The Asset Consultancy

By

Rushin Naik (120170107046)

Janki Kansara (120170107024)

DEPARTMENT OF COMPUTER ENGINEERING

VISHWAKARMA GOVERNMENT ENGINEERING COLLEGE CHANDKHEDA

The Asset Consultancy

Submitted in partial fulfillment of the requirements for the degree of Bachelor of

Engineering in Computer Engineering

By

Rushin Naik (120170107046)

Janki Kansara (120170107024)

DEPARTMENT OF COMPUTER ENGINEERING

VISHWAKARMA GOVERNMENT ENGINEERING COLLEGE CHANDKHEDA

Declaration

This is to certify that

i) The project comprises my original work towards the degree of bachelor of Engineering in Computer Engineering at Vishwakarma Government Engineering College, Chandkheda, under the Gujarat Technological University, Ahmedabad and has not been submitted elsewhere for a degree.

ii) Due acknowledgement has been made in the text to all other material used.

Rushin Naik
(120170107046)
Janki Kansara
(120170107024)

Certificate

This is to certify that the Project entitled ”The Asset Consultancy” submitted by Rushin Naik (120170107046) and Janki Kansara(120170107024), towards the partial fulfillment of the requirements for the degree of Bachelor of Engineering in Information Technology of Vishwakarma Government Engineering College, Chandkheda, under the Gujarat Technological University, Ahmedabad is the record of work carried out by him under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this project, to the best of my knowledge, haven’t been submitted to any other university or institution for award of any degree or diploma.

External Guide

Signature:

Name: Prashant Thakkar

Designation: CEO & Co-founder

Organization: SculptSoft

Internal Guide

Signature:

Name: Prof. Pravina K. Parmar

Designation: Assistant Professor

Organization: Vishwakarma Government Engineering College

Head of Department

Prof. M.T.Savaliya,
Associate Professor
Computer Engineering Department,
Vishwakarma government engineering college, Chandkheda, Ahmedabad.

Signature of External Examiner

Abstract

The Asset Consultancy involves the analysis/prediction of current and future price of real-estate commercials and buildings. The goal is to conduct that depending on analysis/prediction made for the prices of property, whether the customer should invest his money on that property or not. Upon examination of the results, it can be inferred if investing money on the estate would bring out a positive outcome or a negative one, and hence makes the customer aware about the advantages/flaws of investing at the particular place. Data will be fetched from different pre-requisites and compiled at one place producing analysis by an algorithm using Big Data Analysis and its different internal structures, which would be implemented in Java language.

Acknowledgements

We had a very commendable experience while undergoing various stages implementing this project under the esteemed guidance of Ms. Pravina K Parmar, Assistant Professor at Vishwakarma Government Engineering College. We were guided in a very appropriate direction and were provided with optimum suggestions by her. Furthermore, our External Guide Mr. Prashant Thakkar, Project Manager at Sculptsoft has contributed a lot in helping us develop, various components our system. Thus, we would like to thank them both for their constant guidance and perseverance in giving solutions to our issues and problems.

-Rushin Naik
(120170107046)
-Janki Kansara
(120170107024)

Table of Contents

1. Introduction

1.1 Project Summary

Whenever a person will decide to make an investment in a property, he/she may have to go through various tasks like:

- Visit different sites
- Find a trustworthy real estate agent
- Get details related to each property
- Rely on the reviews of others for making a huge investment

This processes will manually need a lot of time and effort to go through this tedious work and collect information. In such situation, this project would act as a very good tool to make the process of investment and asset analysis easy. The project aims to carry the whole property database online, which can be accessed by the users easily.

The project provides an interface with multiple users i.e. customer, real estate agent and administrator. The customer will use the project for viewing properties, getting analysis from the past records of the property market and also interact with the real estate agent.

The real estate agent will post the associated properties and will benefit from this system as the customers can view those properties and contact him. The project works on the creating a trustable result out of a large amount of data provided by the real estate agent.

The administrator takes care of the authenticity of the registered real estate agent as well as the property details updated in the system database.

1.2 Objective

The core objective of the project is to provide the users with a better understanding of the real estate market. It would help the customer to profoundly analyze the ups and downs in the costing of different properties at different location.

The project also aims to ease the access of information related to real estate agents that may be handling specific properties. By doing so, the system would enhance the medium to make right investment decisions and would also help to communicate with respective real estate agents.

1.3 Scope

The system would be used in situations where the customer would like to invest in some property. The user can know the available properties in the locality and have detailed knowledge about its different parameters. The system provides full database of the old as well as new properties in the market. The analysis about the past and future trend of the properties at in various areas will help the customer to decide the property to invest in.

The real estate agent also gets a platform to market its property and come in contact with the customers. Doing, the real estate agent can support his/her business. Furthermore, the real estate agent can also use the system to view detailed information about the assets.

Easy of interaction and building of a professional networks is also promoted by this system.

1.4 Technology Used

The technologies used have a substantial effect on the implementation of any application. The efficiency of the project is also highly affected by the technologies that are used in its development. Following are the major technologies used which serve as a base of this project:

- Languages: Java Script, HTML/CSS, JSP , Java
- Web Server**:** Apache Tomcat Server 8.0.15.0
- Java Software **:** JDK 1.8.0_66
- Ubuntu Operating System 15.05.1
- Hadoop 2.7.1
- Hive 1.2.1
- Sqoop 1.4.6
- Netbeans IDE 8.0.2
- MySQL Workbench 6.2

1.5 Hardware-Software used

User Side:

Minimum Hardware Requirements:

1. Core 2 Duo Processor.
2. 512 MB RAM.
3. 10 GB Hard Disk Space.
4. Ethernet card

.

Minimum Software Requirements:

1. Operating System**:** Windows 2000/XP
4. Languages: Java Script, HTML/CSS, JSP
6. Client Browsers: Any Web Browser

Developer side:

Minimum Software Requirements

1. Operating System**:** Windows 7 32 bit Professional
2. Web Server**:** Apache Tomcat Server
3. Server side Application Software: NetBeans IDE 7.0.1 or 8.0.2
4. Languages: Java Script, HTML/CSS, JSP
5. Data Base**:** SQL Server Management Studio
6. Client Browsers: Google Chrome Or Firefox
7. Java Software **:** JDK
8. Eclipse
9. Hadoop 1.2
10. Linux OS/Linux OS environment on windows

Minimum Hardware Requirements

1. 3 Ghz Quad core processor
2. 8 GB RAM
3. Ethernet card

2. System Analysis

2.1 Study of Current System

- There are few good implementations of similar concepts, which are already present in the market. We have gone through the working and features of these applications.
- They are providing a good source of information and also a descent user interface to deal with. They provide the features to view properties, different type of properties, view real estate agent info, etc.
- It also allows the user to select different areas and view only specific results related to it in the result window.
- The systems also needs the user to register for accessing the complete features of the application. As the technology and ideas evolve each and every day, the current systems are also a subject to further improvements.

2.2 Problem and Weakness of Current System

- The current system may not be using the potential of such an application fully. Many features are yet to be implemented to make things user friendly and use-centric.
- There are still few application which does not provide an attractive and lucid interfaces. This can hamper the growth of the web application as the user may not feel like visiting the site again in the future.
- There is no specific and rigorous platform which can bolster the connectivity between the users.

2.3 Requirement of New System

- ❖ The new system will provide a more clear perspective of the real estate statistics to the customer.
- ❖ It will help the customer to profoundly understand the price fluctuations and the impact of the influential parameters on the value of the assets.
- ❖ The new system would initiate a better network of customer-real estate agent relationship.

2.4 Feasibility Study

- Feasibility test basically focuses on answers to, how well does our project satisfies the four dimensions: Technical, Finance, Time and Resources constraints?
- Answer to these questions could be very easy for projects in established areas where we get lots of time and resources to use. And as the risk increase the feasibility study would result negative.
- As far as our current project is concerned we have carried out the initial risk architecture and design so that the above questions would be accurately answered.

Technical Feasibility:

The technical feasibility study compares the level of technology available in the software development form and the level of technology required for the development of the product. Here the level of technology consists of the programming language, the hardware resources, other software tools etc. As there can be a number of records and large group of data about the properties in different locations, a powerful and efficient computing system is required which can speedily do processing related to the big data analytics.

Our system can be accessed easily through any browser which would support the basic configurations.

Financial Feasibility:

The economic feasibility study evaluates the cost of the software development against the ultimate income or benefits gets from the developed system. There must be scopes for product after the successful Completion of the project.

There is no major financial back-up required for this system. Finance will be only needed for the purposes like:

- Software developers/engineers for maintenance
- A competent and steadfast server for the processing the large data
- A database to store the information

Time Feasibility:

Considering the analysis and work behind the project, it can be successfully completed within a span of 120 days. This time span seems to be quite feasible for developers to understand and implement the features of the system. Though, the time may vary by couple of months keeping in the mind the features that are to be included during the implementation. Therefore, the project is feasible in time.

Operational Feasibility:

Operational feasibility study tests the operational scope of the software to be developed. The proposed software must have high operational feasibility. Thus the different operations can be performed.

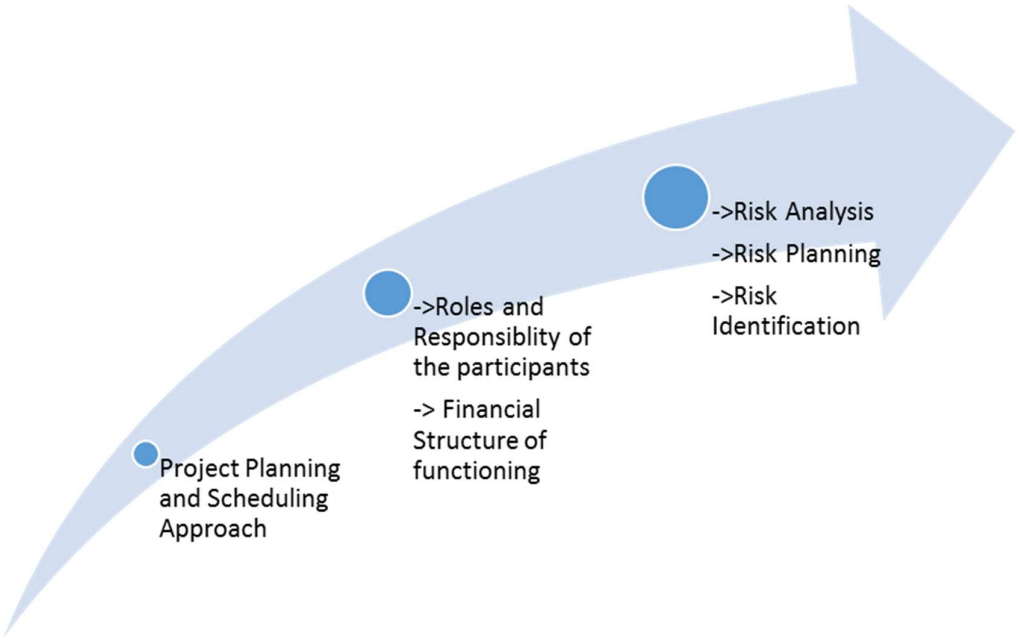
The system does not require high processing user-end devices nor does it require higher benefit. The system can be easily accesses on multiple platforms. The system can be used for various operations like getting real estate agent information, searching the assets, analyzing the trend, understanding the behavior of the real estate market.

3. Project Management

3.1 Project Planning and Scheduling

3.1.1 Project Development Approach

Developing a project follows a logical process, with the first step being to understand and identify what the customers wants to accomplish. Once that is established, we can move towards identifying the problem we want to solve and what resources and assets are already available to address the problem. This development process does not involve reviewing funding opportunity announcements to determine the type of project for the customer, rather, the project idea must come from the customer and match the customer's long range goal.



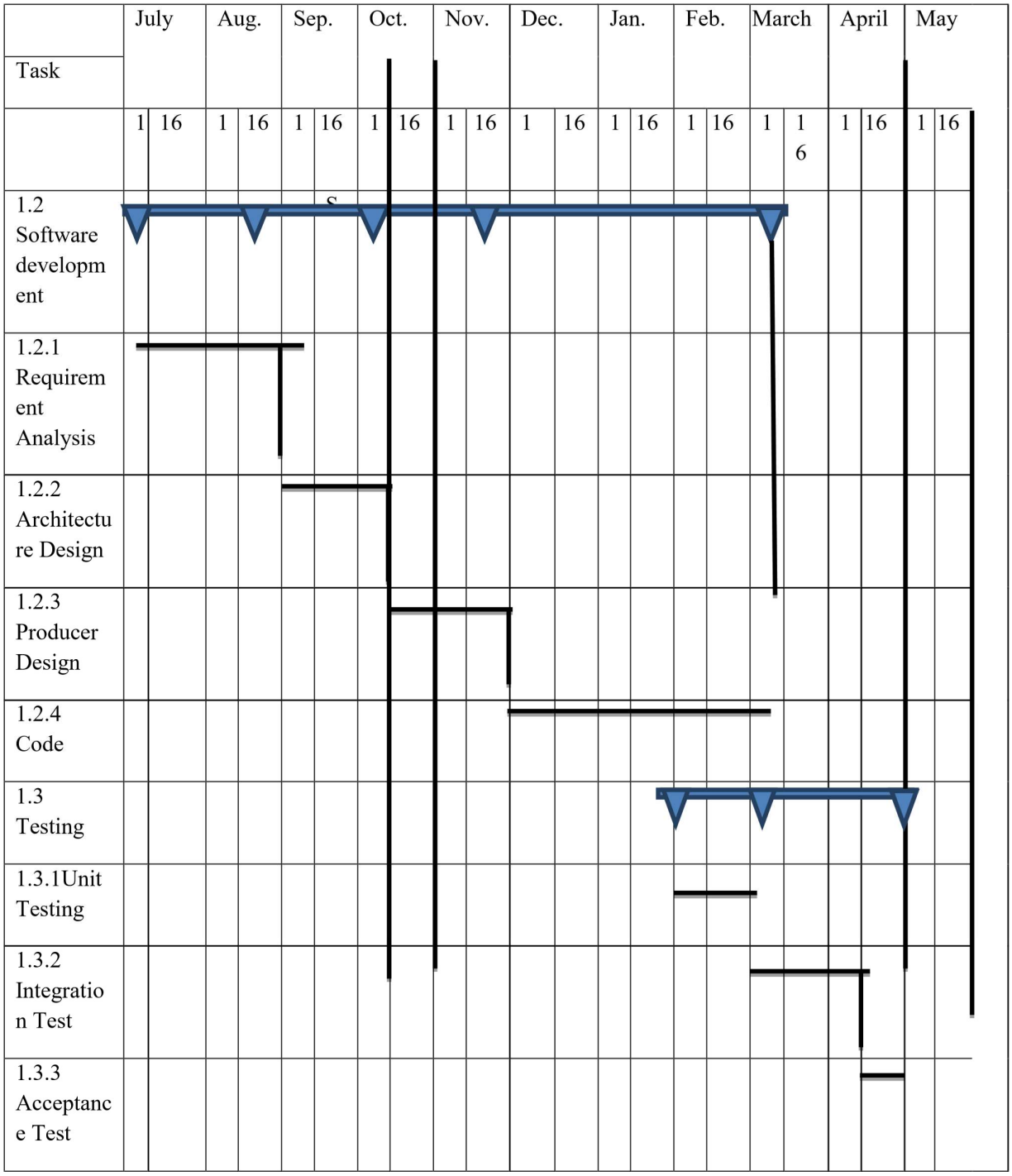
3.1.2 Project Plan

Project Planning:

Planning and scheduling are crucial for any project, from simple jobs like roof replacement to complex endeavors such as building a skyscraper. No matter what the project, it is important to know what needs to be done (planning) and when it needs to happen (scheduling). Equally important to know is how to accomplish this process.

Project planning is part of project management, which relates to the use of schedules such as Gantt charts to plan and subsequently report progress within the project environment. Initially, the project scope is defined and the appropriate methods for completing the project are determined.

3.1.3 Schedule Representation



1.4 Operations																			
1.4.1 Packaging																			
1.4.2 Customer training																			

In its most basic form, project planning consists of determining the milestones of the project and outlining the individual tasks that need to occur in order for the milestones to be completed. For example, one milestone during providing an insightful idea about the price of the real estate includes the following tasks to be completed in a chronological order:

- ✓ Collecting the information of the real estate from previous years
- ✓ Analyzing the comprehensive data and making feasible revised data out of it.
- ✓ From this feasible new data, the data of the next years will be predicted.
- ✓ After predicting the data, presenting it in a chart form so as to make the customer aware about the investment outcomes at that particular plan.

All of the above tasks need to occur in the specific order listed in order for the foundation to be built. A length of time, or duration, will be established for each sub task so that the overall time frame required to complete the foundation can be determined. The duration for completing specific tasks is usually established based on past experience or by using references such as estimating the prices of the real estate from past years. Once the order of tasks is established and the duration selected for each, a definite pattern for performance of this tasks can be scheduled.

3.1.4 Roles and Responsible

Title	Role	Responsibility
Admin	Manages the system	Add Real estate agent Details Manage Users Accept or Reject the request from the real estate agent Check group requests Accept or reject group request Discard group
Real estate agent	Property Venture	Creates Profile Sends profile authentication request to admin Analyze Property Update property specifications Create group Add customers in the group
Customer	Property and price assessment	Registers as a customer View property Stalk Property Create Group Add other customers to the group Interact with the real estate agent for further details regarding the estate

3.2 Risk Management

3.2.1 Risk Identification

Risk Identification is the premise and basis for the risk decision. So a good risk analysis is very important for investors, it is the key to determine the project, the process of the risk analysis is mainly the risk identification, estimation and evaluation.

Since the high avails of real estate, in recent years, a large number of enterprises invest the money into this industry with an attempt to obtain great achievements; however, during the process of investment of high profit industries, the avails also equal to high risks. The real estate investor, sometimes has shown much of their solicitude for the possibility of great avails that would come about when the decision of investment was made, while they often has ignored some potential risks. Actually, in certain condition, an enterprise carries out real estate investment can get abundant profits, while some investors may possibly suffer some loss. Therefore, the risk analysis is essential for the significance and affection of investment.

Identifying the risks that can certainly play a role of obstruction can help in making the project more efficient for a longer period of time. The intense study of the risk can bring down the following problems while execution of the project:

-The data might sound dubious to some of the customers and they may not find it authentic to use, for a longer period of time.

-The customer requirement changes gradually which sometimes may not suffice project requirements.

-The real estate agent can change the price of his site frequently which might sometime result into ambiguity.

These are some risks that we have identified while implementing the project. Any customer while purchasing the real estate or while investing his money in the same, would always think about the profit he would get in return of this investment. Hence by alleviating this risks we can surely provide the customer with a better, more reliable platform for estimating and evaluating his costs on the investment.

3.2.2 Risk analysis

Administration and risk analysis is a critical component of real estate property management. The record-keeping function must be carefully managed and, the greater the level of accuracy, the better the likely results. This function involves all the others, as:

The marketing & financial function requires records of expenditures and income, as well as tax records, advertising invoices and more, tenant management involves records of all their requests, rental payment history and rules violations, and facility maintenance & repairs require maintenance schedules, repair records for warranty, and employee and subcontractor personnel records. The risk management component is of course very important. A large disaster can threaten the survival of the property economically. The records kept are a part of this, as any legal action taken by others can be thwarted if there are detailed records that refute their claims.

Our project basically includes the features which provides a customer to have an insight about the rates of the estate 5 years from now. Providing data from previous years of that particular estate and predicting the data i.e. what would be the price of that place after next five years is the goal of our project. This may help customers to estimate their investments at that location for future. Whether their investment turns out fruitful or not will also be determined. Hence risk management in such a kind of investment is a paramount issue which needs to be sorted out promptly.

3.2.3 Risk planning

A part of risk management planning is determination of risk versus reward. A good example is a hot tub or swimming pool on the property. The property manager and owner must balance the value of the pool with the risks incurred. When a risk such as this is identified, there are three ways in which it can be addressed.

1. **Avoidance** - The decision can be made to remove the hot tub or pool, as the additional rental income is not worth the cost of insurance or the risks involved.

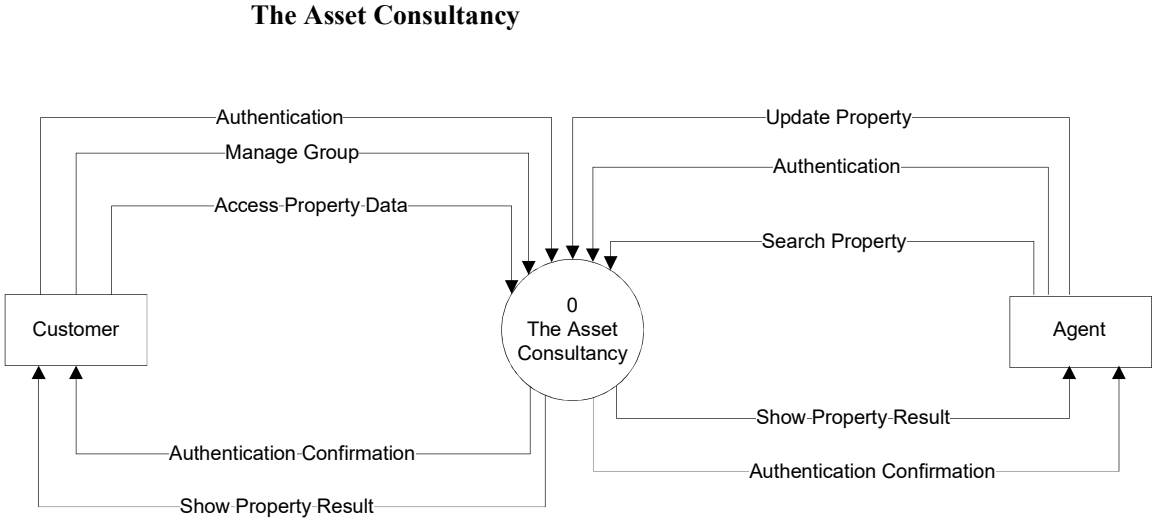
2. **Control** - If the hot tub is retained, perhaps a coded lock and fence would be installed to keep out younger children.

3. **Risk Transfer** - The most prevalent way of dealing with risk is to purchase insurance to transfer the risk to the insurer.

4. System Modeling

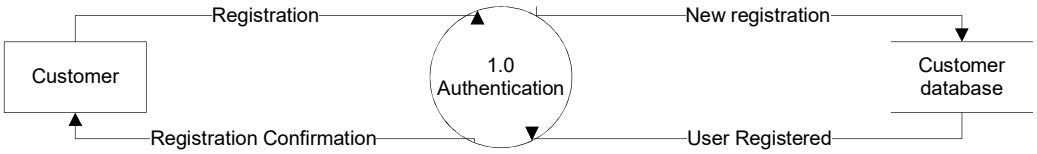
4.1 Dataflow diagrams.

4.1.1 Context Level Diagram

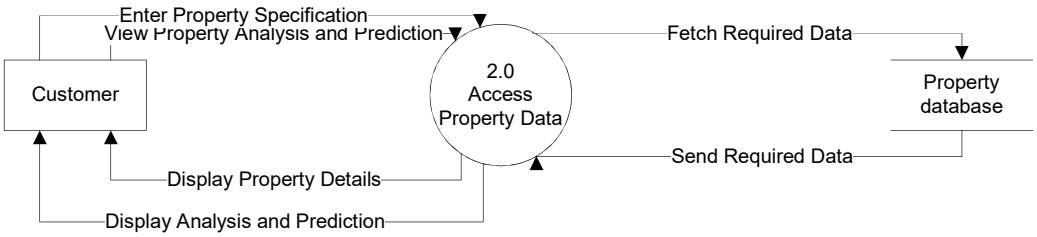


4.1.2 Level – 1 DFD

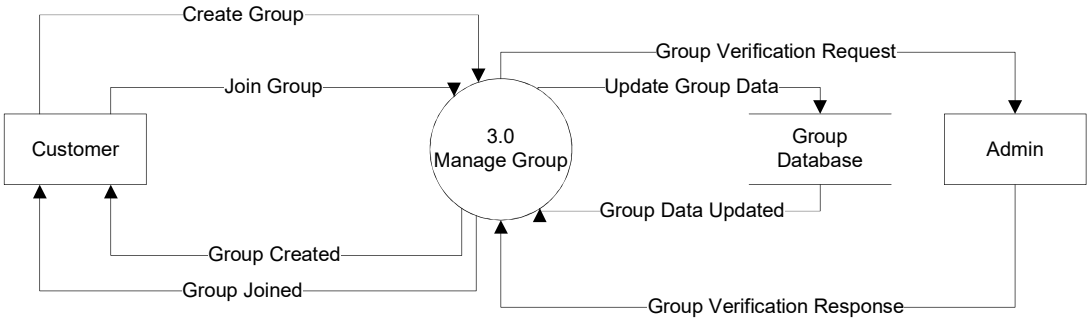
1.0 Authentication



2.0 Access Property Data

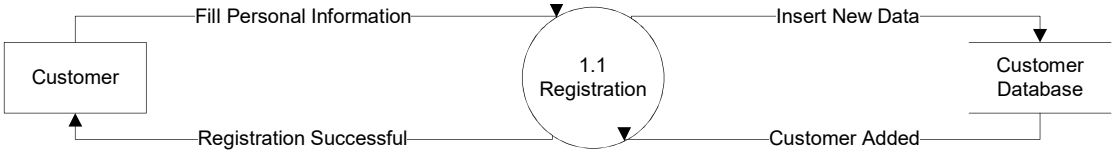


3.0 Manage Group

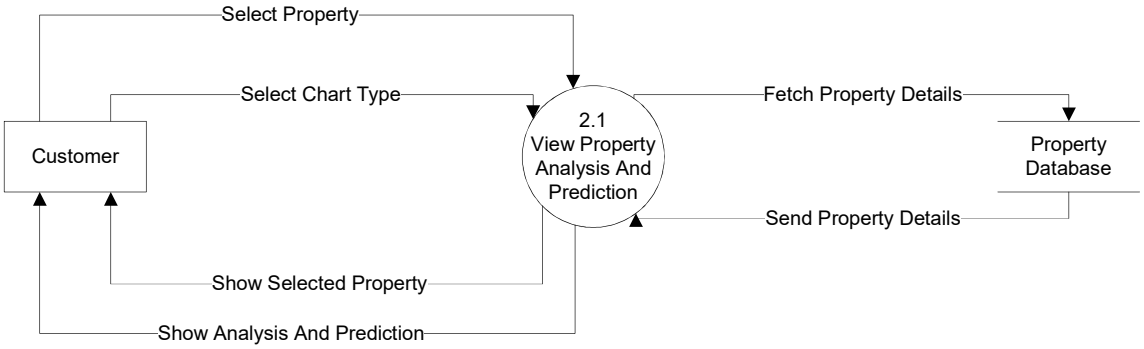


4.1.3 Level – 2 DFD

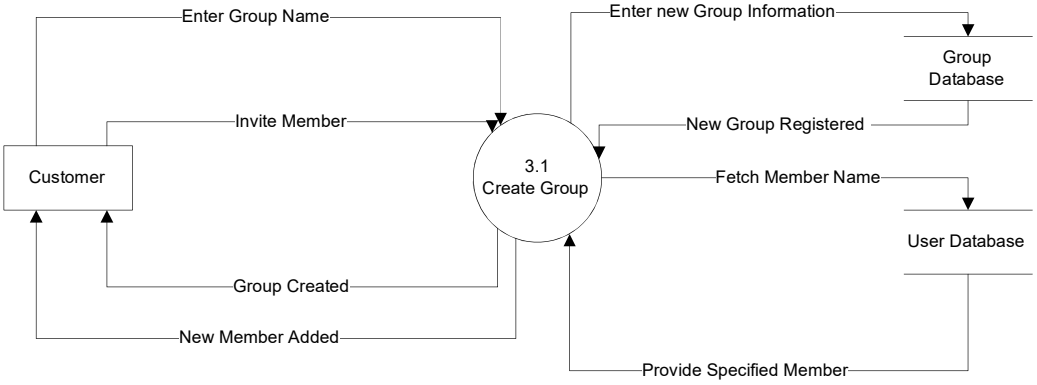
1.1 Registration



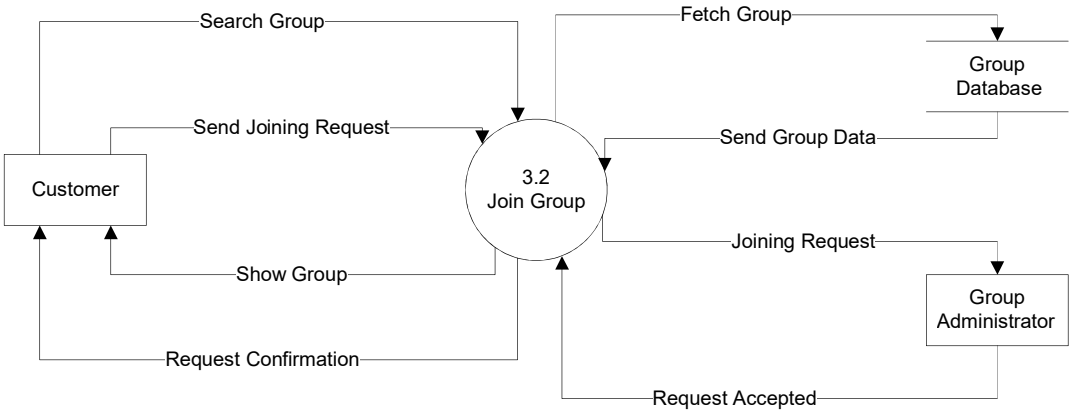
2.1 View Property Analysis and Prediction



3.1 Create Group

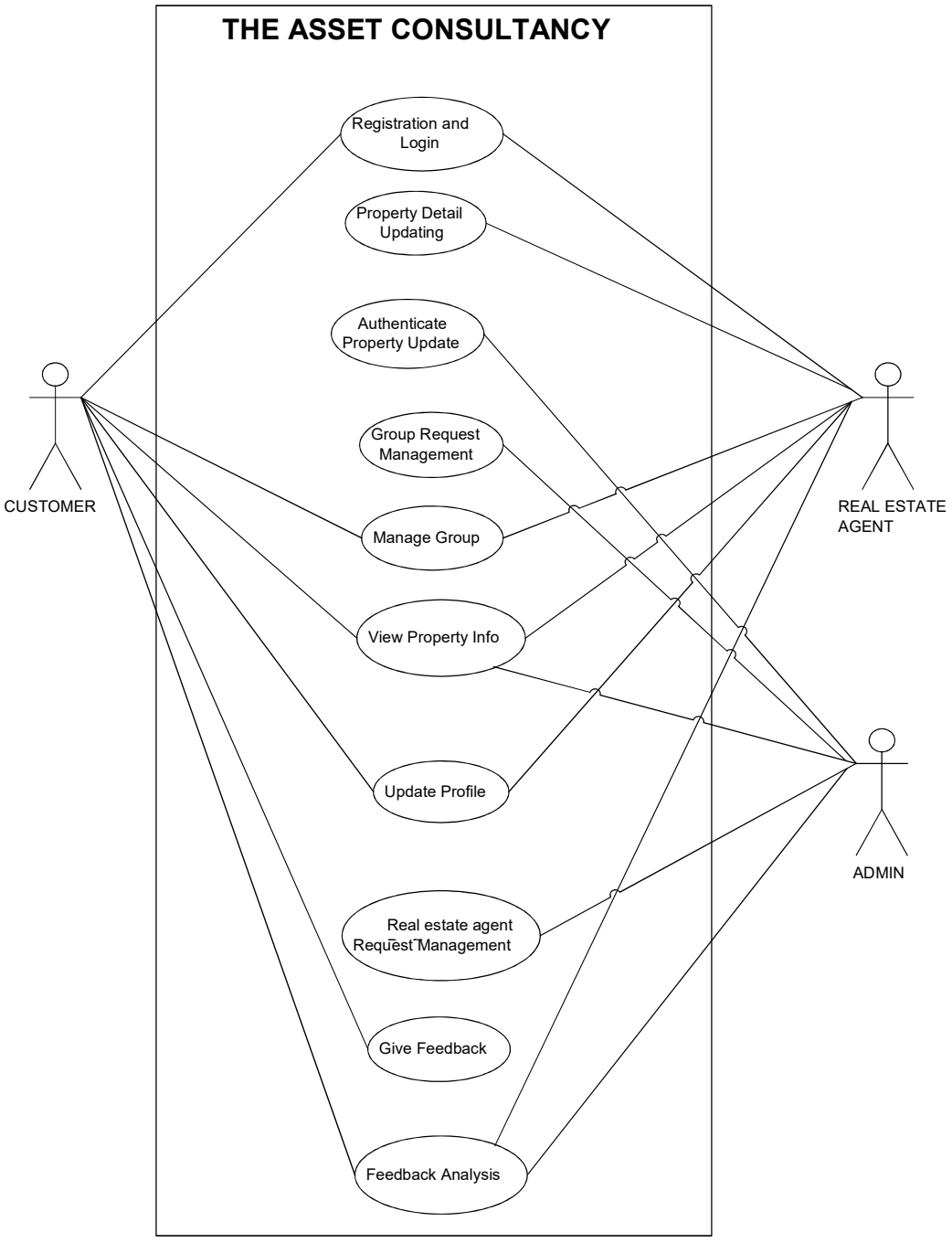


3.2 Join Group



4.2 Use case diagrams [With Description]

Diagram:



Use Case Description

Use Case	Registration and Login
Actor	Customer, Real estate agent
Summary	The new user would register and the already registered user will simply login.
Precondition	The new user should fill registration details. The registered user id and password must be entered.
Description	1. The user will open the login page. 2. If the user is already registered then he/she will directly enter the user id and password. 3. If the user is not registered, the user has to select 'register' option and fill the form.
Exception	The user enters incorrect data and thus cannot access the system.
Post condition	The user would be allowed to access the system with respective interface.

Use Case	Property Detail Updating
Actor	Real estate agent
Summary	The real estate agent will insert, update and delete the property details.
Precondition	The real estate agent should be logged in with authentic id.
Description	1. The real estate agent will sign in and enter the system. 2. The real estate agent will select the option for update, add, remove or edit property details. 3. The real estate agent will enter the new details and wait for confirmation.
Exception	The information may not be updated if the administrator won't verify and accept it.
Post condition	The real estate agent may wait for response of verification.

Use Case	Group request Management
Actor	Administrator
Summary	The admin will handle the requests of the new groups that have been created.
Precondition	The customer or the real estate agent must have created a group to generate the request. The admin should be logged in successfully to handle these request.
Description	1. The admin will be logged in. 2. The admin will select the 'manage request' option and see the group request. 3. The group request can be accepted or rejected.
Exception	There are no group request or the admin has not signed in and so cannot handle these request.
Post condition	The admin can logout or carry out any other task.

Use Case	Manage Group
Actor	Customer, Real estate agent
Summary	The user will perform different functions related to the group.
Precondition	The user should be logged in successfully. The user should create a new group or should already be a part of existing group.
Description	1. The user will create or join some group. 2. The user can send request to other users for inviting them to join group. 3. The user can remove members from the group. 4. The user can delete the group 5. The user can also discuss about various properties in the group.
Exception	If the user will not be a part of the group, he/she would not be able to access the operations related to the group.
Post condition	The user can interact with the group features or can do any other task.

Use Case	View Property Info
Actor	Customer, Real estate agent, Administrator
Summary	The user will view the information about the particular property and access features related to it.
Precondition	The user should be logged in and should have specified the type of property to be viewed.
Description	1. The user will be logged in. 2. The user will enter specification like price, area, type, real estate agent, etc. to view the property. 3. The results of properties will be shown and the user can view any of them.
Exception	There is no such property in the system which can match the specification given by the user.
Post condition	The user can access features related to the property and can carry out other work in the system.

Use Case	Update Profile
Actor	Customer, Real estate agent
Summary	The real estate agent and customer will make new changes in the profile with time.
Precondition	The user should be logged in with authentic account.
Description	1. The user will enter various details about themselves in the profile page. 2. The user may edit data as per the constraints provided.
Exception	The user may enter some invalid details and system may not accept it.
Post condition	The user can carry out other tasks in the system.

Use Case	Real estate agent Profile Request Management
Actor	Administrator
Summary	The admin will verify the new real estate agent profiles that are registered.
Precondition	The admin should be signed in and should have opened the real estate agent profile request page.
Description	1. The admin will be logged in 2. The admin will view the request of profiles from new real estate agents. 3. The admin will accept or reject the request keeping in mind the authenticity.
Exception	If there is some unacceptable information entered by the real estate agent, then the request can be rejected.
Post condition	The admin may accept the new real estate agent profile or reject it.

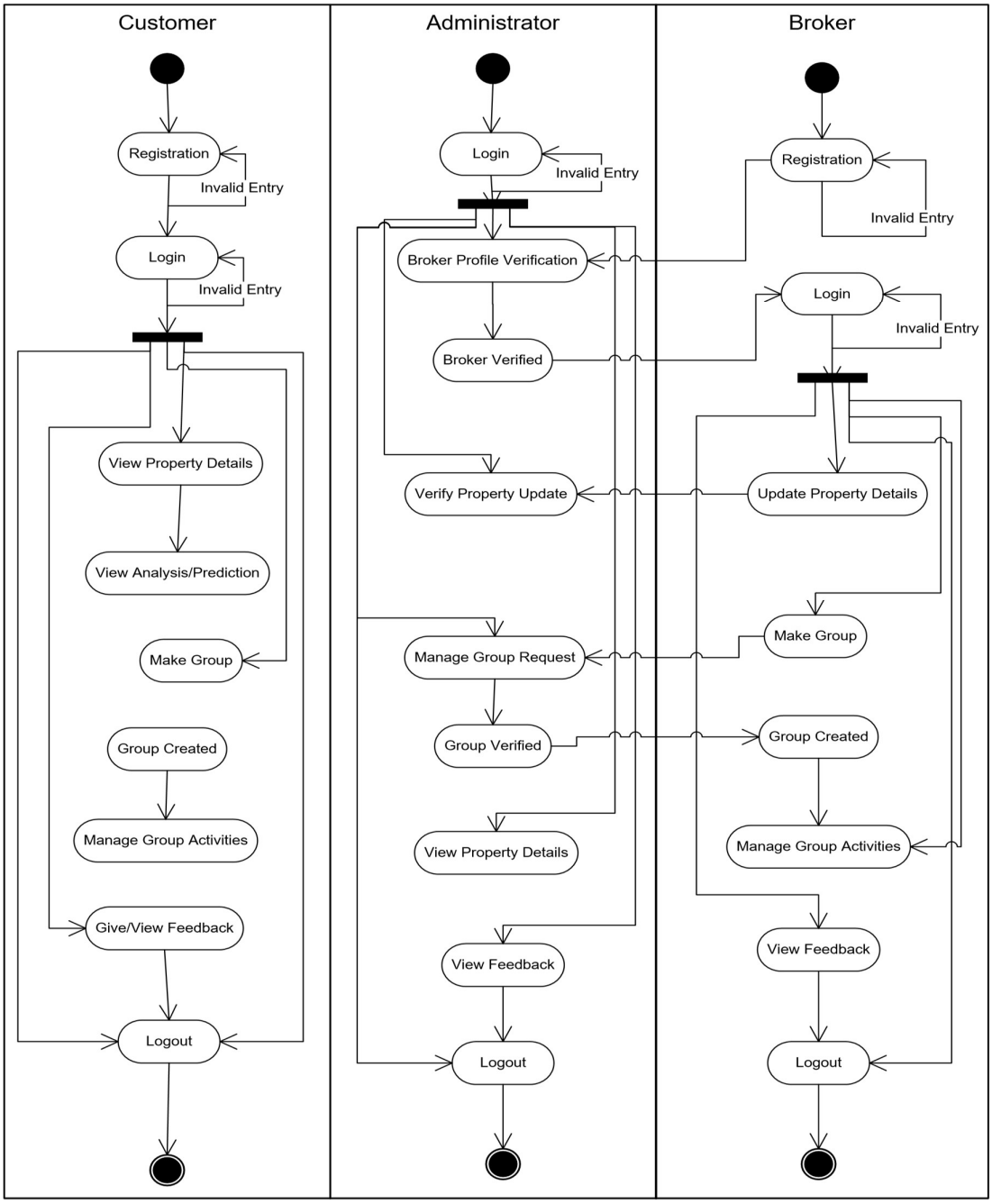
Use Case	Agent Feedback
Actor	Customer
Summary	The customer will write some feedback about experience with the real estate agent.
Precondition	The customer should be logged in and should have selected the feedback option.
Description	1. The customer will be logged in. 2. The customer will have experience about a real estate agent would like to share it. 3. He/she will write a feedback about that real estate agent.
Exception	The customer cannot give feedback without a valid profile.
Post condition	The feedback will be saved in the system and the customer can perform some other task.

Use Case	Property Feedback
Actor	Customer and Agent
Summary	The customer and agent will write some feedback about a property.
Precondition	The user should be logged in and should have selected the feedback option.
Description	1. The user will be logged in. 2. The user will have experience about a property would like to share it. 3. He/she will write a feedback about that property.
Exception	The user cannot give feedback without a valid profile.
Post condition	The feedback will be saved in the system and the user can perform some other task.

Use Case	Feedback Analysis
Actor	Administrator, Real estate agent, Customer
Summary	The actor would access the feedback given by the user.
Precondition	The user should be logged in and select some entity to access feedback about it.
Description	1. The user will select a property or real estate agent. 2. Then he/she would select the 'Feedback' option for viewing the reviews related to the real estate agent or property.
Exception	It may be possible that there is no feedback about the property or real estate agent to view.
Post condition	The user will analyze the comments and can perform some other task.

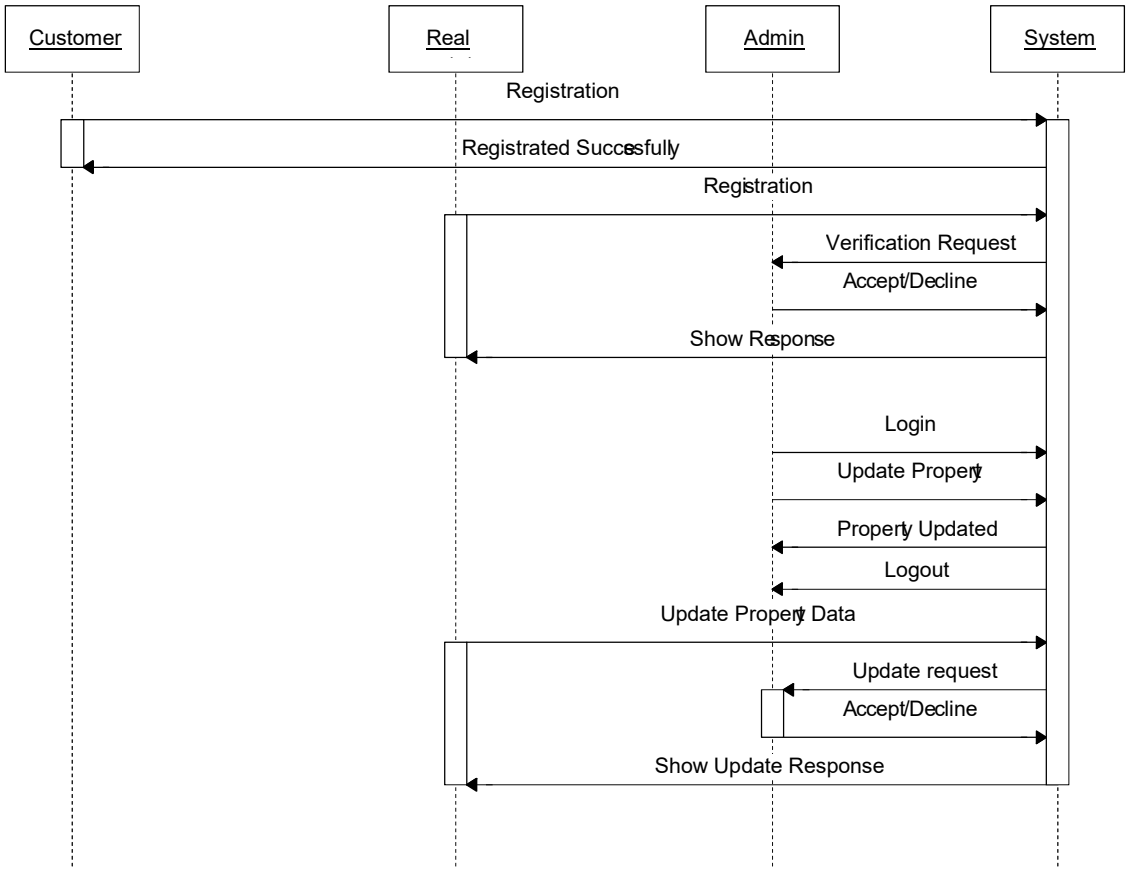
Use Case	Authenticate Property Update
Actor	Administrator
Summary	The actor will approve the changes in the property.
Precondition	The Real estate agent must have added a new property or edited the old one.
Description	1. The real estate agent will select property update feature. 2. The real estate agent will create new property or will edit the details of already added properties. 3. The real estate agent will wait for property update response
Exception	The real estate agent may not enter correct information.
Post condition	The real estate agent will wait for the acceptance for the property update.

4.3 Activity Diagrams [Swim lane]

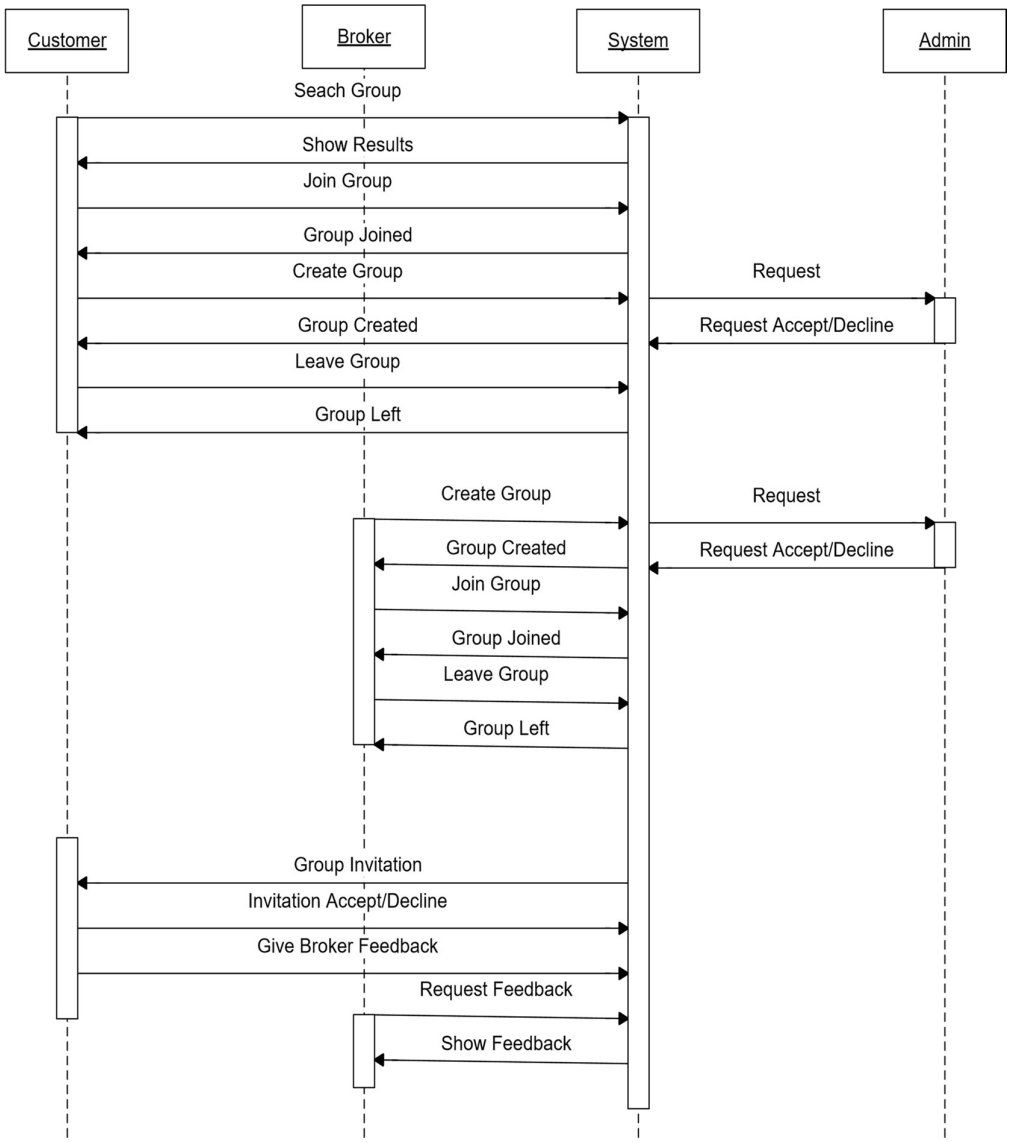


4.4 Sequence diagrams

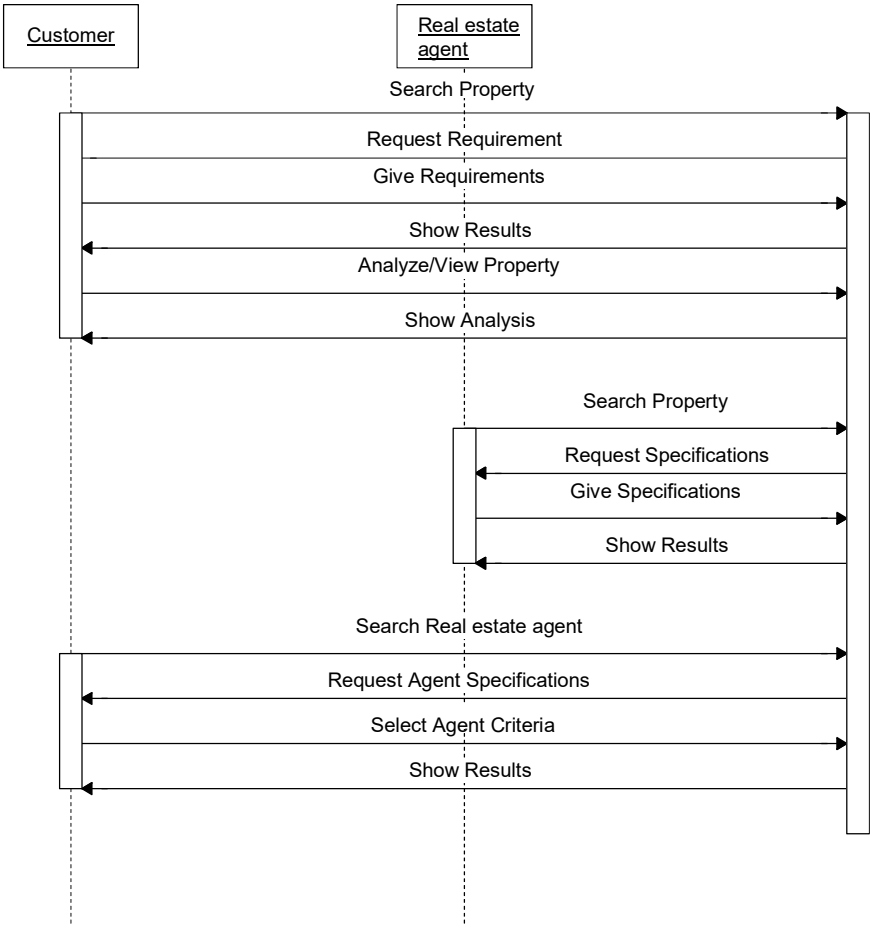
4.4.1 Authentication



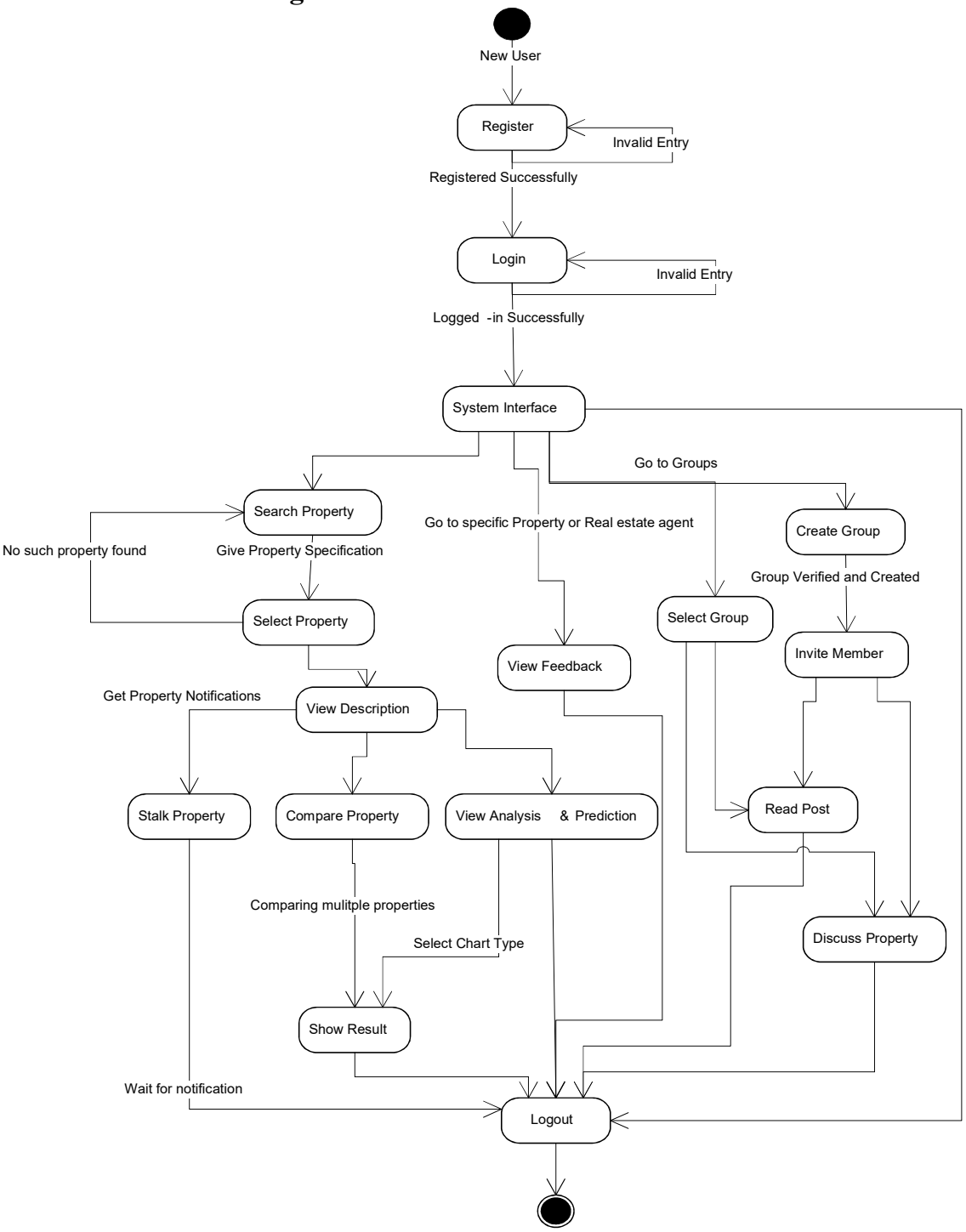
4.4.2 Features



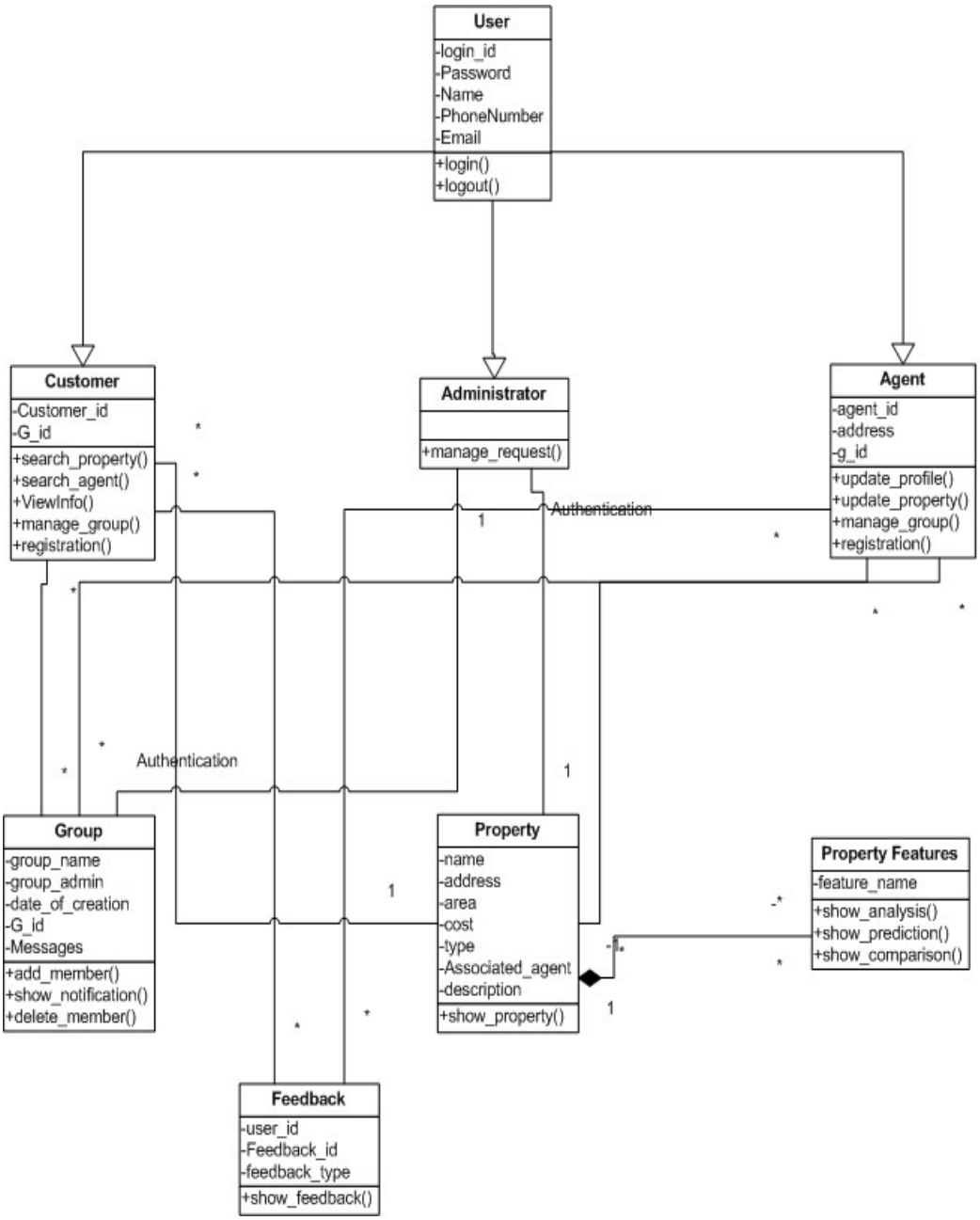
4.4.3 Search


Customer
Real estate agent
Search Property
Request Requirement
Give Requirements
Show Results
Analyze/View Property
Show Analysis
Search Property
Request Specifications
Give Specifications
Show Results
Search Real estate agent
Request Agent Specifications
Select Agent Criteria
Show Results

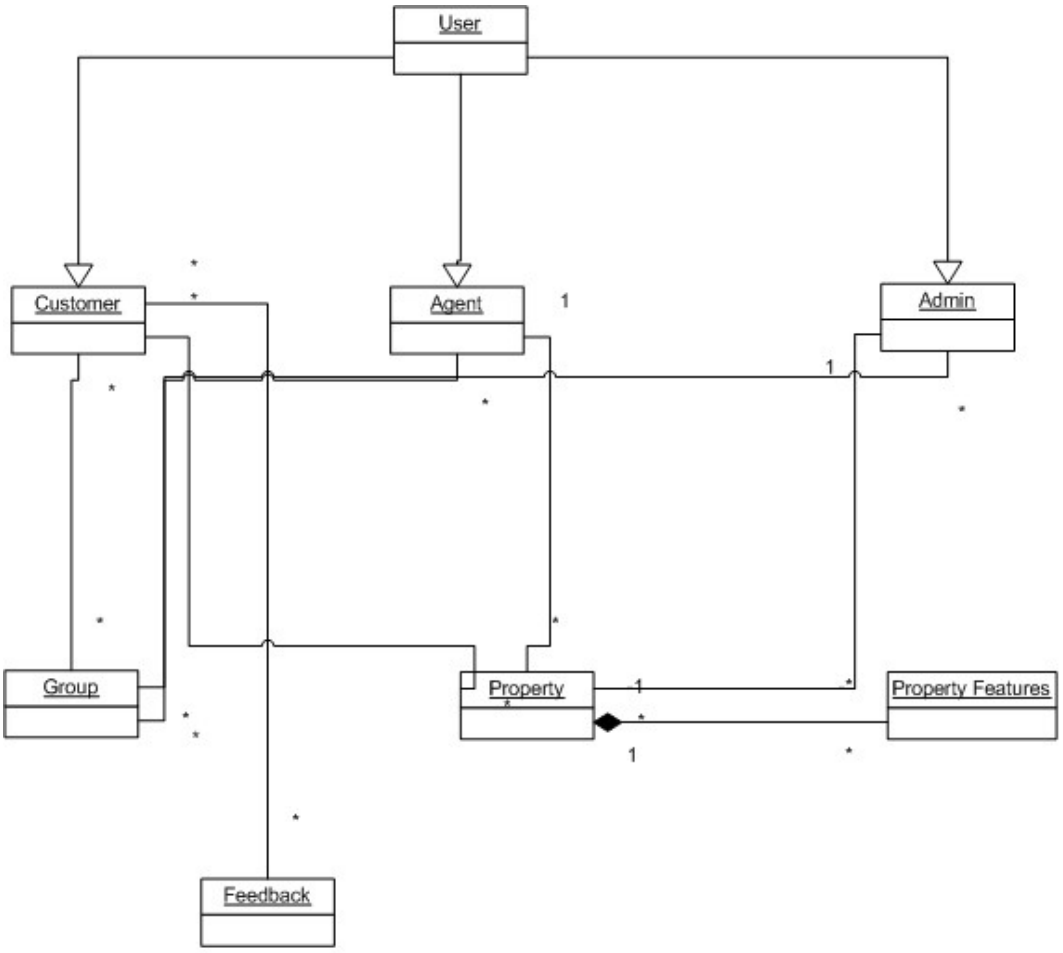
4.5 State Transition Diagrams



4.6 Class Diagram

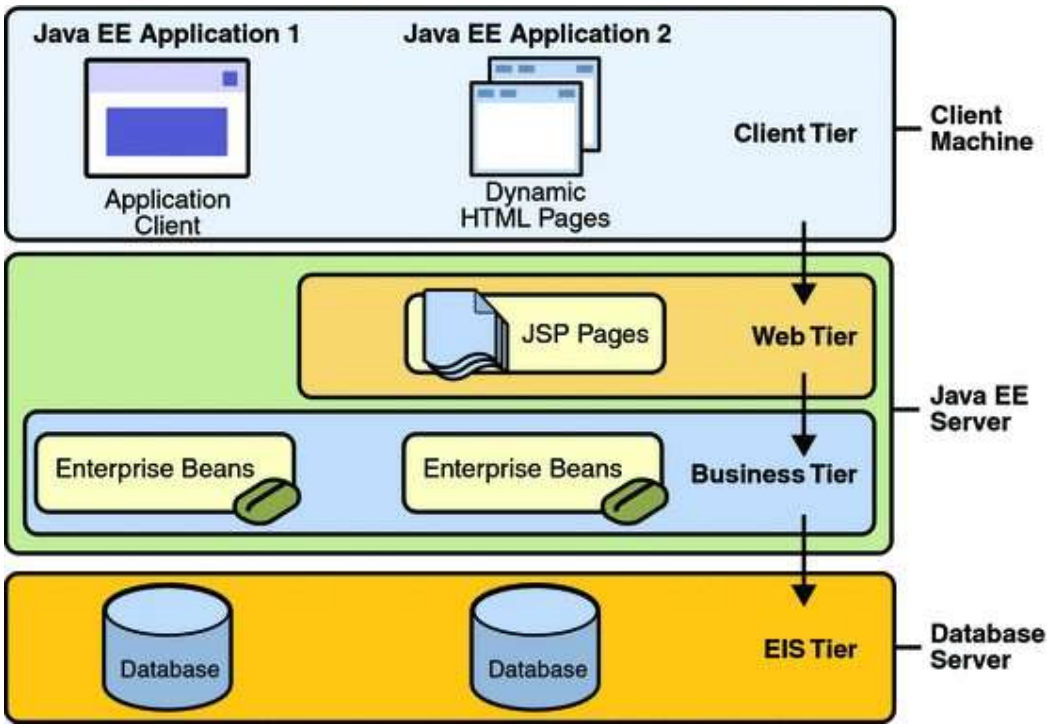


4.7 Object Diagram



4.8 System Architecture

Java Application Architecture



Java EE:

A Java EE application or a Java Platform, Enterprise Edition application is any deployable unit of Java EE functionality. This can be a single Java EE module or a group of modules packaged into an EAR file along with a Java EE application deployment descriptor. Java EE applications are typically engineered to be distributed across multiple computing tiers.

JSP pages:

A JSP page is a text document that contains two types of text: static data, which can be expressed in any text-based format (such as HTML, SVG, WML, and XML), and JSP elements, which construct dynamic content. The recommended file extension for the source file of a JSP page is jsp.

Enterprise Beans:
EJB stands for Enterprise Java Beans. EJB is an essential part of a J2EE platform. J2EE platform have component based architecture to provide multi-tiered, distributed and highly transactional features to enterprise level applications.

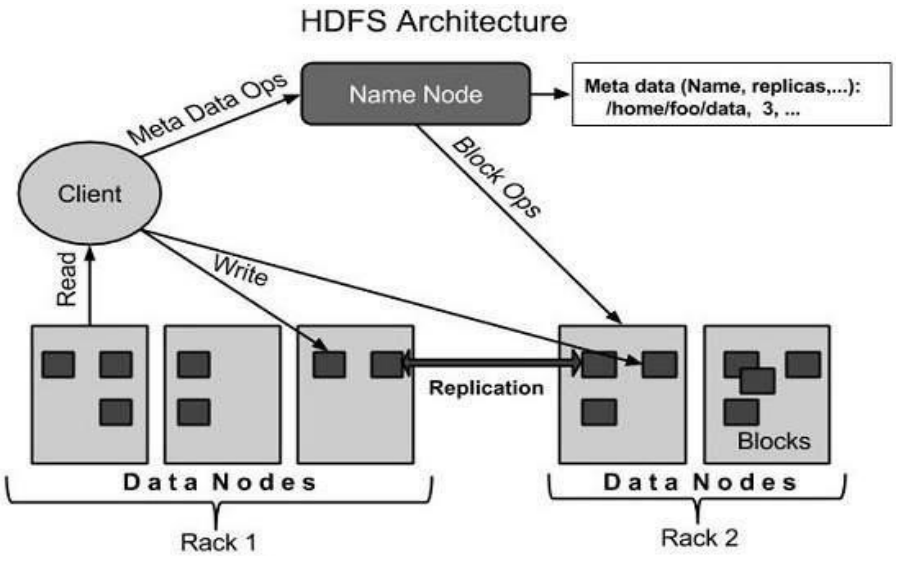
EJB provides an architecture to develop and deploy component based enterprise applications considering robustness, high scalability and high performance. An EJB application can be deployed on any of the application server compliant with J2EE 1.3 standard specification

HDFS Architecture

File System was developed using distributed file system design. It is run on commodity hardware. Unlike other distributed systems, HDFS is highly fault tolerant and designed using low-cost hardware.

HDFS holds very large amount of data and provides easier access. To store such huge data, the files are stored across multiple machines. These files are stored in redundant fashion to rescue the system from possible data losses in case of failure. HDFS also makes applications available to parallel processing.

Given below is the architecture of a Hadoop File System.



HDFS follows the master-slave architecture and it has the following elements.

Namenode

The namenode is the commodity hardware that contains the GNU/Linux operating system and the namenode software. It is a software that can be

run on commodity hardware. The system having the namenode acts as the master server and it does the following tasks:

- Manages the file system namespace.
- Regulates client's access to files.
- It also executes file system operations such as renaming, closing, and opening files and directories.

Datanode

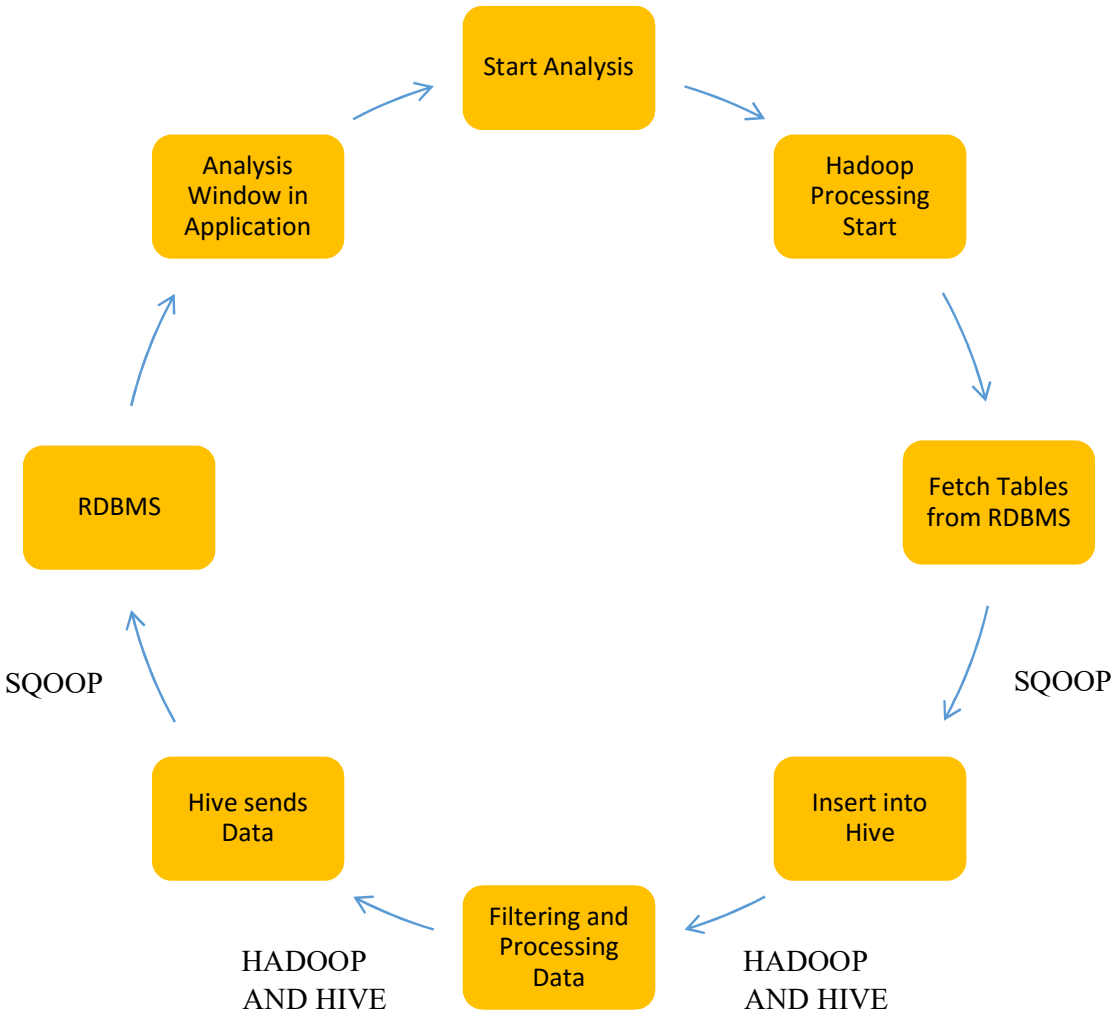
The datanode is a commodity hardware having the GNU/Linux operating system and datanode software. For every node (Commodity hardware/System) in a cluster, there will be a datanode. These nodes manage the data storage of their system. Datanodes perform read-write operations on the file systems, as per client request.

- They also perform operations such as block creation, deletion, and replication according to the instructions of the namenode.

Block

Generally the user data is stored in the files of HDFS. The file in a file system will be divided into one or more segments and/or stored in individual data nodes. These file segments are called as blocks. In other words, the minimum amount of data that HDFS can read or write is called a Block. The default block size is 64MB, but it can be increased as per the need to change in HDFS configuration.

Flow of Interaction with HDFS:



5. Data modeling and design

5.1 Data dictionary

Table-1: Login

Field	Data Type	Constraints	Description
Log_id	int	Primary key	Unique identity used for login.
Username	Varchar(50)	Not null	Username of the user.
Password	Varchar(20)	Not null	Password for login
User_type	Varchar(10)	Not null	Type of user: Customer, Real estate agent, Admin

Table-2: Customer

Field	Data Type	Constraints	Description
C_id	Int	Primary key	Unique identity of customer.
Log_id	Int	Foreign key	Login id.
C_name	Varchar(50)	Not null	Name of customer.
C_gender	Varchar(10)	Not null	Gender of customer.
C_contactno	Varchar(50)	Not null	Contact number of the customer.
C_email	Varchar(50)	Not null	Email id of the customer.
G_id	int	Allow null	The id of group the customer has joined

Table-3: Real estate agent

Field	Data Type	Constraints	Description
B_id	Int	Primary key	Unique identity of real estate agent.
Log_id	Int	Foreign key	Login id.
B_name	Varchar(50)	Not null	Name of real estate agent.
B_contactno	Varchar(50)	Not null	Contact number of real estate agent.

B_address	Varchar(50)	Not null	Address of real estate agent.
B_email	Varchar(50)	Not null	Email id of real estate agent.
G_id	int	Allow null	Id of the group the real estate agent has joined.
B_gender	Varchar(10)	Not Null	Gender of real estate agent.

Table-4: Group

Field	Data Type	Constraints	Description
G_id	Int	Primary key	Unique identity of the group.
G_name	Varchar(50)	Not null	Name of group.
G_admin	Varchar(50)	Not null	Administrator of the group.
No_of_members	Int	Not null	Number of members in the group.
Log_id	int	Not null	The login id of the members in the group.
G_date	Date	Not null	Date on which the group was created.

Table-5: Feedback

Field	Data Type	Constraints	Description
F_id	Int	Primary Key	Unique identity of feedback.
C_id	Int	Foreign Key	Customer who gave the feedback.
F_type	Varchar(50)	Not null	Property feedback or real estate agent feedback.
Subject_id	int	Not null	Real estate agent id or Property id about which the feedback is posted.

Table-6: Property

Field	Data Type	Constraints	Description

P_id	Int	Primary key	Unique identity of property.
P_name	Varchar(50)	Not null	Name of property.
P_location	Varchar(200)	Not null	Address of the property.
P_size	Int	Not null	Area of property in sq. meter.
P_type	Varchar(50)	Not null	Features of property.
Associated_real estate agent	Varchar(50)	Allow null	Real estate agent handling the property.
Description	Varchar(500)	Not null	Summary about the property.

Table-7 :AssetRecord:

Field	Data Type	Constraint	Description
Id	Int	Not Null	Unique feature for Asset
Assetid	Int	Allow Null	Unique for property
Year	Varchar(45)	Allow Null	Year for the asset data
Price	Varchar(45)	Allow Null	Price of the Asset

Table-8 :Chat Message:

Field	Data Type	Constraint	Description
Cmid	Int	Not Null	Unique id for chat message
G_id	Int	Not Null	Group ID
U_id	Int	Not Null	User ID
Msg	Longtext	Allow Null	Messages that are received in chat
Date_Time	DateTime	Allow Null	Date and time of message received

Table-9: Group-Member:

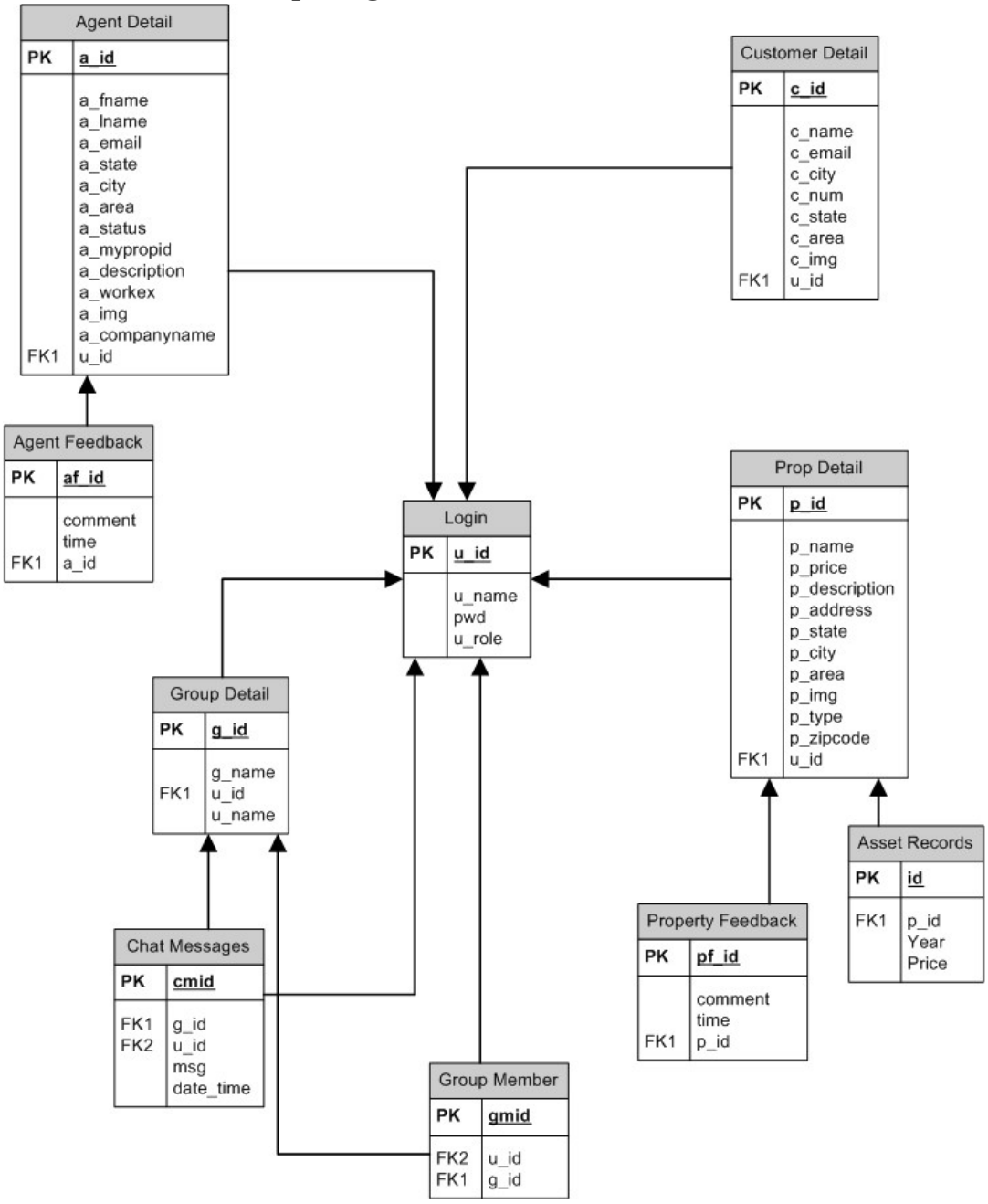
Field	Data Type	Constraint	Description
Gmid	Int	Not Null	Unique group member id
G_id	Int	Not Null	Group Id
U_ID	Int	Not Null	User Id

Table-10: Property Feedback:

Field	Data Type	Constraint	Description

Pf_id	Int	Not Null	Unique Property Feedback Id
P_id	Int	Not Null	Property Id
U_id	Int	Not Null	User Id
Comment	Varchar(45)	Allow Null	Comments for the Property
Time	DateTime	Allow Null	Time at which Feedback was posted

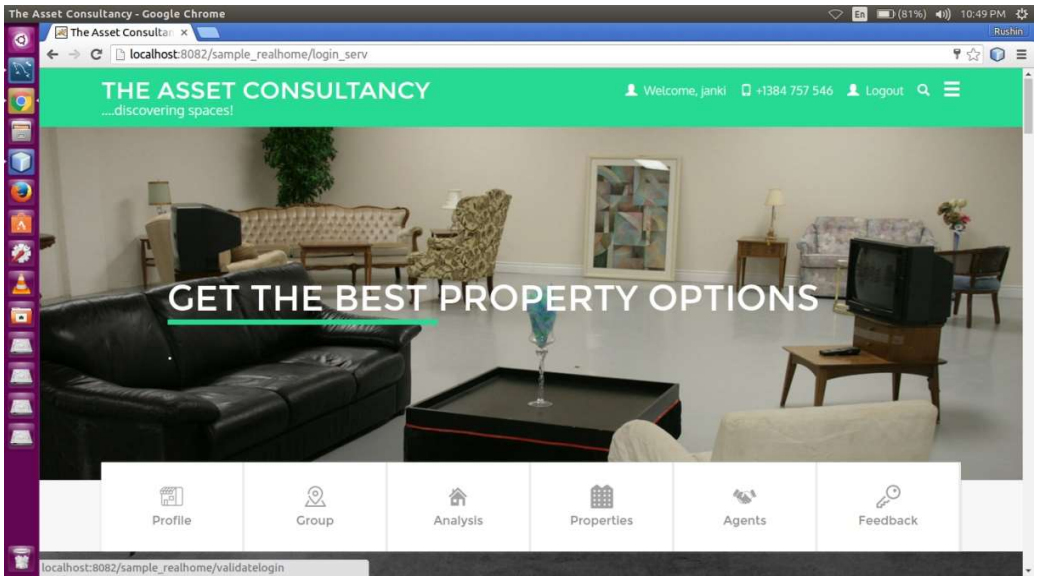
5.2 Database Relationship Diagram



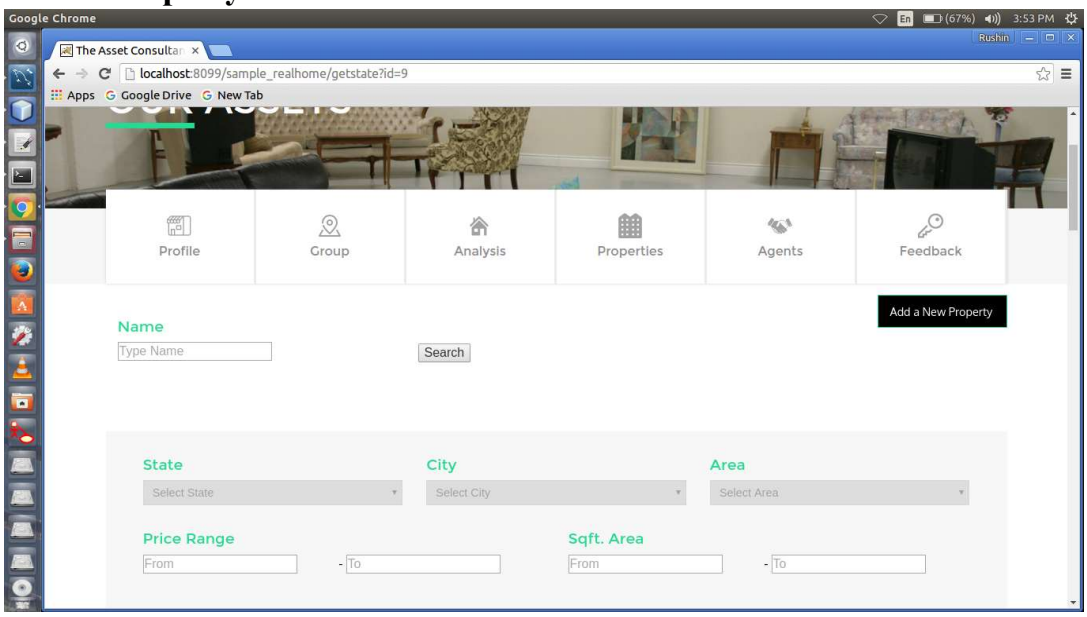
5.3 Input/output and Interface Design

5.3.1 Samples of Forms, Reports and Interface

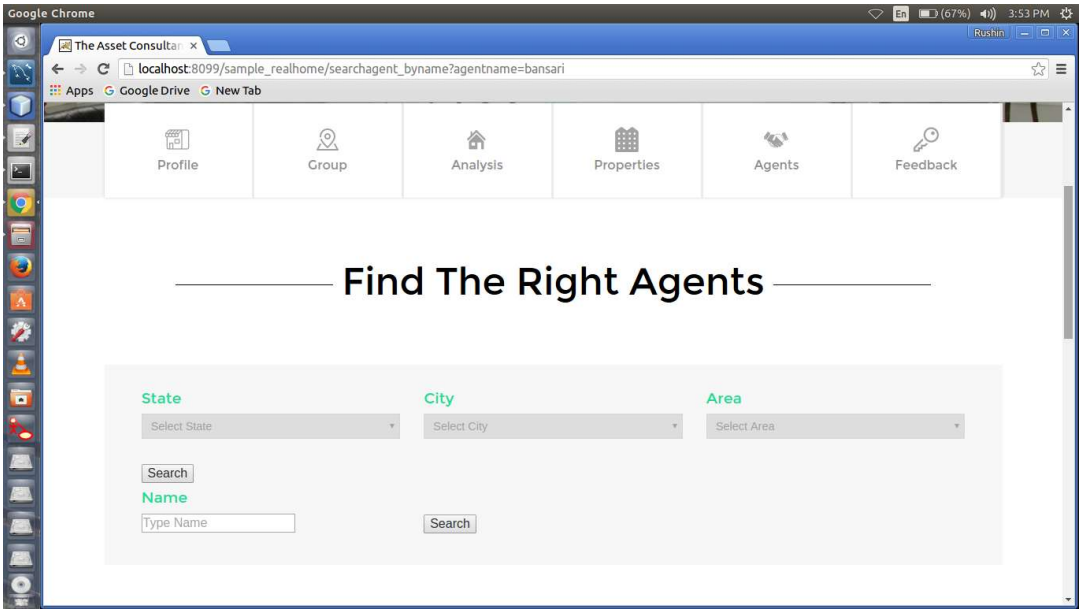
1. Home Page



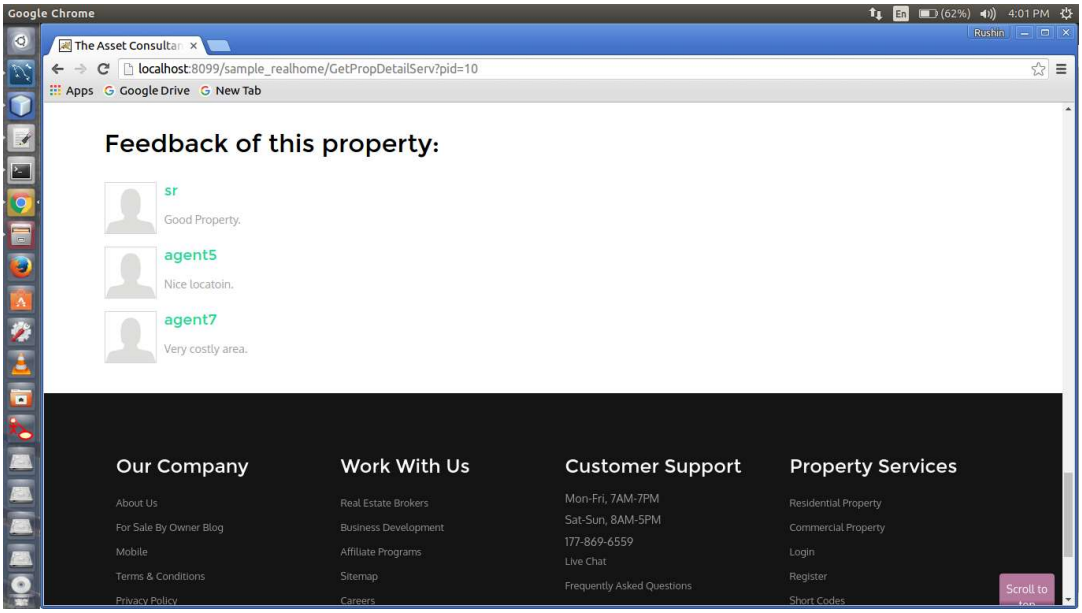
2. Search Property



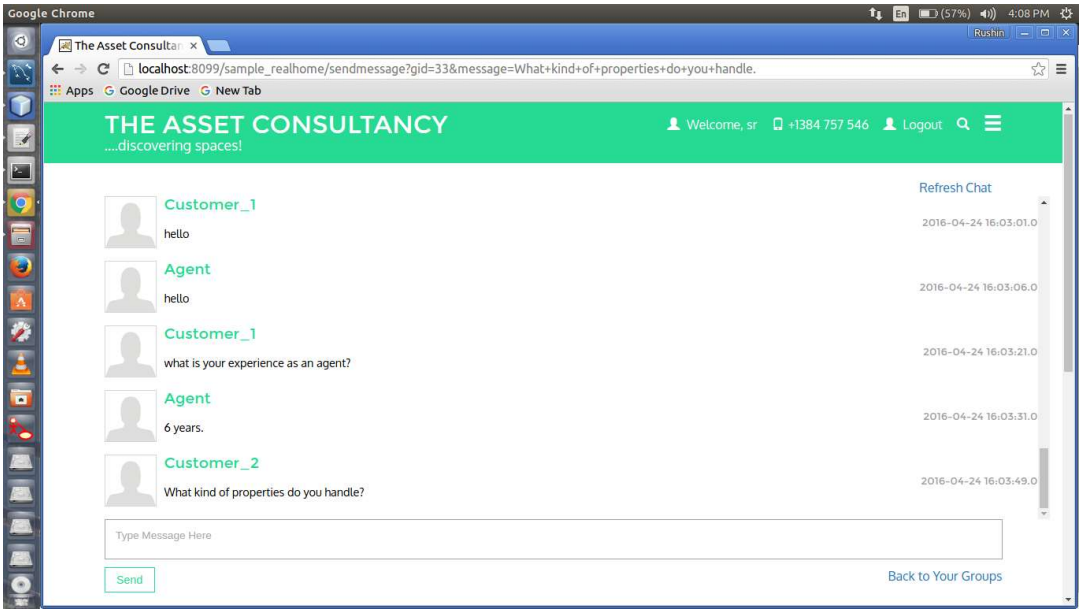
3.Search Real estate agent



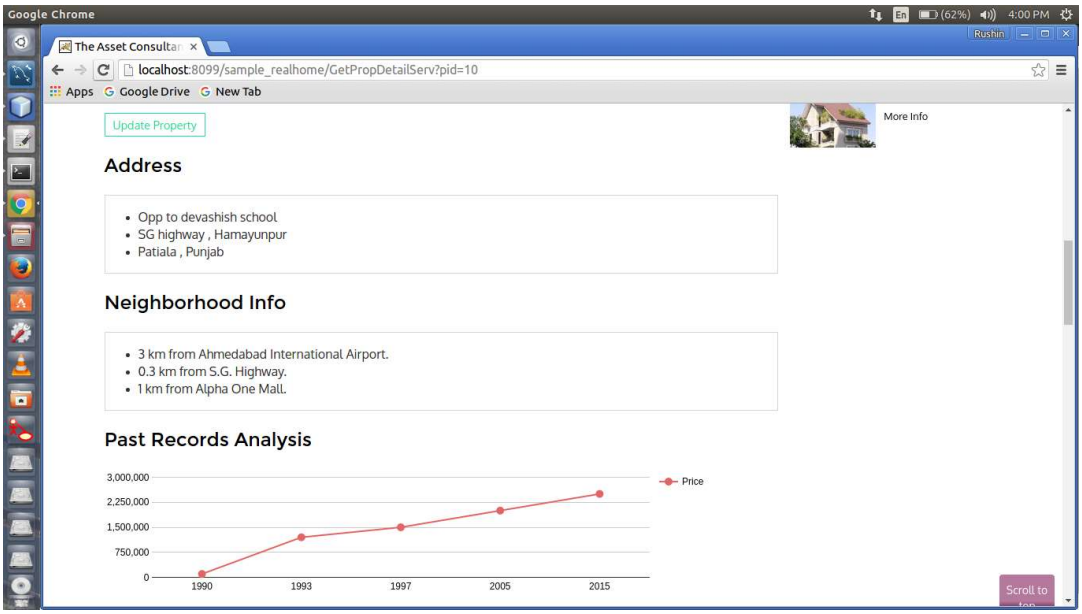
4. Property Feedback



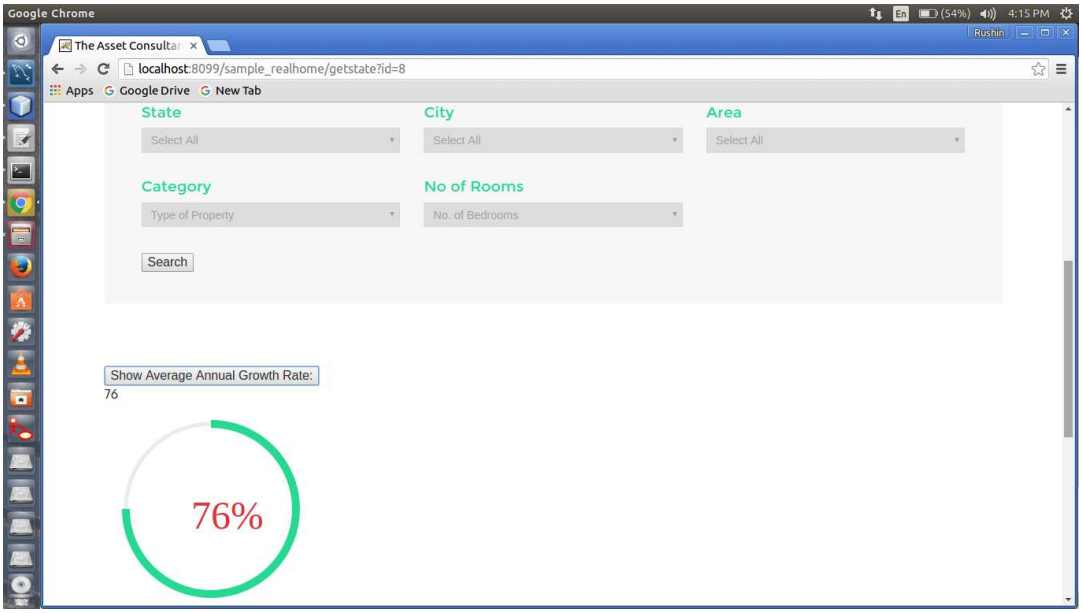
5.Group Chat



6.Analysis Graph

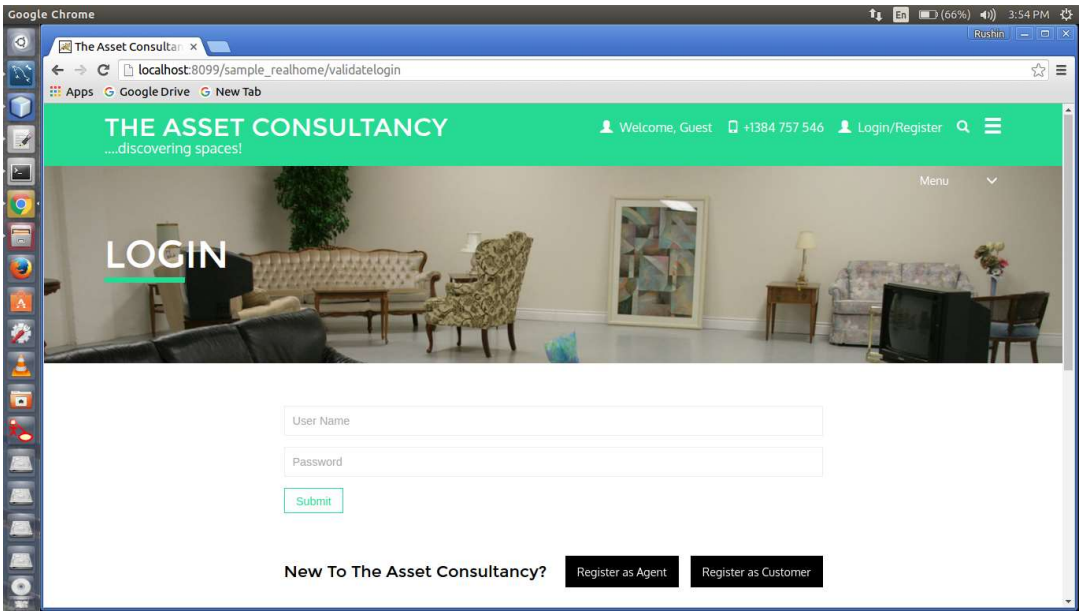


7. Growth Rate Display

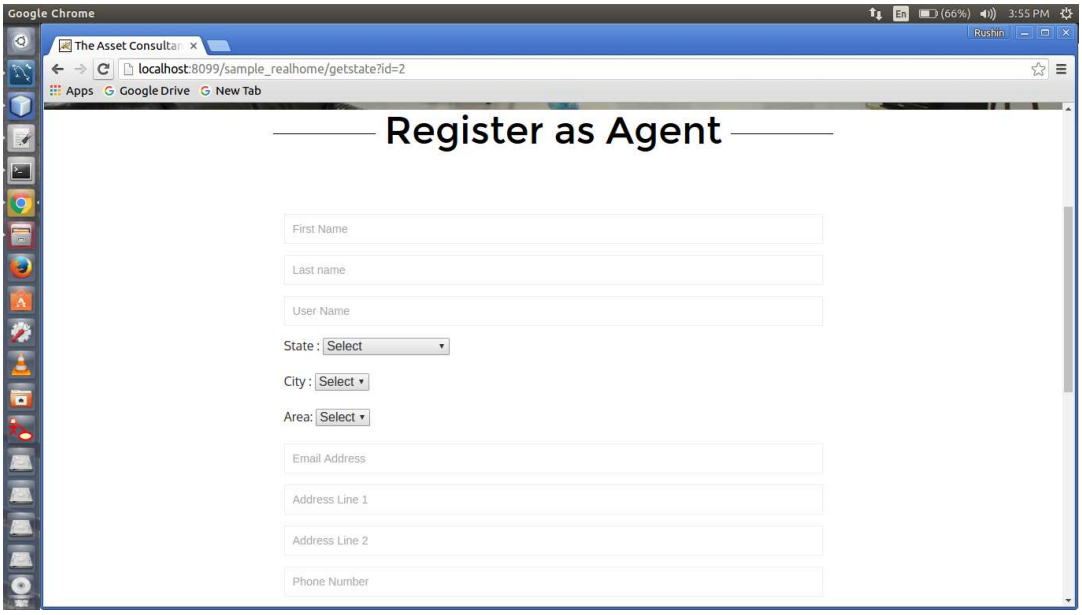


5.3.2 Access Control and Security

Login



Registration



6. Testing

6.1 Test cases (for each module).

Administrator:

Test cases	Summary	Precondition	Post condition
TC1	Name Identification	Xyz2	Invalid name. Name should not contain numbers.
		Xyz#	Invalid name. Name shouldn't contain special characters.
TC2	Password verification	Xyz	Invalid password. Password should be of 6 to 30 characters.
		Xyz532@!... (more than 30 characters.)	Invalid password. Password should be of 6 to 30 characters.
		xyz@!#	Invalid Password. Password should contain numbers [0-9] and capital letters [A-Z]
TC3	Email_id verification	xyz@xyz.co	Invalid Email id.

Profile Management:

Test cases	Summary	Precondition	Post condition

TC1	Specific Real estate agent Id	1_real estate agent	Invalid userid. Userid shouldn't contain numbers as first character.
		.real estate agent	Invalid userid. Userid shouldn't contain special characters at the first place.

Group:

Test cases	Summary	Pre-condition	Post condition
TC1	Group Name	123	Invalid name. Name should not contain only numbers.
		.@123	Invalid name. Name shouldn't contain special characters.
TC2	Invitation send to customer	1_customer	Invalid customer username. Customer username should not contain numbers as the first character.
		Customer123..(more than 11 characters)	Invalid customer username. Customer username should not be more than 10
			characters long.
TC3	Email_id invitation	Customer1@xyz.co	Invalid Email id.

Access Property:

Test cases	Summery	Pre-condition	Post condition
TC1	Property Name validation	@#	Invalid Property name. Property Name shouldn't contain special characters.
		Customer_1	Invalid Property name.
TC2	Chart type choice	Round chart	Invalid chart type.
		Numbers chart	Invalid Chart type.

7. Limitation and Future Enhancement

Limitations:

- The system is still to be worked on in order to give for flexibility and accessibility. There is possibility of obtaining more precise analysis and predictions by including detailed factors in evaluation.

Future Enhancements:

- The new features related to personal advice from the adviser can be added to the system. Currently the system supports the group messaging functionality. This can be taken to another level by giving a service of 24*7 customer care chat on the website itself.

- A more precise evaluation of parameters can be done to provide accurate analysis. We are working on providing more complete and detailed functionalities to the administrator and the user.

- Furthermore, property area ranking can also be shown twice in every month. Such feature will create a better idea in mind of the customer about which area is to be selected for investment.

8. Conclusion

In conclusion, it can be foreseen that if the project is implemented, it is going to be of much help the people who would like to analyze the market of real estate by oneself. The features would avail the user to know the trend and thus come to a decision about the property statistics. Though many other systems would be competing this system, but once the limitations are eliminated or the future enhancements are implemented it would be one of the best in the segment of asset market.

9. Bibliography and References

➢ Books

- Object oriented Analysis and Design using UML by Michel R. Blaha and James R. Rambaugh
- The Complete Reference, Java 2 (Fourth Edition), Herbert Schild, TMH.

➢ Web sites

- www.magicbricks.com
- www.99acres.com
- www.propchill.com
- www.google.com
- www.tutorialspoint.com