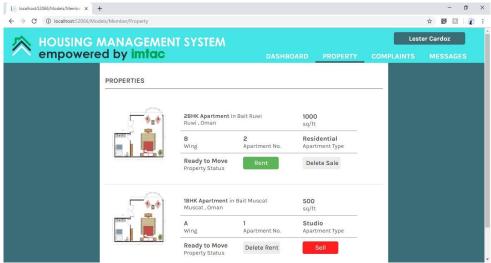


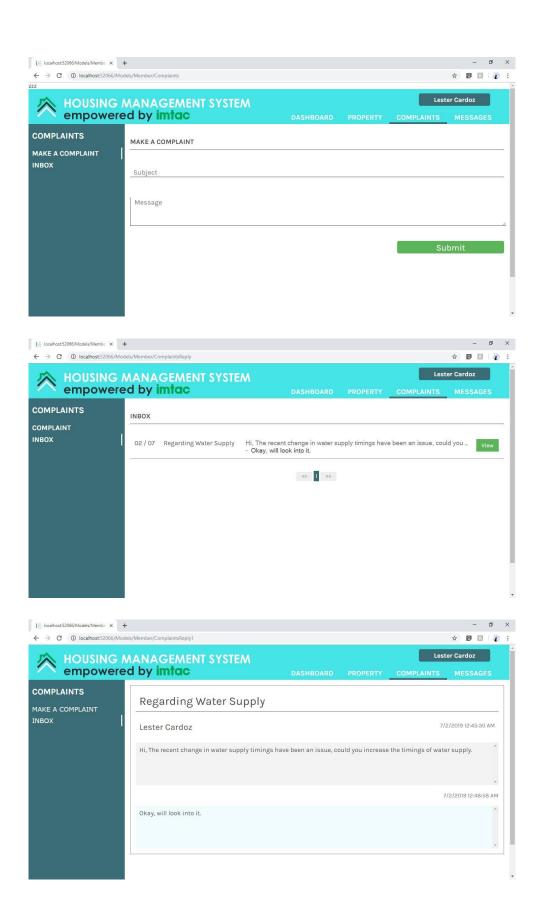












8. CONCLUSIONS

Internship gives the opportunity to grab the professional experience. This internship program uplifted my skills and knowledge and gave me the opportunity to work in a professional surrounding. Another major thing that I learned is time management and work management. With this internship opportunity, I have gained much more insight into the web development. This internship opportunities have help me gain the practical knowledge required to implement the theoretical information obtained. I gain the knowledge about the difference between the real-world scenario and the college level. The internship in IMTAC has provided a great opportunity to enhance knowledge and skills. It helped me gain the experience of working in real and practical field. The main objective of the internship is learning the things that is necessary to get yourself into the real field of work. This internship has enhanced my knowledge and skills. It has given me the opportunity to understand this industry and how the work is actually done.

9. FUTURE SCOPE OF WORK

The Housing management system should be in according to the expectations of users so that it can be an effective instrument of defining for the customers the nature of service provision and explicit standards of service delivery. For this, it is essential to maintain a super administrator who can manage and govern all the information provided in the application by administrator of the respective organization. The application doesn't have all features of Housing management system. And, the system being developed will be better if there was a feature that that could raise invoices against all flats or select flats based on area or based on a fixed amount. Members would be able to view their maintenance bill whenever an invoice is raised against their flat. This system of maintaining a society would be made in such a way, so that the most common problem faced in residential societies are solved. Admin can also keep track of expenses using this system and reports which include provider bill.

10. REFERENCES

[1] J.L. Whitten, L.D. Bentley, K.C Dittman. "Systems Analysis and Design Methods" 5e 5th McGraw-Hill Higher Education, 2000. [2] Software Engineering, A Particular Approach by ROGER S. PRESSMAN [3] Elmasri Navathe, Fundamentals of database systems" 7th Edition [4] Ian Somerville, Software engineering" 7th Edition [5] Software System Testing, www.softwaretestingclass.com/system-testingwhat Why-how, October 1st, 2012 [March. 1, 2014], [Online] [6] Somerville, Ian (2000). Software Engineering, 6th edition, Pearson Education. [7] stackoverflow.com [8] codeproject.com [9] forums.asp.net [10] W3schools.com