ONLINE REAL ESTATE

(ORE)

By

Khadija Khan

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CERTIFICATE

Certified that the contents and form of project report entitled "**Online Real Estate",** submitted by Khadija Khan, have been found satisfactory for the requirement of the degree.

Advisor: _____

Miss. Shamaila Kiyani

Co-Advisor:_____

Mr. Aatif Kamal

Member: _____

Mr. Shahrzad Khattak

Member: _____

Mr. Mujtaba Haider

DEDICATIONS

To my dearest Mama, loving memories of Ami and Baba,

my sisters and my friends

& last but not the least

ME, Myself and I

ACKNOWLEDGEMENTS

First of all, I am grateful to Allah Almighty for giving me the strength and vision to be what I am and for giving me the potency to gracefully carry on with the life. I would like to thank all my teachers who supervised me during the completion of this project and despite their heavy schedule extended their services and help in this regard, my family and friends who supported me throughout this project and due to their support and encouragement I was able to achieve the set goal within the specified time.

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ABSTRACT

Real Estate industry is a major source of wealth creation for investors, contributing significantly to the socio-economic well being of all the citizens, and is surely to increase in the coming years keeping in mind the increase in population and the trends of the citizens. The industry however, faces severe issues of data maintenance, office maintenance, time management, hassle of surveying the location both of the dealers and the customers and above all, lack of customer satisfaction. The Automation of the real estate industry can solve all these problems in an effective manner by saving the time and the efforts of both the clients and the property dealers and providing everything online at one point and at all the times.

ORE (Online Real Estate) developed by NIIT students, is a platform that brings the customers and real estate agents closer to one another – just a click away; to provide fast, easy and less time consuming dealings.

The system is aimed to facilitate the customers to make a thorough survey before investing their money, and help the agents flourish their business on a global scale. The end product of the project is to provide a Mall where different real estate agents can register and develop their website by using the web wizard provided by the Mall. Each individual agent can maintain their own virtual shops and provide different categories of the properties available. The client can search for the desired requirements and make reservations either by specifying the requirements or through the Google map API.

Chapter 1

INTRODUCTION

1.1. PROJECT PROLOGUE

Real Estate or immovable party is a legal term (in some jurisdictions) that encompasses land along with anything permanently affixed to the land, such as buildings [Wikipedia]. Real Estate industry is a huge industry and is a major source of wealth creation for investors, contributing significantly to the socio-economic well being of all the citizens.

In Pakistan, Real estate industry has always been in masses focus and a great number of customers have been investing into the land and property at all times. The main reason behind the real estate investment is that it can be attributed to be the safest form of investment as compared to others. Market analysis has shown that the safest investment is in the real estate. For example, investing money in gold or stocks is not safe as the prices fluctuate on a regular basis and the fluctuations are usually quite unpredictable. Also the importance of real estate cannot be ignored in terms that people always need a shelter to live and they have to have a roof under which they can live. The real estate industry is surely to increase in the coming years keeping in mind the increase in population and the trends of the citizens.

However, the market analysis has shown that there are a lot of issues faced by the property dealers conducting the real estate business. The office and the data maintenance require a lot of hard work and effort. A lot of man power is required in order to keep the data and the files updated and also to manage and handle all sorts of clients coming in to the office at all the times. The time management is also a critical factor faced by the property dealers. It requires a lot of effort and time in order to cope up with all the clients at all the times. Another main issue faced by the property dealers is that it is very difficult to manage all the clients. A huge amount of hassle is involved in surveying the location of the properties, both

for the property dealers and the clients. The property dealers as well as the clients do not have plenty of time to visit properties and therefore there is a lack of customer satisfaction.

1.2. MOTIVATION

Keeping in view the importance of the real estate industry and the increasing growth potential of this industry, we come to realize that the issues faced by this industry as discussed above are a big hurdle in the growth of this industry. The real estate business can never exploit the potential offered by this industry until these issues are properly and effectively dealt with. The market analysis also reveals that the automation of this industry will help the property dealers and the customers to a great extent by saving their time and efforts.

The Automation of the real estate industry will save the time and efforts of both the Property dealer and the customers. It would save the effort and the hassle involved in surveying the property locations for both the customer and the property dealer. This would help in regard that only the genuine buyers would come forward to the property dealers; and also that the buyers can conduct the searches online and look for the selected properties. The automation of the real estate business would help to a great extent by making it very easy to maintain the records and analyze the customers' trends. This would save the property dealers time and effort and would help them to manage their time and business in a more effective and a productive way. This would minimize the requirement of the man power and the effort involved to a great extent. The dealers would be able to maintain their businesses online and therefore save the extra expenses involved in maintaining the data and the office. The automation of this industry would allow a direct communication between the customers and the dealers at all the times in an easy way. The users can search for the properties online and view the property's information online.

Summarizing the benefits, the automation of the real estate industry would help, both the customers and the property dealers, and allows them to exploit the

potential offered by this industry in a more effective and a productive manner; and this is what this project aims to do.

1.3. PROJECT SCOPE

The objective of this project is to automate the real estate industry and to provide a platform that would bring the customers and real estate agents closer to one another so that fast, easy and less time consuming dealings can he done and the industry's potential can be utilized in a more productive manner.

Using the technologies of today, the project aims to provide the solutions to the problems of the everyday life. Developed in .Net 2005 and SQL Server 2005, and using the distinguishing features of the growing technologies, the system is aimed to facilitate the customers to make a thorough survey before investing their money, and help the agents flourish their business on a global scale.

The project is to provide a Mall where different real estate agents can register and develop their website by using the web wizard provided by the Mall. Each individual agent can maintain their own virtual shops and provide different categories of the properties available. The client can search for the desired requirements either by specifying the requirements or through the Google map API.

1.4. PROJECT DOMAIN

The project is basically a development project which involved, to a great extent, research as well, in the fields of using the technologies like .Net, SQL, the Web Controls and the Google APIs.

The project, 'Online Real Estate' system is beneficial for both the property dealers and the customers. It will provide a Mall (a Web portal) where the property dealers can set up their shops (websites) by using the web wizard the system provides, providing their information and selecting the templates; and then can

maintain their properties. The users can conduct different searches and view the property's images and information and place reservation requests for the properties. Using the Google Map API, the user would be able to view the property's location on map, view the images and the information of the properties. This would make things easy for both the dealers and the customers to a great extent and allowing the business to grow at a fast pace.

1.5. PROJECT DELIVERABLES

There are two deliverables of the project.

- A Web Portal, an efficient, proficient and a well organized system for the Property dealers and the consumers to could help them manage their websites and online businesses and facilitate the users to conduct the searches online.

- A detailed Documentation, enlightening all the study and the development details of the project.

1.6. REPORT STRUCTURE

- Chapter 1 gives the introduction to the project, and the project prologue. It also discusses the motivation and the project scope. It describes the motivation behind the project, and efficient solution it provides to the real life problem, and how and to what extent it aims to provide a solution to that problem. It will introduce to the reader what exactly the nature of the problem is, and what steps are needed to provide an efficient solution.

- Chapter 2 provides a detailed background study, and increases the user's knowledge in terms of the technology in this project.

- Chapter 3 defines the proposed design of the system, along with the implementation aspects of different modules.

- Chapter 4 contains the test results and the outcomes of the project.
- Chapter 5 gives the conclusion of how the system meets the issues and challenges faced by the real estate industry.
- Chapter 6 gives the future recommendations to enhance the functionalities of the system.

Chapter 2

LITERATURE REVIEW

2.1. MOVING FROM ASP.NET 2003 TO ASP.NET 2005

ASP.NET 2003	ASP.NET 2005
Compilation Visual Studio 2003 automatically compiles only certain file types such as ASP.NET pages, Web services, user controls, HTTP handlers, Resource files and Global.asax class files. The remaining files needs to be explicitly complied.	**Compilation** The ASP.NET dynamic compile engine automatically compiles the applications that includes .aspx, .cs, .vb files.
Modification The entire project needs to be opened in order to make changes and needs to recompiled to publish the code to the web server.	**Modification** Only the individual file needs to be opened in which the changes are to be made and the code is automatically published to the web server without having to recompile.
Individual pages outside the project cannot be opened.	Individual pages outside the project can be opened, it is achieved through Compile-on-demand feature.
Code-Behind Model It requires IIS Virtual Directory. It can directly access the local installation of IIS.	**Code-Behind Model** It lacks support for FTP, local file system, and direct IIS access. It has multiple ways to open Web sites.

It requires IIS on development computer. In the ASP.NET runtime, the life cycle of a page is marked by a series of events. In ASP.NET 1.x, based on user interaction a page request is sent to the Web server, as a result of which Init event occurs. After Init, Load event is raised, then PreRender event and finally the Unload event is raised and an output page is returned to the client.	It has already built-in Web server ASP.NET 2.0 adds new events to allow you to follow the request processing more closely and precisely. These events are called in the order such that first PreInit is called, then Init Complete, PreLoad, Load Complete and finally the PreRenderComplete is called.

2.2. SQL SERVER 2000 Vs. SQL SERVER 2005

SQL 2005 has much more functionality that what is available in SQL 2000. Below is a list of a few simple ones.

SQL SERVER 2000	SQL SERVER 2005
The DTS of SQL 2000 has been replaced with SSIS (Sql Server Integrated Services) All your data can be manipulated in a variety of ways within each SQL task and there is a whole list to it. The drawbacks exist with regard to ODBC drivers and connecting to MYSQL servers.	The application SQL Server management studio for 2005 is a combination of both The Enterprise Manager and the Query Analyzer. SQL 2005 integrates very well with Visual Studio and .Net. Security can be applied in a customized way. It is flexible and can be used as per the requirements. Users and groups can be controlled

	quite extensible with the new security features.

2.3. ASP.NET 1.1 and 2.0

Working with ASP.NET 2.0 is a lot easier and more functionality is provided as well. ASP.NET 2.0 dynamically creates and instantiates a class representing the page and the compiler uses the CodeFile attribute in the @Page directive to find the file containing the code, when the page runs. The Inherits attributes defines the name of the class that will be created. The @Page directive in ASP.NET 2.0 has several new attributes that allow to control new framework features such as personalization and making themes. The Page class in ASP.NET 2.0 also has new properties, methods, and events.

The ASP.NET 2.0 provides new features of GridView and datalists etc in addition to the data grid that simplifies data binding and presentation. The Data Grid control is one of the powerful ASP.NET 1.1 controls, but it has its share of limitations. Microsoft provided the changes with ASP.NET 2.0, including the introduction of new data controls: Grid View, Data List and Details View.

The column headers are generated automatically using the data source column names, and the data is displayed in a standard table. Achieving the same results with an ASP.NET 1.1 Data Grid control would involve code for the database connection and tying to the Data Grid, so the Grid View approach is much simpler.

The ASP.NET 1.x Data Grid provides the functionality effectively but when it comes to having more functionality and simplified usage, it does not meet the requirements. The solution comes with ASP.NET 2.0's Grid View that addresses the complaints with simplified usage that often avoids backend code. You can easily connect to a data source and provide sorting, paging, editing, and more by editing the Web Form's source.

2.4. GOOGLE MAPS

Google Maps is a free web mapping service application and technology provided by Google via the Google Maps API. It offers street maps, a route planner, satellite view and an urban business locator for numerous countries around the world. Using the Google Map API, the Google map can be used on your project as desired and different features provided by Google map can be used by using the navigation controls and the map type controls etc. Google Maps allows for the creation of driving directions. Google Map can be used with three viewing modes by default: Map, Satellite and Hybrid views.

By using the Google Maps API you can embed the full Google Maps on an external web site. Start by creating an API Key, it will be bound to the web site and directory you enter when creating the key. Creating your own map interface involves adding the Google JavaScript code to your page, and then using Java script functions to add points to the map.

The map type control can be added on the map in your project in order to switch between the different modes. By default the map opens in the Map view. In order to view the Map in Hybrid or the satellite view the property type has to be specified in the setCenter method. The map.setCenter method can take three arguments specifying the point, the zoom level and the map type.

The maximum zoom level offered is normally 18, but if higher-resolution images are available, changing the z parameter, which sets the zoom level, will allow the user to access them, as in this view or this view using the parameter z=23.

Another feature of map overlays is also provided by Google map. Using the icons and map overlays an overlay window can be added that is displayed by clicking on the icon. The over lay window can be customized as per the requirements. All the work using the Google map is done in java srcipts.

2.5. WEBSITES OVERVIEW

2.5.1 Realtor.com

Realtor.com is an official site of the National Association of REALTORS. It's a massive website supporting the users with almost all types of facilities required in the real estate business. Realtors allow the users to register to their site and search the property for rentals, sale etc and avail other facilities that are provided. It also gives you an option for home financing and loans etc.

2.5.2 Coldwellbanker.Com

Coldwellbanker.com is a registered trademark licensed to Coldwell Banker Real Estate Corporation. It is Real Estate Corporation that will never sell or provide information to a third party without your prior consent. It provides the user with all the options to buy, sell, contact, learn etc and also allows to search by specifying the multiple attributes as well as through the Maps.

2.5.3 The Property Inn

In this rapidly changing world, their vision is to provide the platform for Pakistan Property agents who want to let or to take Their Property for Sale, Purchase and Rent on a desired price. They are targeting the Real Estate Business in Pakistan and initiate this web site for respective persons who are dealing in property in Pakistan. They provide services like

- Property (Sale , Purchase , Rent)
- Cars (Sale , Purchase , Rent)
- Motorcycles (Sale , Purchase , Rent)
- Mobile (Sale , Purchase)

Thepropertyinn.com introduces an online estate agents directory, with all related detail and allows any real estate agent can make his /her profile and publish

his contact information online. By the service of Internet marketing all Builders regarding Real Estate and Property in Pakistan can publish there new or Up Coming Housing Projects. This service will work as a big banner System, in which all information of specific project like (Picture, Location, Interior view, booking starting Date, Advance payment, Monthly installments etc) will be published on any available page randomly.

Unfortunately, in Pakistan, the concept of the online real estate business is not so common and there is a lack of such sites. There are some sites like escapeartist.com etc. but these sites are not up to the mark and the online real estate industry requires special attention so as to come up to the level for competing with the international industry.

Chapter 3

METHODOLOGY

In this chapter, the entire system design and architecture will be discussed so that it gives a better understanding and the features of the system. It will also show all the different modules designed independently, and how they work and coordinate with each other.

3.1. SYSTEM ARCHITECTURE

3.1.1. Problem Statement

"To provide a platform that brings the customers and real estate agents closer to one another – just a click away; to provide fast, easy and less time consuming dealings."

3.1.2. Proposed Architecture

The system is aimed to facilitate the customers to make a thorough survey before investing their money, and help the agents flourish their business on a global scale.

There are two main perspectives of the system:

- The Mall perspective
- The Shop perspective

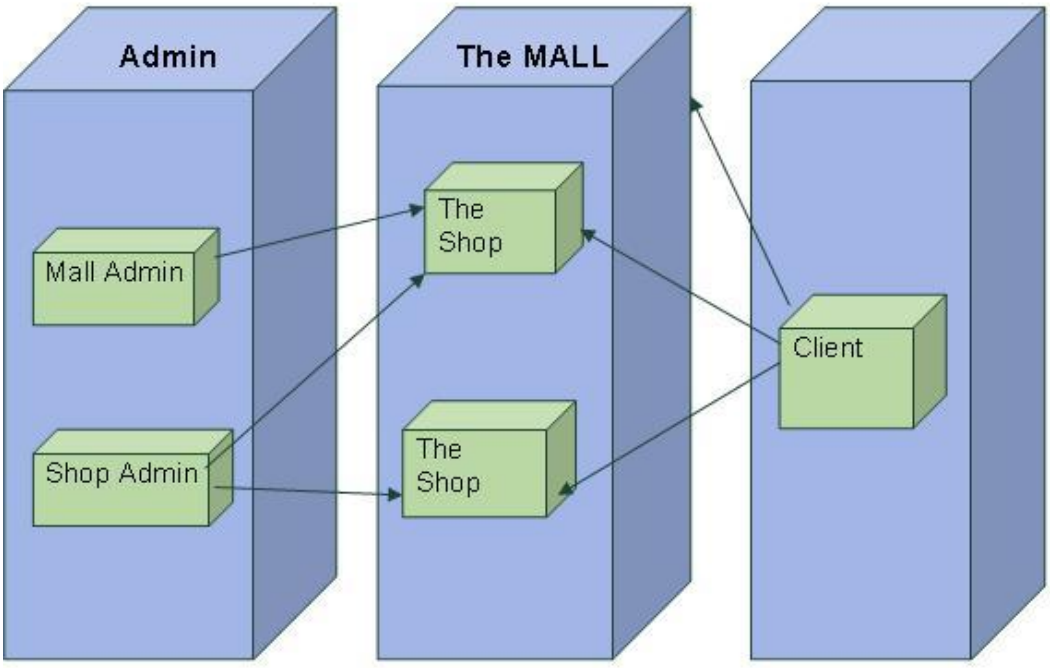

Figure 1: Proposed Architecture 1

3.2. Architecture Details

3.2.1. System Architecture

The system architecture comprises of three main actors:

- The Mall administrator
- The Shop administrator
- The User

All the users of the system contact the web server, which in turns saves the changes into the database and retrieves the information form the database.

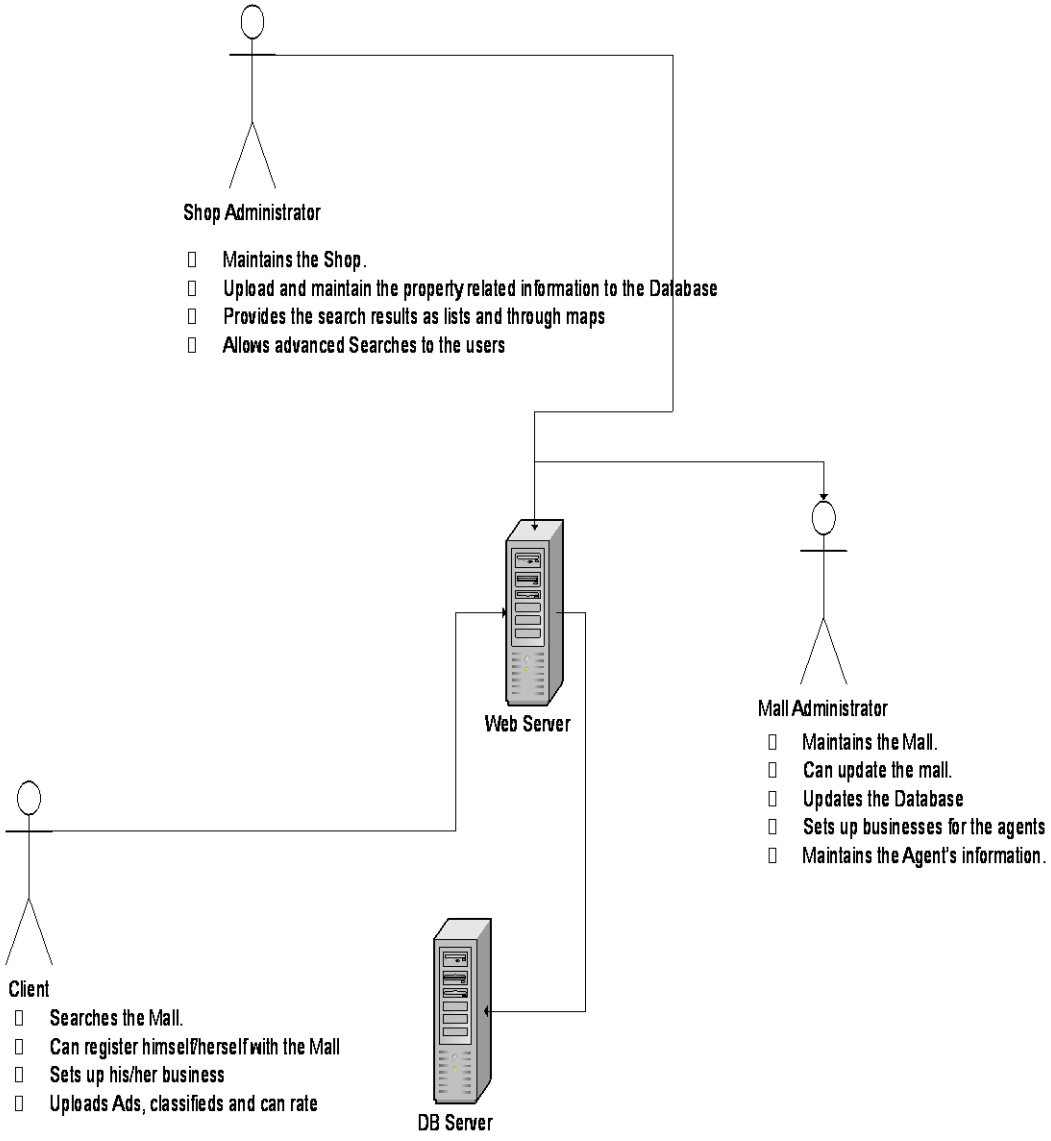

Figure 2: System Architecture 1

3.2.1.a. The Mall administrator:

The Mall sets up Agent's business by registering them to a domain and by letting them choose from the provided templates. The Mall admin has the authority to accept or reject the classifieds and the advertisements requests placed by the users.

3.2.1.b. The Shop administrator

The Shop Administrator can create his website by using the Web Wizard provided by the system and providing the information. The shop admin can upload the personal and the business information e.g. graphics, logos, photos and text, title, their contact information, e-mail address, a link to their personal website, and even a short biography or their brochures. They can also select the template form the given ones. The Mall also provides the shop admin with the Navigation Wizard which the shop admin can use to change navigational button names and the order in which their buttons are displayed.

The Shop administrator can also upload, edit and delete the property information once their website is created. The shop admin maintains the properties and the reservation requests placed by the users. The shop admin can accept or reject the reservation requests and enters the required information of sale/ rent amount etc. (in case of acceptance) to complete the transactions.

3.2.1.c. The User

- The User can conduct different searches. E.g.
- Search for any business/agent.
- Search for any property in a given area.
- Search for any property in a given price range.
- Search for any property by specifying multiple criteria.
- Search for properties through the Google Map

The user can view the search results either on the grid view in form of lists or on the Google Map. The user can also view the detailed property information and make a reservation request for the property. The user can also upload, edit or delete the advertisements and the classifieds.

3.2.1.1 Operating environment:

The Server Computer should be running on Windows XP Service Pack 2 with a RAM of at least 1 GB, along with the .NET 2005 and SQL 2005 and connected to a high speed internet.

The users' computers should have Windows XP along with the browser compatible for viewing the Google maps preferable internet explorer, and a high speed internet.

3.2.1.3 Design and implementation constraints

- Understanding the system and designing is difficult as multiple issues need to be taken into consideration as per the requirement of this diversified project.
- The system must have a RAM of at least one GB in order to ensure efficient processing.
- Should not transfer large images or information over the network as this would make the network slow.
- The Page using the Google Map API if viewed more than 500,000 pages per view, then the Google has to be contacted for additional capacity to handle the traffic.

3.2.1.3 Technology adopted

There are primarily two options for the development of the system ORE; either using the .NET Technology or J2EE. To better understand the reason for choosing the .NET tool to implement the system, following is a brief study of the two technologies and a brief comparison.

3.2.1.4 Difference between .NET and J2EE

There are some very core differences between the two technologies.

3.2.1.4.1. Interoperability and web services

The .NET platform E-Collaboration model is based on the UDDI and SOAP standards. These standards are widely supported by more than 100 companies. Microsoft, along with IBM and Ariba, are the leaders in this area.

Sun has done nothing to incorporate the UDDI standards into J2EE. Sun's idea of interoperability is that it should be based on the communication protocol called IIOP. The major flaws with IIOP are that it requires the whole world to be running J2EE or CORBA. Also it is not amendable to transport over the internet making it impossible to serve as a wide spread mechanism for E-Collaboration. Thirdly, the current specification of IIOP is inadequate to ensure interoperability even among the J2EE vendors.

3.2.1.4.2. Frame Work Support

When building a large, E-Commerce solution, one wants to build on top of a well defined and tested E Commerce framework. The use of such a framework can dramatically reduce development costs, probably by a factor of at least 10. The .NET platform includes such an E Commerce framework called Commerce Server. At this point, there is no equivalent vendor- neutral framework in the J2EE space.

3.2.1.4.3. Portability

The .NET/Windows platform can scale from 16,000 transactions per minute to over 500,000 transactions per minute. The J2EE/ Unix technology conducts around 17,000 to 110,000 range of transactions per minute, at a much higher cost per transaction.

3.2.1.4.4. Client Device Independence

The .NET framework approach is to write device independent code that interacts with the visual controls. It is the control not the programmer that is responsible for

determining what HTML to deliver, based on the capabilities of the client device. In the .NET framework, one can forget that such a thing as HTML even exists. In Java, it is the presentation tier programming that determines the ultimate HTML that will be delivered to the Client, and with .NET, it is the Visual Studio .NET control.

3.2.1.4.5. Standardized Configuration

Java configuration is mostly oriented around property files which are simple name value pairs separated by equal signs in a text file. Property parsers are included as a part of Java, and the java runtime executable (java.exe on Windows) accepts named properties on the command line that are included with System properties (which are a centralized repository for global properties).

Though XML parsers certainly exist for Java, Java components don't tend to be configured by XML files.

3.2.1.4.6. Conclusion

The above discussion is a clear indicator to the superiority of using .NET in place of J2EE. In addition to all the differences, one benefit of using the .NET technology is that it is comparatively less time consuming and more reliable to develop the project using Microsoft Visual Studio 2005 along with SQL Server 2005. The resulting application would be faster, more reliable, and easier to extend with new functionality and less expensive to maintain than the UNIX/Java Solution.

3.2.2. Working of the Web Portal

The working of the System can be illustrated from the following figure.

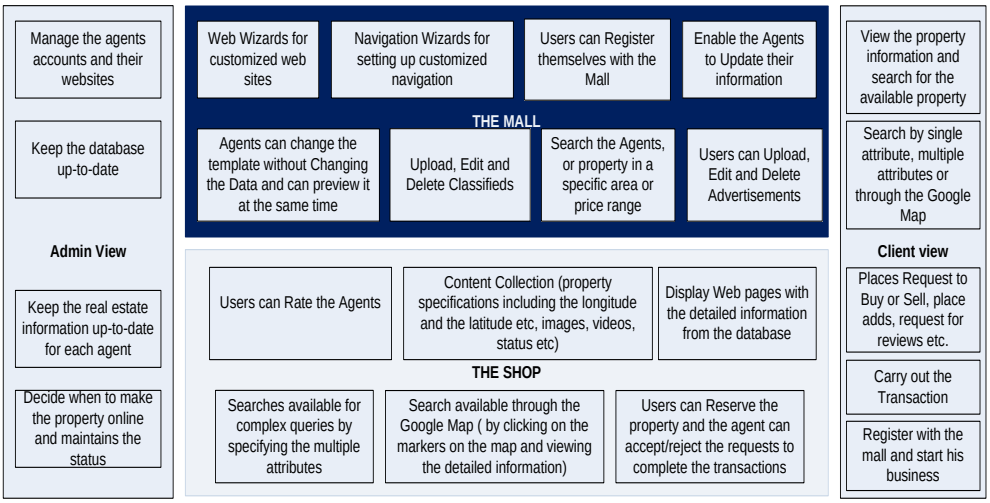

Figure 3: Block Diagram 1

3.2.3. Features and Functionalities

The project can be divided into two main perspectives:

- The Mall perspective
- The Shop perspective

The group members are:

- Hareem Hameed
- Khadija Khan

The Mall module will be handled by Hareem Hameed and the Shop module will be handled by Khadija Khan.

3.2.3.1. The MALL

The Mall perspective involves the overall management of the MALL. It will be the main entry point of the business. The Agents can register themselves to a domain, and set up their websites by customizing the templates provided to them. The users can come to the mall and search for either the agents or the property using the specialized search options. Other businesses can advertise themselves on the mall. The users can also place classifieds on the Mall.

3.2.3.2. The SHOP

The Shop perspective involves the complete maintenance of the virtual shops. After the agent has registered with the Mall and created his website, the shop admin is responsible for maintaining the different categories of the properties available with in a shop under a particular agent, and the data entry and the maintenance of the information about properties. The shop admin, who is the agent himself responsible for that shop, gives the user an opportunity to do the advance searches by specifying different criteria or by using the Google Map API. The shop admin manages the properties available, maintains their status and decides when to make them online or offline etc. Also what information to keep about the property specifications and the images of the property etc., everything is handled by the shop administrator. The details of the features available to the Shop administrator are as follows.

3.2.3.2.a. Upload Property Information

The Shop administrator can upload the property's information e.g. address, location, photo, inspection time, number of bedrooms, bathrooms, garages, lounge, drawing, dining etc, the property type etc. for the residential property and the floor area, total area, car spaces etc and the property type in case of commercial property. The shop admin can also set the visibility to display the property or not.

3.2.3.2.b. Edit Property Information

The Shop administrator can select the property that he wishes to change from the drop down list bounded with the database. On selecting the property the details of the information are retrieved from the database and are displayed to the shop admin. He can change the fields that he wants to and can save the changes into the database.

3.2.3.2.c. Delete Property Information

The Shop administrator can select the property from the dropdown list that he wishes to delete from the database. On selecting the property, the details of the information are retrieved from the database and are displayed to the shop admin. He can execute the query and delete the record from the database.

3.2.3.2.d. Reservation Handling

The Shop administrator has authority to handle the reservation requests made by the users. When the shop admin signs in, he is displayed the reservation requests made by the user and the necessary information required for the reserved properties. It is up to the shop admin whether to accept the request or not. If he accepts the request then the necessary information about the rent/sale of the property is entered by him and the record is deleted form the database and the corresponding entry is made into the rent/ sale table as the case may be. If he does not accept it, the request record stays into the reservation table and is displayed to the shop admin the next time he signs in.

Figure 4: Applied for Reservation

The user, on the other hand, has the option to conduct multiple searches. He can search for the agents, the classifieds and last but not the least the properties. The user can conduct the advanced search for the properties by specifying the requirements, or through the Google Map API. After selecting the property, the user can apply for the reservation for which the request is placed in the database. The user has the option to

cancel the reservations placed by him next time he logs in before the transaction has been finalized. The details of the features available to the **User** are as follows.

3.2.3.2.e. Agent Search

The user can search for the agents of a particular area subscribed to the Mall by specifying the region. The basic information of all the agents of that particular region is displayed to the user in the grid view in form of a list. The user can go to the agent's home page by clicking on the agent's link.

3.2.3.2.f. Google Map Based Property Search

The user can search for the properties by navigating through the Google Map. Small Icons would be displayed for all the properties of the agents' and the user can view the basic features in the over lay window that is displayed when the user clicks the icon. The user can then go to the detailed information of the property by clicking on the appropriate link.

3.2.3.2.g. Area Based Property Search

The user can search for the properties of a particular area uploaded into the database. The user has to specify the area and the resulting properties are displayed to him on execution. The user can then go to the detailed information of the property by clicking on the appropriate link.

3.2.3.2.h. Price Based Property Search

The user can also search for the properties uploaded into the database by specifing the price range. The user has to maximum and the minimum price range and the resulting properties falling in that category are displayed to him on execution. The user can then go to the detailed information of the property by clicking on the appropriate link.

3.2.3.2.i. Advanced Property Search based on Multiple Criteria

The user can conduct advanced search for the properties uploaded into the database by specifying the multiple criteria. The user has to specify all the requirements and the specified resulting properties are displayed to him on execution. The user can select to view the property on Grid view as list or as icons on the Google Map. If he selects the lists the basic description are displayed to him in the grid view, otherwise if he selects to view on map, then the icons are placed at the locations specified in the resulting properties' records. The user can view the basic features in the over lay window that is displayed when the user clicks the icon. The user can then go to the detailed information of the property by clicking on the appropriate link.

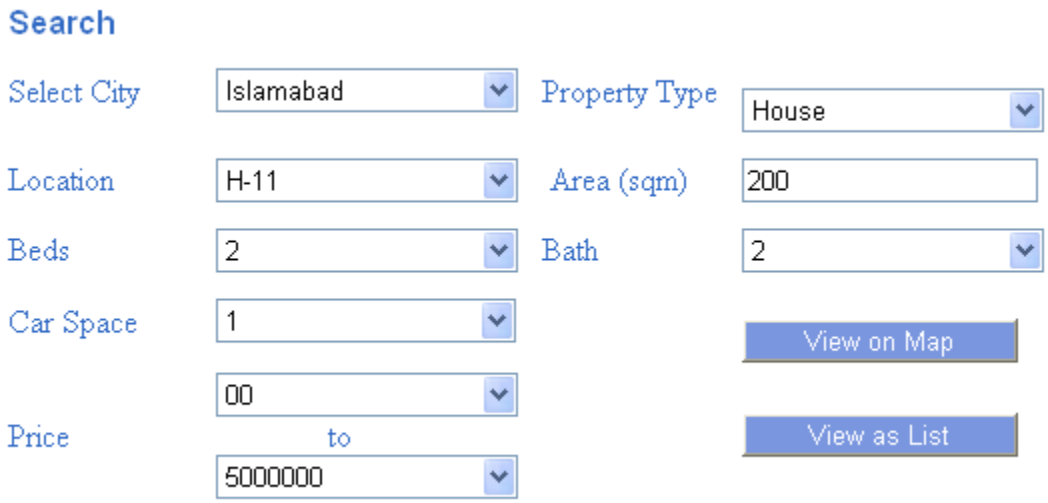

Figure 5: Search

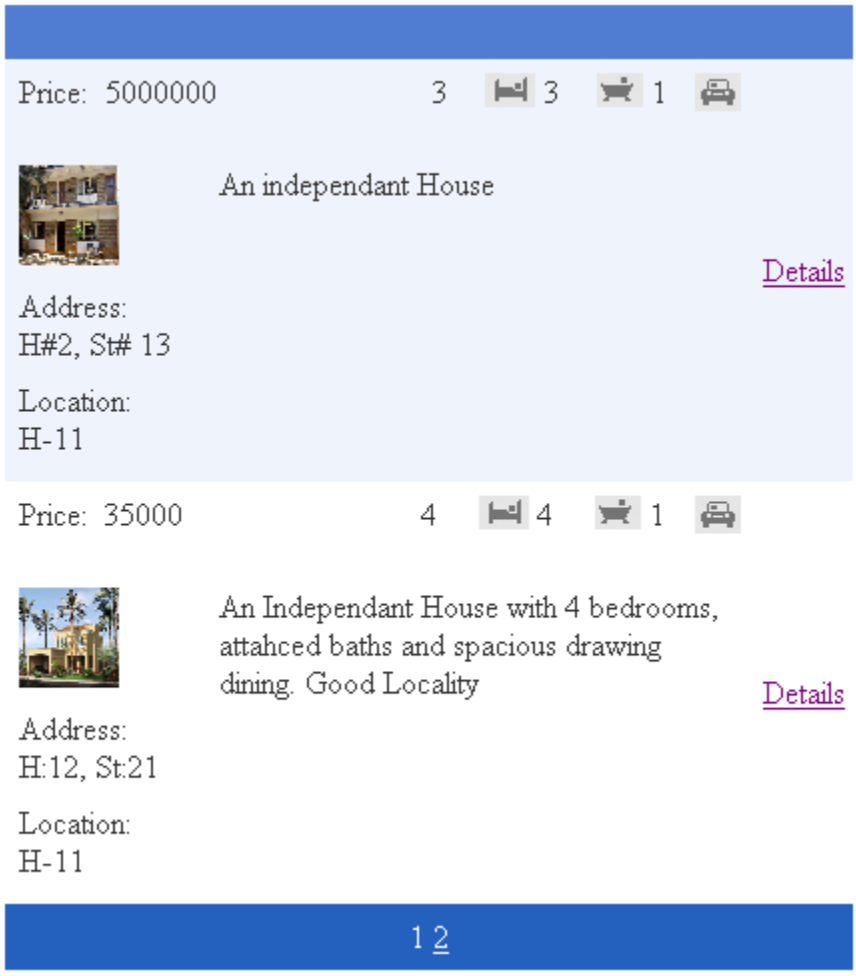

Figure 6: Search Results on list 1

Figure 7: Search Results on MAP 1

3.2.3.2.j. Maintaining Search History

The system also saves the searches conducted by the users and the user can view his previous searches when he signs in later on.

3.2.3.2.k. Reservation Request Handling

The signed in user, after selecting the properties and viewing the detailed information can apply for the reservation of the property either for rent or sale. The system saves the reservation request into the database only if the same user has not already reserved the same property or the user has not already made more than five property reservations.

Price:	5000000
Beds:	3
Baths:	3
Contract Type	Sale
Status:	Available
Inspection Time:	

H:51, St:39
H-11
View on Map

An independant house, prime Locality

Apply for: Label
Rent
Sale
Apply

Details

Property Type	Farm House
Total Area	500
Covered Area	250
Rooms	3
Bathrooms	3
Kitchen	1

Figure 8: Detail View of Property 1

3.2.3.2.l. Maintaining Reservation History

The system keeps a record of the reservations, and allows the shop admin to accept or reject the request. If the shop admin accepts in then the transaction is finalized and the record is deleted from the reservation table and the corresponding entry is made into the Rent/Sale table. If he does not accept it then the next time the agent logs in, he is again displayed the request. Similarly in this case the next time the user signs in, he is displayed the reservations that he has made with an option to cancel the reservation.

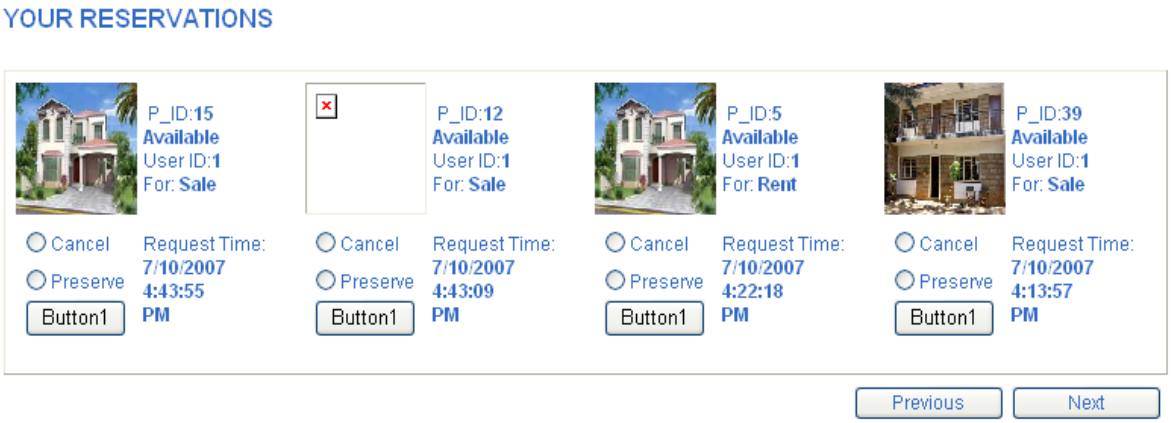

Figure 9: Reservations 1

There are different categories that the shop deals in are maintained. These can be any of the following:

- Residential area
  - Rent
  - Sale
- Commercial area
  - Rent
  - Sale

With in the Residential and the Commercial areas of businesses, further different options are available as given below:

- Residential
  - Independent houses
  - Apartments
  - Shared Apartments
  - Farmhouses
  - Land

- Commercial
  - Office area
  - Shops

- Warehouse
- Land

The residential and the commercial properties are two different categories and have completely different requirement, therefore all the functionality has been customized for the two different categories and the user can benefit from both of them.

3.3. USECASE MODEL ANALYSIS

3.3.1. Use Case Model Diagram- Over All System Overview

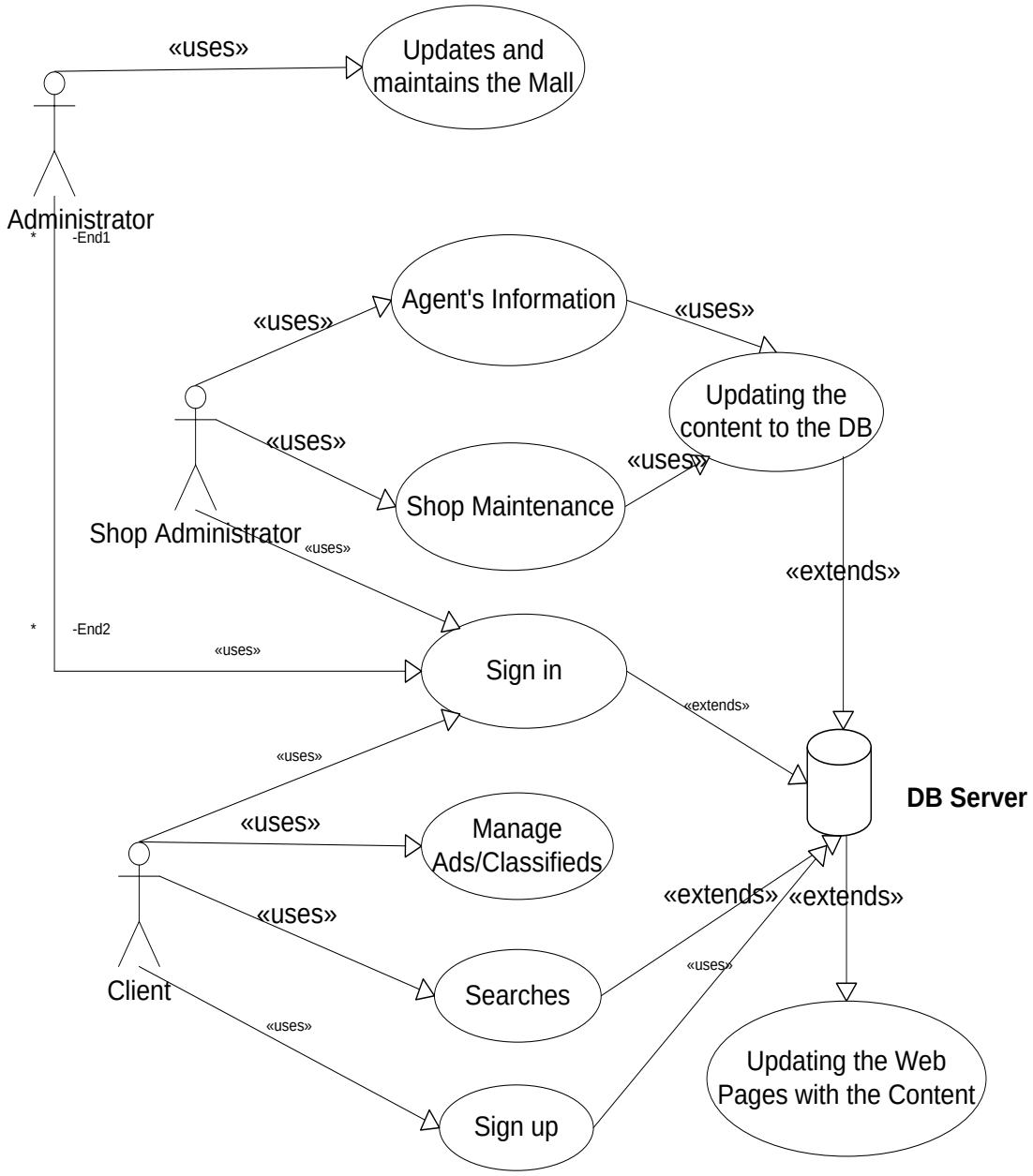

Figure 10: Overall System View 1

3.3.1.1. Use Case Model Detail

The details of all the use cases are shown in the tables below

3.3.1.1.1. Use Case: Sign In

Table 1: Use Case for Sign In 1

Use Case Name	**Sign in**
Participating User	Mall Administrator, Shop Admin, User
Description	User must login to access available services
Flow of Events	• Provide login and password • Authentication • If authenticated, access available Services
Entry Condition	Visits Web portal
Exit Condition	Authenticated

3.3.1.1.2. Use Case: Sign Up

Table 2: Use Case for Sign Up 1

Use Case Name	**Sign up**
Participating User	User
Description	User fills the registration form, gets registered with the system and has a login and password
Flow of Events	• Fills Registration form available on the portal • Assigned login and password • Registered with the system
Entry Condition	Visits the Web portal

Exit Condition	Get registered

3.3.1.1.3. Use Case: Updates and Maintains the Mall

Table 3: Use Case for Updates and Main 1

Use Case Name	**Updates and Maintains the Mall**
Participating User	Mall Administrator
Description	The Mall Administrator would accept or reject the requests placed by the users, for uploading the Advertisements / Classifieds.
Flow of Events	• Sign in. • All the pending requests are displayed • Accept /Reject the requests • Sign out
Entry Condition	Mall Maintenance
Exit Condition	Save all the changes and sign out

3.3.1.1.4. Use Case: Agent's Information

Table 4: Use Case for Agent's Informat 1

Use Case Name	**Agent's Information**
Participating User	Agent
Description	The system gets the information provided by the agent
Flow of Events	• Agent sign up • Enter the required information • The changes are saved

Entry Condition	Sign up
Exit Condition	Save the information and exit

3.3.1.1.5. Use Case: Manage Ads/Classifieds

Table 5: Use Case for Manage Ads/ Classifieds

Use Case Name	**Manage Ads/Classifieds**
Participating User	Client
Description	The Clients can upload, Edit and Delete the Advertisements and Classifieds
Flow of Events	• If new user, get registration • Login • Upload/Edit/Delete/View advertisements or classifieds. • Save the changes
Entry Condition	Manage Advertisement/Classified
Exit Condition	Save and exit.

3.3.1.1.6. Use Case: Shop Maintenance

Table 6: Use Case for Shop Maintenance

Use Case Name	**Shop Maintenance**
Participating User	Shop Administrator
Description	The shop Administrator (Agent) Add, Edit or delete information related to property and accepts or rejects the reservation requests.
Flow of Events	• Sign in • All pending requests for property reservation are displayed

	• Accept/Reject the requests • Add/Edit/Delete the property by entering necessary information. • Sign out
Entry Condition	Sign in
Exit Condition	Save the information/changes made and exit

3.3.1.1.7. Use Case: Searches

Table 7: Use Case for Searches

Use Case Name	**Searches**
Participating User	Client
Description	The Client can search the Property/ Agent
Flow of Events	• Search for Property/ Agent • Specify the criteria • Results displayed and the search history maintained
Entry Condition	Search
Exit Condition	Search results displayed

3.3.1.1.8. Use Case: Updating the Content to DB

Table 8: Use Case for Updating the content to DB

Use Case Name	**Updating the content to the DB**
Participating User	The Application
Description	After the Agent enters the information the data is updated in the database.

Flow of Events	• Agent Sign in • Add/Edit/Delete the information • Database is updated
Entry Condition	The Agent Adding/Editing or Deleting any Information
Exit Condition	Updating the Database

3.3.1.1.9. Use Case: Updating the Web Pages with the content

Table 9: Use Case for Updating the Web Pages with the content

Use Case Name	**Updating the Web Pages with the content**
Participating User	The Application
Description	After changes are made by the Agent the database automatically updates the web pages of the Agents
Flow of Events	• Agent Sign in • Edits the content of the web pages • Web pages are automatically updated instantaneously
Entry Condition	Agent Editing the Web content
Exit Condition	Saving and reflecting the changes to pages automatically

3.3.2. Use Case Model Diagram- The CLIENT VIEW

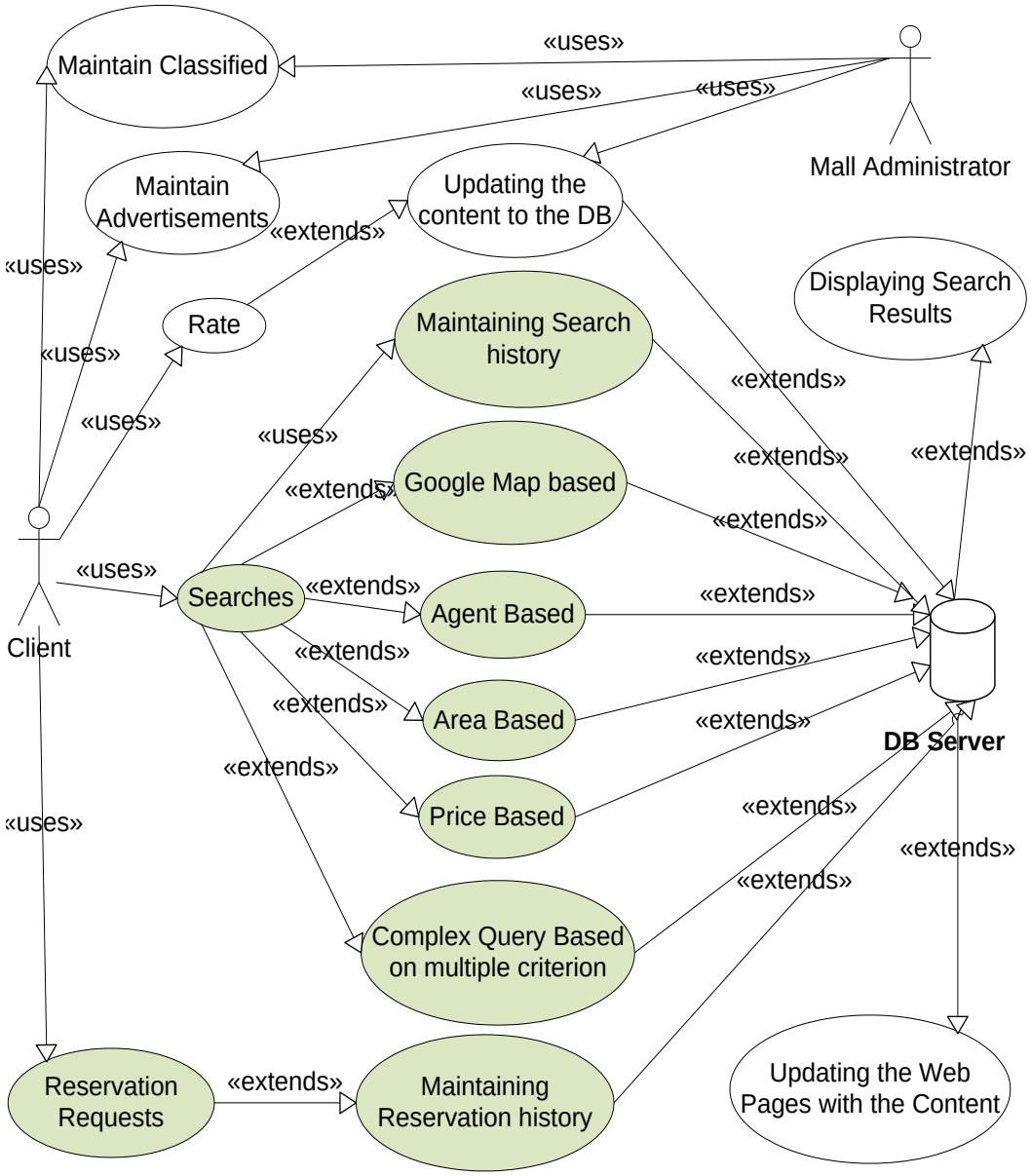

Figure 11: The Client View

3.3.2.1. Use Case Model Detail

The details of all the use cases are shown in the tables below

3.3.2.1.1. Use Case: Search

Table 10: Use Case for Search

Use Case Name	**Search**
Participating User	User
Description	The User can conduct the searches
Flow of Events	• User specifies criteria • If signed in, save search query • Execute the query • Display the results
Entry Condition	Search property
Exit Condition	Display results

3.3.2.1.2. Use Case: Google MAP Based Search

Table 11: Use Case for Google MAP based Search

Use Case Name	**Google Map Based Search**
Participating User	User
Description	The User can search the property through the Google Map
Flow of Events	• The application loads all the properties on the Map • The user can navigate through the map • View the basic features on the map overlays by clicking on the Map
Entry Condition	Search property by Map

Exit Condition	Display results
Use Case Name	**Agent Based Search**
Participating User	User
Description	The User can search for Agents of a particular region by specifying the area
Flow of Events	• User specifies criteria • If signed in, save search query • Execute the query Display the results
Entry Condition	Search Agents of a particular Area
Exit Condition	Display results

3.3.2.1.3 Use Case: Area Based Search

Table 12: Use Case for Area based Search

Use Case Name	**Area Based Search**
Participating User	User
Description	The User can search the properties in a particular region by specifying the area
Flow of Events	• User specifies criteria • If signed in, save search query • Execute the query • Display the results
Entry Condition	Search Properties of the particular Area
Exit Condition	Display Results

3.3.2.1.4 Use Case: Price Based Search

Table 13: Use Case for Price Based Search

Use Case Name	**Price Based Search**
Participating User	User
Description	The User can search the property by Price
Flow of Events	• User specifies criteria • If signed in, save search query • Execute the query Display the results
Entry Condition	Search property by price
Exit Condition	Display results

3.3.2.1.5 Use Case: Complex Query Search based on Multiple criteria

Table 14: Use Case for Complex Query Search based on multiple criteria

Use Case Name	**Complex Query Search based on multiple criteria**
Participating User	User
Description	The User can perform a complex search on multiple criteria
Flow of Events	• User specifies criteria • If signed in, save search query • Execute the query Display the results
Entry Condition	Search property by multiple criteria
Exit Condition	Display results

3.3.2.1.6 Use Case: Display Results

Table 15: Use Case for Displaying Results

Use Case Name	**Displaying Results**
Participating User	Application
Description	The application displays the results of the search queries either on the grid view or the Google Map as selected by the user
Flow of Events	• User conducts the searches • Selects to view results on the Map or the Grid view • The application executes the query • Displays the results accordingly
Entry Condition	Search
Exit Condition	Display results

3.3.2.1.7 Use Case: Maintaining Search History

Table 16: Use Case for Maintaining Search History

Use Case Name	**Maintaining Search History**
Participating User	Application
Description	The application maintains the history of the searches of the properties, agents and classifieds conducted by the logged in users
Flow of Events	• User conducts the searches • Selects to view results • The application executes the query • Saves the search query into the

	database • Displays the searches conducted to the user when he logs in later on
Entry Condition	User signs in
Exit Condition	User signs out

3.3.2.1.8 Use Case: Maintaining Reservation History

Table 17: Use Case for Maintaining Reservation History

Use Case Name	**Maintaining Reservation History**
Participating User	Application
Description	The application maintains the history of the reservation requests of the properties for sale or rent placed by the logged in users
Flow of Events	• User applies for the reservation • The application executes the query • Saves the reservation request into the database • Displays the pending requests to the user placed by the user and the pending requests to the agent from all the users when the user or the agent logs in later on respectively
Entry Condition	Make reservations
Exit Condition	User signs out

3.3.2.1.9 Use Case: Reservation Requests

Table 18: Use Case for Reservation Requests

Use Case Name	**Reservation Requests**
Participating User	User
Description	The logged in users can apply for reservations of the properties for rent or sale when viewing the details of the properties.
Flow of Events	• User view the detailed page of the property • Applies for the reservation • The application executes the query • Saves the reservation request into the database if the same user has not already reserved that or if the user has not already made five reservations
Entry Condition	Make reservations
Exit Condition	Request placed to the database

3.3.3. Use Case Model Diagram- The SHOP ADMIN VIEW

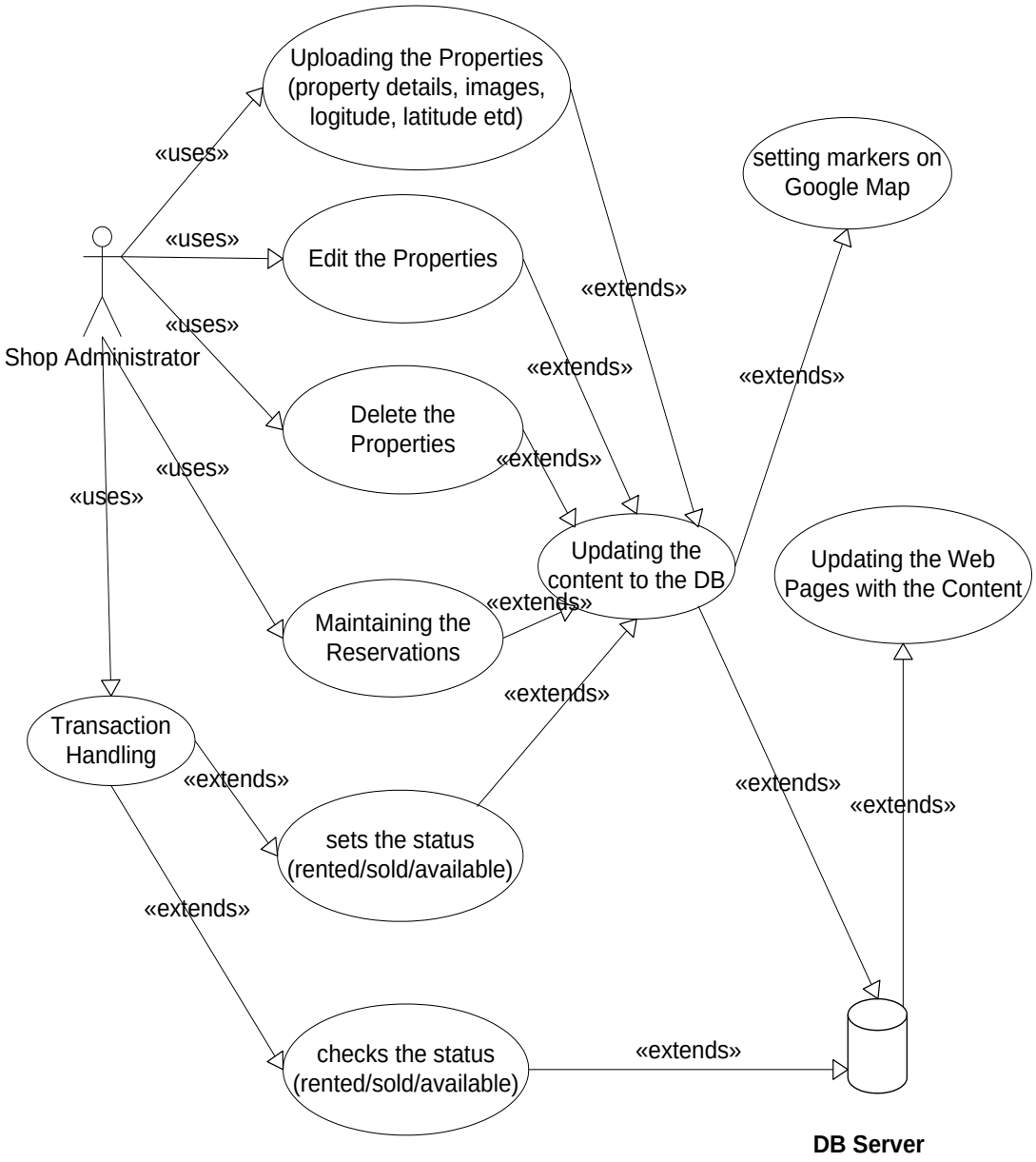

Figure 12: The Shop Admin View

3.3.3.1. Use Case Model Detail

The details of all the use cases are shown in the tables below

3.3.3.1.1 Use Case: Uploading the Properties

Table 19: Use Case for Uploading the Properties

Use Case Name	**Uploading the Properties**
Participating User	Shop Administrator
Description	The agent(shop administrator) can upload the information of the properties
Flow of Events	• Agent signs in • Fills in the information of the new property into the upload form • Uploads the information of the property • Saves into the database
Entry Condition	Sign in
Exit Condition	Saved into the database

3.3.3.1.2 Use Case: Edit the Properties

Table 20: Use Case for Edit the Properties

Use Case Name	**Edit the Properties**
Participating User	Shop Administrator
Description	The agent(shop administrator) can edit the information of the selected property
Flow of Events	• Agent signs in • Selects the information that he wants to edit • Edits the information of the property • Saves into the database
Entry Condition	Sign in

Exit Condition	Saved into the database

3.3.3.1.3 Use Case: Delete the Property

Table 21: Use Case for Delete the Property

Use Case Name	**Delete the properties**
Participating User	Shop Administrator
Description	The agent can delete the selected property from the database
Flow of Events	• Agent signs in • Select the property that he wants to delete • Executes the query • Saves the changes into the database
Entry Condition	Sign in
Exit Condition	Saved into the database

3.3.3.1.4 Use Case: Maintaining the Reservations

Table 22: Use Case for Maintaining the Reservations

Use Case Name	**Maintaining the Reservations**
Participating User	Shop Administrator
Description	The shop administrator accepts or rejects the pending reservation requests made by the users
Flow of Events	• The shop administrator signs in • View the reservation requests made by the users

	• Accepts or rejects the reservation requests
Entry Condition	Sign in
Exit Condition	Accepts or rejects the requests

3.3.3.1.5 Use Case: Transaction Handling

Table 23: Use Case for Transaction Handling

Use Case Name	**Transaction Handling**
Participating User	Shop Administrator
Description	The shop administrator is displayed the properties requested for reservation. The shop administrator accepts and rejects them after checking the status and availability etc.
Flow of Events	• Shop administrator signs in • Checks the status and request time of the request • Fills in the amount and the details required to put the property on rent or sale as the case may be • Executes the query
Entry Condition	Sign in
Exit Condition	Query Execution

3.3.3.1.6 Use Case: Checks the Status

Table 24: Use Case for Checks the Status

Use Case Name	**Checks the Status** (rented/sold/Available)
Participating User	The Application
Description	The application checks the status of the property from the database and displays it to the shop administrator
Flow of Events	• Shop administrator signs in • Application checks the status of the property from the database • Displays the status of the property • The shop administrator views the status and request time of the request • Accepts or Rejects the request
Entry Condition	Sign in
Exit Condition	Accepts or Rejects the request

3.3.3.1.7 Use Case: Sets the Status

Use Case Name	**Sets the Status** (rented/sold/Available)

Table 25: Use Case for Sets the Status 1

Participating User	The Application
Description	The application sets the status of the property into the database
Flow of Events	• Shop administrator signs in • He accepts a request and carries out the transaction • The application changes the status into the database
Entry Condition	Shop administrator signs in
Exit Condition	Executes the query

3.3.3.1.9 Use Case: Updating the Web Pages with the Content

Table 26: Use Case for Sets the Status 1

Use Case Name	**Updating the Web Pages with the content**
Participating User	The Application
Description	After the Agent makes the changes into the database, the changes are reflected into the web pages of the Agents
Flow of Events	• Agent Sign in • Edits the information of the web pages • Saves the changes into the database • The changes are reflected into the page on refreshing the page

Entry Condition	Agent Editing the Web content
Exit Condition	Saving and reflecting the changes to pages automatically

3.3.3.1.9 Use Case: Updating the Content to DB

Table 27: Use Case for Updating the Content to the DB

Use Case Name	**Updating the content to the DB**
Participating User	The Application
Description	After the necessary changes have been made the information is updated in the database
Flow of Events	• Shop Administrator Signs in • Makes Changes • Database is updated
Entry Condition	The Shop Admin making necessary changes
Exit Condition	The Database is updated

3.3.3.1.10 Use Case: Setting Markers on Google Map

Table 28: Use Case for Setting Markers on Google Map

Use Case Name	**Setting Markers on Google Map**
Participating User	The User

Description	The user requests for the property results to be shown on the Map and the application loads all the icons for the resulting properties at the specified location on the Google map
Flow of Events	• User searches for properties • Requests for viewing on Map • The application displays the icons on the Map for all the resulting properties
Entry Condition	User Selects to view results on Map
Exit Condition	Results displayed on Map

Table 3-31: Use Case for Setting Markers on Google Map

3.3.3.1.11 Use Case: Marker Overlays on Google MAP

Table 29: 3.3.3.1.11 Use Case: Marker Overlays on Google MAP

Use Case Name	**Marker Overlays on Google Map**
Participating User	The User
Description	The user can click on the specific icon on the Map to view the overlays describing the main features of the property and a link to the detailed information page
Flow of Events	• User clicks on the icon for the particular property • An overlay is displayed on the

	Map displaying the basic features of the property The user can view and click on the view details link to go to the detailed page or he can close the overlay
Entry Condition	User click on the Icon on Map to view the overlay
Exit Condition	User clicks on the view detail link or closes the page

3.4. DATA FLOW DIAGRAM

3.4.1. DFD-Level 0

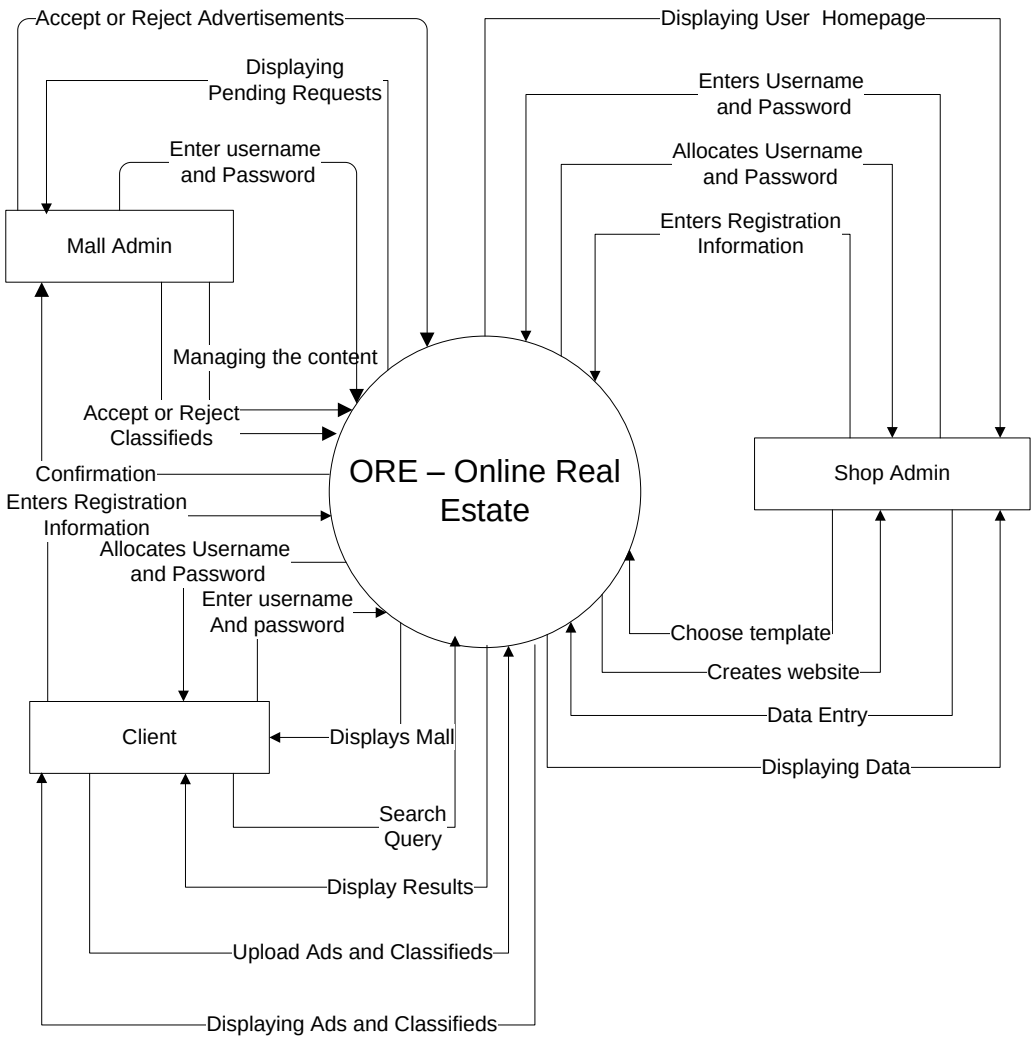

Figure 13: DFD level 0

3.4.2. DFD-Level 1(The Client View)

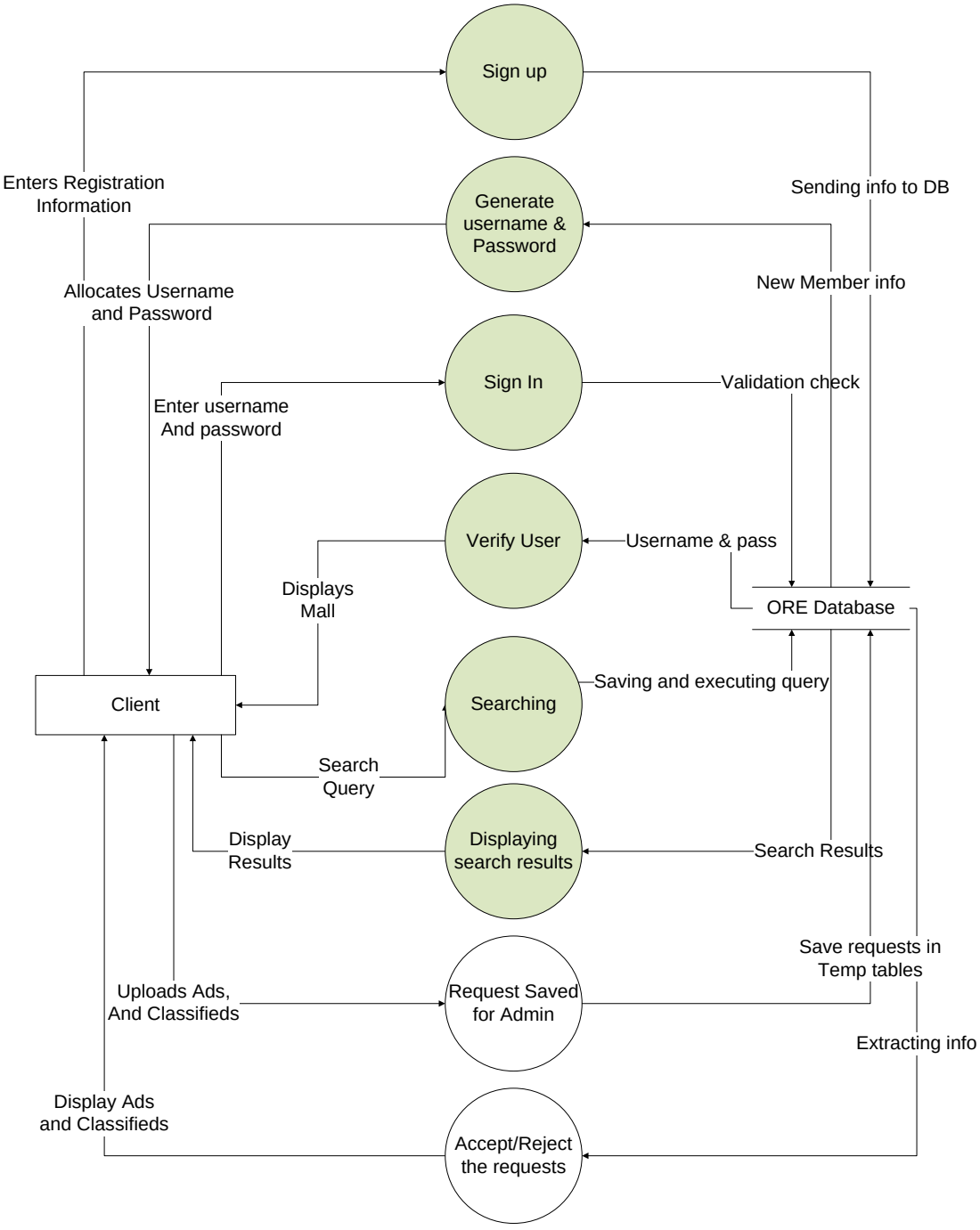

Figure 14: DFD 1- Client View

3.4.3. DFD-Level 1(The Shop Admin View)

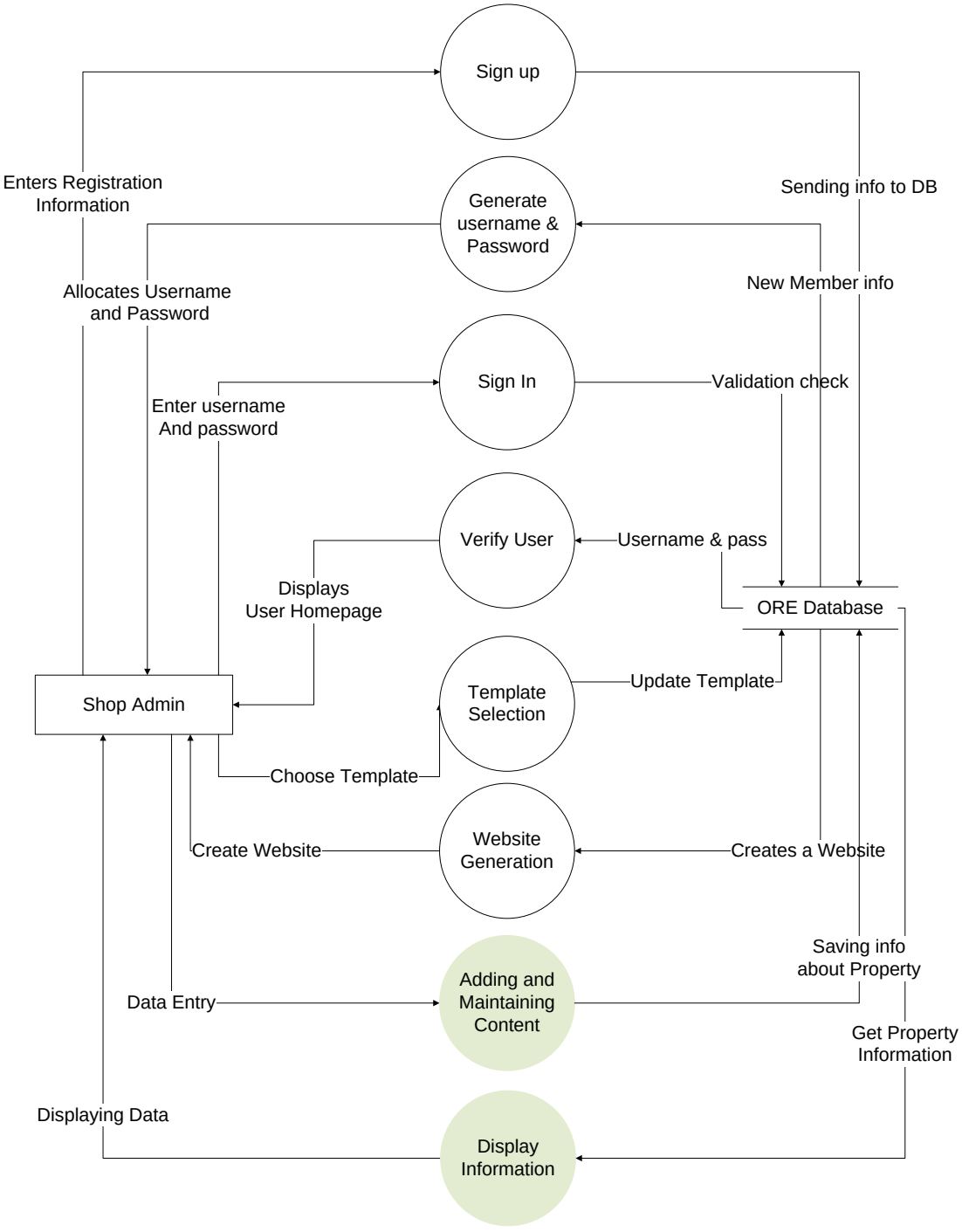

Figure 15: DFD - 1 Shop Admin View

3.4.4. DFD-Level 1(The Mall Admin View)

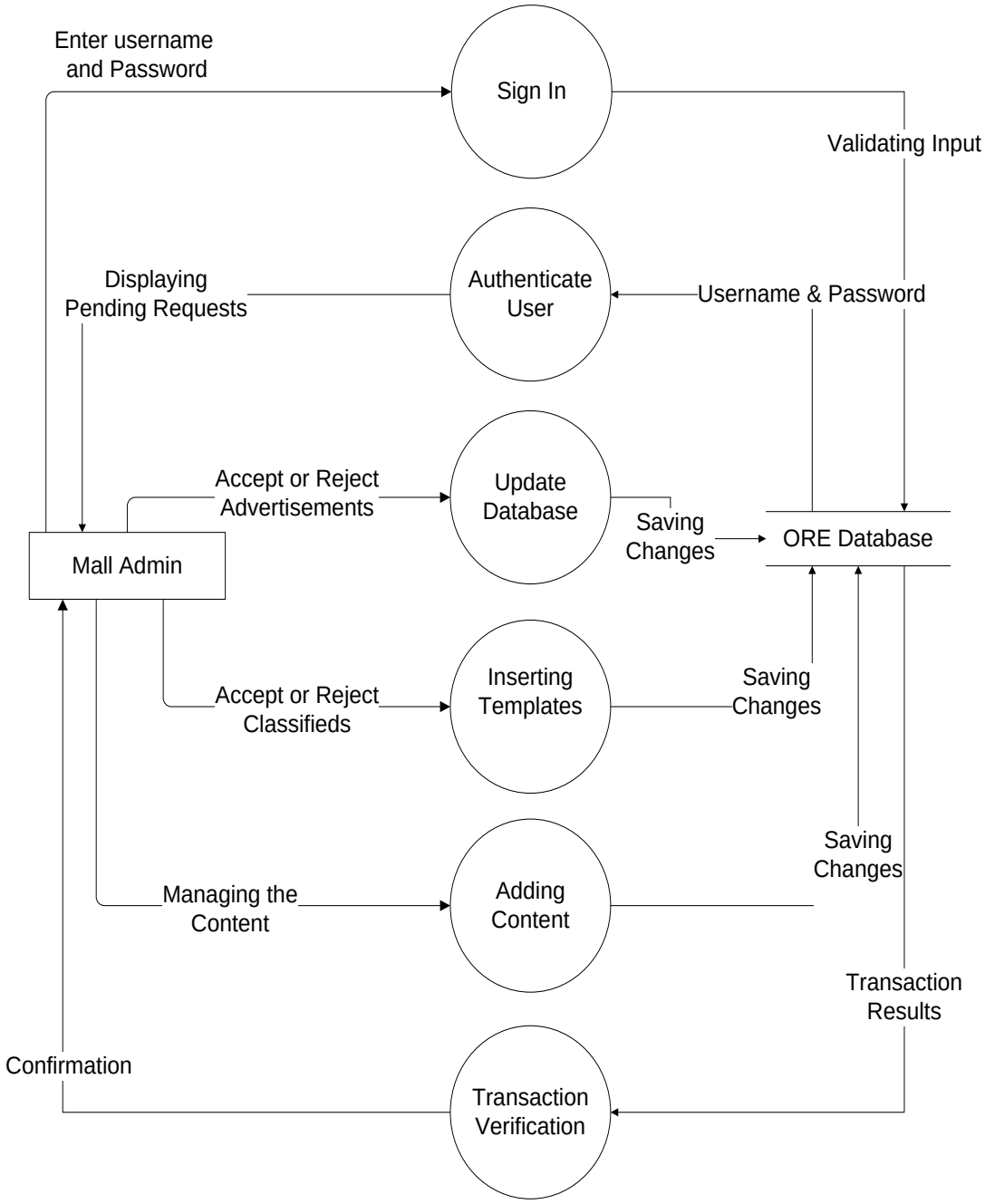

Figure 16: DFD - 1 Mall Admin View

3.5. ENTITY RELATIONSHIP DIAGRAM

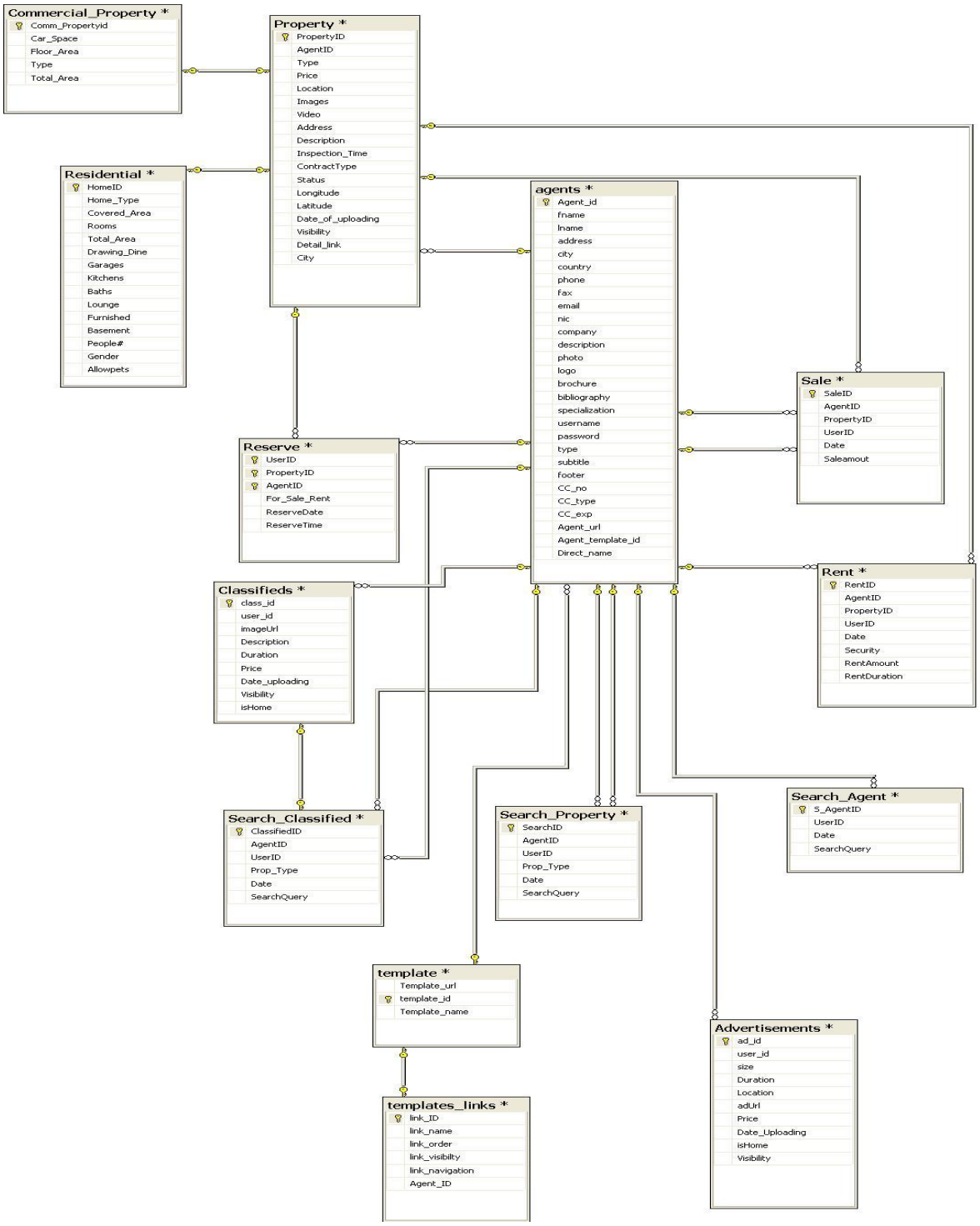

Figure 17: ERD

Chapter 4

TESTING AND RESULTS

The Software testing was carried out thoroughly and the test results are discussed in this chapter.

4.1. UNIT TESTING

Whenever a module was completed, either small or large, it was first independently tested. Once the module passed independent testing, only then it was incorporated into the main system.

This shows that an incremental life cycle was followed, creating independent modules, and then enhancing the existing system by merging the tested module with the main system

4.1.1. Sign In

Table 30: Sign In Unit Testing

Component Name	Sign In
Description	This module authenticates the Users of the system (the Mall Administrator, the shop administrator, and the user) and allows them to sign in to the system
Methodology	The Mall administrator will connect to our Web portal by specifying the User name and the password. The Shop administrator can log in to his website by specifying his username and password, and similarly the user can sign in to the system by specifying his

	username and password. The system will check the username and passwords from the database and verifies the users by matching the data.
Results	User Authenticated if the login and the password is entered Otherwise Not Authenticated.
Status	OK
Performance	Efficient but requires the network and the database to be connected.

4.1.2. Property Information Handling

Table 31: Property Information Handling Unit Testing

Component Name	Property Information Handling
Description	This module allows the shop administrator to upload, edit and delete the information related to the property.
Methodology	The Shop administrator can upload new property, edit the property information of the selected property and can delete the selected property from the database.
Results	The Shop administrator upload, edits and deletes the property information.
Status	OK
Performance	Efficient but requires the network and the database to be available

4.1.3. Conduct Searches and View Results on Grid

Table 32: Conduct Searches and view results on Grid View Unit Testing

Component Name	Conduct Searches and view results on Grid View
Description	The user will specify the criteria for his search which will give the appropriate results to the user in the Grid View.
Methodology	User can conduct the searches for the properties, agents and classifieds by specifying different criteria. The user can conduct the searches without signing in, but in that case he cannot view the detailed pages and thereby cannot reserve properties and neither his searches would be saved. If the user has signed in, then he can make reservations and also his searches would be saved into the database. In either case, the search query goes to the database and the results are retrieved and are displayed to the user in the grid view in form of lists.
Results	User view the basic information of the resulting search in the grid view in form of a list
Status	OK
Performance	Efficient but requires the network and the database to be available

4.1.4. Conduct Searches and View Results on Map

Table 33: Conduct Searches and view results on MAP View Unit Testing

Component Name	Conduct Searches and view results on Map
Description	The user will specify the criteria for his search which will give the appropriate results to the user in the form of icons on the Map.
Methodology	User can conduct the searches for the properties by specifying different criteria. The user can conduct the searches without signing in, but in that case he cannot view the detailed pages and thereby cannot reserve properties and neither his searches would be saved. If the user has signed in, then he can make reservations and also his searches would be saved into the database. In either case, the search query goes to the database and the results are retrieved and are displayed to the user in the form of icons on the Map. The user can click on the icon and can view the basic features of the property in a small over lay window.
Results	User views the icons of the resulting search on the map and can view the basic features of the property by clicking

	on the icon.
Status	OK
Performance	Efficient but requires the network and the database to be available

4.1.5. Reservation Handling

Table 34: Reservation Handling Unit Testing

Component Name	Reservation Handling
Description	This module allows the user to place reservation requests for the properties, and allows the agents to accept or reject them thereby completing the transaction.
Methodology	The user can place the reservation requests only if he has not already placed more than five requests. The agent can view the requests placed by the users and can accept or reject them. If the agent rejects the request, it stays in the reservation table and if he accepts it, then the complete rental/sale amount, and necessary details are entered and reservation request is deleted from the database, and the corresponding entry is made in the rent or sale table.
Results	User places the requests and the agent can accept them by specifying the details of the transaction and the corresponding record is entered into the rent/ sale table
Status	OK

Performance	Efficient but requires the network and the database to be available

4.1.6. Sign Out

Table 35: Sign Out Unit Testing

Component Name	Sign out
Description	This module allows users to sign out. The Mall administrator signs out from the admin view of the Mall, the Shop admin signs out from the admin view of the shop, and the user signs out and comes to the Mall.
Methodology	Testing was performed by signing in to the system form the different views and then signing out.
Results	The users can gracefully sign out
Status	OK
Performance	Performance is maximized if users gracefully sign out.

4.2.SYSTEM TESTING

As the modules were integrated into the system, the overall system tested to make sure that the new module has been correctly integrated. Once all the modules were created, and the project completed, the system was tested as a whole, to make sure that it performs as expected, and as required.

The server runs as required along with the .NET 2005, SQL 2005 and a high speed internet connection. Accepts the requests from the users of the system and sends the response in time.

The system runs smoothly when executed.

The Mall appears to all the users of the system when they connect to the Mall.

The Mall admin signs in to the Mall admin view by giving the username and the password, the system checks the username and password form the database. If verified the user is authenticated other wise an alert message is displayed and the screen re appears.

The Mall admin is authenticated and signed in. He can handle the classifieds and the advertisements as desired.

The Mall admin signs out of the Mall admin view and comes to the Mall.

The Shop Admin signs up at the Mall by following the process of the web wizard. The system takes the information from the shop admin and creates a website for the shop admin.

The shop admin signs in to his web site by giving in the user name and the password. The user name and password are verified and the type of the user is checked from the database and the user is referred to the appropriate page.

The user signs in to the Mall for placing the ads, classifieds and for viewing the detailed information and reserving the properties, by giving in the user name and the password. The user name and password are verified and the type of the user is checked from the database and the user is referred to the appropriate page. The searches of the user are also saved if the user is signed in.

The user can sign out of the system when they desire.

The system gracefully signs out the users.

Chapter 5

CONCLUSION

The Real estate industry is one of the most important industries form the investment point of view which can not be neglected. The issues faced by the manual handling of this industry, protects us from exploiting the real potential involved in this industry. Pakistan, being a developing country can certainly not ignore this industry and needs to make it efficient and productive so that the country's economic condition can be improved and the general public can also get benefited.

Therefore Online Real Estate has been implemented for facilitating the real estate industry and to explore the potentials offered by this industry. Most of the aspects required by the users regarding the property related issues have been provided by ORE. The Property dealers can very easily build up their websites and upload the properties and maintains them minimizing the effort and costs involved otherwise. The system aims to provide user the facility to conduct online searches and select the desired properties, saving their time to a great extent.

Being first of its kind, the system provides a complete Web Portal where both the property dealers and the normal users can get facilitated. The system provides the Web wizard to make up their websites, and allows the user to view the properties on Map and view the property images which helps them to select the property of their own choice. It is not solely focused on the local market but has worked to the advantage of the various constraints faced by the manual real estate industry. It has been built up on the discrepancies in the current market needs.

The intent is the result of a paperless, time savvy environment so that managing and maintaining the records could be handled and the time and hassle can be saved and the real potential offered by the industry can be exploited.

IT projects have poor track records. Each year a considerable number of projects are abandoned proving unsuccessful. CHOAS a Standish Group cited that only 16.2 % of IT projects are successful. In spite of the terrible record however, the world as a whole spends nearly $10 trillion of its $40.7 trillion gross product on projects of all kinds.

Real Estate industry is a major source of wealth creation for investors, contributing significantly to the socio-economic well being of all the citizens, and is surely to increase in the coming years keeping in mind the increase in population and the trends of the citizens. The industry however, faces severe issues of data maintenance, office maintenance, time management, hassle of surveying the location both of the dealers and the customers and above all, lack of customer satisfaction. The Automation of the real estate industry can solve all these problems in an effective manner by saving the time and the efforts of both the clients and the property dealers and providing everything online at one point and at all the times.

ORE (Online Real Estate) developed by NIIT students, is a platform that brings the customers and real estate agents closer to one another – just a click away; to provide fast, easy and less time consuming dealings.

The system is aimed to facilitate the customers to make a thorough survey before investing their money, and help the agents flourish their business on a global scale. The end product of the project is to provide a Mall where different real estate agents can register and develop their website by using the web wizard provided by the Mall. Each individual agent can maintain their own virtual shops and provide different categories of the properties available. The client can search for the desired requirements and make reservations either by specifying the requirements or through the Google map API.

Chapter 6

FUTURE RECOMMENDATIONS

Version 1 of this module contains the basic functionality, however in future following things could be incorporated to make it more appealing

- Right now we offer free services but more features for the Agents could be introduced, e.g. creating their own custom pages. The users would be charged according to the number of services provided by each package
- Agents can personalize their website and their business with their own domain name. They can easily set-up their real estate site to come up for any available domain name (e.g. www.agentDomain.MallName.com).
- The websites that are created can be made highly optimized for the search engines. When Agents create their websites, it would automatically generate with the proper meta-tags for their individual selling area. The Agents can easily adjust their meta-tags in their control panel using the custom website meta-wizard.
- Reviews and consultancy would be provided by the registered people to the registered ones who need them. It would be like a forum where people can come and discuss their problems.
- The Agents could also upload the video images of the Property
- Calculators would also be provided to the people to help them make their decisions effectively
- The Mall can also provide guarantees and protection to the clients. It could provide the authentication of the dealers and the customers and also ensures that the transaction has taken place.
- Agents would be able to Update, Edit or Delete the property through the MAP.
- Credit card Module could also be implemented

- Automatically generated emails to users and Agents would make the system more efficient

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