KINGDOM OF SAUDI ARABIA
Ministry of Higher Education
Al-Imam Mohammad University
College of Computer & Information Sciences

المملكة العربية السعودية

وزارة التعليم العالي جامعة
الإمام محمد بن سعود الإسلامية
كلية علوم الحاسب والمعلومات

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Software Engineering (CS- 290)
Section: 372

Software Requirements Specifications document (SRS)
for
The Ministry of Environment, Water and Agriculture revenue management systems project
(PDF)

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1. Introduction

1.1 Purpose :

In line with the Saudi Arabia Kingdom's 2030 vision of future challenges and requirements, which include shifting from the cash basis to the accrual basis of accounting, The Ministry of Environment, Water and Agriculture decided to strive to build an integrated system to manage the revenues that are collected so that a set of relevant systems is provided that will work to unify and collect all information, data and work procedures related to it.

1.2 Scope :

The Ministry serves many groups of society, individuals, government agencies, the business sector, and visitors to the Kingdom, and serves farmers, property owners, animal business owners, people who do well drilling, engineers, veterinarians, citizens, and many more.

1.3 Definitions, acronyms, and abbreviations:

Term	Definitions
The government agency	Ministry of Environment, Water and Agriculture.
Client	The customer may be an individual, a business sector, a government agency, or a visitor to the Kingdom (residents)
Website	A site designed specifically for the customer with the required interface, the required systems and the required functions, and it must be easy, flexible and free of problems.
The system	There are many systems on the site, and each system supports a specific service and has specific functions.
The service	The services required in the system and there are many services that depend on the type of the customer. The required service. There are general services, environment, water, agriculture, land, survey, livestock and fish services.

1.4 References :

- https://www.perforce.com/blog/alm/how-write-software-requirements-specification-srs-document

1.5 Overview:

A system that supports the Ministry of Environment, Water and Agriculture will target many groups of society, provide the services required for them and help them, including several systems for managing property and violations, managing invoices and customer services. The system seeks to develop these systems to become more flexible and easy. Violations system for the purpose of controlling violations that were confused as a result of a wrong practice or failure to comply with the regulations and regulations issued by the Ministry for the various activities related to the Ministry. The two previous systems are supported by the development of a new invoice management system that will complete the work procedures for registering all types of invoices issued by the ministry for all revenues that the ministry collects. As a supportive step for the Ministry, it will be within the scope of work to build an integrated system for managing customer relations to allow customer support and make everyone available Enabled channels to deliver their voice to their various segments, in a manner that ensures transparency and speed of response.

2. Overall description

2.1 Product Perspective :

it is a self-contained linked with pre-existing systems an integrated system to manage the collected revenues, which will work to unify and collect all information, data and work procedures related to it, which are summarized in four main tracks: Property management system - Violation management system - Invoice management system - Customer services management system.

The project will includes tow users: the primary users are Employees of the Ministry of Environment Water and Agriculture, Secondary users are the client .

2.2 Product functions :
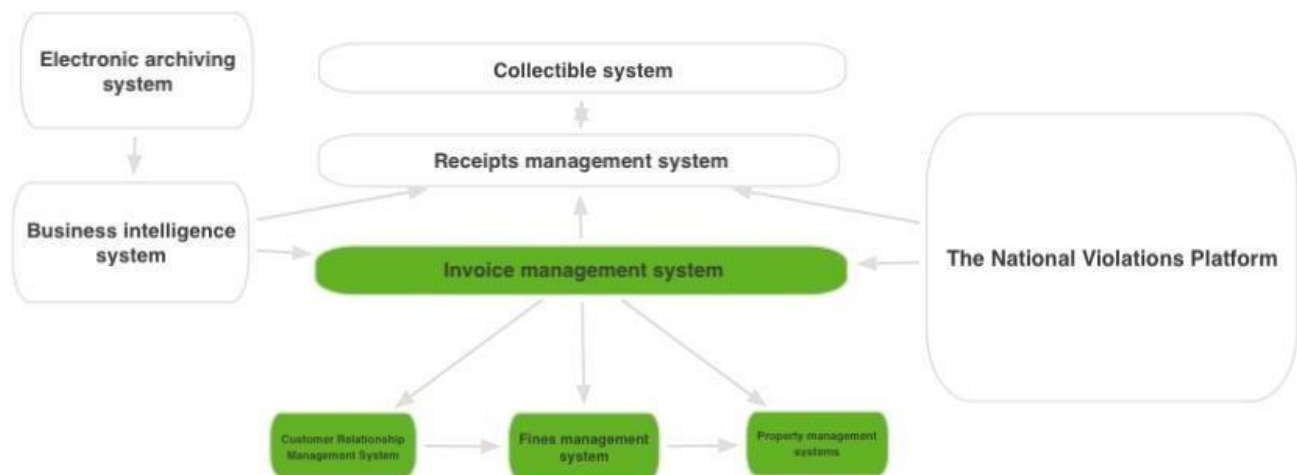
2.3 User characteristics :

Ministry employees, clients, investors, tenants, and violators.

User Interests: investment, leasing, grievance, tracking of complaints, inquiries.

User needs: names, national ID, commercial registration number, contact information such as phone, national address.

2.4 General constraints :

The system should be restricted to creating public interfaces and screens that can be embedded in other systems so that they can be used in the event that the API is not used.

Internet connection is also a limitation of the system. Because the system must fetch data from Online database, so it is important to have an internet connection for the system to work well.

The Ministry intends to work on building a system of reports and cases on the CRM platform, which is a platform characterized by many characteristics related to the customer axis and what is going on in it.

• cost:
setup: 160$ design and building:5000$ content creation: 500$ training to use it:600$
maintenance: 500$ total cost: 6760$

2.5 Assumptions and dependencies:

Risks and issues	• Inability to create generic interfaces and screen that can be embedded in other systems • Inability to interact directly with technical problems
assumptions	• weak website protection that leads to the access and theft of user confidential data • A poor network can lead to user dissatisfaction with the service and disruption of business
Internal and external factors	• Technical Support System (ITSM) • Administrative communication system • FileNet IBM system for archiving and file preservation • The outer gate • Social platforms • Complaints systems of the National Water Company

3.1 External interface requirement

3.1 User Interfaces

Firstly: Log in to the system and then choose the type of user and service to be executed. The types of services are divided into individual services, business sector services, or services for visitors to the Kingdom

Secondly : After the user selects the required service category, the user selects the service to be performed, including public services, environment, water, agriculture, lands, surveying, livestock and fisheries.

Third : After choosing the category and one of the services mentioned in the second paragraph, many services fall under each type of service. The service to be implemented is chosen, such as communications, afforestation, drilling a well, farmers 'requests, land leasing, animal requests, etc.

Fourthly : After choosing the required service, the application information will be filled out.

Sixthly : User request is sent.

Seventh : The application is reviewed by the competent authority .

Eighth : The request is approved by sending an approval letter to the applicant .

3.2 Hardware Interfaces

Because the system is a website, it does not have a device interface. The site gets the information from the database and this happens when the device operating system is connected to the database.

3.3 Software Interfaces

The site communicates with the database in order to obtain and verify data about the user and the type of user, Name, e-mail, and obtaining the information for the service to be implemented. The exchange of information between the database and the web portal consists of data operations, data modification, and execution.

4. Functional requirements

4.1 General functional requirement for the system

This section includes the requirements that specify all the fundamental actions of the software system.

4.1.1 Functional Requirement :

Title: Opening of the Ministry of Environment and Agriculture website

DESC: The site is opened by any Chrome browser, Microsoft..etc, then an interface appears through which the user must choose from: Individuals Services, Inquiry Services, Business Sector Services, Governmental Agencies Services

RAT: to enable the user to enter the site and choose the service he wants

- **Individuals services**

4.1.2 Functional Requirement :

Title: Access to Individuals Services

DESC: Upon entering, the user must choose one of the options: General, Environment, Water, Agriculture, Land and Survey, Livestock

RAT: for the user to log in to the service he needs

4.1.3 Functional Requirement :

Title: Access to Individuals Services: Public

DESC: Upon logging in, the user appears with 5 options: Citizen Voice, Report, Electronic Employment, Appointment, and Agricultural Employment Portal

RAT: get into the service he needs

4.1.4 Functional Requirement :

Title: Access to Individuals Services: Water

DESC: When clicking on the service, 6 display services will appear: a query about requests for a well drilling license, a request for renewing a well drilling license, a request for updating the data for a well drilling license request, an application for a well drilling license, Al-Shayab data initiative, escalating water complaints

RAT: Get involved in the service he needs

4.1.5 Functional Requirement :

Title: Access to Individuals Services: Cultivation

DESC: When you click on the service, 35 services will appear to the user, including: requests wishing to convert to organic production, requests to support farms under organic transformation, requests to support organic farms, requests to support documentation of organic products for farms under organic transformation ... etc

RAT: Get involved in the service he needs

4.1.6 Functional Requirement :

Title: Access to Individuals Services: On Land and Survey

DESC: When you click on the service, 3 services will appear to the user: renting fallow land for the purpose of expanding a project, renting fallow land for the purpose of investment, renting fallow land with an approved scheme.

RAT: Get involved in the service he needs

4.1.7 Functional Requirement :

Title: Access to Individuals Services: Livestock

DESC: When clicking on the service, the user will see 34 services, including: request for a cattle census certificate, a request for permission to import rabbits and rodents, a request for a permit to import eggs / chicks, a request for a permission to import livestock ... etc.

RAT: Get involved in the service he needs

4.1.8 Functional Requirement

Title Access to Individuals Services: Environment:
DESC: Clicking on the service will show the user only one service: forestation

RAT: Get involved in the service he needs

• **Inquiry Services**

4.1.9 Functional Requirement :

Title: Access to Inquiry Services

DESC: Upon entering, the user must choose one of the options: a transaction inquiry, a request query, a query about the kingdom's water production, a query about dams and rain bulletins, verification of identification letters

RAT: when the user wants to inquire about one of these services

4.1.10 Functional Requirement:

Title: Accessing Inquiry Services

DESC: When clicking on the service, the user will appear: Individuals Services, Business Sector Services, Governmental Agencies Services, Kingdom Visitor Services, Service Level Agreement for Electronic Services

RAT: when he wants to inquire about one of these services

• **Business Sector Services**

4.1.11 Functional Requirement :

Title: Accessing Business Services

DESC: Upon entry, the business sector must choose one of the options: General, Environment, Agriculture, Land and Survey, Wealth Resources

RAT: When the business sector wants to choose one of these services

4.1.12 Functional Requirement :

Title: Business Sector: General

DESC: When you click on the service, a number of services will appear to the user: Citizen Voice, Appointment, Agricultural Employment Portal, Suppliers Portal

RAT: The user chooses the service he needs

4.1.13 Functional Requirement :

Title: Business Sector: Environment
DESC: When clicking on service, the user will see service: tree RAT: The user chooses the service he needs

4.1.15 Functional Requirement :

Title: Business Sector: Water

DESC: When you click on the service, the user will see 23 services, from which he can choose: an inquiry about requests for a well drilling license, a request for renewing a well drilling license, a request for updating the data for a well drilling license request, a request for a well drilling license, a request for the issuance of a license to practice the activity of the contractors of drilling tube wells, Request to issue a license to practice the activity of contractors digging hand wells, ... etc

RAT: The user chooses the service he needs

4.1.16 Functional Requirement :

Title: Business Sector: Agriculture

DESC: When clicking on the service, the user will see 36 services that he can choose from: a request to import fertilizers and agricultural fertilizers, a request to import agricultural seeds and seedlings, a request to import agricultural pesticides, a request to export agricultural fertilizers and fertilizers, a request to export agricultural seeds and seedlings, a request to export agricultural pesticides…etc.

RAT: The user chooses the service he needs.

4.1.17 Functional Requirement :

Title: Business sector: Land and Survey

DESC: When you click on the service, the user will see the service: renting wasteland for the purpose of expanding a project, renting empty land for the purpose of investment, renting unused land with an approved scheme.

RAT: The user chooses the service he needs

4.1.18 Functional Requirement :

Title: Business: The Animal Revolution

DESC: When clicking on the service, the user will be informed of 25 services that he can choose from: request for a cattle census certificate, a request for

permission to import rabbits and rodents, a request for a permit to import pets, a request for a permission to import livestock, a request for a permission to import live birds, ... etc.

RAT: The user chooses the service he needs.

- **Governmental Agencies Services**

4.1.19 Functional Requirement:

Title: Accessing the services of government agencies

DESC: Upon entering, the agency must choose one of the options: General, Environment, Water, Agriculture, Land and Survey, Livestock

RAT: When the entity wants to choose one of these services

4.1.20 Functional Requirement:

Title: Governmental Agencies Services: Environment DESC: Click on the service, the user will see Service: Forest RAT: The user chooses the service he needs

4.1.21 Functional Requirement:

Title: Governmental Agencies Services: Water

DESC: When clicking on the service, a number of services will appear to the user: a query about requests for a well drilling license, a request for renewing a well drilling license, a request for updating the data for a well drilling license request, a request for a well drilling license

RAT: The user chooses the service he needs

4.1.22 Functional Requirement:

Title: Governmental Agencies Services: Agriculture

DESC: When you click on the service, several services will appear to the user: agricultural marketing services, plant wealth project licenses.

RAT: The user chooses the service he needs.

4.1.23 Functional Requirement:

Title: Governmental Agencies Services: Lands and Survey

DESC: When the service is pressed, a number of services will appear to the user: renting a wasteland for the purpose of expanding a project, allocating land as a government utility, renting a wasteland for the purpose of investment, leasing unused land with an approved scheme.

RAT: The user chooses the service he needs

4.1.24 Functional Requirement:

Title: Governmental Agencies Services: Livestock

DESC: When you click on the service, several services will appear to the user: a veterinary pharmacy, a veterinary hospital, a veterinary clinic, a falcon care center, a shelter center (hotel services) A license to practice a veterinary profession

RAT: The user chooses the service he needs

4.2 Functional requirements for Property Management System

4.2.1 The ability to define and manage real estate and lands that fall under the Ministry's management and to provide their information through the system.

4.2.2 The ability to register lease contracts for real estate and lands that fall under the Ministry's management and provide information about them through the system.

4.2.3 Ability to approve nodes in the system.

4.2.4 The ability to post rental bills to the invoice management system.

4.2.5 The ability to automate the process of issuing lease invoices to clients according to the schedule of payments contracted between the Ministry and the tenant.

4.2.6 Extending a lease contract .

4.2.7 Waiver of the land leased.

4.2.8 Request to terminate a contract .

4.2.9 Request for amendment of valid contract data (modification of activity, addition of partners, heirs, and so on).

4.2.10 The ability to define and manage maintenance requests for Ministry properties and provide their information through the system.

4.2.11 Track maintenance requests and know their status.

3.2.2.12 Issuing rent invoices automatically.

4.2.13 Transferring the issued invoices to the SADAD payment system so that all external parties can pay them through the system.

4.2.14 Receive information on collection through SADAD's payment system to update the status of invoices that have been paid.

4.2.15 The ability to define and manage clients dealing with the Ministry and provide their information through the system.

4.2.16 Ability to extract maps showing each geographical area.

4.2.17 The ability to extract reports showing contract information for real estate and land (for example: the time period and the contractual value for each).

4.2.18 Issuing rent invoices automatically.

4.2.19 Linking with the inventory and warehouse department to record and track any materials or items that are disbursed to the Ministry's property.

4.2.20 Linking with unified access to facilitate employee access to the application and the system.

4.2.21 All integration points (APIs) that would retrieve, add, modify or cancel any property data must be provided so that it is available to be linked with it with the various systems of the Ministry.

4.2.22 Linking with the land platform.

4.3 Functional requirements for Violation Management System

4.3.1 Extensive and comprehensive analysis of the various procedures for controlling violations that are implemented in many departments of the Ministry's agencies, in order to lead to the possibility of reaching a unified form for conducting institutional work that differs from all affected departments.

4.3.2 The system must support linking with the field visit system to allow the completion of inspection tour tasks that may result in seizing several groups of violations against entities through the application of smart devices.

4.3.3 The ability to complete the remaining steps of the standard procedure through a web system that performs all the related functions, from the beginning of monitoring violations to settlement, payment or cancellation.

4.3.4 The system must have the ability to amend irregularities at all stages.

4.3.5 The ability of the system to enable the system administrator to define user files.

4.3.6 The system must have flexible methods of closing the violator.

4.3.7 Developing a mechanism for issuing the seizure report for the list of violations.

4.3.8 Developing a mechanism for writing the final statement of statements.

4.3.9 Developing a mechanism for auditing and reviewing the record and making decisions about it (approval - rejection).

4.3.10 Developing a mechanism for sending the request to each of the committee members, the committee reporter and the head, whereby each of them can enter his priority recommendations on the minutes and copies of evidence evidence prior to the meeting of the request or the transaction.

4.3.11 Developing the mechanism for sending the data of the violation seizure report and evidence evidence to the committee authorized to decide on violations, developing the mechanism for the committee to decide on the violation record and approve it.

4.3.12 The system's ability to generate an image of the penalty decision and send it electronically to the violator.

4.3.13 The system's ability to enable the violator to file a grievance against the penalty decision within a specified period from the date on which he was notified of the notification.

4.3.14 Linking with human resources to retrieve employee data.

4.3.15 Linking with the inventory and warehouse management to record and track any materials or items that are disbursed during the inspection process and to control the violation.

4.3.16 Linking with the national violations platform for the purpose of exporting the list of violations seized from the violations system that will be developed.

4.3.17 Linking with unified access to facilitate employee access to the application and the system.

4.3.18 Linking with a reporting system for the purpose of linking the notifications with the reports of the offenses that arise from it.

4.3.19 All integration points (APIs) that would retrieve, add, amend or cancel any data related to a system for violations must be provided so that it is available to be linked with it with the various systems of the Ministry.

4.3.20 Linking with the billing management system.

4.4 Functional requirements for Billing Management System

4.4.1 The ability of the system to manage billers and billing categories.

4.4.2 he ability of the system to classify revenues according to their source and type.

4.4.3 The ability of the system to manually register the invoices for the miscellaneous income directly in the system, so that those invoices are automatically sent through e-mail to the e-mail registered for the customer.

4.4.4 The ability to manually record invoices for miscellaneous revenues directly into the system.

4.4.5 The ability to automate the issuance of invoices for rents to customers by automating the issuance of invoices according to the schedule of payments contracted between the ministry and the tenant and sending those invoices in an automated way through e-mail to the registered e-mail of the customer and sending text messages in an automatic way to notify the customer that the invoices have been issued for him to Paid off.

4.4.6 The ability to automate the process of issuing invoices for violations to the perpetrators of the violation by issuing invoices according to the violations that have been recorded and sending those invoices in an automated way through e- mail to the registered e-mail of the perpetrators of the violation and sending text

messages in an automatic way to notify the perpetrators of the violation that they have been issued Violation bills for them to pay.

4.4.7 The ability to automate the process of following up the invoices with customers, whether they are related to rentals, violations, or miscellaneous revenues, by sending reminders of the claims of those invoices in an automated way through e-mail to the registered e-mail of the customer and sending text messages in an automatic way to remind the customer of the existence of bills due for payment to be paid.

4.4.8 Defining the ministry's services.

4.4.9 Linking services with the Ministry's revenue accounts.

4.4.10 Determine the method of calculating fees for each service.

4.4.11 Define different and various invoice groups for invoice classification.

4.4.12 Modify / activate / disable billing groups.

4.4.13 View the billing categories data (the agreement with the collection system on the characteristics of the invoices).

4.4.14 The mechanism for the invoice to be based on an invoice number only or an account number and an invoice number.

4.4.15 The system's ability to send push notifications is refundable or not. 3.2.4.16 The ability of the system to determine the expiration date of the invoice.

4.4.17 Automatic identification of invoice numbers settings, so that the system allows four optional components (year - month - day - fixed value) and a mandatory component, which is the invoice serial.

4.4.18 Reason settings so that the property enables the user to define causes.

4.4.19 Management of official holidays: The feature enables the user to define the official holidays in the country, which will be used to know the official working days and which are used in the settlement reports.

4.4.20 Connecting with the real estate management system with the aim of issuing rent invoices automatically.

4.4.21 Connecting with the violations management system in order to issue invoices for violations automatically.

4.4.22 Linking with the receipts system (the enterprise resource planning system "Oracle") for the purpose of recording accounting entries for revenues resulting from invoicing operations of all three types (real estate management, irregularities management, the rest of the types of revenues (recorded on the system and recording the accounting entries for collections resulting from payment operations from Different customers on the collection system.

4.4.23 Linking with the customer intelligence system to create reports and dashboards.

4.4.24 Linking with the Tahseel system for the purpose of migrating the issued invoices to the Tahseel system so that all external parties can pay them through the system and receive the collection information through the Tahseel system to update the status of the bills that have been paid

4.4.25 Electronic linking with the FileNet electronic archiving system in order to archive documents automatically.

4.4.26 Adding a new revenue account to the ministry's list of revenue accounts.

4.4.27 Activating the Ministry's revenue accounts.

4.4.28 Disabling the Ministry's revenue accounts.

4.4.29 The matching mechanism with the payment notifications of the Tahseel system.

4.4.30 Matching mechanism with notifications of refund requests for the Tahseel system The requirement for "invoice source" and all options and fields related to this requirement (this includes bill registration screens, bill modification, and invoice inquiries).

4.4.31 Developing a mechanism for granting powers at the level of billing services (and then revenue accounts) to users.

4.4.32 The system works on the sub-entities that have tax numbers with the Ministry of Finance only, and accordingly, a mechanism is developed for other branches to link users to them and also link those branches on cities to use that data in the procedures for granting powers.

4.5 Functional Requirements for Customer Relationship Management System

4.5.1 The system should have the ability to direct complaints between different users, work teams and / or departments.

4.5.2 The system should have the ability to configure and manage SLA for each case and by type.

4.5.3 The system should be able to define the approval hierarchy for each case and by type.

4.5.4 The system must be able to define the list of tasks to accomplish cases based on the type of case.

4.5.5 The system should be able to attach documents related to the complaint record.

4.5.6 All internal and external emails with the customer must be recorded to the Entity Profile (Party Status).

4.5.7 The system should support customer satisfaction assessment at every stage through auxiliary systems, tools and dashboards.

4.5.8 The system should provide tools to manage the flow of complaints.

4.5.9 The system should have the ability to amend cases and complaints at all stages.

4.5.10 The system should have flexible methods of closing the case or complaint.

4.5.11 The system should support online chatting (through the information provided by the customer).

4.5.12 The system should support the creation of an automatic case through social media.

4.5.13 The system can add an automatic response to the social network

4.5.14 The system must support the authorization feature.

4.5.15 The system should have the ability to log and track tasks.

4.5.16 The system should have the ability to assign, delegate, and track the progress of all tasks.

4.5.17 The system should be able to send reminders before assignment due dates.

4.5.18 The system should be able to define different types of perspectives for active tasks, which are in progress, and completed tasks due.

4.5.19 The ability to create new requests for complaints or services through previous requests or forms.

4.5.20 The ability to locate and retrieve customer information by customer name, contact name or phone number.

4.5.21 The ability to create complaints or requests from a predefined list of recurring or common activities.

4.5.22 The ability to create hypothetical response scenarios to customer requests, recurring complaints or questions.

4.5.23 The ability to save the date, customer name, receiving method, severity, priority and fields defined by the user or complaints sent.

4.5.24 The ability to quickly assign complaints or service requests to individuals or groups.

4.5.25 The ability to set a time for customer calls to study performance standards.

4.5.26 The ability to link support complaints to other complaints and resolve them as a group.

4.5.27 The ability to link support complaints with services.

4.5.28 The ability to track complaints by due date, open days, and percentage completed.

4.5.29 The ability to keep a record of operating notes related to complaints and the results of each complaint.

4.5.30 The ability to fully describe the complaint, the solution, and the root cause of the complaints should be displayed on one page.

4.5.31 The system includes diagnostic tools that in turn suggest questions based on the type of complaint on the service or on the product or pre-defined by the user.

4.5.32 The system should include a search engine for the knowledge base based on the keyword (s).

4.5.33 The ability to transcribe the old or past occurrence history of resolving complaints into open complaints.

4.5.34 The system includes online common questions (common questions and answers) classified according to the type of complaint, type of service, or a pre- defined category by the user.

4.5.35 The system includes classification of search results and solutions to proposed complaints according to relevance.

4.5.36 The ability to create an activity plan or task list for detailed customer service solutions or follow through.

4.5.37 The ability to upload documents or other electronic files related to each complaint to the services and methods of solution.

4.5.38 The ability to create a sensitive alert notification history for any complaint.

4.5.39 The ability to automatically assign complaints based on various criteria.

4.5.40 The ability to automatically notify assigned employees of new complaints tasks.

4.5.41 The ability to automatically forward email notifications to customers regarding the receipt, status, or completion of a complaint.

3.2.5.42 The ability to automatically escalate complaints based on date, elapsed time or failure to meet a service level agreement (SLA).

4.5.43 The ability to send customer emails to the designated call center warden and call center manager.

4.5.44 The ability to schedule a customer service task or 'do' a reminder for one or more people, to be completed at the same or different times.

4.5.45 The ability to include and assign a specific plan for resolving complaints based on the type of complaint or client

4.5.46 The ability to distribute complaints surveys automatically.

4.5.47 The ability to automatically redirect or escalate survey responses based on response values or findings.

4.5.48 The ability to automatically update customer service complaints according to the historical activities of each account.

4.5.49 The ability to create fax-automatic, email-automatic, or create copies of printed letters from the templates by clicking a button.

4.5.50 The ability to broadcast e-mail to user defined account groups.

4.5.51 Vendor provides a workflow toolkit in order to allow the user to create and automate notifications and approvals or route data to ensure complaints are resolved quickly and effectively.

4.5.52 In order to reduce learning curves and increase consistent performance, the system's ability to enable users to create relevant support policies, procedures and best practices within web pages that are rich and well-curated and placed on specific pages in the CRM system.

4.5.53 System capacity to empower non-technical users Create online knowledge bases to reduce repetitive answers to common questions by providing correct and customized answers.

4.5.54 Self-service portals for customers are available to allow customers to enter the complaint online and review the status of the complaint.

4.5.55 The ability to automatically upload complaints submitted to the self- service portal to the Customer Support Unit.

4.5.56 The self-service portal allows customers to do a search on questions and answers or browse the online knowledge base on specific documents.

4.5.57 The self-service portal includes links to additional support information.

4.5.58 Clients have the option to start instant messages (messaging instant, IM) from the self-service portal.

4.5.59 The ability to review the complaints analysis report according to the type of complaint, the category of the complaint, the service provided and other user- defined segments and classifications.

4.5.60 The system provides 'root cause' reports and analyzes to identify problem patterns and proactively solve root causes.

4.5.61 The ability to track all complaint activity and history in one place according to complaint date, user, type of activity, priority, status and more.

4.5.62 The system includes a report writer tool to modify customer support reports or create new reports from scratch.

4.5.63 The system provides a central information repository for sharing electronic files and documents (such as customer surveys, customer response documents, etc.).

4.5.64 The system provides pre-defined user-defined security permissions for central safeguards.

4.5.65 The ability of the system to check-in / finalize document management procedures.

4.5.66 The ability of the system to complete the historical review of the use of documents.

4.5.67 The ability of the system to secure and provide all complaints globally by the Customer Support Representative (CSR), the Customer Support Representative Manager, the user or the role.

4.5.68 The ability of the system to bypass global security settings and apply specific complaint security settings to any customer complaint.

4.5.69 The ability to view a history of the audit statement that shows all the changes made to the complaint, including the user who made each change, the date and time, and the fields that changed.

4.5.70 The system provides a simple (non-technical) import wizard to import tickets and complaints to the Help and Support Center.

4.5.71 The system provides the ability for the system user to create or use import forms for repeated imports (for example, importing complaints from multiple sources).

4.5.72 The system provides a comprehensive modification tool to make specific or comprehensive adjustments to the data (such as reassignment of all complaints from one supplier to another).

4.5.73 The ability of the system to enable the non-technical user to modify the tables in the system in order to specify the required columns and pre-defined by the user, and the order of the columns and column headings - according to the user or the role.

4.5.74 The system's ability to enable a non-technical user to modify Web page forms without any technical architecture or programming knowledge.

4.5.75 The ability of the system to enable the non-technical user The ability to modify, add or remove menu items throughout the system according to users or their individual roles.

4.5.76 The system's ability to enable the system administrator to define user files - such as the default CRM homepage, maximum file size, and password rules.

4.6 Other functional requirements

4.6.1 The system must support single entry in the ministry.

4.6.2 The system must be linked with the human resources system for the organizational structure and employees according to the requirements of the ministry.

4.6.3 The system should be composed of integrated modules and programs. 5.5.5 The ability to support the Hijri calendar (Umm Al-Qura exclusively) and the Gregorian calendar.

4.6.4 Enable the use of shortcut keys to perform frequently used operations.

4.6.5 Implementing the system's functions and operations in line with the procedures, laws, regulations and government instructions of the Kingdom of Saudi Arabia.

4.6.6 The ability to print the forms used in the system, and to place the ministry's logo on all official reports and the main system screens.

4.6.7 The ability to print the screen and print the related business model on the printer

4.6.8 Ability to print manual signature on specific forms in the system.

4.6.9 The ability to support official government holidays and Islamic holidays.

4.6.10 The ability to provide decision-makers with the required public and analytical reports and statistics, instantly and in multiple views.

4.6.11 The ability to scan and store different types of documents related to specific movements and processes in addition to the ability to retrieve and print

these images later. This must be done in conjunction with the document archiving system.

4.6.12 The ability to integrate systems and integrate with third-party systems and with the existing systems at the Ministry (by using "interfacing" and not "hard coding").

4.6.13 The ability of the system to integrate with systems to send and receive information through the text message service.

4.6.14 The ability to link with different databases and operate on different operating systems.

4.6.15 Allow the use of digital signatures

4.6.16 The ability to link and integrate with the administrative communication system to send and receive administrative decisions and documents.

4.6.17 The system must have the ability to add new fields, cases, types on cases and clients without programming.

4.6.18 The system must provide predefined email templates for sending emails.

4.6.19 The system must provide a flexible auditing method for all data in the system and all changes to all fields.

4.6.20 The system should support escalations of three or more levels depending on business requirements.

4.6.21 The system should be flexible in adding new fields and customizing forms.

4.6.22 The system should have the ability to create predefined work procedures.

4.6.23 The system provides the ability to integrate with the SMS gateway to send alerts to customers and users.

4.6.24 The system should allow returning the status to the previous stages to fill in the missing data or documents.

4.6.25 The system should support a combination of organizational structures, traits, hierarchy and multiple roles.

4.6.26 The system must provide a web application programming interface to enable the integration of the required services.

4.6.27 The system should support the exchange of knowledge between users.

4.6.28 The system must support the import and export of data according to (type, form and method).

4.6.29 The system must have a high potential for expansion and development in terms of functionality, integration and number of users.

4.6.30 The system should enable mobile access with more features and compatibility.

4.6.31 The system should provide the communication feature and customer profile management.

4.6.32 The system should support flexibility to re-engineer policies and processes.

4.6.33 The system should provide an effective content management tool.

4.6.34 Ability to track and save all operations on records (such as deletion, update, query ... etc)

4.6.35 The ability of the system to monitor and prevent the deletion of master records along with their movements.

4.6.36 The system should be built in the duplication unit to maintain data integrity and avoid duplication.

4.6.37 The system must provide a flexible auditing method for all data in the system and all changes to all fields.

5. Non-functional requirement

5.1 Efficiency

5.1.1 The system must support the ability to access from anywhere and work on the system, with access to all users on the system at the same time while maintaining the level of system performance (reducing response time in the arrival of information).

5.1.2 The system must provide each user with a flexible and concise method for quick access to the information and data that are frequently used

5.1.3 The ability to handle large amounts of data with high speed and performance.

5.2 Scalability

5.2.1 The ability to install the system on multiple servers (Clustering) to accommodate future growth (Scalability) with a database server attached to a cluster (Clustered DB).

5.3 Security

5.3.1 The system must support encryption and high security so that it provides the ability to adhere to the highest levels of security when dealing with sensitive data such as encryption, censorship and powers.

5.4 Usability

5.4.1 The system shall be provided with a simple, common, and unified application interface, and that this interface shall contain constant commands and keys to navigate it across all system units.

5.4.2 System development in line with the Ministry's identity.

5.4.3 The ability to support both Arabic and English languages in the system interface, data entry and issuance of reports

5.4.4 The ability to deal with the lists and functions in the system easily, flexibly and easily, and that these lists are similar in all systems and linked to the responsibilities and powers used.

5.4.5 The system should be easy to use and free from any complexity to facilitate the work of all users

5.5 Portability and compatibility

5.5.1 The system should be based on the web entirely for the end user and support internet browsers - the latest versions - (Safari, Firefox, Internet Explorer, Chrome) at a minimum.

5.5.2 Ability to import / export data from the system into XML, popular spreadsheets, word processors, and databases.

5.5.3 The ability to enter applications through Internet, intranet and extranet portals, and user-defined portals according to the previously set powers.

5.5.4   The system must provide the user with easy access and access to the application through web services (without the client-server application).

5.5.5 The system must be fully integrated with Microsoft Outlook

5.6 Flexibility

5.6.1 The ability to adapt and amend systems to meet future requirements and needs, and that the process takes place within the Kingdom of Saudi Arabia.

5.7 Install-ability

5.7.1   The system must support the ability to have periodic and automatic backup operations, so that the system, for example, downloads a complete database backup on a daily basis.

5.8 Accessibility

5.8.1 The system must be centralized, with multiple users and teams having access to it.

5.9 Other non-functional requirement

5.9.1 It should be built at least with a (3 Tier) structure.

6. UML diagrams

6.1 Use cases:

6.1.1 Use case for Property Management System

Use Cases Descriptions:

Use Case Name	Description
Login	This use case describes the process by which a user can login into the system.
Account Authentication and Authorization	This use case describes the process by which a user's credentials are authenticated on login and an appropriate role is assigned to it.
Reset Password	This use case describes the process by which a user can reset his/her password.
Logout	This use case describes the process by which a user can logout of his/her account.
View Properties	This use case describes the process by which a user can view properties.
Search Properties	This use case describes the process by which a user can search properties.
Filter Search	This use case describes the process by which a user can filter the search result.
Get MapView of Properties	This use case describes the process by which a user can get map-view of properties.
View Reports	This use case describes the process by which a user can view reports.
Filter	This use case describes the process by which a user can filter reports.
View property data report	This use case describes the process by which a user can view property data reports.
View Property status reports	This use case describes the process by which a user can view status report of properties.
View Contracts	This use case describes the process by which an Admin user can get or view other contracts.
Cancel Contract	This use case describes the process by which an Admin user can cancel contract.
Update Contract	This use case describes the process by which a user can update contract.

Add Contract	This use case describes the process by which a user cana dd contract.
Manage Contract	This use case describes the process by which a user can manage contracts.
Manage Users	This use case describes the process by which an Admin user can manager other users.
Add User	This use case describes the process by which an Admin user can add a new user.
View User	This use case describes the process by which an Admin user can get or view other user data.
Remove User	This use case describes the process by which an Admin user can remove other user.
Update User	This use case describes the process by which an Admin user can update other user's data.
Manage Property	This use case describes the process by which user can manager other properties.
Add Property	This use case describes the process by which an Admin user can add a new property.
View Property	This use case describes the process by which an Admin user can get or view other properties.
Remove Property	This use case describes the process by which an Admin user can remove properties.
Update Property	This use case describes the process by which an Admin user can update property's data.

6.1.2 Use case for Violation Management System

Use Cases Descriptions:

Use Case Name	Description
Login	This use case describes the process by which a user can login into the system.
Account Authentication and Authorization	This use case describes the process by which a user's credentials are authenticated on login and an appropriate role is assigned to it.
Reset Password	This use case describes the process by which a user can reset his/her password.
Logout	This use case describes the process by which a user can logout of his/her account.
File Grievance	This use case describes the process by which a user can file grievance against fines for violations.
Track Violation	This use case describes the process by which a user cant track the violation done.
Get notifications	This use case describes the process by which a user can get system notifications.
Add Violations Data	This use case describes the process by which a user can add violations data.
Delete Violation Data	This use case describes the process by which a user can delete violations data.
Edit Violations Data	This use case describes the process by which a user can edit violations data.
Get Violations Data	This use case describes the process by which a user can get violations data.
Manage Users	This use case describes the process by which an Admin user can manager other users.
Create Report	This use case describes the process by which an Admin user can create a report.
Get User	This use case describes the process by which an Admin user can get or view other user data.
Remove User	This use case describes the process by which an Admin user can remove other user.

Update User	This use case describes the process by which an Admin user can update other user's data.
View Report	This use case describes the process by which an Admin user can view reports.
View Seizure Report	This use case describes the process by which an Admin user can view seizure report.
View Violations Report	This use case describes the process by which an Admin user can view violations reprots.
Manage Employee	This use case describes the process by which an Admin user can manage employees.
Remove Employee	This use case describes the process by which an Admin user can remove other employee.
Update Employee	This use case describes the process by which an Admin user can update other employee's data.
Get Employee	This use case describes the process by which an Admin user can get or view other employee data.
Add Employee	This use case describes the process by which an Admin user cana dd employee.

6.1.3 Use case for Invoice Management System

Use Cases Descriptions:

| Use Case Name	Description
Login	This use case describes the process by which a user can login into the system.
Account Authentication and Authorization	This use case describes the process by which a user's credentials are authenticated on login and an appropriate role is assigned to it.
Reset Password	This use case describes the process by which a user can reset his/her password.
Logout	This use case describes the process by which a user can logout of his/her account.
Access Dashboard	This use case describes the process by which a user can access the dashboard.
Pay Invoice	This use case describes the process by which a user can make payment for invoices.
Process Payment	This use case describes the process by which POS system can process the payments of user.
View Invoice	This use case describes the process by which a user can view the invoices paid and pending.
View Revenues	This use case describes the process by which an Admin user can view revenues.
View by Type	This use case describes the process by which an Admin user can view revenues by type.
View by Source	This use case describes the process by which an Admin user can view revenues by source.
Manage Accounts	This use case describes the process by which an Admin user can manager other accounts.
View Account	This use case describes the process by which an Admin user can get or view other accounts data.
Remove Account	This use case describes the process by which an Admin user can remove other account.
Update Account	This use case describes the process by which an Admin user can update other account's data.
Add Account	This use case describes the process by which an Admin user cana dd new account.
Enable Account	This use case describes the process by which an Admin user can set status of an account to active or enabled.

Disable Account	This use case describes the process by which an Admin user can set status of an account to inactive or enabled.
Issue Invoice	This use case describes the process by which an Admin user can issue invoices.
Issue Lease Invoice	This use case describes the process by which an Admin user can issue lease invoice.
Issue violation Invoice	This use case describes the process by which an Admin user can issue violation invoice.
Define Invoice Groups	This use case describes the process by which an Admin user can define invoice groups.

6.1.4 Use case for Customer Relationship Management System

Use Cases Descriptions:

Use Case Name	Description
Login	This use case describes the process by which a user can login into the system.
Account Authentication and Authorization	This use case describes the process by which a user's credentials are authenticated on login and an appropriate role is assigned to it.
Reset Password	This use case describes the process by which a user can reset his/her password.
Logout	This use case describes the process by which a user can logout of his/her account.
Issue Complaints	This use case describes the process by which a user can issue complaints to customer support for help and inquiry.
View Complaints	This use case describes the process by which a user can view his/her compalints done in the past.
Rate Customer Service	This use case describes the process by which a user can leave feedback for the services provided by customer support against the issue and complaints registered in the past that were closed.
Chat	This use case describes the process by which a user a chat with customer support or other users.
Send Message	This use case describes the process by which a user can send a message in any chat.
Upload file	This use case describes the process by which a user can upload and send file in a message to any user in the chat box.
Delete Chat	This use case describes the process by which a user can delete the chat(s).
View Assignments	This use case describes the process by which an Admin user can view the assignments assigned to him/her.
Create Report	This use case describes the process by which an Admin user can create a report.
Manage Complaints	This use case describes the process by which an Admin user can manage complaints which includes remove complaint, update complaint status, answer complaint, define complaint groups, search and assign complaints.
Remove Complaint	This use case describes the process by which an Admin user can remove a complaint.

Answer Compalint	This use case describes the process by which an Admin user can post an answer to complaint.
Upload file	This use case describes the process by which an Admin user can upload and send any file as an answer to complaint.
Define Complaint Group	This use case describes the process by which an Admin user can define complaint group to categorize complaints.
Search Complaint	This use case describes the process by which an Admin user can search complaints.
Assign Complaints	This use case describes the process by which an Admin user can assign complaints to other users.
View Reports	This use case describes the process by which an Admin user can view reports.

6.2 Context Model:

6.3 architecture:
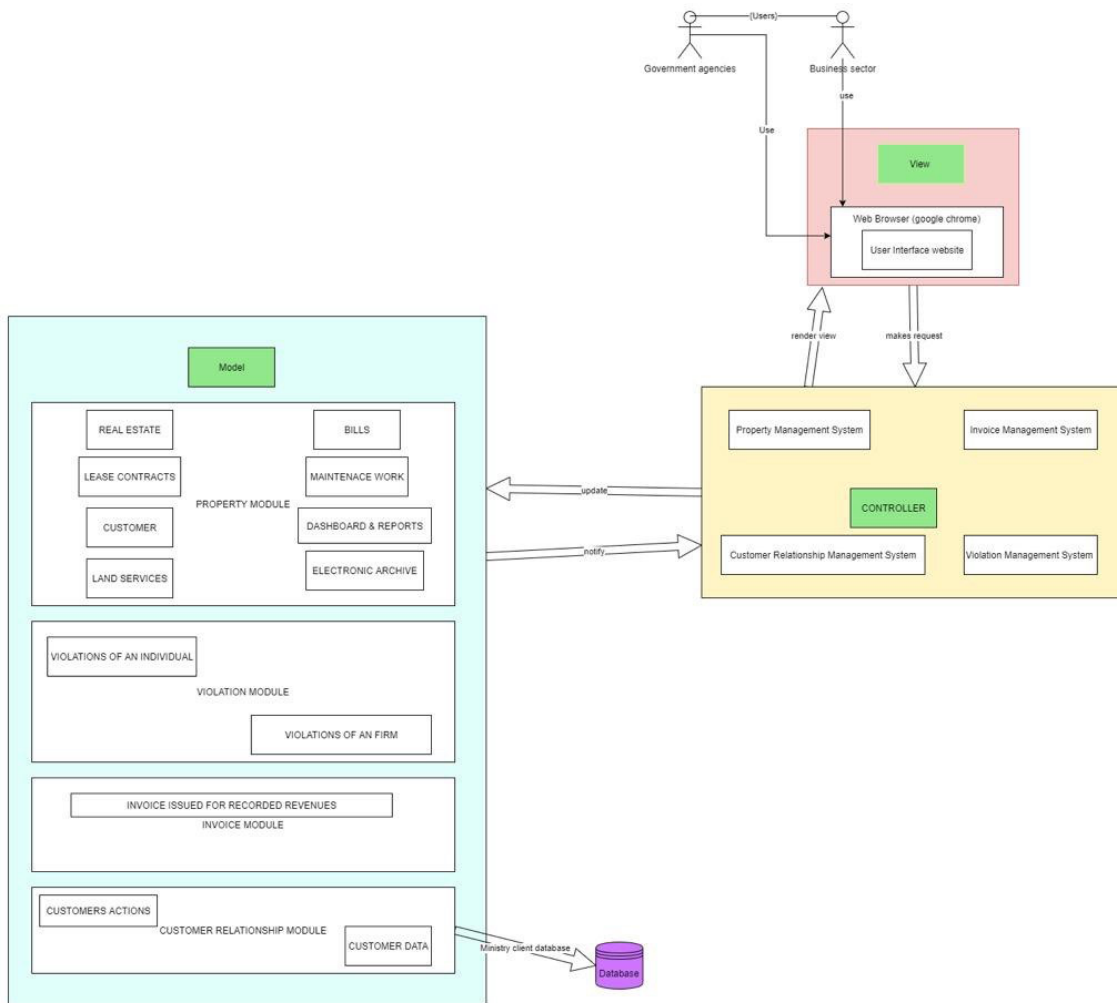
Reason to choose MVC architecture:

The main reason behind the choice of MVC pattern is, our system contains the website which is accessed by the opening of web browser where users like the Government agencies use it and perform their relevant operations. This is the view component in the MVC. This is all about user interfaces and interactions.
The view model request changes from the controller, here ministry operations like management of different modules are Handel. This is the controller module. The main functions of controller is to update model with latest requests from the client side and then the main data is processed at the model module. The model is connected with the database where the client data is stored.

6.4 class diagram:

6.4.1 Class diagram for Property Management System
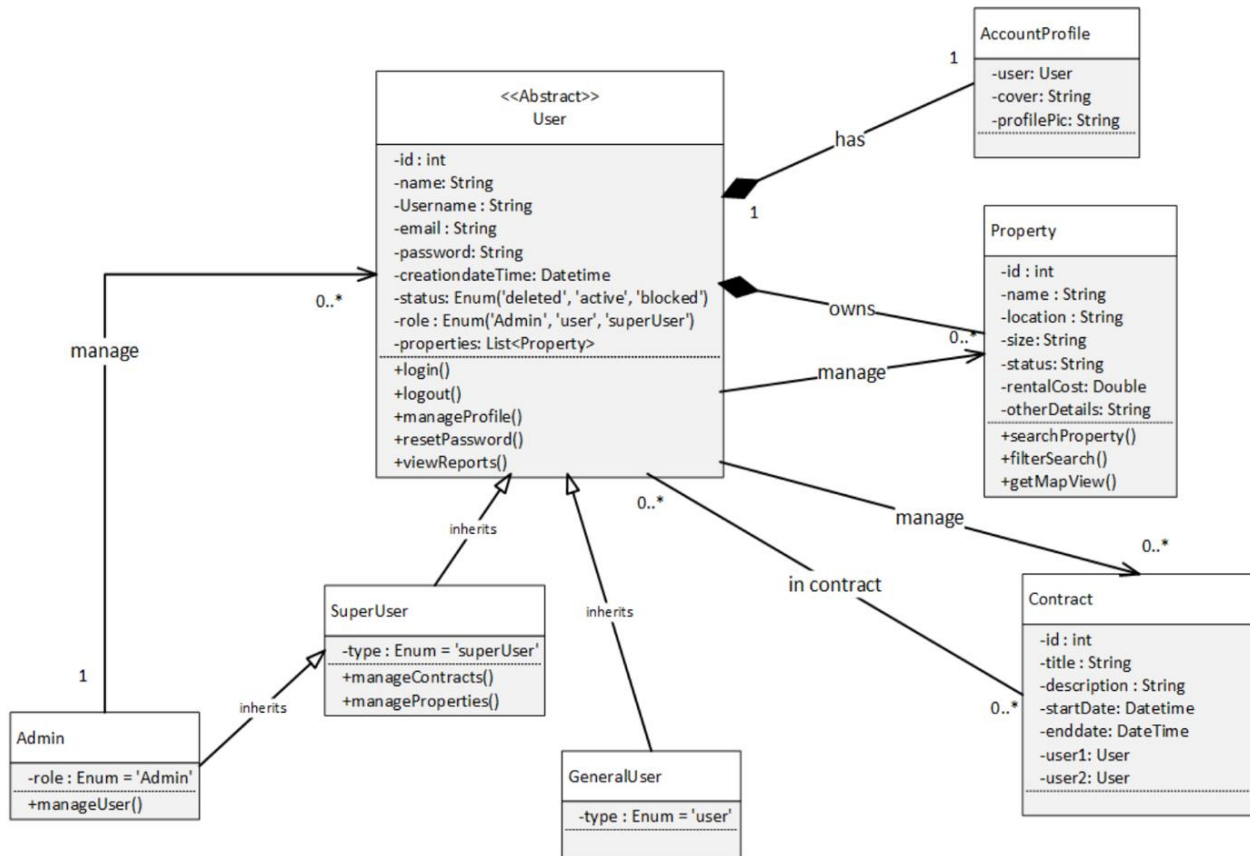
6.4.2 Class diagram for costumers relationship Management System
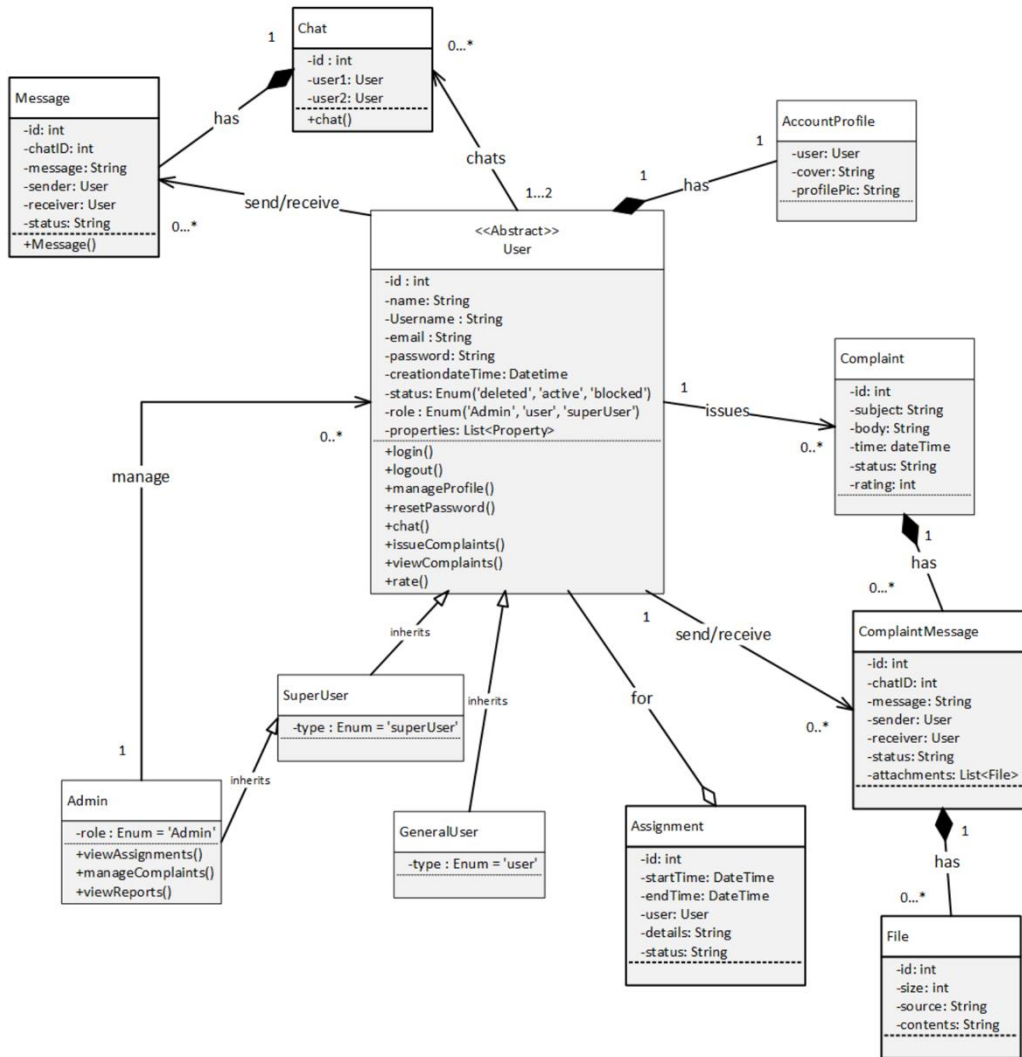
6.4.3 Class diagram for violation Management System
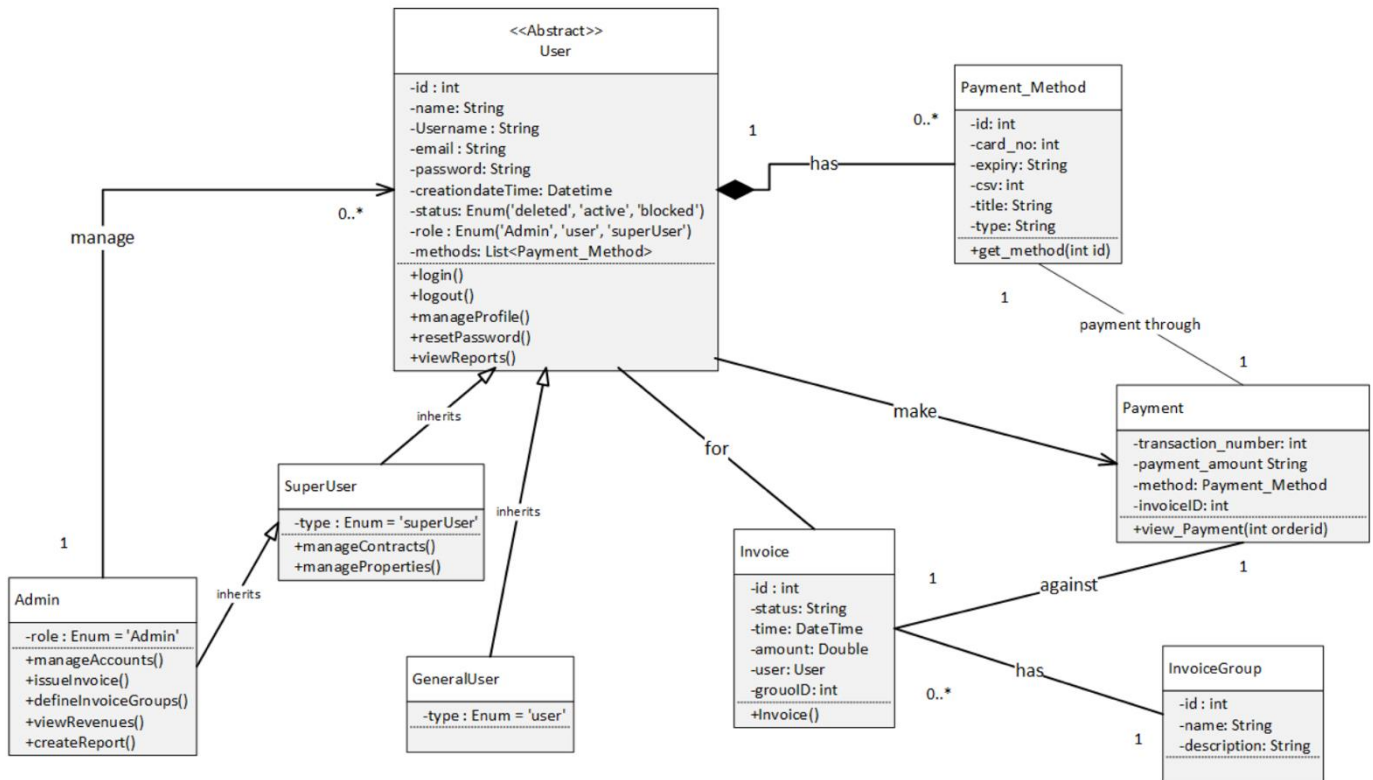
6.4.4 Class diagram for invoice Management System
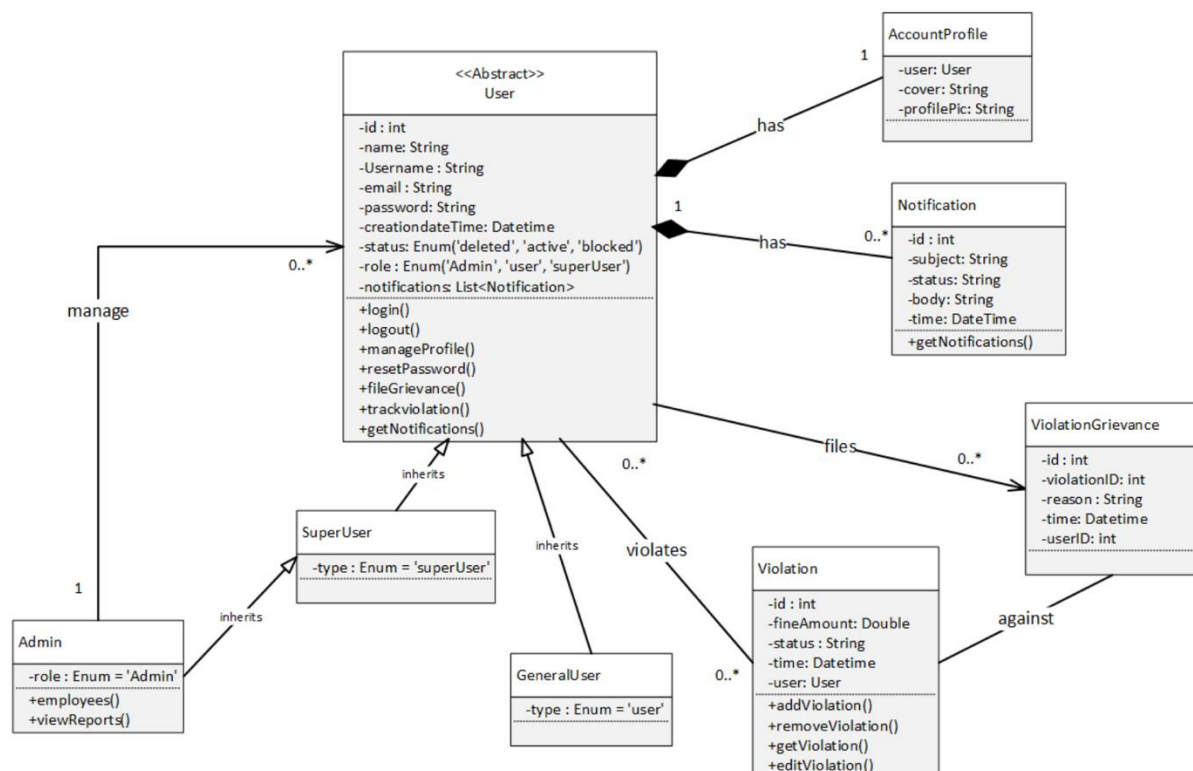
6.4.5 Class diagram for Management System
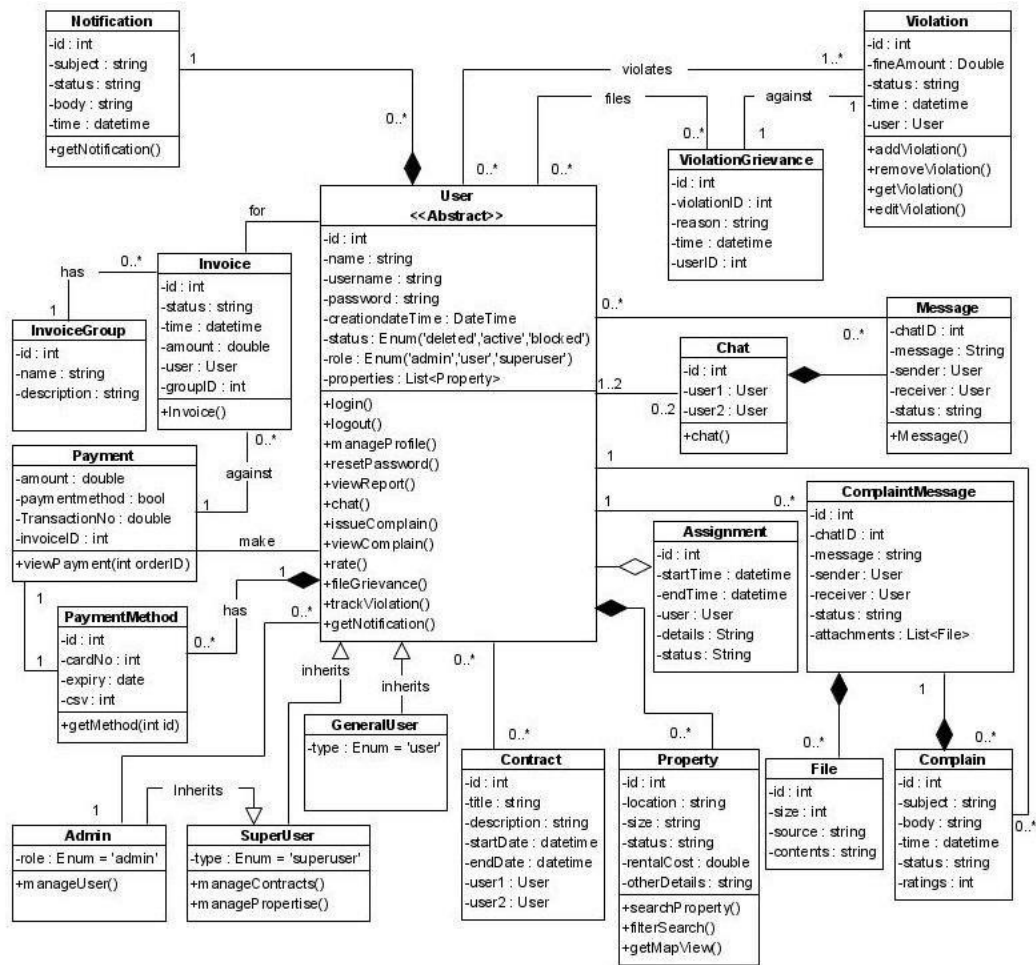
6.5 Sequence diagram

6.5.1 Sequence diagram for Property Management System
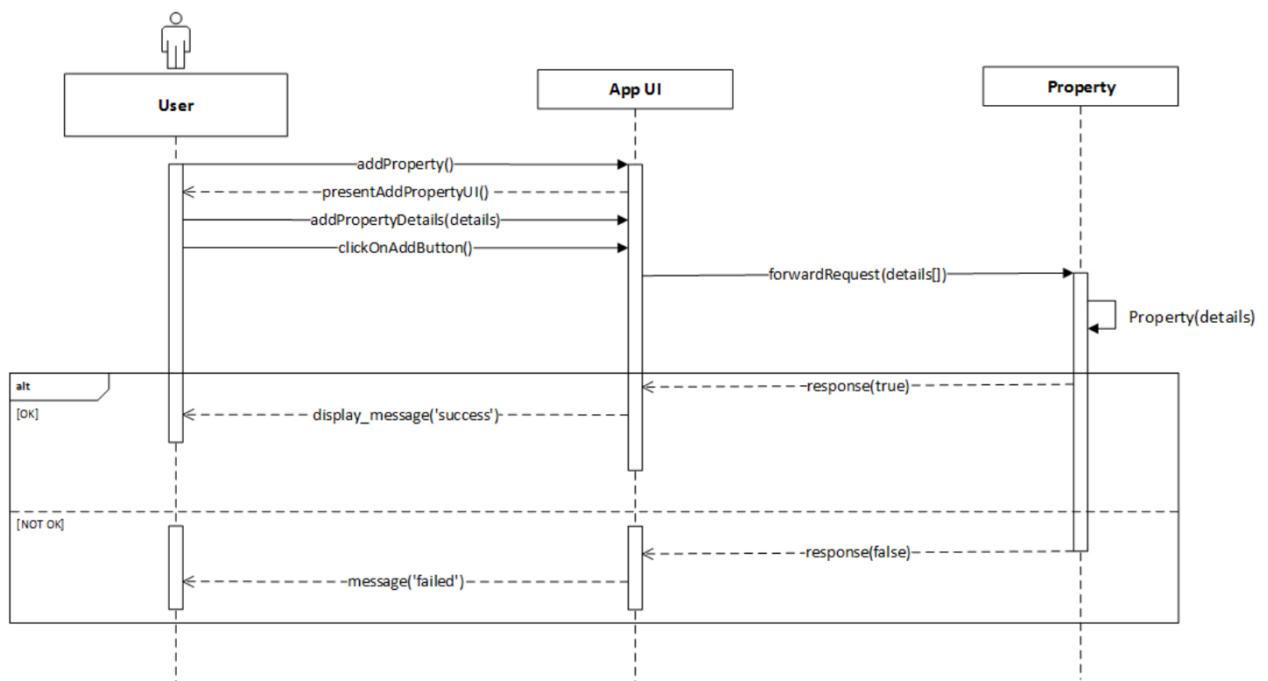
6.5.2 Sequence diagram for costumers support Management Systems
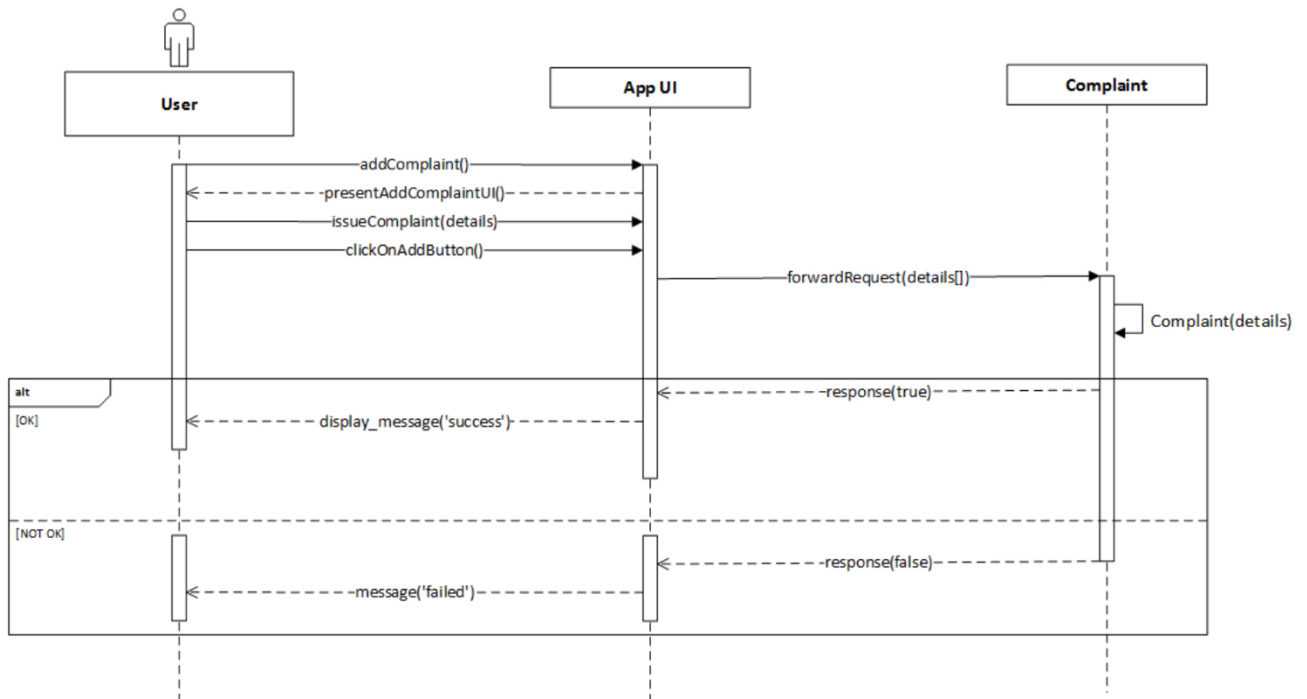
6.5.3 Sequence diagram for violation Management System
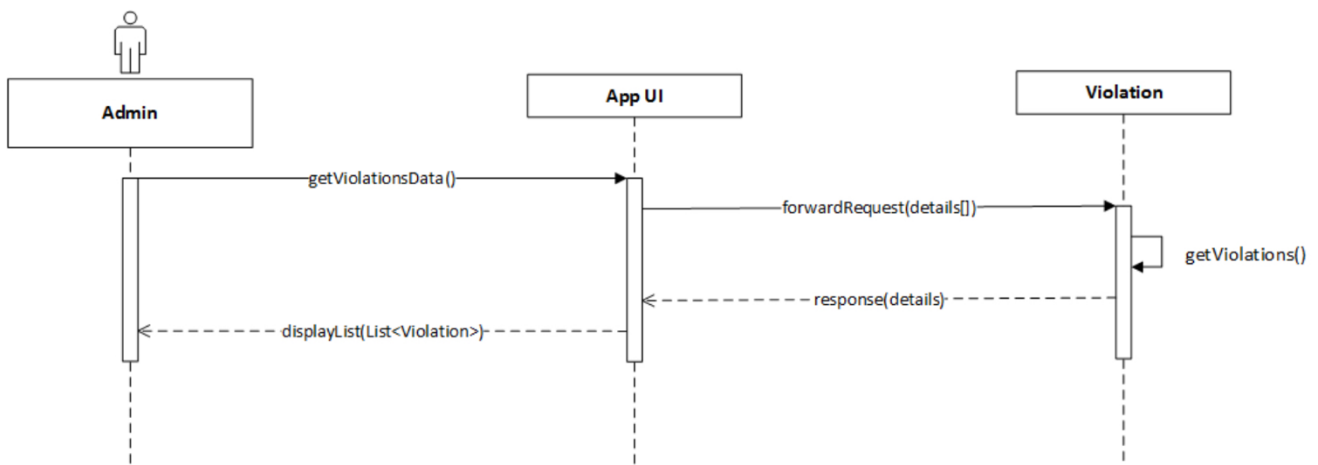
6.5.4 sequence diagram for invoice Management System
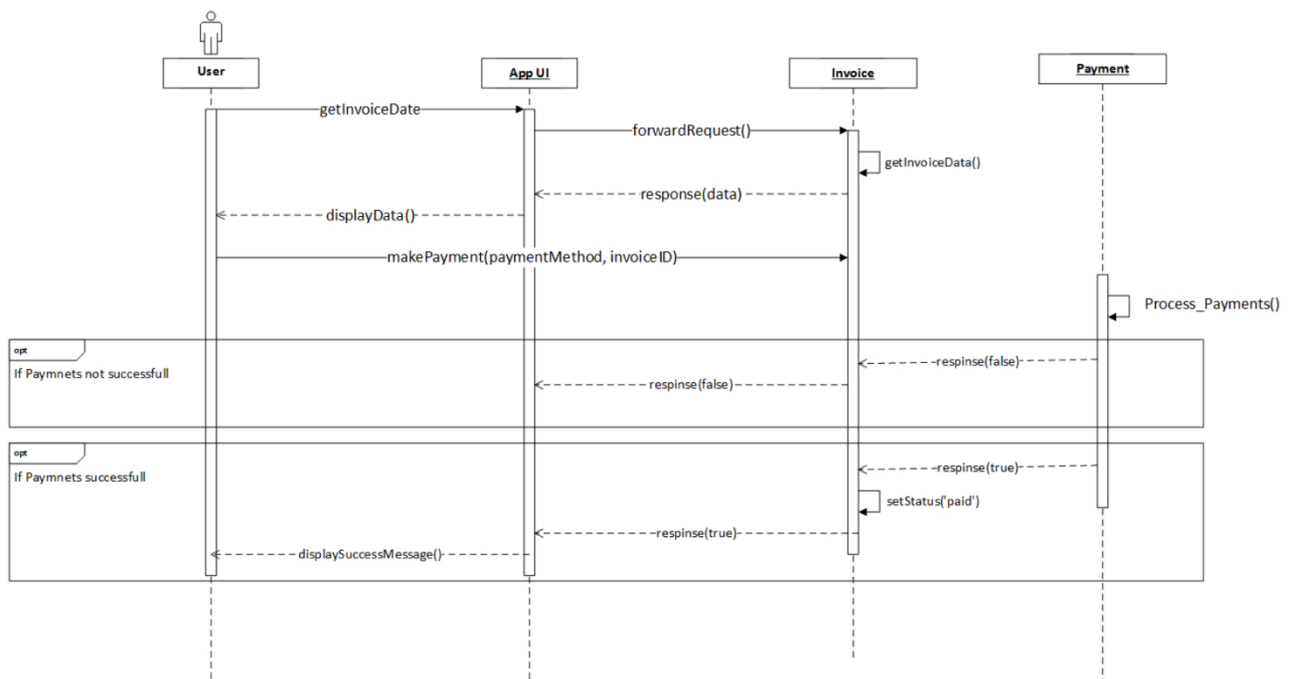
6.6 Prototype :

6.6.1. Home page:
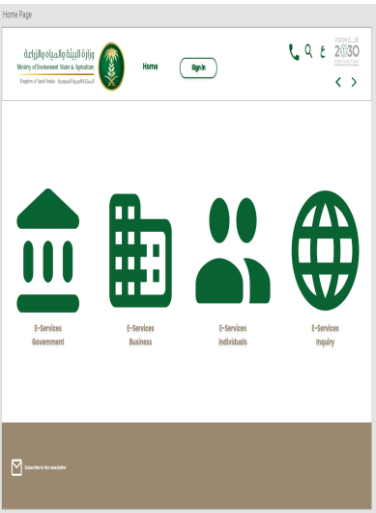
6.6.2 Log in and sign in
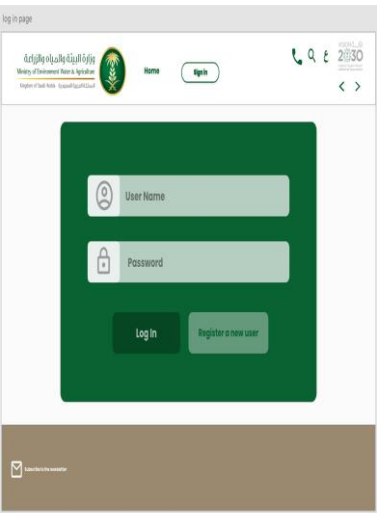
6.6.3 Individual General services
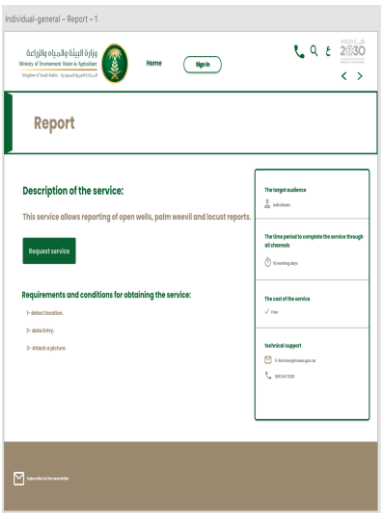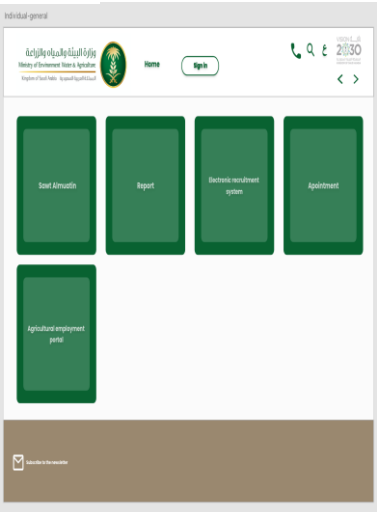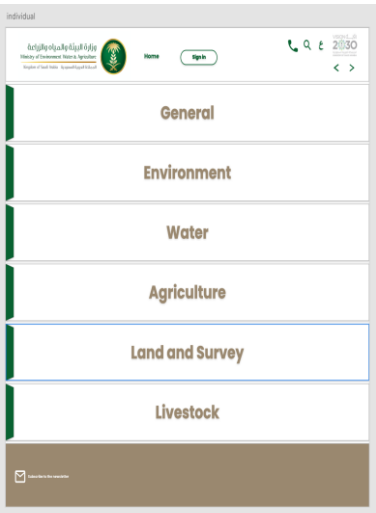
6.7 Activity diagram

6.7.1 Activity diagram for Property Management System
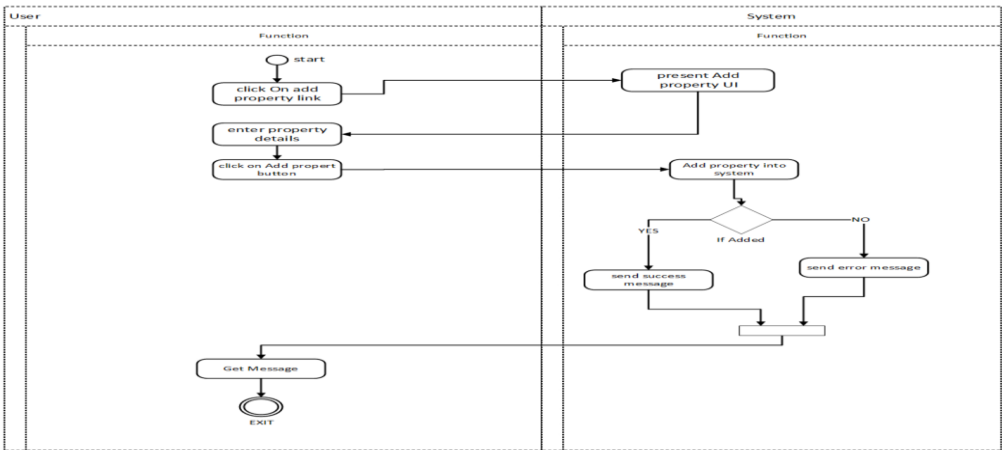
6.7.2 Activity diagram for costumers support Management System
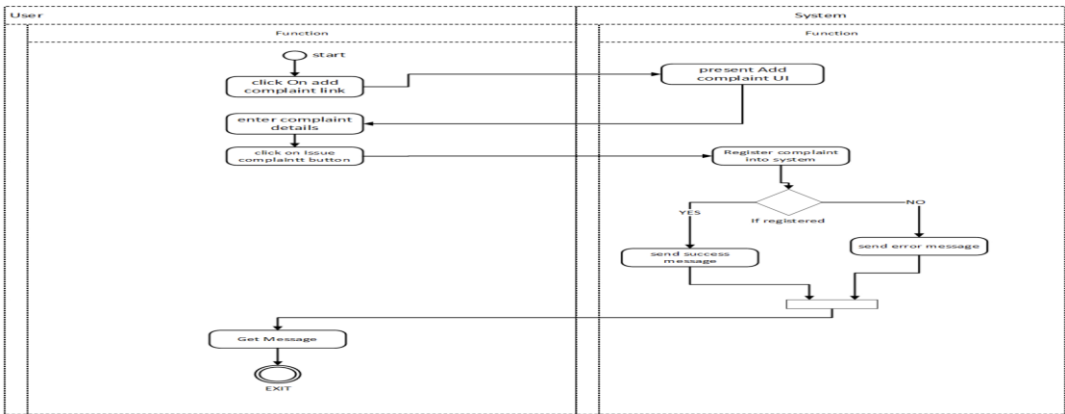
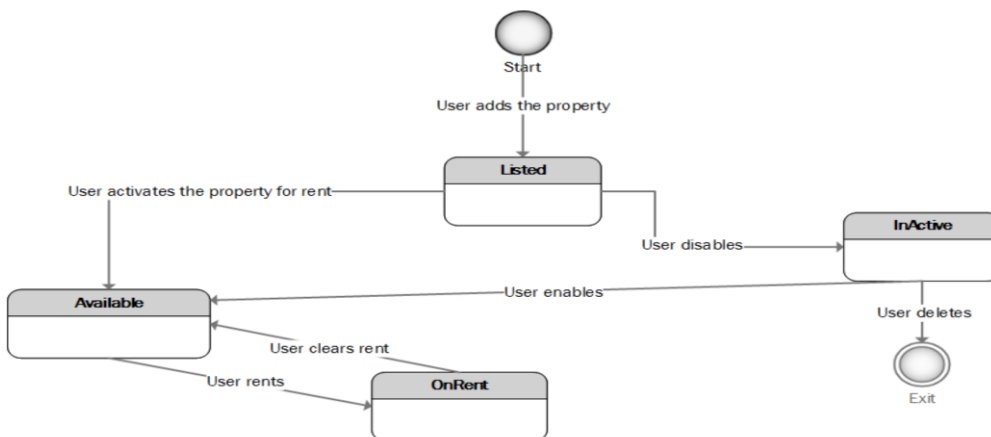## 6.7.3 Activity diagram for violation Management System
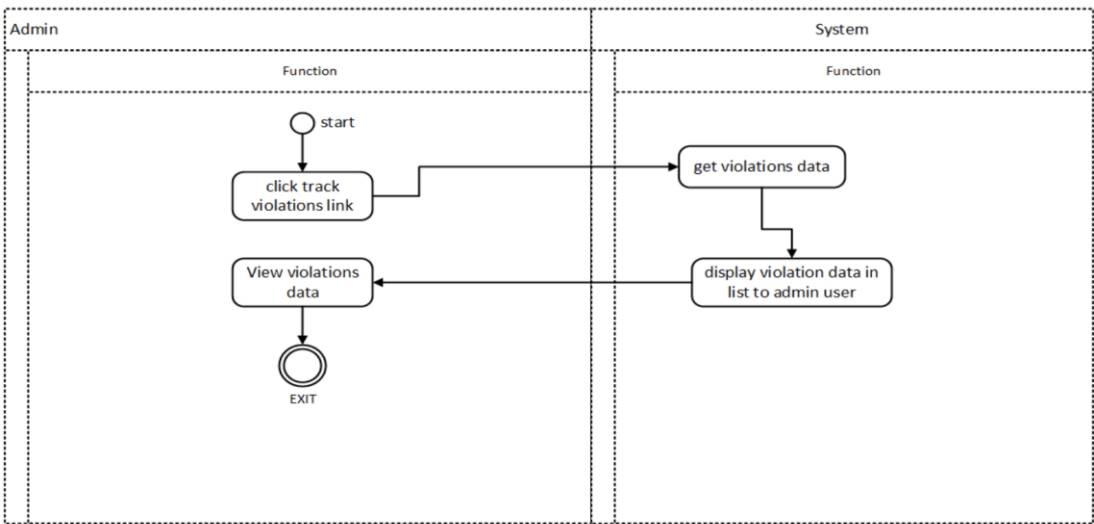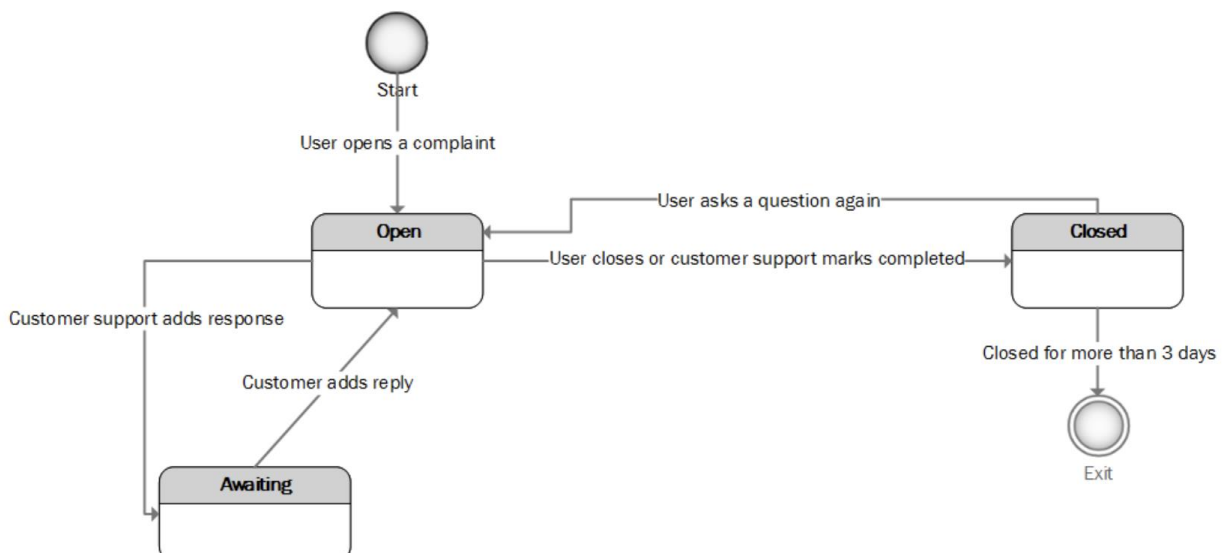
6.7.4 Activity diagram for invoice Management System
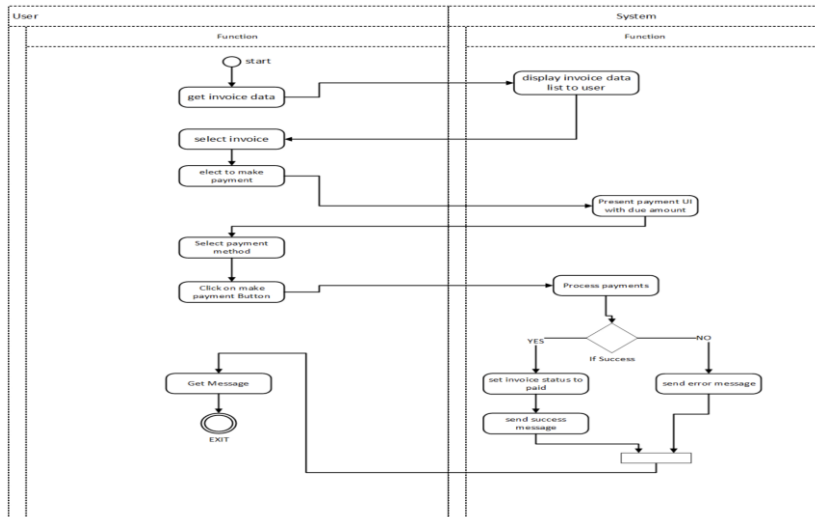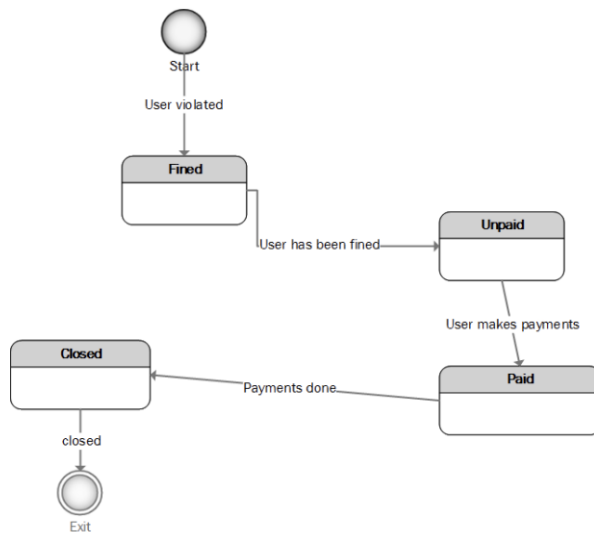

6.8 State diagram

6.8.1 state diagram for Property Management System

6.8.2 State diagram for costumers support Management System

6.8.3   State diagram for violation Management System

6.8.4 State diagram for invoice Management System