**A Report on**

**Real Estate Auction Platform Management System**

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ABSTRACT

This project, "Real-Estate Auction Platform Management System," is related to online real estate applications for the dissertation module's final submission. The Real Property Administration (RPA) decided to transition from manual to automated digitalized operations. Until now, the company has relied solely on clerical methods. However, due to current issues with data management for agents, properties, owners, buyers, and search operations, RPA has made an appeal for an online system. To that end, we began the project by conducting interviews with RPA stakeholders Mr. Dan Brown, Mr. Frank Morgan, and Ms. Emma Thompson, as well as some online research and problem domains analysis. It was accomplished through careful interview preparation and execution.

Required functionalities were identified through such elicitation activities, and the project was planned accordingly. To provide a clear picture of data and information, a system design process was carried out, which included system analysis, database design, system functionality design, and interface designs.

System analysis and design were carried out using Use Case diagrams, Class Diagrams, Sequence Diagrams, State Diagrams, Activity Diagrams, Collaboration Diagrams, and Deployment Diagrams, followed by database design using E-R diagrams and data modelling methods, and finally interface design using wireframes, mock-ups, navigation, and activity event diagrams. All these design methods aided in the systematic and consistent execution of subsequent code implementation.

For the project implementation, Laravel 8 was combined with bootstrap 5 and html, as well as a MySQL database, and was run on a Windows operating system laptop with 4/8 GB RAM. Similarly, testing operations for the implemented functionalities were carried out. The testing operations were divided into two categories: black box and white box testing, and the system was finally evaluated by RPA employees. The completed portion of the project was completed within the time frame specified by the GANTT CHART.

The overall goal of the project was to move manual company activities online in order to avoid probate, tax deduction, and to make real-estate operations untroubled and non-negotiable.

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# INTRODUCTION

This section will attempt to start the project by introducing the system to be developed, project motivation through background research, defining overall aims and objectives, and conducting some research on comparable systems and articles.

## Introduction to the system

Despite its numerous drawbacks, the manual real-estate process is still widely used, with interested buyers searching for properties with the help of brokers through affiliated organizations. Brokers are commission-paid mediators employed by real-estate management companies to represent the actual owners of real estate, which is often land with a property on it. Brokers are commission-based mediators hired by property management companies to represent the actual owners. Manual process management is a complex and time-consuming task; as a result, it is difficult to achieve efficiency and reliability with manual work.

Hiring agents, calculating the current number of agents, registering owners and their properties, finding homes for prospective buyers, and negotiating prices are all done manually in manual real-estate administration rather than using simple software to make the task simple and accurate. In the manual real-estate industry, an online real-estate administration system may be the real deal in terms of automating the cycle of manual effort into digitalized work. This project is required to promote systematic and digitalized real-estate management as a replacement for manual management systems.

## Project Background

"Real Property Administration (RPA)," a real-estate management firm, is considering an effective solution for their frantic working due to the manual real-estate management system, with the goal of digitalizing their working system.

Real Property Administration (RPA) is a real-estate management company that oversees real-estate operations such as property buying and selling in collaboration with agents and assisting interested buyers in finding dependable properties. The management firm is considering computerization to eliminate manual data management challenges for managing agents, properties, owners, purchasers, and non-negotiable operations.

## Project Rationale

### Problem Definition

Because all data is kept on paper, there has been misplacing and leakage of papers, resulting in disagreements with clients and company staff, as well as client loss due to a lack of security, which leads to client dissatisfaction. A single operation took a long time and a lot of effort. For example, if an interested buyer came to the company looking for a specific property, it was quite a burden to go through all the documentation for that specific group of properties, physically transporting and handling them here and there and occasionally to the property field. Even though there are few clients, dealing with paperwork is simple.

However, as the number of clients increased, it became more difficult to manage each piece of information accurately, resulting in a significant amount of paperwork and a lack of physical space. Editing properties, as well as clients' and brokers' personal information, has proven difficult. Physical documentation and storage are frequently more expensive procedures, resulting in increased company costs. In addition to all of this, buyers' price negotiations are a chore that businesses prefer to avoid. There have also been instances where a single property drew many buyers.

### Possible Solution

These issues may be efficiently addressed by a system with an appropriate authorization procedure, which increases the organization's trustworthiness. A system that makes property searching easier and less time-consuming benefits the business because it creates a simple and rapid system in which one task does not absorb all the time and effort. An excellent alternative would be an IT product or system that allows you to store as much data as possible without taking up extra physical space. A proper system that enables each employee to handle their personal information as they see fit would be extremely beneficial to the company. A system in which they do not have to deal with price or anything else, and everything may be handled civilly and directly between several buyers and property owners.

### Proposed System Credibility

As a conclusion to a study into the above problems, the building of a new system for the firm based on the internet would enhance the company's operational characteristics, resulting in effective administration of real-estate operations. A Real-Estate Auction Platform Management System, in which a company can hire employees (agents), store and manage their information electronically, and similarly, where buyers and sellers can register and only enter the system if authorized, as well as store and manage their own information, would make the company system secure and decentralize the system between all individuals involved, resulting in fast and accurate operation. Furthermore, with the bidding facility, multiple buyers can try their luck on a single property with their best price, and owners can directly pick their best amount, which is beneficial to both the owners and buyers, as well as the company, because they do not have to deal with price negotiation, and the environment is unaffected, which is in contrast to where the company must satisfy both buyers and owners, and all of these processes are far more affordable because physical space consumption is not a factor.

## Introduction to the Report

The primary objective of this paper is to establish the required methodology, design, and development foundations for the Real-Estate Auction Platform Management System for RPA project that was previously proposed for the dissertation. The project's background/motives, system introduction, scope, and aims and objectives are all rationalized in this report. The proposed design methodology, which is a waterfall model, is then implemented into project execution, starting with a brief of requirement engineering processes, requirement specification formulation, system analysis and design, implementation of some of the specifications, testing and evaluation strategy, and an updated GANTT chart to showcase project element time frames.

## Project Aims and Objectives

This section will lay out the project's aims and objectives, which must be accomplished by the project's conclusion.

### 1.5.1. Aims

The following are the project's aims:

* To enable a real estate firm to shift from a manual management and operations system to a digitalized management and operations system.
* To make data administration easy, fast, safe, and seamless for each business module and real-estate activity.
* To make the financial activities of the organization impenetrable in negotiations.

### 1.5.2. Objectives

* Identify and collect requirements for project execution by conducting interviews with RPA stakeholders, analyzing current manual systems in the company and relevant documents, researching comparable systems in the market, and reading related publications on the internet. After that, create a requirement specification.
* Analyze and design the system to meet the needs of the company, including database design using E-R diagrams and data modeling to identify actors and related attributes, real-estate operations design using UML diagrams and state, activity, collaboration, and deployment diagrams, and interface design using wireframes and mock-ups to visualize the company's needs.
* Create a completely working system using relevant programming tools in a suitable environment.
* To secure and govern the entire system, employ user credentials to authorize the entire system.
* Create a system that can store all the company's information and actions.
* Provide a simple and intuitive user interface to the system so that it demands the least amount of labor from the user while producing the greatest outcomes, making the system easy to use.
* To minimize pricing disagreements between company representatives and clients, and to deal with non-negotiable real-estate transactions, turn the system into an auction platform.
* Test and validate each system's functionality on behalf of the firm to ensure that it is helpful and runs properly.
* Create a robust real-estate auction platform administration system in the period allocated.
* Maintain accuracy, reliability, and the project's intended approach throughout the project's execution.

## Project Development Methodology

This section will outline the research methods used at each stage of the development process, as well as their rationale. This project follows the waterfall methodology of software development. I picked the waterfall method because I want to build a client-driven website and want to make sure that all the key features and constraints are well understood before proceeding with the actual implementation. I could have chosen the agile method, but it isn't necessary because I will have well defined schedules and goals for each project, as well as a complete awareness of all constraints prior to implementation.

Diagram

Description automatically generated

Figure 1.6‑1 Waterfall Model of SDLC

All the phases are detailed here in chronological sequence.

### Requirement Engineering and Specification

The author performed one-on-one interviews with corporate stakeholders as well as background research to ensure that the best criteria are satisfied.

Table 1.1 Requirement Engineering and Specification

|  |  |
| --- | --- |
| Elicitation Activities | Reasoning |
| Interviewing | Because the issue would be unique to the company, the author picked this technique because it allows us to obtain information from credible sources while also contributing to the system description. Furthermore, because the system will be client-driven, the interviewing approach for elicitation is the greatest option because it entails collaboration with actual clients. |
| Background Reading | In terms of background information, the author decided to investigate two areas: relevant articles and similar systems.  Examining similar systems tries to uncover distinctions between similar technologies and enables for the adaption of new features for the system to be built, while reviewing existing papers assists in acquiring a complete grasp of the subject area. |

### System Analysis and Design

Table 1.2 System Analysis and Design

|  |  |
| --- | --- |
| Activities | Reasoning |
| High Level Function Design Diagrams | This is the author's choice for representing the system's functional architecture.  Techniques:  UML Use Class, UML Class, UML Sequence, UML Deployment Diagram. |
| System Database Design Diagrams | This is the author's choice for representing the system's logical models.  Techniques:  Data Modelling, Entity-Relationship Diagram. |
| System Interface Design Diagrams | This is the author's choice for representing interfaces with an emphasis on appearances and styles.  Techniques:  Wireframes, Mock-ups. |
| Other Diagrams | Other Techniques are:  System Activity, System State Diagram. |

### System Implementation

Table 1.3 System Implementation

|  |  |
| --- | --- |
| Programming Tools | Reasoning |
| Laravel 8 framework | The author chose the Laravel 8 framework, which is based on the PHP language, because it has various packages as well as API connections, which are necessary for back-end development. It's also built on the MVC framework, which is ideal for OOP. |
| HTML, Bootstrap 5, JavaScript | These are the options used by the author to generate media-responsive and interactive web views, which are necessary for front-end development. |
| MySQL | The author uses a MySQL relational database to hold corporate data and use database models to govern interaction between views and controllers. |
| Google Map APIs | For the autogenerated address field and map creation, the author uses Google Map APIs. |

### System Testing

Table 1.4 System Testing

|  |  |
| --- | --- |
| Testing Activities | Reasoning |
| Black box testing (test cases) | The author thinks about test cases to test the system's whole functionality. |
| White box testing (Unit testing) | The author considers unit testing to be white box testing for each unit of code. |

### System Evaluation

Table 1.5 System Evaluation

|  |  |
| --- | --- |
| Evaluation Activities | Reasoning |
| Project Trial | By allowing certain users to utilize the system, the author deems this way for a proper evaluation of system usability in the firm. |

# RESEARCH AND LITERATURE REVIEW

This section will attempt to provide a list of previously published real-estate management papers.

## Research Aims and Objectives

* Make a critical evaluation of previous research on the issue (project challenge), using pertinent journal papers as an example.
* Give readers a critical overview of current knowledge, as well as an explanation of how the chosen topic fits within it.
* Provide direct quotations, references, an introduction, a summary, and background information in each article review.

## Articles Review

This is an essential section since it allows us to learn from academic sources about what is already known about the issue and different approaches to it. The topic is a platform management system for real estate auctions. As a result, real-estate, auction, real-estate management system, auction system, and management system might be used as research keywords. Using the Google Scholar database, the author concentrates his research on these terms.

### IEEE Research Papers Review

#### IEEE: Real Estate Management System Based on Blockchain

Ankit Mittal, Bhavyansh Sharma, and Pinku Ranjan of the Indian Institute of Information Technology and Management (2020) describe how a blockchain-powered real estate management system, which will include all real estate management departments, with each blockchain storing all transactions, will make the system transparent, secure, and efficient, as opposed to centralization and decentralization.

Although the previous manner of preserving paper documentation of real-estate operations has become digital, the real-estate transaction continues to confront computerization, which addresses the present issue since many firms still rely on a large human force for the transaction. This study also discusses the issues that have arisen because of the old method of record-keeping. Because any property is a high-valued asset, accurate data must be preserved to provide the owner with authenticity; nevertheless, the old method is hampered with incomplete and destroyed records. For real estate management, the system is separated into various divisions that do not function in tandem, resulting in inadequate verification and document fraud. To transfer property, one must go through many departments, each of which changes their copy of the records, which is a flaw in the system that certain cheaters can exploit. These data, however, may be cryptographically protected and utilized to safeguard ownership rights, prevent fake sale deeds, and resolve disputes with the correct solution. This study also discusses a possible solution for the forementioned issues, which is to work with all of these departments in a synchronous manner to create a centralized system that is connected to all departments; however, there are certain issues with the centralized system. The centralized system's potential vulnerabilities include data theft, data loss, and data manipulation. As a result, the system's centralization will no longer suffice, and in comes a blockchain-powered system that combines a centralized system for real estate administration with decentralized and distributed data storage. The system will be linked to other departments and synchronized with them to allow for efficient and real-time data access, verification, and property transfers. Blockchain technology's main purpose is to maintain data security and consistency.

Overall, the researchers discovered that as technology advances, real-estate dealers' experiences would improve if, rather than entirely centralizing and decentralizing the system, we centralize it using many blockchains. This is relevant to the project I'm working on because I'm going to build an online real-estate management system that's similar to blockchain technology in that there will be separate departments for enterprise, buyer, and seller, each with their own authority controlled by the admin, which will be the central department.

#### IEEE: Secure E-Auction System Using Blockchain: UAE Case Study

This paper from Hani Qusa, Jumana Tarazi, and Vishwesh Akri at the Higher Colleges of Technology in Dubai, UAE (2020) describes a prototype of a secure blockchain e-auction system that uses smart contracts to store important transaction details such as auctioneer data, auction start time and deadline, current winner data, and the current highest price.

"One key automation of e-commerce services is electronic auctions, often known as E-Auctions," according to this study article. In addition, the study attempts to explain two primary sorts of auction systems. The first is a public bid auction, in which all bidding prices are displayed in front of the public and the highest bidder ultimately wins. The second type of auction is a sealed bid auction, in which the bidding prices are only revealed after the deadline, and the highest bidder wins. The researchers try to explain why a perfectly safe auction system necessitates a lot of work. As a result, one of the answers is to embrace a blockchain-based strategy. Finally, the article outlines the stages involved in creating a system prototype. The first stage is to register assets, which should be done by the seller. The second step is to submit an auction request for that item. The asset must be authenticated in the third phase before a final decision can be made.

Overall, the researchers wanted to provide a blockchain auction system that may increase the security of any auction process, particularly in the United Arab Emirates. The research claims that critical security factors such as confidentiality and authenticity were secured using blockchain technology. In relation to the project, I'm working on, a similar system might be implemented on the corporate website, where a seller could register a property for auction, and then the company admin could check the property before moving on to the next step.

#### IEEE: Basics of Forming an Integrated Management System

Yuliya V. Velmakina, Svetlana V. Aleksandrova, and Victor A. Vasiliev of the Quality Management and Certification Department, Moscow Aviation Institute (National Research University), Moscow, Russia (2018) discuss the challenges of forming an integrated management system based on the quality management system and including branch systems such as the information security system and the information services management system, by proposing a model (stages) for integrated management system.

The combination of industrial management systems with quality management systems, according to this article, allows businesses to improve their efficiency, lower total costs, and boost competitiveness. The quality management system can be used as a foundation for integrating industrial management systems or separate aspects, resulting in a fully integrated management system. The article then goes over the many steps of implementing an integrated management system. Multifunctionality with minimum development, implementation, and operating expenses is one of the key benefits of deploying an integrated management system.

The stages of an integrated management system described in this article can be used in this project as a measure to allow the firm to provide information and communication services to its consumers. The steps begin with the planning for an integrated management system, which includes determining the firm environment, defining customer needs, identifying risks, and then putting systems in place through the creation of a process and assessment register. The final step is to evaluate the system's efficacy and stakeholder satisfaction, as well as to review and update it on a regular basis.

#### IEEE: Real Estate Business E-commerce System Research Based on Supply Chain

This article by Shen Aihua of Harbin University of Commerce's School of Construction and Refrigeration, Harbin, China, (2010) shows how real-estate businesses may use different types of e-commerce models to benefit from new technology and goods.

According to this research, the real estate business is beginning to exhibit a "customer first, brand building, long-term growth" pattern of competitiveness. However, many real-estate businesses have struggled with customer interactions, lowering operational expenses, and increasing profits. In such circumstances, supply chain management combined with e-commerce aids in boosting overall customer happiness, sales growth, and corporate competitiveness. According to real-estate companies, E-commerce businesses can fall into a variety of categories. The first is B2B, which involves transactions between two firms or organizations. For example, real-estate transactions between businesses and banks, governments, or other businesses. Direct costs and operating cost management may be greatly lowered by applying this. The second is B2C, which involves transactions between businesses and individual customers. Real estate sales, consumer searches, enterprise information inquiries, real estate, information inquiry, commonly asked questions, applicable legal advice, property processing, service, and property services are among the items covered. A high degree of customer satisfaction may be reached by applying this. The third kind is C2C, which refers to consumer-to-consumer interactions. Second-hand housing transactions, housing and leasing, real estate auctions, warrant agents, and price appraisal are all covered. This, together with the integration of bidding procedures, may save a lot of money on market communication. On the other hand, this model's participation group is vast, and the breadth of choice is broad.

Overall, the goal of the study was to present several models, tactics, and advantages for implementing e-commerce supply chain management in the real-estate industry. B2B, B2C, and C2C are the three distinct models. In relation to the project, I'm working on, a C2C system could be implemented on the corporate website, allowing customers to complete transactions through interactions with one another, while also incorporating bidding procedures, as one of the main issues our company-client faces is customer price negotiations.

### Other Research Papers Review

#### ONLINE REAL ESTATE MANAGEMENT SYSTEM

This research study offers a new virtual platform that allows any user to submit a property-related advertisement on the Internet for free.

Whether you're looking for a home or selling one, the authors feel that a pleasant and hassle-free experience is essential. Online Real Estate Managements System offers a one-stop Real Estate Management System for your dream home. Our Real Estate Management System engine makes it easy to find a property. The author then provides a background study on the current system, in which all procedures are performed manually. Documents or letters are used to communicate information between different parts of the company. The report then presents the suggested system as an alternative to the manual system, which is, incidentally, the same motivation as our effort. The suggested system is designed to be as simple to use as perusing a webpage, allowing even non-technical users to participate with the application's processing. The technology also allows for simple data administration. Non-registered users are unable to add or alter properties in the system. A potential buyer can look for a home by using search parameters such as the area name, price range, sale purchase/rent, and so on.

Overall, the scope of the research study imposed a system for online real estate administration for a corporation to replace an existing manual method. This may be considered for the system I'm working on, but with some more features added because the system will also have bidding capabilities.

# REQUIREMENTS ENGINEERING

This part comprises all the requirements collecting efforts as well as all of the needed specs for the system to be built, allowing for a comparison between the company's requests and the final result.

## Elicitation Activities (Interview)

Mr. Dan Brown (the firm's owner), Mr. Frank Morgan (an existing client of the company), and Ms. Emma Thompson (a potential customer of the company) were interviewed one-on-one to understand more about RPA's business needs.

### Interview Plans

The objectives of the interview, interview questions, methodology, and the projected time of the interview are all included in this part.

#### Objectives

* Learn how the present system operates.
* Find out about the present system's faults.
* Discover all the system's possible restrictions.
* Learn about the expectations and requirements of the firm.
* Try to consider as many recommendations as possible.
* Make a list of questions that cover all aspects of the system's evolution.

#### Questions

A set of questions was generated for each interviewee. RPA property was used for all the interviews.

Table 3.1 Interview Questions for Mr. Dan Brown

|  |  |
| --- | --- |
| Problem Domain Entities | Questions |
| Mr. Dan Brown (owner of the company) | 1. What motivated your company to make the switch from manual to digital operations? 2. Have you tried switching from a manual to a digital camera before? What went wrong if that's the case? 3. What is the project's estimated completion date? 4. What are the main drawbacks of the existing paper-based system? 5. What are your primary goals for the system? 6. Do you want to customize your system to a certain country? 7. How would you like to go about negotiating prices? also, why is that? 8. Is there a programming language in particular that you prefer to use? 9. Is there anything in the law that restricts you? 10. Do you have any recommendations regarding the user interface of the system? Do you have a favorite color combination? 11. What type of data do you wish to save in the database? 12. Who oversees the company's operations? 13. Do you also wish to include rental properties? |

Table 3.2 Interview questions for Mr. Frank Morgan

|  |  |
| --- | --- |
| Problem Domain Entities | Questions |
| Mr. Frank Morgan (existing customer of the company) | 1. Have you done business with the organization for a long time? 2. How did you go about registering as a customer? 3. Would a bidding procedure be more convenient for you to undertake pricing negotiations? 4. As a seller, how did you register your land property? 5. As a buyer, how did you acquire access to the registered properties? 6. As a merchant, are there any specific features you'd want to see? 7. Is property information sufficient? Would you like to see some further property information? 8. As a buyer, how did you obtain the authorization to purchase property? |

Table 3.3 Interview Questions for Ms. Emma Thompson

|  |  |
| --- | --- |
| Problem Domain Entities | Questions |
| Ms. Emma Thompson (potential customer of the company) | 1. Why do you think a digital system can replace a manual method? 2. How do you think client registration should be handled online, in your opinion? 3. What are the advantages of bidding over the usual price negotiating technique, in your opinion? 4. Do you think there will be more technical problems on the internet in the future? 5. Why do you think the auction price-negotiation strategy will enhance the sales price more than the prior system? 6. How frequently do you think you'll use an online system? 7. What is your opinion on how property registration should be handled? |

*Methods?? Interview Duration??*

Each interview will be limited to 30 minutes in length. Every result should be meticulously documented, question by question.

* All the pertinent issues have been handled.
* The interview and the topic will be discussed with the company.

### Interview Findings

This section is for keeping track of the outcomes of RPA stakeholder interviews.

Interview Title: Initial Interview with Mr. Dan Brown

Interview Date & Time: 2021-12-01 10:00am-10:30am

Duration: 30 minutes

Table 3.4 Interview with Mr. Dan Brown

|  |  |  |
| --- | --- | --- |
| Question Number | Question | Answer |
| 01 | What motivated your company to make the switch from manual to digital operations? | There was a slew of concerns to address. There was a lot of misplacing of documents because all vital information was maintained on a paper document, which is why many clients were disappointed with the lack of security. A single activity took a long time since we had to go through every single file looking for certain data. Transporting property data to the field has been one of the most challenging undertakings. It used to be a lot easier. However, as the number of clients has increased, keeping track of paperwork has become a huge difficulty, demanding physical space growth. Keeping track of everything has also proven pricey. So, yes, we've been arguing for a long time whether to go to automated operations. |
| 02 | Have you tried switching from a manual to a digital camera before? What went wrong if that's the case? | We haven't yet done so. For us, this would be the first time. |
| 03 | What is the project's estimated completion date? | The project is expected to be finished in 6-8 months. |
| 04 | What are the main drawbacks of the existing paper-based system? | As I previously indicated, keeping track of documentation has been a challenging task. It would take days to update, remove, or add new data, or to transfer critical information to vendors or purchasers, or even to the field. A lack of security has resulted from the theft of papers. Aside from all of this, price negotiation between suppliers and customers is one of the most pressing difficulties. As a result, an online management system that allows vendors and buyers to automatically negotiate prices, particularly through bidding, would be desirable. Customer fraud is also witnessed on occasion. |
| 05 | What are your primary goals for the system? | We've developed a list of the most important system requirements.   * The system should be simple to use and understand. * The system should have strong security and permission features, such as email verification. * According to the firm handler, sellers should be able to register their land property, and purchasers should only be authorized to purchase authenticated property. |
| 06 | Do you want to customize your system to a certain country? | For the time being, no. |
| 07 | How would you like to go about negotiating prices? also, why is that? | As I previously stated, discussing pricing is another annoyance that no company likes to deal with. Therefore, a bidding system in which potential purchasers could bid for a specific property and sellers could evaluate and accept the bid would be practical for the firm, as the company would not be responsible for anything else, and sellers and buyers would be able to handle things independently. |
| 08 | Is there a programming language in particular that you prefer to use? | No, the decision is totally yours. Select the best. |
| 09 | Is there anything in the law that restricts you? | There aren't any that we're aware of. However, we would want you to investigate this more thoroughly. |
| 10 | Do you have any recommendations regarding the user interface of the system? Do you have a favorite color combination? | Try to stay away from everything that isn't absolutely required. Make it easy to understand while still being fascinating. There is no such thing as a color preference. |
| 11 | What type of data do you wish to save in the database? | We'd want to save as much information on customers, properties, and bids as possible. |
| 12 | Who oversees the company's operations? | With the assistance of employed agents, the company's head. |
| 13 | Do you also wish to include rental properties? | Sure. |

Interview Title: Initial Interview with Mr. Frank Morgan

Interview Date & Time: 2021-12-01 11:00am-11:30am

Duration: 30 minutes

Table 3.5 Interview with Mr. Frank Morgan

|  |  |  |
| --- | --- | --- |
| Question Number | Question | Answer |
| 01 | Have you done business with the organization for a long time? | Yes, for around ten years. |
| 02 | How did you go about registering as a customer? | After hearing about the firm, I went there first. I provided my personal information on a form provided by the firm. After a few days, I received a call informing me that if all the conditions were completed, I had been verified as an official client of a firm. Then I was given information on all the properties that had been registered and asked whether I wanted to buy any of them. To become a seller, I had to go through a different process. Another form had to be filled out and a charge had to be paid. After a few days, I was informed that if all the conditions were satisfied, I was now an official vendor for the firm. Users would be prompted to re-fill the form if the conditions were not satisfied in both situations. However, if a vendor registers, the cost will be refunded. If I merely registered a couple of my properties, I'd be swamped with property purchase inquiries on a regular basis, if at all. |
| 03 | Would a bidding procedure be more convenient for you to undertake pricing negotiations? | Unquestionably. Sellers would be able to get the best price feasible. Buyers would be able to make the highest bid possible. The market would become more competitive because of this. Even if the corporation had no responsibility for pricing negotiations, it would promote it. |
| 04 | As a seller, how did you register your land property? | As a seller, I had to notify one of the company's agents. Then he or she would provide me a paperwork for registering my property. After that, I'd complete the registration form. However, it will only be registered when it has been authenticated by the company. If not, the property would stay among those that have yet to be validated. |
| 05 | As a buyer, how did you acquire access to the registered properties? | You would receive daily notifications regarding newly registered homes as a buyer. If I wanted to access registered properties in bulk, I had to go via the corporation and ask one of the agents to provide me with the information. |
| 06 | As a merchant, are there any specific features you'd want to see? | Yes, I'd want to have property search capabilities based on property price and address because the system will be online. Based on your research, you can contribute more. |
| 07 | Is property information sufficient? Would you like to see some further property information? | Yes, it will suffice for the time being. |
| 08 | As a buyer, how did you obtain the authorization to purchase property? | I'd approach the business's owner, agent, or seller, and they'd point me in the right direction. |

Interview Title: Initial Interview with Ms. Emma Thompson

Interview Date & Time: 2021-12-01 12:00pm-12:25pm

Duration: 25 minutes

Table 3.6 Interview with Ms. Emma Thompson

|  |  |  |
| --- | --- | --- |
| Question Number | Question | Answer |
| 01 | Why do you think a digital system can replace a manual method? | Because we are living in the digital age. Is there anything that can't be done with a computer? Furthermore, due to advancements in technology, a digital system may easily replace a manual one. |
| 02 | How do you think client registration should be handled online, in your opinion? | Basic personal information may be asked for online registration. It is impossible to overestimate the value of email information. |
| 03 | What are the advantages of bidding over the usual price negotiating technique, in your opinion? | Because the corporation would not have to worry about pricing discussions and would be able to generate a profit with no effort. |
| 04 | Do you think there will be more technical problems on the internet in the future? | As a user, though, adjusting to internet technologies can be difficult. When it comes to technical concerns, device compatibility might be an issue. If that's the case, you should be able to make the system mobile-friendly. Also, according to what I've heard, the RPA has over 1000 users, so there may be access concerns. |
| 05 | Why do you think the auction price-negotiation strategy will enhance the sales price more than the prior system? | Bidding can help buyers compete more effectively. When compared to the prior method, every bidder would be willing to bid their highest price, resulting in a greater sale price. |
| 06 | How frequently do you think you'll use an online system? | This is something about which I am unsure. If the system was straightforward to use, I'm sure I'd be more indulgent. However, if that were not the case, it would be tough for me. |
| 07 | What is your opinion on how property registration should be handled? | It should be basic, with no superfluous frills; yeah, and it should contain the image and relevant documentation. |

## Other Problem Domains Research

### Comparable Systems

Comparative research is a research approach for determining the usability of a system.

The following are some of the extant similar systems, along with their distinguishing characteristics:

Table 3.7 Comparable Systems

|  |  |
| --- | --- |
| Name of the System | Features |
| A house with a tree in the front  Description automatically generated with low confidence  Figure 3.2‑1 Realtor.com | Realtor.com is a real estate listings website owned by News Corporation subsidiary Move, Inc. and based in Santa Clara, California. As of 2021, it is the second most popular real estate listings website in the United States, with approximately 100 million monthly active users.  Distinguished Characteristics:  Premium Listings and Profiles: Premium exposure for profiles and/or listings can be provided, which includes increased lead generating opportunities, more prominent placement, and more detailed information.  CMA Tools: Comparative market analyses (CMAs) may be used to compare real estate listings, which can subsequently be shared with clients.  Mortgage Calculators: The listing service includes simple mortgage calculators so that agents may estimate potential buyers' purchasing power and set budget restrictions. |
| Graphical user interface, application  Description automatically generated  Figure 3.2‑2 Huzbu.com | Hubzu.com is a website that allows sellers to promote their houses in several ways while also allowing users to make bids or offers on those homes. Hubzu.com is not involved in the transaction between the Buyers and the Sellers. Hubzu.com is a real estate auction and management platform that operates online.  Distinguished Features:  • It runs a reserve auction, which means the sale will be rescheduled if the seller does not obtain his asking price.  • It's mostly used for bank-owned homes.  • The seller mentions the open offer amount as well as an unspecified reserve price. |
| A picture containing text, building, house, outdoor  Description automatically generated  Figure 3.2‑3 Zillow.com | Zillow is an American online real estate marketplace startup formed in 2004 by former Microsoft executives Rich Barton and Lloyd Frink, who also launched Microsoft spin-off Expedia.  Features:   * To boost visibility, submit properties to the listing service and browse through other syndicated listings. * Property valuations, pictures of the houses, and descriptions of fittings or amenities are all common details seen in ads. * Share professional profiles of brokerages or agents that highlight their areas of specialization, active listings, and service offerings. * CMA Tools. |

## Requirements Specification

Based on the requirements collecting techniques outlined above, this section will explain the system's functional requirements, performance requirements, design, and commercial limitations (system specifications).

### Problem Domain Description

Problem Domains are the areas that must be researched to handle the extracted problem. The collection of issue domains in our industry would include the present real-estate system in the firm, persons participating in the company such as employed agents, company admin, and other users, papers about current system procedure, and information about every sort of action in the organization. To overcome commercial constraints, we must first identify all the issues. We can accomplish this by examining the problem domain.

#### Existing Business Operations

Existing Business Operations is one of the problem domains. RPA's day-to-day operations are carried out manually. Some of the procedures are as follows:

**Registration of Customers**

Customers that are interested would go to the firm and fill out a registration form. If all the conditions are satisfied, they will be contacted within a few days of becoming an official customer. If the conditions are not satisfied, users will be prompted to re-fill the form.

Diagram

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Figure 3.3‑1 Figure Showing Customer Registration

**Registration of Sellers**

The company's official client would have to go through a different process to be registered. Fill out another form and pay a charge beforehand. If all the conditions are completed, they will be notified within a few days of becoming an official seller of the firm. If the conditions are not completed, users will be contacted to re-fill the form, and the registration price will be refunded.

Diagram

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Figure 3.3‑2 Figure Showing Registration of Seller

**Registration of Real Estate**

The registered seller would contact one of the company's representatives first. Then he or she would hand out the property registration paperwork. The vendor would then fill out the form. However, it will not be recorded until it has been validated by the company. If not, the property would stay among those that have yet to be validated.

Diagram

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Figure 3.3‑3 Figure Showing Registration of Real-Estate

**Viewing Registered Real Estate**

Registered customers will receive daily updates on newly registered properties. They have a good view from there. However, if the consumer wants to inspect registered properties in bulk, he or she must go to the firm and request the information from one of the agents.

Diagram

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Figure 3.3‑4 Figure Showing Viewing Registered Real-Estate

#### Existing Business Limitations

This section gives an overview of the system and indicates the areas where it needs the greatest help.

• The customer/seller registration procedure takes a long time. You must go to the firm and fill out the registration form, following which you must wait a few days for verification. Furthermore, there is no certainty that we will be admitted.

• All files are handled physically. It is possible for a file to be lost when being moved from one operation to another.

• There is no assurance of data privacy because completed forms are reviewed by various agents.

• Visiting the firm every time you want to check the registered properties is excessive as a buyer.

• Customer fraud is possible since anybody may enter the firm.

• Finding a certain property is challenging.

• According to the interview, the company's price negotiation is perceived as an impediment.

### Functional Requirements

This section will detail all the features that the system must provide in order to solve existing business challenges and fulfill company standards.

#### Manage User

This module will handle user registration, authentication, and role administration.

**Register User**

This module will add a user to our database.

Input: Username, email, password, and payment for premium (seller) services (optional).

Output: Confirmation that the user has registered.

**Authenticate User**

This module will validate the user's identity.

Enter your username and password.

Output: A message regarding user validation.

#### Manage User Profile

This module will deal with user data.

**Display User Information**

This module will offer user info to authenticated users.

Input: User Choice

Output: User Information

**User Information Should Be Updated**

This module will make changes to the user's information.

User Details Have Been Modified

Acceptance of the circumstance as an output.

**Preferences and User Features can be managed.**

This module will remember the user's selections from the available options and allow the user to purchase a premium package (seller registration) if one is available.

User selection and voluntary payment are both inputs.

Output: Acknowledgement receipt and adjustments performed in line with the selected

#### Browse Property Listings

This module allows the user to browse property listings.

**Look for a property**

This module will do a property search based on the user-specified parameters. Location, property type, on leash or to purchase, price range, and other parameters are entered.

Enter your text here: Search

Properties that are relevant to the search are output.

#### Manage Property

This module allows our premium client (seller) to create, edit, view, and delete property listings for other users. There will also be two sorts of properties: renting and selling.

**This module will be used to add real estate for sale or rent.**

Input the following information: most current photo, price, size, location, property type (for rent or sale), amenities, and so on.

Output: The property is listed for sale or rent.

**Property should be updated**

This module will make changes to properties that are for sale or rent.

Input: The most recent image and the most recent information.

Output: The property has been modified.

**Remove a property**

This module will delete any property that the user has posted for sale or rent.

Input: User Selection Output: Property is removed

**View Property Specifications**

This module will display individual property details for sale or rent.

Input: User Selection; Output: Property Details

#### Property Sale Management

This module oversees property sales.

**Bid on Real Estate**

This module allows users to enter multiple bids on a for-sale property.

Bid is an input.

Acknowledgement or Acceptance as an Output

**Book Property**

This module allows the user to book property.

User selection is input.

The owner's acknowledgement is output.

#### Admin Criteria

**Check the property**

This module allows administrators to validate the system's listed properties.

Property Selection is the input.

Output: The property has been checked.

**Add Agent**

This module allows administrators to add agents to manage the system's listed properties.

Input: Information about the agent.

Output: The agent has been registered.

**Manage Agents**

This module allows administrators to manage existing agents.

Manipulation of agents as input.

Manipulation Acknowledgement is the output.

### Performance Requirements

This portion of the requirements specification will define the system's performance capabilities, which will be based on speed, capability, dependability, usability, and security.

**Speed**

The data flow will be increased and retrieving records will be simplified. According to net coverage, each action on this application should take between 10 and 30 milliseconds.

**Capability**

The system will be able to accommodate around 2000 individuals at the same time. As needed, the System Database can be enlarged.

**Reliability**

Except while it is being repaired, the system will always remain operational. In this event, users will be notified.

**Usability**

The system will be exceedingly simple to use and comprehend. The user interface will be simple, with all the essential navigation for various functions. The technology will also be mobile device compatible.

**Security and safety**

The security of the application will be a major focus. The system will only be accessible to users who have been authenticated.

* + 1. Design Constraints

This section addresses the non-functional requirements of the system. It is based on the look of the system rather than its behavior. These restrictions are imposed by the customer.

**Language of programming**

The customer hasn't chosen a programming language. As a result, I've decided to use the Laravel 8 framework, which is based on the PHP programming language and employs an OOP approach. The code structure will adhere to Laravel's MCV concept. And for the front-end design, I'll be employing the Bootstrap 5 framework, which is built on CSS and JavaScript technologies.

**Storage of Data**

Similarly, the client has not selected a data storage media. As a result, I decide to utilize MySQL.

**Graphics on the front end**

The client has requested that no extraneous components be included in the graphics. As a result, I decided to create a straightforward user interface with all the essential navigations for each task. The customer hasn't specified a color preference. I believe there will be no substantial color differences between interfaces regardless of the color I pick.

**Compatibility with Media**

Device compatibility concerns, like the client said, might develop. As a consequence, the system will be compatible with mobile devices.

# SYSTEM ANALYSIS AND DESIGN

This section will illustrate the architectures of system functionalities, dynamics, interfaces, and databases.

## System Analysis

### High Level Function Design

UML designs will be shown here.

#### UML Use Case Diagram

Diagram

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Figure 4.1‑1 Figure Showing UML Use Case Diagram

#### UML Class Diagram

A picture containing graphical user interface

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Figure 4.1‑2 Figure Showing UML Class Diagram

#### UML Sequence Diagram

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Figure 4.1‑3 Figure Showing Customer Sequence Diagram

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Figure 4.1‑4 Figure Showing Seller Sequence Diagram

#### UML Deployment Diagram

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Figure 4.1‑5 Figure Showing UML Deployment Diagram

### System Activity Diagram

This figure depicts the overall system behavior.

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Figure 4.1‑6 Figure Showing System Activity Diagram

### System State Diagram

This graphic depicts the dynamic picture of the system.

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Figure 4.1‑7 Figure Showing System State Diagram

### System Database Design

This section depicts the system's database design. However, it is critical to keep in mind that required changes will be made during the development process.

#### Entity- Relationship Diagram

Graphical user interface, diagram

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Figure 4.1‑8 Figure Showing Entity-Relationship Diagram

## System Design

This part displays the system's interface design utilizing wireframes and mock-ups by linking system architecture to system visual.

### Wireframes

The basic framework of the system is represented by wireframes.

Graphical user interface

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Figure 4.2‑1 Wireframe Showing Admin Dashboard

Admin can use this page to confirm or deny the listed properties.

Graphical user interface

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Figure 4.2‑2 Wireframe Showing Premium User Registration

The user can pay the fee and register as a premium user here.

A picture containing graphical user interface

Description automatically generated

Figure 4.2‑3 Wireframe Showing Property Details

Here, the user may read property data, comment on the property, and put a bid on the property.

Graphical user interface

Description automatically generated with medium confidence

Figure 4.2‑4 Wireframe Showing Premium User Dashboard

Premium users can add/delete/edit/view rental properties here.

### Mockups

Mock-ups are representations of the system in visual form.

Graphical user interface, application, Word

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Figure 4.2‑5 Mockup Showing Premium User Registration

Graphical user interface, application, Teams

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Figure 4.2‑6 Mockup Showing Rent Property Registration

A picture containing text, screenshot, indoor

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Figure 4.2‑7 Mockup Showing Premium User Dashboard

A picture containing text, indoor, screenshot

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Figure 4.2‑8 Mockup Showing Agent Dashboard

# SYSTEM IMPLEMENTATION

This section will explain the project implementation strategy, a functionality overview, and a cooperation diagram of software components for ongoing implementation.

## Overview of Implementation Strategy

The system is built on a Windows operating system PC running version 10 Pro. Laravel 8 framework is used for back-end development, whereas bootstrap 5 framework and HTML, JavaScript are utilized for front-end development. Laravel 8, since it includes all of the packages required to create a fully functional client-driven website. Bootstrap 5, since it has a front-end framework as well as media-responsive technology, which is required for this project. MySQL server is used for database building.

## Functionality Notes

Software implementation began with the creation of mockups and the incorporation of those designs into project front ends. Following the OOP approach, the Laravel 8 framework was utilized since it tightly adheres to MVC design.

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Figure 5.2‑1 Screenshot Showing Readme file

Here are all the instructions to run the system correctly.

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Figure 5.2‑2 Screenshot Showing Stripe Payment Functionality

Whenever the pay button is clicked, stripe customer object is created with user’ information. 100 dollars of payment is made, then. New payment object is created with respective payment information. User’ role is updated as premium user.

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Figure 5.2‑3 Screenshot Showing User view verified properties and search properties.

This returns the views for user where verified rent and sell properties are listed. Also, returns search data is search button is clicked.

Text

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Figure 5.2‑4 Screenshot Showing view details functionality for properties

This will return views which shows details for selected properties. Details include property location for map generation, owner information, comments, bids.

Text

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Figure 5.2‑5 Screenshot Showing functionalities for applying for rent and bid.

This will add rent or bid value for the property whenever the corresponding functions are called.

Text

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Figure 5.2‑6 Screenshot Showing functionalities for verification of properties by Admin or Agent.

Whenever the corresponding functions are called, those properties status is changed to verified. Those verified properties can be booked.

Text

Description automatically generated

Figure 5.2‑7 Screenshot Showing functionalities for disapprovement of properties by Admin or Agent.

Whenever the corresponding functions are called, those properties status is changed to disapproved. Those disapproved properties remain with pending properties.

Text

Description automatically generated

Figure 5.2‑8 Screenshot Showing functionality for viewing self-booked properties.

Whenever the above function is called, it returns all the rent and sell properties booked to authenticated user.

Text

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Figure 5.2‑9 Screenshot Showing functionality for sending mail for verification code.

This function is called whenever the user is registered, uses Mail class to send sign up email with the registered user details.

Text

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Figure 5.2‑10 Screenshot Showing functionality for automatic address generation.

With the use of Google Map Places API, we used JavaScript to generate automatic addresses while the user is typing in the address field.

## Software Components Collaboration Diagram

Graphical user interface, diagram

Description automatically generated

Figure 5.3‑1 Figure Showing System Components Collaboration Diagram

# SYSTEM TESTING AND EVALUATION

This section will include system Testing and Evaluation methodologies.

## System Testing

### Overview of testing strategy

The examination of a fully integrated software solution is referred to as "system testing." The two fundamental forms of testing are black box testing and white box testing. The following testing activities will be carried out to ensure that the final system meets the quality standard by checking the code and functioning of the solution system:

### White-box testing

White box testing is done at the code level, where we will evaluate internal code structures to ensure their authenticity. It focuses entirely on the implementing code and structure, assessing all logical judgments. Unit testing will be performed as part of white box testing, in which the smallest testable components of an application, known as units, are checked separately and independently for proper functioning. It is carried out as part of the development process. For this, Laravel makes use of the embedded PHPunit library. Testing is presented below:

### Black-box testing

Black box testing focuses entirely on the input and output of the program, and hence on its functioning. With the end user of RPA in mind, the application is evaluated in a black box environment. It is carried out after all other functions have been completed. After all the capabilities were completed, it was tested using test cases.

**Admin Scope Testing**

Table 6.1 Admin Scope Testing Table

|  |  |  |  |
| --- | --- | --- | --- |
| Test Cases | Expected Output | Actual Output | Result |
| LOGIN | | | |
| Login with correct credentials. | Should direct to manage property’s view. | Directed to manage property’s view. | Successful |
| Login with incorrect credentials. | Should redirect to login view. | Directed to login view. | Successful |
| MANAGE PROPERTIES | | | |
| Verify Property. | Should change the property status to verified and that property should be visible in browsing area. | Changed the property status to verified and that property was visible in browsing area. | Successful. |
| Disapprove Property. | Should change the property status to disapproved. | Change the property status to disapproved. | Successful. |
| View Details. | Should open details for the selected property, should be able to hover over map. | Opened details for the selected property, was able hover over map. | Successful. |
| MANAGE AGENTS | | | |
| Create new agent. | New agent should be created and appear on the list. | New agent is created and appeared on the list. | Successful. |
| Edit agent. | Agent information should be modified. | Agent information is modified. | Successful. |
| Delete agent. | Agent should be deleted. | Agent is deleted. | Successful. |
| Send Credentials. | Email should be sent with information for the agent credentials. | Email is sent with information for the agent credentials. | Successful. |

**Agent Scope Testing**

Table 6.2 Agent Scope Testing Table

|  |  |  |  |
| --- | --- | --- | --- |
| Test Cases | Expected Output | Actual Output | Result |
| LOGIN | | | |
| Login with correct credentials. | Should direct to manage property’s view. | Directed to manage property’s view. | Successful |
| Login with incorrect credentials. | Should redirect to login view. | Directed to login view. | Successful |
| MANAGE PROPERTIES | | | |
| Verify Property. | Should change the property status to verified and that property should be visible in browsing area. | Changed the property status to verified and that property was visible in browsing area. | Successful. |
| Disapprove Property. | Should change the property status to disapproved. | Change the property status to disapproved. | Successful. |
| View Details. | Should open details for the selected property, should be able to hover over map. | Opened details for the selected property, was able hover over map. | Successful. |

**Premium User Scope Testing**

Table 6.3 Premium User Scope Testing Table

|  |  |  |  |
| --- | --- | --- | --- |
| Test Cases | Expected Output | Actual Output | Result |
| LOGIN | | | |
| Login with correct credentials. | Should direct to manage properties to rent view. | Directed to manage properties to rent view. | Successful |
| Login with incorrect credentials. | Should redirect to login view. | Directed to login view. | Successful |
| MANAGE PROPERTIES TO RENT/SELL | | | |
| Add Property. | Should appear add property form and that property should be appeared in the rent/sell property listing, after created. | Add property form was appeared and that property was appeared in the rent/sell property listing, after created. | Successful. |
| Edit Property. | Should appear edit property form and that property should be modified, after edited. | Edit property form was appeared and that property was modified, after edited. | Successful. |
| View Details. | Should open details for the selected property, should be able to hover over map. All the comments, rent and bid application should be visible for that property. | Opened details for the selected property, was able hover over map. All the comments, rent and bid application were visible for that property. | Successful. |
| Delete Property. | Should delete the property from the listing. | Deleted the property from listing | Successful. |
| Comment on Property. | Comment should appear in the details. | Comment is appeared in the details. | Successful. |
| Accept/View Rent/Bid applications. | Should be able to view rent and bid applications with the user details. Also, should be able to accept one of the bids from rent and sell applications. | Able to view rent and bid applications with user details. Also, able to accept one of the bids from each property. | Successful. |

**User Scope Testing**

Table 6.4 User Scope Testing Table

|  |  |  |  |
| --- | --- | --- | --- |
| Test Cases | Expected Output | Actual Output | Result |
| LOGIN | | | |
| Login with correct credentials. | Should direct to property view. | Directed to property view. | Successful |
| Login with incorrect credentials. | Should redirect to login view. | Directed to login view. | Successful |
| BROWSE PROPERTIES FOR RENT/SELL | | | |
| Browse properties to rent. | All the verified properties for the rent should appear. | All the verified properties for the rent were appeared. | Successful. |
| Browse properties to sell. | All the verified properties for the sell should appear. | All the verified properties for the sell were appeared. | Successful. |
| View Details. | Should open details for the selected property, should be able to hover over map. All the comments should be visible for that property. User should also be able to apply for a rent or place bid amount. | Opened details for the selected property, was able hover over map. All the comments were visible for that property. User is able to apply for a rent or place bid amount. | Successful. |
| Comment on Property. | Comment should appear in the details. | Comment is appeared in the details. | Successful. |
| Searching Property. | User should be able to search for properties in the browsing area based on locations or price. | User can search for properties in the browsing area based on locations or price. | Successful. |
| BROWSE PROPERTY | | | |
| Browse Property. | User should be able to view list of properties that have been booked for them as well as view their details. | User can view list of properties that have been booked for them as well as view their details. | Successful. |
| REGISTER AS PREMIUM USER | | | |
| Register as premium user. | User should be able to fill the form with card information, which will retract $100 from user card. | User can fill the form with card information, which retracts $100 from user card. | Successful. |
| Login as premium user. | User should be able to login as a premium user after successful payment. Manage property to rent view should be shown after login. Now, the user should be able to list properties. | User can login as a premium user after successful payment. Manage property to rent view is shown after login. The user is now able to list properties. | Successful. |

All the functionalities are successfully executed.

## System Evaluation

### Overview of Evaluation Strategy

System assessment includes measuring the completed system against its initial performance goals as well as continual testing to ensure that the system continues to meet those goals. Before final deployment, system assessment will assist determine what works effectively in a program or project and what may be improved. Under System Evaluation, I have prepared a series of questionnaires to ask a few RPA-related people to use the system and evaluate it, as well as answer questions based on their experience, to get an overview of the system's usability and functionalities, all after the system has been fully implemented and tested.

**Plan of Evaluation**

The Evaluation Plan is a set of questions that users will use to assess the system based on their personal experiences with it. The following are the questions:

1. Did all the feature’s function as expected?

2. How would you describe your overall perception of the system?

3. Did you encounter any problems with the system while using it?

4. Do you anticipate you will need expert assistance at some point?

5. Was the user interface simple to understand?

6. How does the system work?

7. Is it capable of meeting all the company's criteria in the same manner as the manual system?

8. Can you see yourself utilizing this system in the long run?

Project Trial will be conducted with RPA users with the help of above questions.

### Project Trials

**User 1**

Did all the feature’s function as expected?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

How would you describe your overall perception of the system?

|  |  |
| --- | --- |
| Satisfactory |  |
| Good |  |
| Excellent | ✓ |
| Below Average |  |

Did you encounter any problems with the system while using it?

|  |  |
| --- | --- |
| Yes |  |
| No | ✓ |

Do you anticipate you will need expert assistance at some point?

|  |  |
| --- | --- |
| Yes |  |
| No | ✓ |

Was the user interface simple to understand?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

How does the system work?

|  |  |
| --- | --- |
| Satisfactory |  |
| Good |  |
| Excellent | ✓ |
| Below Average |  |

Is it capable of meeting all the company's criteria in the same manner as the manual system?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

Can you see yourself utilizing this system in the long run?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

**User 2**

Did all the feature’s function as expected?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

How would you describe your overall perception of the system?

|  |  |
| --- | --- |
| Satisfactory |  |
| Good | ✓ |
| Excellent |  |
| Below Average |  |

Did you encounter any problems with the system while using it?

|  |  |
| --- | --- |
| Yes |  |
| No | ✓ |

Do you anticipate you will need expert assistance at some point?

|  |  |
| --- | --- |
| Yes |  |
| No | ✓ |

Was the user interface simple to understand?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

How does the system work?

|  |  |
| --- | --- |
| Satisfactory |  |
| Good |  |
| Excellent | ✓ |
| Below Average |  |

Is it capable of meeting all the company's criteria in the same manner as the manual system?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

Can you see yourself utilizing this system in the long run?

|  |  |
| --- | --- |
| Yes | ✓ |
| No |  |

### Project Trial Results

Table 6.5 Project Trial Results

|  |  |
| --- | --- |
| System Evaluation | Evaluation Results |
| System Usability | Usable |
| Errors | None |
| System Functionalities | As Expected, |
| System Interface | Simple |
| Company’ Specifications | All met |
| Overall Experience | Excellent |

# CONCLUSIONS

The initial purpose of this project was to develop a client-driven system for a property management company (RPA). The recommended project title is "Real-Estate Auction Platform Management System." The system's basics were introduced first, followed by the formulation of more specific objectives. Following that, some research was conducted using a literature review. The fundamental background was then recognized. The system requirements were then developed utilizing a range of elicitation methodologies, including interviews with RPA clients and comparative system research. In this approach, all of the system's needed features and constraints were developed. Following it, the system design was finished. Following that, a summary of some of the key aspects was offered. Unit testing and black box testing were then performed. Following that, the system was reviewed. The evaluation outcome was as anticipated. The system is now ready for use.

# LIMITATIONS AND TECHNICAL DIFFICULTIES

* It was challenging to incorporate the Laravel Stripe Payment gateway. Furthermore, online eSewa payment has deleted its testing API, necessitating the use of the Stripe payment gateway.
* Google Maps API has ceased allowing us to access it without a paying account, which has introduced a new risk. Finally, everything was in order.
* For the group of 4-5 students, just one supervisor was assigned. It would have been much better if we could have received an equal number of ideas from each of the other supervisors.
* It was challenging to integrate login with Google features. It was eventually completed with some debugging and tweaks to the env and config files. However, doing so jeopardized the forget password feature, which is why login with Google had to be deleted in the end.
* It was challenging to locate relevant publications for the literature review. There were just a few works that were directly related to the issue. As a result, I had to make do with reviewing things that were just loosely linked.

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# APPENDIX

## Appendix I: Updated Project Gantt Chart

Table

Description automatically generated

Chart

Description automatically generated

## Appendix II: Interview Questions

Mr. Dan Brown

1. What motivated your company to make the switch from manual to digital operations?
2. Have you tried switching from a manual to a digital camera before? What went wrong if that's the case?
3. What is the project's estimated completion date?
4. What are the main drawbacks of the existing paper-based system?
5. What are your primary goals for the system?
6. Do you want to customize your system to a certain country?
7. How would you like to go about negotiating prices? also, why is that?
8. Is there a programming language in particular that you prefer to use?
9. Is there anything in the law that restricts you?
10. Do you have any recommendations regarding the user interface of the system? Do you have a favorite color combination?
11. What type of data do you wish to save in the database?
12. Who oversees the company's operations?
13. Do you also wish to include rental properties?

Mr. Frank Morgan

1. Have you done business with the organization for a long time?
2. How did you go about registering as a customer?
3. Would a bidding procedure be more convenient for you to undertake pricing negotiations?
4. As a seller, how did you register your land property?
5. As a buyer, how did you acquire access to the registered properties?
6. As a merchant, are there any specific features you'd want to see?
7. Is property information sufficient? Would you like to see some further property information?
8. As a buyer, how did you obtain the authorization to purchase property?

Ms. Emma Thompson

1. Why do you think a digital system can replace a manual method?
2. How do you think client registration should be handled online, in your opinion?
3. What are the advantages of bidding over the usual price negotiating technique, in your opinion?
4. Do you think there will be more technical problems on the internet in the future?
5. Why do you think the auction price-negotiation strategy will enhance the sales price more than the prior system?
6. How frequently do you think you'll use an online system?
7. What is your opinion on how property registration should be handled?

## Appendix III: LOG SHEETS

Graphical user interface, text, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

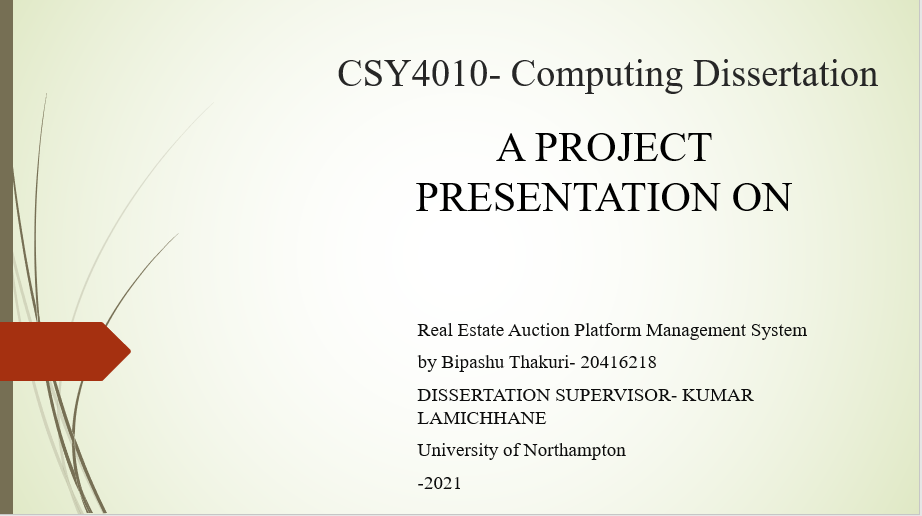
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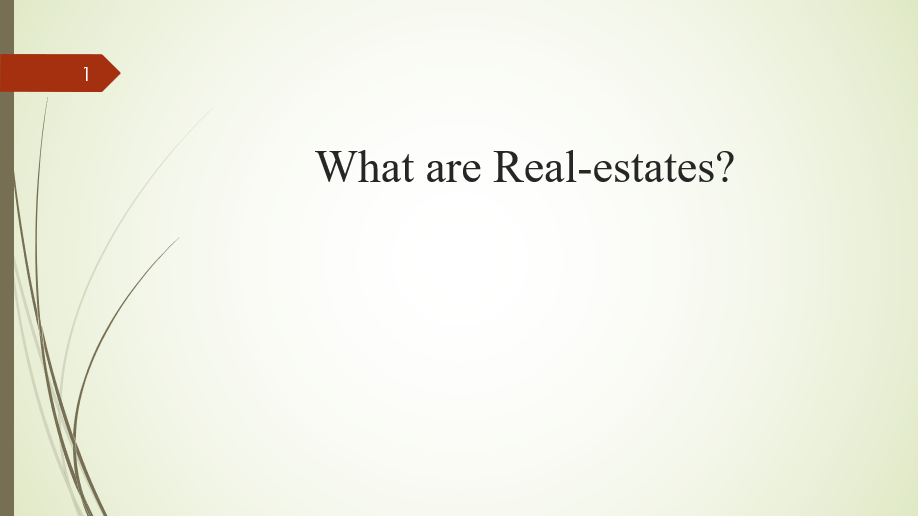
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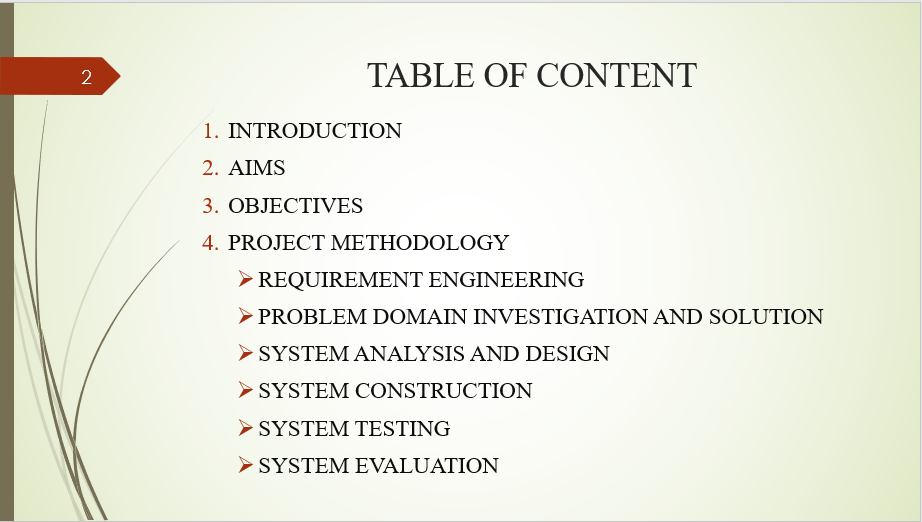
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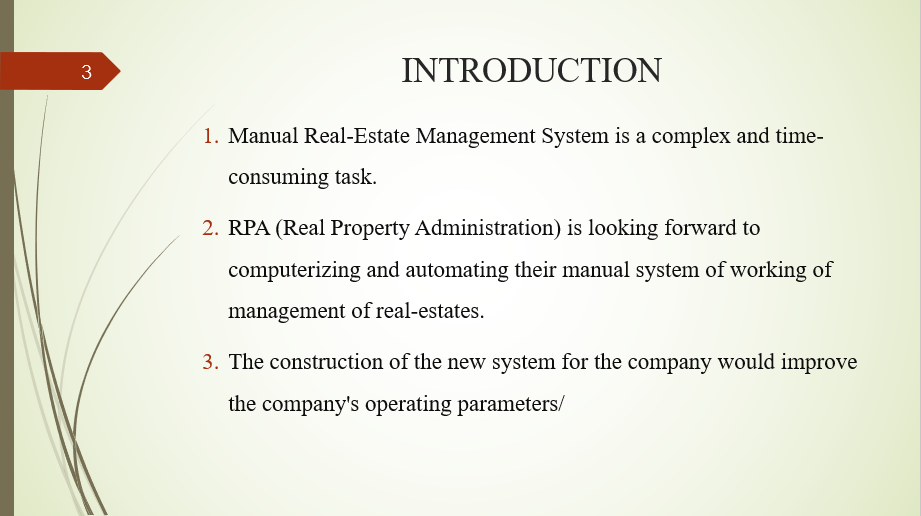
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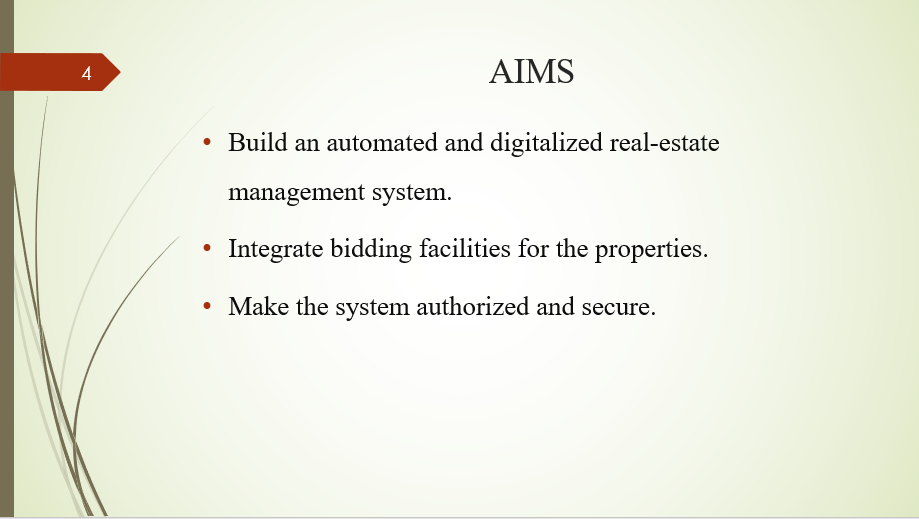
## Appendix IV: Presentation Slides

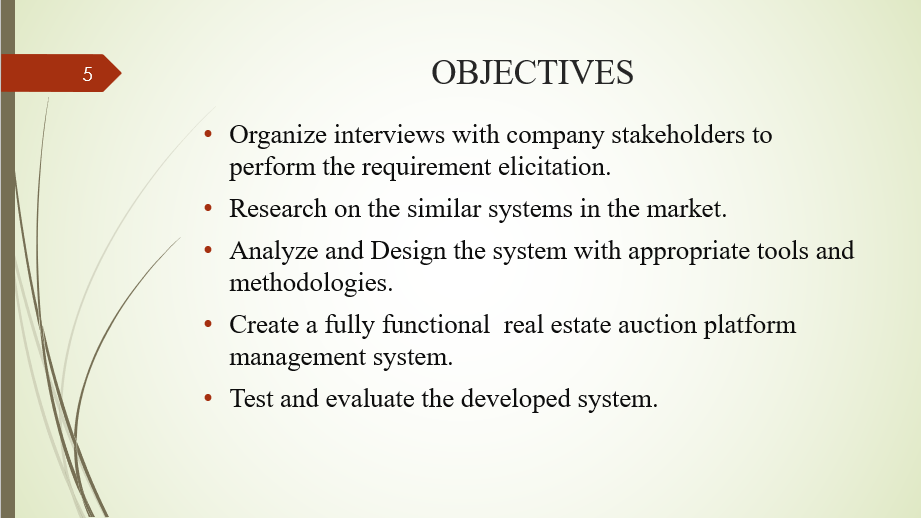




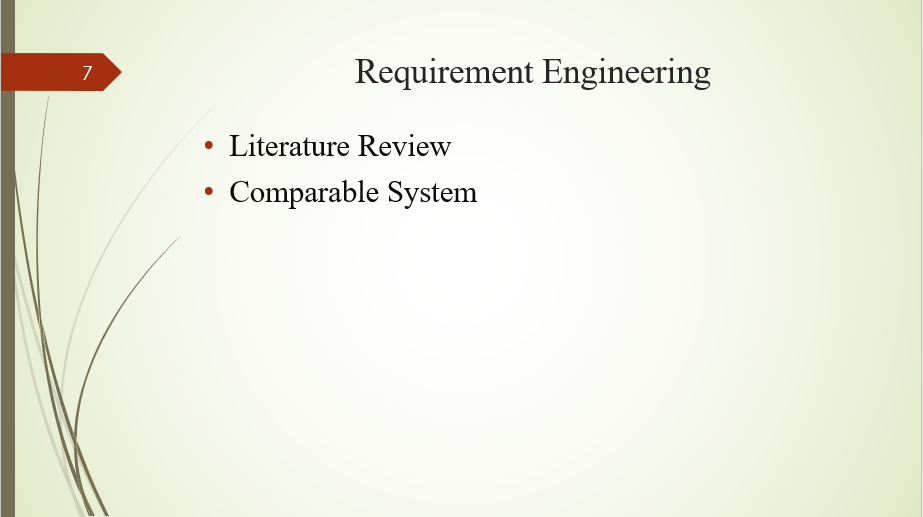


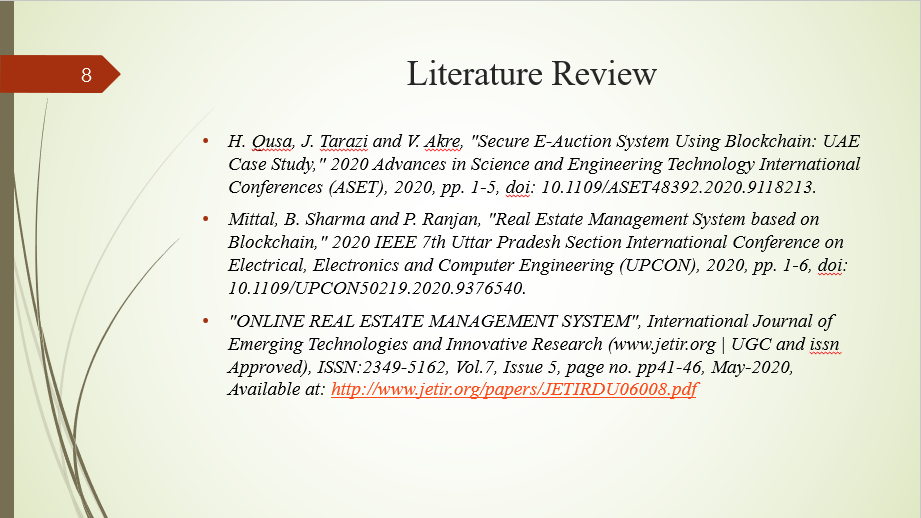




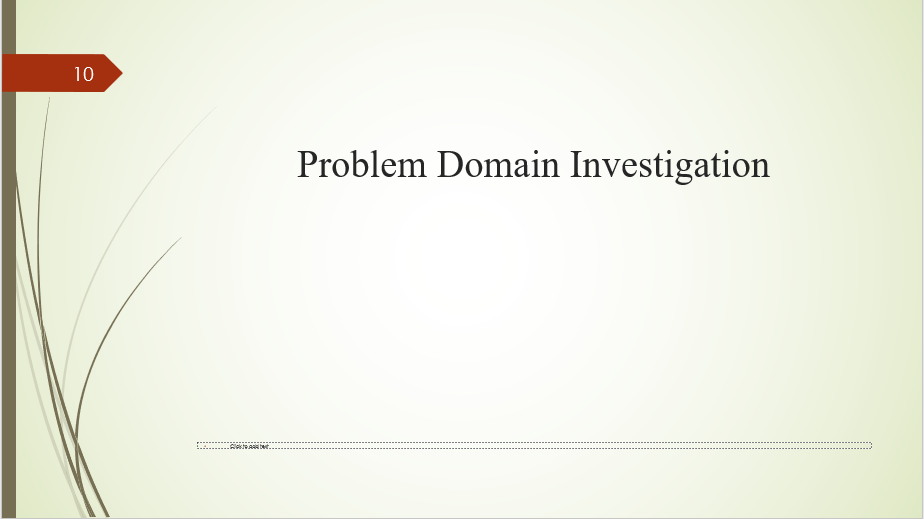


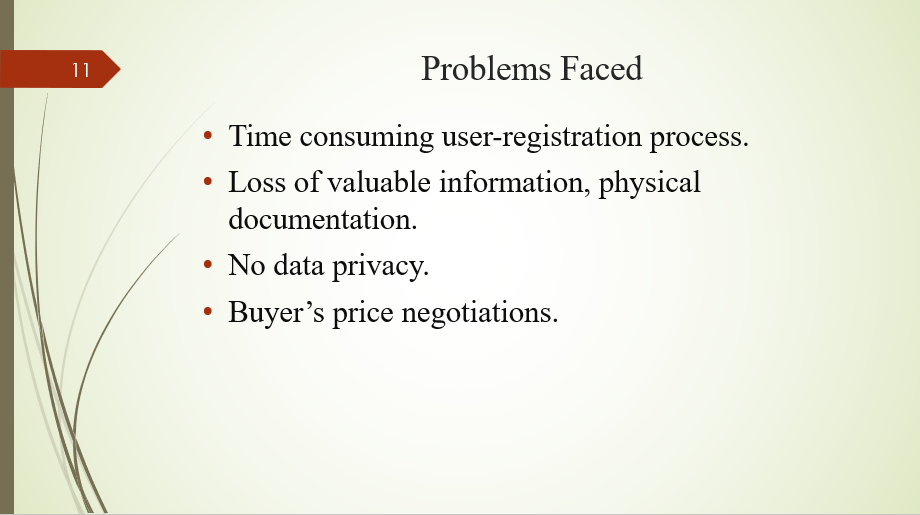




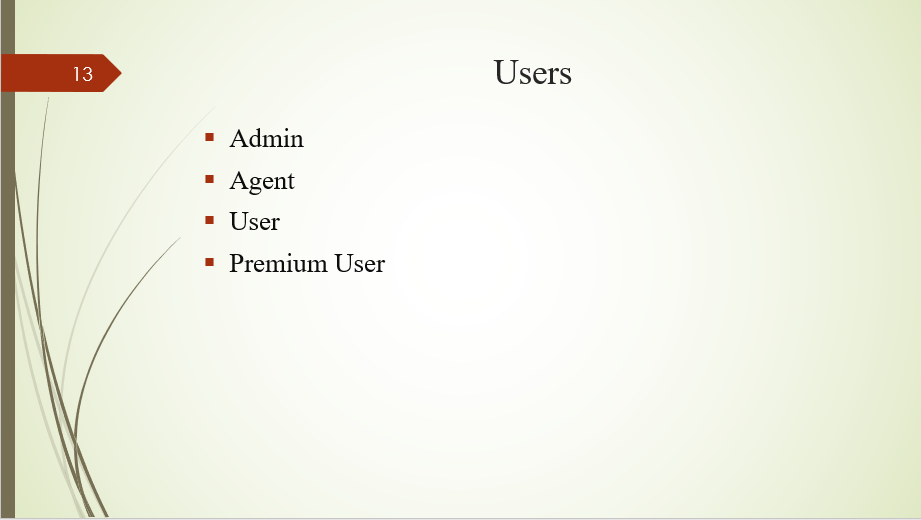


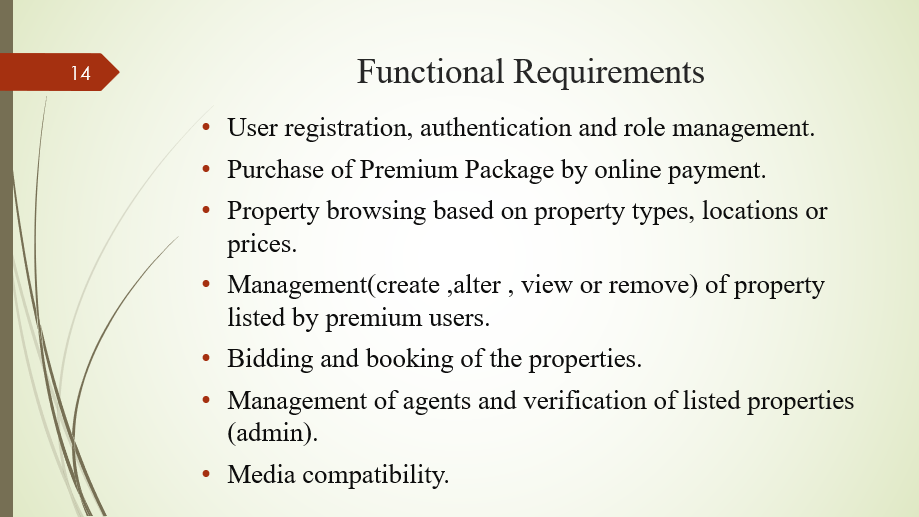


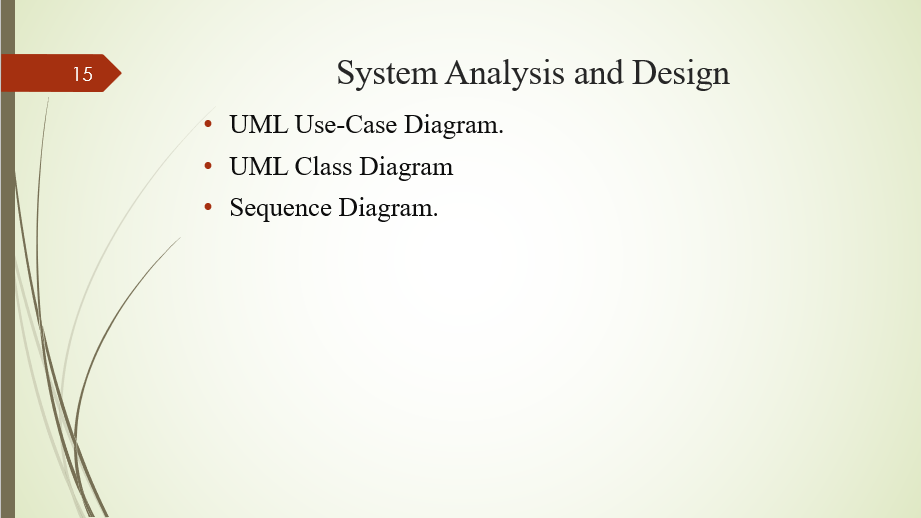


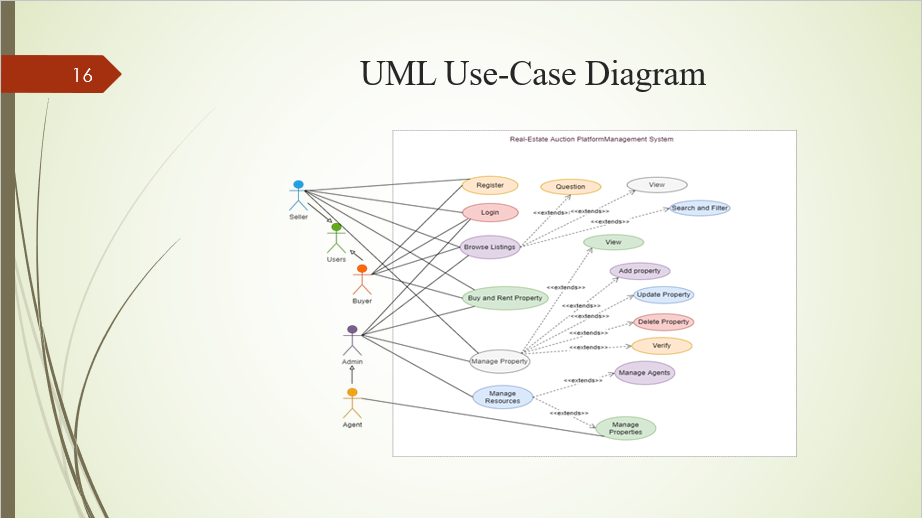












Diagram

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Diagram, schematic

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Graphical user interface

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Graphical user interface, application

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Text, letter

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Graphical user interface, text, application

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