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COS730
Software Requirements Specification

Customer Care System

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1 Software Requirements Specication

1.1 Functional Requirements Deliverable

1.1.1 Introduction

The purpose of this document is to present a detailed description of the Customer Care System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate, and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system and will be liable for the approval or disapproval of the project. Customers are the essential factor in the organization. The business has to support the customers' preferences and demands for creating customer loyalty, which makes the customer still purchases with the particular company. The customer may feel dissatisfied with the service when he or she receives the delay of services and they do not know the channel for filing the complaint, and also the current complaint handling in the organizations still has the problems. Customer Complaint is important information reflecting customers sound and is a primary measure of customer dissatisfaction. Effective and Efficient response to these complaints is an essential index of an organization's performance.

Customer Care System will be an oriented by Web-application which will be used by customers to make complaints about their dissatisfaction on provided services. This system will be able to handle complaints by recording and giving feedback for each raised complaint. Since the organization has to deal with several complaints, The Customer Care System will have a service for classifying the complaint, then automatically direct to the responsible department and the service for finding the similar complaint to avoid submitting the duplicate complaint. Thus, the benefits of saving time and labor. The Customer Care System will able designed in such a way that it will be able to reduce the time and procedures for complaint handling, increase the channel for filing the complaint, and increase the channel for progress reporting and tracking the status of the complaint. The System will also be able to perform some semantic data analysis which can be a good reference to find out users' needs from e-complaint and the handling process of this complaint in the body of any organization.

1.1.2 User characteristics

The Customer Care System user is simply anyone that has access to the Internet and a web browser. It is assumed that the user is familiar enough with a computer/mobile phone to operate the browser, keyboard, and mouse and is capable of browsing too, from and within simple websites

Three types of users interact with the system: Customer users of the Customer care system, Staff and management users, and administrators. Each of these three types of users has a different use of the system so each of them has its requirements. Customer users can only use the system to submit new complaints. This means that the customer user has to be able to fill the complaint form provided, choose to upload supporting evidence such as pictures or documents. For the customers' users to submit the complaint, there are multiple criteria the users should specify on the complaint form for the complaint to be submitted to the system. The Staff and management users will not use the same window as the customer users but the web portal designed for handling these complaints submitted by customer users. There they will manage the information about complaints, for example, assign a complaint to the relevant staff user, update complaint status, provide feedback to the customer and be able to pull data report generated automatically by the system. The administrators also only interact with the web portal. They are managing the overall system so there is no incorrect information within it. The administrator can manage the information and Create system users and manage their privileges and maintaining the Customer Care System and will be involved in software fixes, deployment, and regular maintenance.

1.1.3 Functional Requirements

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

User Class 1 - The Administrator

Functional Requirement 1.1: User Creation

Functional Requirement Id	FR1.1
Requirement Title	Staff User and Management creation
Requirement Description	• Admin creates staff users • Admin creates Management users • Admin assigns system privileges based on management reporting structure. • Staff users and management users should use employee numbers as usernames and use Windows/Domain passwords as passwords.
Business Rationale	• Provide the staff and management users with an efficient user experience
Exception Scenarios	• Only active employees' users will be created by the admin
Dependencies	• User should be an active staff member

Functional Requirement 1.2: Database Management

Functional Requirement Id	FR1.2
Requirement Title	Database Management
Requirement Description	• Admin manages the databases • keep track of customers, staff, and management details • Admin assign permissions to employees.
Business Rationale	• Keep the system running for business usage.
Exception Scenarios	• Admin cannot update employee's details without the manager's approval.
Dependencies	• User should be an active staff member

User Class 2 - Customers

Functional Requirement 2.1 - Login Operation

Functional Requirement Id	FR2.1
Requirement Title	Login Operation
Requirement Description	• User enters username and password. • User ticks remember password option • User clicks on the "Login" button. • System should authenticate the login credentials supplied by the user and create a valid user session upon successful authentication and redirect the user to the Home page. • System saves the user password and username for next sessions
Business Rationale	Allow registered users to browse through the entire system
Exception Scenarios	• If authentication fails, a user should be redirected to the error Scenario's page showing the "Username or password incorrect" message. Maximum password retries allowed are 3 after which the account should be temporarily locked and request the user to reset the password using forgot password session. • The operation should also support first-time user registration and forgot the password. • Display “supply all required field” message if one of the required attributes is not supplied. • Required attribute will be indicated by the use of **asterisk** notation (*)
Dependencies	• Authentication service of corporate LDAP.

Functional Requirement 2.2: New User Registration Operation

Functional Requirement Id	FR 2.2
Requirement Title	**New User Registration Operation**
Requirement Description	• Customer Users must fill in the registration form provided. • Customer Users should fill in the personal information required. • Customer Users should set up a username and password. • Customer User Accepts Terms and conditions of the system • System should authenticate all credentials supplied by Customer user and create a valid user session upon successful authentication and redirect the user to Login Page.
Business Rationale	Allow registered users to login into the system.
Exception Scenarios	• If authentication fails, a user should be redirected to the error Scenario’s page showing the "Username or password does not match" message. •Validate if Customer User-supplied all required information •Validate if the password supplied by user meets minimum requirements • Display “supply all required field” message if one of the required attributes is not supplied. • Required attribute will be indicated by the use of **asterisk** notation (*)
Dependencies	• Authentication service of corporate LDAP.

Functional Requirement 2.3: Forgot Password

Functional Requirement Id	FR2.3
Requirement Title	**Forgot Password**
Requirement Description	• Registered user enters username and password. • User clicks on the "Login" button. • System authenticate fails. • System displays “Username or password incorrect” • User Clicks on Forgot Password • System displays Forgot Password • User enters a new password and confirms password • System validates if supplied password matches • System validates if supplied password meets minimum requirements • User clicks change the password to submit • System should authenticate all credentials supplied by the user and create a valid user session upon successful authentication and redirect the user to Login Page.
Business Rationale	Allow registered users to browse through the entire system based on the user privileges granted.
Exception Scenarios	• If authentication fails, a user should be redirected to the error Scenario’s page showing the "Username or password incorrect" message. Maximum password retries allowed are 3 after which the account should be temporarily locked and request the user to reset the password using forgot password session. • The operation should also support first-time user registration and forgot the password. • Display “supply all required field” message if one of the required attributes is not supplied. • Required attribute will be indicated by the use of **asterisk** notation (*)
Dependencies	• Authentication service of corporate LDAP. • FR2.2: Users should be registered.

Functional Requirement 2.4: Register Complain

Functional Requirement Id	FR2.4
Requirement Title	**Register Complain**
Requirement Description	• Customer User enters any' of these required attributes: Category, Sub-Category, Complain Type, complain header, Complain Descriptions, Upload pictures from the complaint form provided • Customer User personal information is pre-populated to the register complaint form
Business Rationale	Help Customer users to fill the form in few minutes
Exception Scenarios	• Display “supply all required field” message if one of the required attributes is not supplied. • Required attribute will be indicated by the use of **asterisk** notation (*)
Dependencies	• FR2.1: Users should be logged in.

Functional Requirement 2.5: Submit Complain

Functional Requirement Id	FR2.5
Requirement Title	**Submit Complain**
Requirement Description	• User should Submit the registered complaint after filling in all required information. •The Submit function should submit the complaint to the database • Submit report text is displayed for the user • User perf
Business Rationale	Help users to fill the form in few minutes
Exception Scenarios	• Display supply all required field messages if one of the required attributes is not supplied. • Required attribute will be indicated by the use of **asterisk** notation (*)
Dependencies	• FR2.4: user should have **Registered a Complain**

Functional Requirement 2.6: Complaint History

Functional Requirement Id	FR2.6
Requirement Title	Complaint History
Requirement Description	• Complaint History function should display all the Complain details supplied by the user before. • While displaying the Complaint History, it should get the latest complaint status and display that for the user to track the progress of the query.
Business Rationale	Provide the users with a seamless complaint addressing.
Exception Scenarios	User will not be able to edit the complaint once it logged with the system
Dependencies	• FR2.5 user should have **Submitted a Complain**

Functional Requirement 2.7: Logout

Functional Requirement Id	FR2.7
Requirement Title	Logout
Requirement Description	• Customer User must logout of the site after use.
Business Rationale	• Protecting user account information
Exception Scenarios	• User needs to login next time to access the system
Dependencies	• FR2.1: Users should be logged in.

User Class 3 - Staff and Management

Functional Requirement 3.1: Login

Functional Requirement Id	FR3.1
Requirement Title	Login Operation
Requirement Description	• User enters username and password. • User ticks remember password option • User clicks on the "Login" button. • System should authenticate the login credentials supplied by the user and create a valid user session upon successful authentication and redirect the user to the Home page. • System saves the user password and username for next sessions
Business Rationale	Allow registered users to browse through the entire system
Exception Scenarios	• If authentication fails, a user should be redirected to the error Scenario's page showing the "Username or password incorrect" message. Maximum password retries allowed are 3 after which the account should be temporarily locked and request the user to reset the password using forgot password session. • Display “supply all required field” message if one of the required attributes is not supplied. • Required attribute will be indicated by the use of **asterisk** notation (*)
Dependencies	• Authentication service of corporate LDAP.

Functional Requirement 3.2: Management User Dashboard

Functional Requirement Id	FR3.2
Requirement Title	**Management User Dashboard**
Requirement Description	• The management user is supposed to see all new complaints lodged for their department. • The management user is supposed to assign new complaints to staff users in their department. • Management user manages the staff work • Management user is responsible for properly allocating complaint to their staff members (agents) • All ticket pages should display all opened complaints, resolved, New logged complaints assigned to that particular staff user. • Staff users should be able to filter with query status to see queries per status.
Business Rationale	Provide the management users with efficient complaint assessment.
Exception Scenarios	management User will not be able to delete a complaint logged against their department
Dependencies	• FR3.1: Users should be logged in.

Functional Requirement 3.3: Task management

Functional Requirement Id	FR3.3
Requirement Title	Task management
Requirement Description	• The Staff user is supposed to see all ticket activities perfumed in a week. • All tickets page should display all opened complaints, resolved, New logged complaint assigned to that particular staff user. • Staff users should be able to filter with query status to see queries per status. • Staff Users should be able to re-assign the task back to management
Business Rationale	•Provide the staff users with efficient complaint assessment.
Exception Scenarios	•Staff User will not be able to delete a complaint assigned to them
Dependencies	FR3.1: Users should be logged in.

Functional Requirement 3.4: Complaint Status Notification

Functional Requirement Id	FR3.4
Requirement Title	**Complaint Status Notification**
Requirement Description	• System should send the customer user a notification once the complaint has been resolved. • Notification should be sent to the Customer User's email supplied during registration.
Business Rationale	Provide the users with real-time communication
Exception Scenarios	• Customer user will only receive a notification via email provided. • No cell phone notifications will be provided.
Dependencies	• FR2.5 user should have **submitted a Complain**

Functional Requirement 3.5 Data Analysis Reports

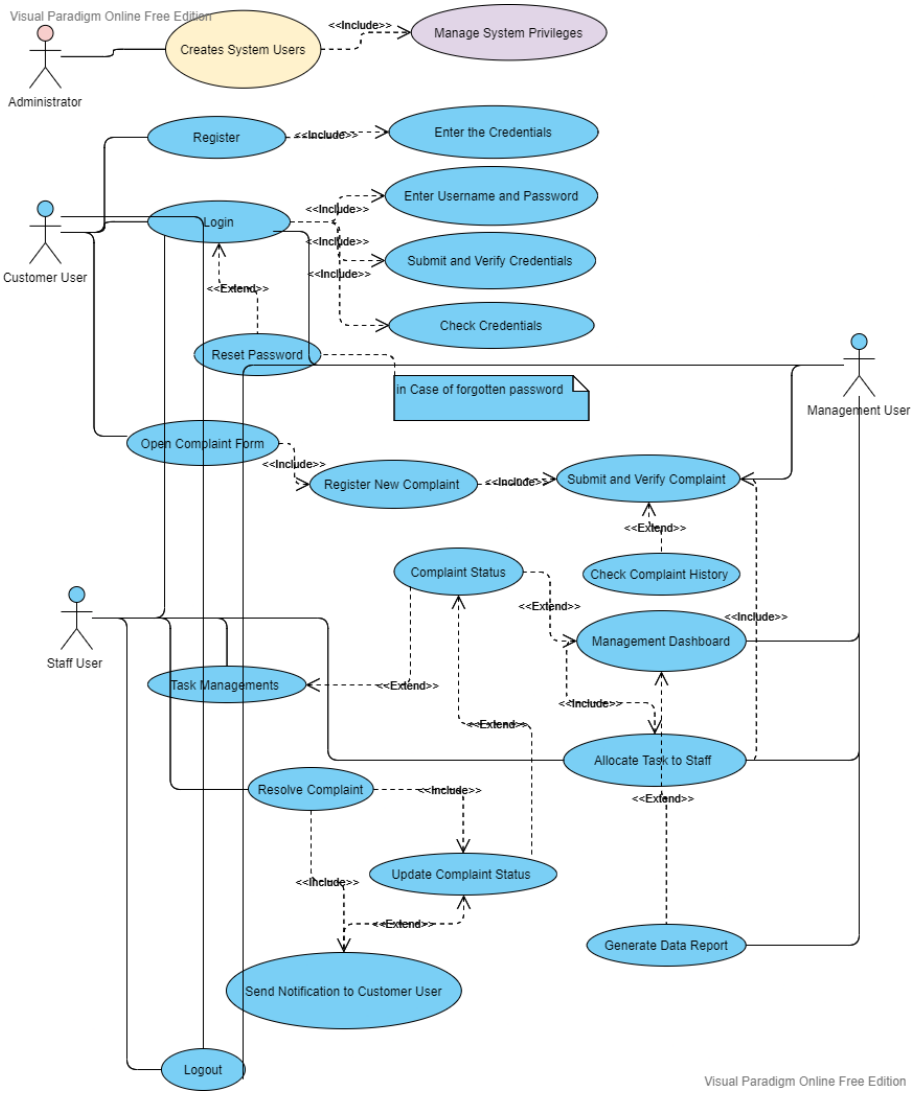
Functional Requirement Id	FR3.5
Requirement Title	Data analysis Reports
Requirement Description	• Management should be able to pull data reports automated by the system
Business Rationale	•Provide the business with ways to improve complaints by customers.
Exception Scenarios	• Only management can pull the reports
Dependencies	• FR 3.1: Users should be logged in

Functional Requirement 3.6: Logout

Functional Requirement Id	FR3.6
Requirement Title	Logout
Requirement Description	• Customer User must logout of the site after use.
Business Rationale	• Protecting user account information
Exception Scenarios	• User needs to login next time to access the system
Dependencies	• FR3.1: Users should be logged in.

1.1.4 Use Case diagram

This section outlines the use cases for each of the active users separately. The Admin, the Customer , the Staff and the management user have only one use case apiece. The management user is the main actor in this system



Use Case 1: Administrator

Use Case 1.1: Creates System Users

- Admin creates staff users.
- Admin creates Management users.

Use Case 1.1.1: Manage System Privileges

- Admin assigns system privileges based on management reporting structure.
- Admin assigns system roles to each user.

Use Case 2: Customer User

Use Case 2.1: Register

- New customer users clicks the register button provided by the system.
- System opens the registration page.

Use Case 2.1.1: Enter the Credentials

- Customer Users must fill in the registration form provided by the system
- Customer Users should fill in the personal information required.
- Customer Users should set up a username and password
- System should authenticate all credentials supplied by Customer user and create a valid user session upon successful authentication and redirect the user to Login Page.

Use Case 2.2: User Login

- existing customer users clicks the Login button provided by the system.
- System opens the login page.
- Customer User clicks on the Login button.

Use Case 2.2.1: Enter Username and Password

- existing customer user enters username and password.

Use Case 2.2.2: Checks Credentials

- System checks if user supplied with all required information.
- System isplay "supply all required field" message if one of the required attributes is not supplied.

Use Case 2.2.3: Submit and Verify Credentials

- System authenticate the login credentials supplied by the user and create a valid user session upon successful authentication

Use Case 2.2.4: Reset Password

- Registered customer user enters username and password.
- Customer User clicks on the Login button.
- System authenticate fails
- Customer User enters a new password and confirms password.
- System validates if supplied password matches
- System validates if supplied password meets minimum requirements
- User clicks change the password to submit
- System should authenticate all credentials supplied by the user and create a valid user session upon successful authentication and redirect the user to Login Page.

Use Case 2.3: Open Complaint Form

- Customer user opens a new complaint form to register a new form
- System loads a register new complaint page

Use Case 2.3.1: Register new complaint

- Customer User enters any' of these required attributes: Category, Sub Category, Complain Type, complain header, Complain Descriptions, Upload pictures from the complaint form provided.
- Customer User personal information is pre-populated to the register complaint form.

Use Case 2.3.2: Submit and Verify Complaint

- User should Submit the registered complaint after filling in all required information.
- The Submit function should submit the complaint to the database
- Submit report text is displayed for the user.

Use Case 2.3.3: Check Complaint History

- Complaint History function should display all the Complain details supplied by the user before.
- While displaying the Complaint History, it should get the latest complaint status and display that for the user to track the progress of the query .

Use Case 3: Management

Use Case 3.1: Management Dashboard

- The management user is supposed to see all new complaints lodged for their department.

Use Case 3.1.1: Allocate Task to Staff

- The management user is supposed to assign new complaints to staff users in their department.

Use Case 3.1.2 : Generate Data Report

- Management user should be able to pull data reports automated by the system based on report criteria they select.

Use Case 4: Staff

Use Case 4.1: Task Management

- System displays all opened complaints, resolved, New logged complaints assigned to that particular staff user.
- Staff users should be able to filter with complaints status to see complaints per status.

Use Case 4.1.1: Resolve Complaint

- Staff users reslove a complaint by providing a reply to the customer.

Use Case 4.1.2: Update Status

- Staff users update the complaint status from given options by system.

Use Case 4.1.3: Send Notification to Customer User

- System should send the customer user a notification once the complaint has been resolved.
- Notification should be sent to the Customer User's email supplied during registration.

Use Case 5: Logout

- all Users must logout of the site after use

1.1.5 Traceability matrix Requirements VS Subsystems

The 'D' in the row/column intersection illustrates that the requirement in the row depends on the requirement named in the column; an 'R' means that there is some other weaker relationship between the requirements. For example, they may both define the requirements for parts of the same subsystem.

	USER_ID	1.1	1.1.1	2.1	2.1.1	2.2	2.2.1	2.2.2	2.2.3	2.2.4	2.3	2.3.1	2.3.2	2.3.3	3.1	3.1.1	3.1.2	4.1	4.1.1	4.1.2	4.1.3	5
REQ_ID																						
1.1		D																				
1.2		R	D																			
2.1				R	R	D	R	R	R													
2.2				D	R					R												
2.3										D												
2.4											D	D	R	R								
2.5												D	D	R								
2.6														D								
2.7																						D
3.1		R				R	R	R	R						D	R	R	D	R	R	R	
3.2															D	R	R					
3.3																					D	
3.4																						
3.5																R	D					
3.6																						D

2 Non-Functional Requirements

2.1 Quality requirements

2.1.1 Performance

- The system shall accommodate a high number of items and users without any fault.
- Responses to view information shall take no longer than 5 seconds to appear on the screen.
- The system must be interactive and the delays involved must be fewer. So in every action-response of the system, there are no immediate delays.
- In the case of opening windows forms, popping error messages, and saving the settings or sessions there is a delay much below 2 seconds.
- In the case of opening databases, sorting queries, and evaluation there are no delays, and the operation is performed in less than 2 seconds for opening, sorting, computing, submitting more than 95 percent of the complaints.

2.1.2 Scalability

- The customer care system shall be scalable to support unlimited growth in the number of users.
- The effort needed to administer the customer care system (as measured in hours per month of system administratorsâĂŹ time) shall not increase with an increase in the number of users.
- If there is a significant increase in system operation work, it shall be proportionately less than an increase in the number of users.

2.1.3 Responsiveness

- When a user selects any tab it should be easy for the user to add any information required under the tab with few touches and this should happen in fewer seconds or instantaneous with user touch.
- The system should be responsive to the user Input or to any external interrupt which is of highest priority and return to the same state.

2.1.4 Useability

- User should be able to understand the flow of the system easily ie users should able to use the system without any guidelines or help from experts or manuals.
- Users with no training and no understanding of English shall be able to use the system.
- As the system is easy to handle and navigates most expectedly with no delays.
- In that case, the system program reacts accordingly and transverses quickly between its states.

2.1.5 Reliability

- When a user is done with selecting the menu and proceeding to submit the complaint, there should be a way for a user to see a summary of the complaint, and once complete he or she should get a confirmation via email notification.
- The customer care system probability of failure on demand should be 0.005 The rate of failure occurrence per customer care system shall be 5/1000 (5 occurrences per 1000 days).
- Failure means the system fails to register new complaints. As the system provides the right tools for customer satisfaction, complaints, it must be made sure that the system is reliable in its operations and for securing the sensitive details.

2.1.6 Security

- Users' info like personal contact, should be protected and should not be accessible to unauthorized personals, and also there should not be a way for a user to manipulate the application for their gain or bypass necessary means.
- The main security concern is for user's accounts hence proper login mechanism should be used to avoid hacking. The registration is a way to spam check for increasing security.
- Hence, security is provided from the unwanted use of recognition software.

2.1.7 Availability

- If the internet service gets disrupted while sending information to the server, the information can be sent again for verification.

2.1.8 Maintainability

- The system shall not be shut down for maintenance more than once in 24 hours.
- The application development process must have a regression test procedure that allows complete re-testing within 2 business days

2.2 Specify and quantify

2.2.1 Performance

- Production of a data report shall take less than 20 seconds for 95 percent of the cases.
- The system shall be able to process 100 complaint transactions per second in peak load.
- When connecting to the server the delay should be in less than 20 seconds for sake of good communication.

2.2.2 Scalability

- The Home page supporting 5 thousand users per hour must provide 6 seconds or less response time in a Chrome desktop browser, including the rendering of text and images, over an LTE connection.

2.2.3 Responsiveness

- The time from the submission of a Customer care system user request until the first response is produced shall take no longer than three seconds.

2.2.4 Useability

- Customer care system users shall perform tasks in 10 minutes, Experienced users shall perform tasks in 2 minutes.

2.2.5 Reliability

- The system defect rate shall be less than 1 failure per 1000 hours of operation.
- No more than 1 per 100000 transactions shall result in a failure requiring a system restart.

2.2.6 Security

- At least 99 percent of intrusions shall be detected within 10 seconds. The application shall identify all of its client applications before allowing them to use its capabilities.

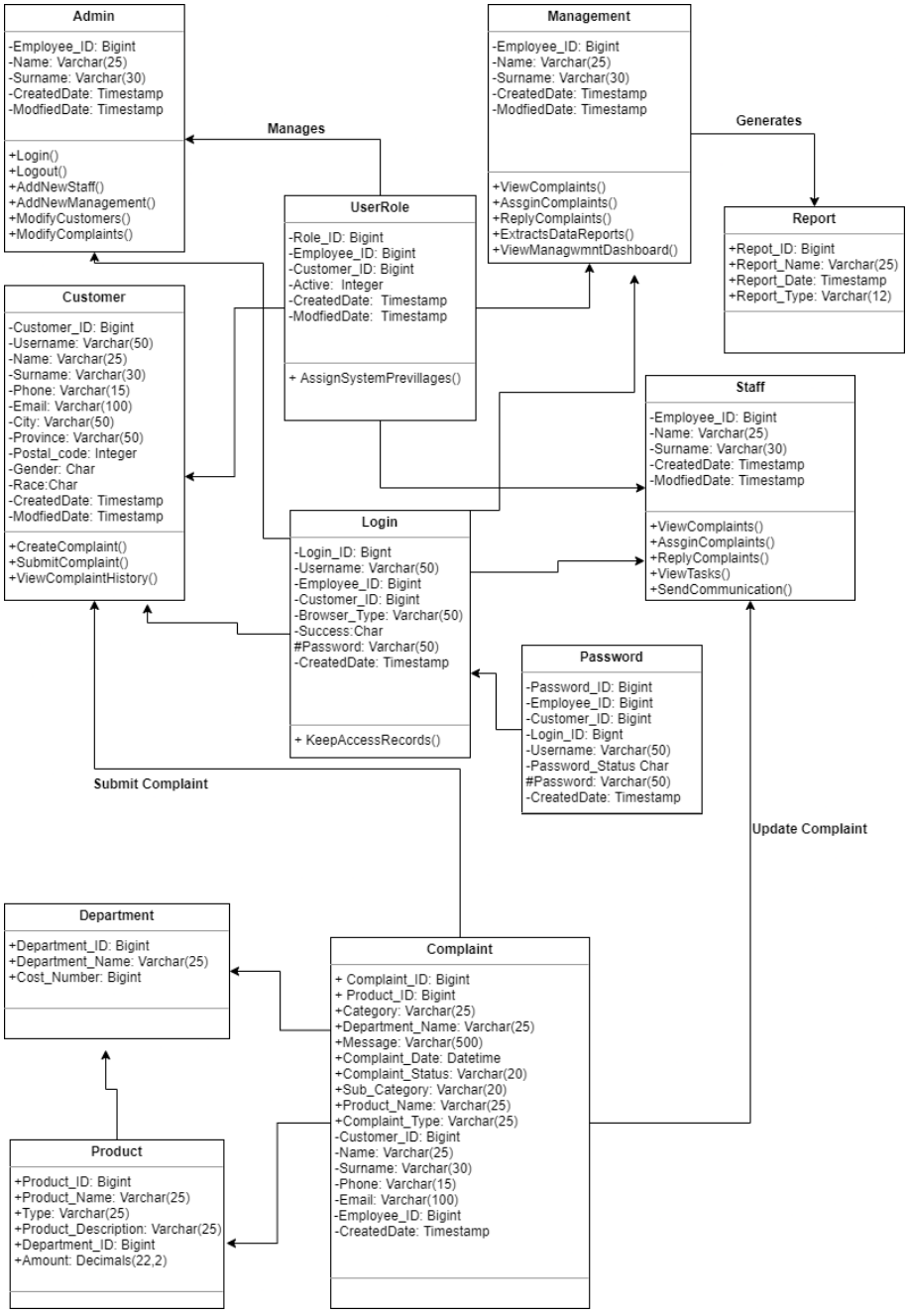
2.2.7 Availability

- The system shall meet or exceed 95 percent uptime. Less than 20 seconds shall be needed to restart the system after a failure 95 percent of the time.

2.2.8 Maintainability

- The product shall provide facilities for tracing any database field to places where it is used.
- Updates of a new version shall leave all database contents and all personal settings unchanged.
- The cyclomatic complexity of code must not exceed 7.
- No method in any object may exceed 200 lines of code.

3 Domain model using UML Diagram



The above domain model contains the following tables which are explained below

Admin:

- The admin table contains the details of the admin of the system.

Management:

- The Management table contains details of Management.

Customer:

- It contains the details of the customer for the system, details of the customer like the customerid, name, and communication details.

Staff:

- The Staff table contains details of staff members responsible for resolving complaints.

UserRole:

- The user role table contains the details of the role a user is playing as in the role of the customer or a role of the staff

Complaint:

- The complaint table consists of the details of the complaint lodged by the customer.
- Details of the complaint like the complaintid, who has sent the complaint, who will be receiving the complaint.
- The message communication took place between the customer and the receiver etc.

Department:

- The Department table contains the data regarding the department using this system.

Product:

- The product table consists of the details of the product.

Report:

- The report table contains details of the report generated

Login:

- The login table contains authentication details.

Password:

- The password table contains all user's passwords.