

SecurityWire

Final Year Project

Session 2018-2022

A project submitted in partial fulfilment of the
COMSATS University Degree
of
BS in Computer Science / Software Engineering (CUI)

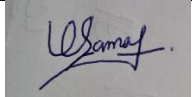
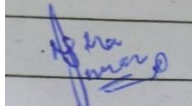
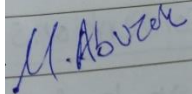


Department of Computer Science
COMSATS University Islamabad, Lahore Campus

16 January 2022

SECURITY WIRE

Project Detail

Type(Nature of Project)	[<input checked="" type="checkbox"/>]-Development [<input type="checkbox"/>]-Research [<input type="checkbox"/>]-R&D				
Area of the Specialization	Cyber Security and Development.				
Project Group Members.					Evaluation (to be filled by the Supervisor)
Sr. #	Reg.#	Student-Name	Email ID	*Signature	Obtained Marks (Total Marks:10)
(i)	SP18-BCS-132	Usama Arshad	SP18-BCS-132@cuilahore.edu.pk		
(ii)	SP18-BCS-172	Neha Imran	SP18-BCS-172@cuilahore.edu.pk		
(iii)	SP18-BCS-131	Muhammad Abuzar	SP18-BCS-131@cuilahore.edu.pk		

*The candidates confirm that the submitted work is their own and appropriate credits has been given where reference has been made to work of others.

1 Plagiarism Free Certificate

This is to certify that, I am **Usama Arshad S/D/o Muhammad Arshad**, group-leader of FYP under registration no **CIIT/SP18-BCS-132/LHR** at Computer Science Department, COMSATS University Islamabad, Lahore campus. I declare that my FYP proposal is checked by my supervisor and the similarity index is 13% that is less than 20%, an acceptable limit by HEC. The report is attached herewith as Appendix(A).

Date: **1-04-2022**

Name of Group Leader: **Usama Arshad**

Signature: 

Name of Supervisor: **Mr. Tahir Muhammad**

HoD: **Dr. Muhammad Waqas Anwar**

Designation: **Lecturer**

Signature: _____

Signature: _____

Abstract

Our project is based upon Cyber Security and Development. We will provide a platform for issues related to application and website security, either it be a software developer or a product owner, they will have a handy platform where they will have several choices to get their worthy credentials protected from any threats. Our application will be based upon an automated tool that will test any website for common vulnerabilities like OWASP top 10 bugs. We will also provide a Bug Bounty Platform that will allow website owners to connect with Security Researchers to find more logical bugs that were not found by our automated tool.

The modules included in the development of this project are briefly described below:

Automatic vulnerability scanner:

As a free user, our automated scanner will look for all the vulnerabilities and only display the number of vulnerabilities it found. Paid version will display all the vulnerabilities with details it found and the suggestions to remove them.

Bug Bounty platform:

An automated tool can only test a limited number of vulnerabilities. Therefore, manual testing is in huge demand. We'll have security researchers and ethical hackers registered on our App who will test websites posted by website owners or developers to get super secure websites. Upon finding a bug or vulnerability, a detailed report will be submitted on our platform. Our team will look for the validity of the vulnerability. If valid, these vulnerabilities will then be shared with the respective program owner and open complete validation with critical impact, the respective security researcher will be awarded, named, Bug bounty.

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CHAPTER #1

INTRODUCTION



1.Introduction

1.1 Idea

In the era of the internet and modern technology, life is becoming digital day by day. This digital life is easily admissible to human beings but, it is not entirely safe. The reason behind this is that online criminals are sitting on their computers who can attack your information and hack your business, governmental, industrial, financial, and sensitive personal details.

Cybersecurity systems help to secure your online data from these hackers. With all the wise technologies and knowledgeable practices, they keep your digital life and electronic data secure. Many famous cybersecurity platforms are working around the world that are functioning to provide security to websites and mobile applications. Since Pakistan is now aware of cybersecurity more than ever and has many security researchers in the country, we came with the idea that Pakistan should have its cybersecurity platform. Our platform, Security Wire will provide its services around the globe. Websites, mobile applications, and many other online platforms will get bug-free and secure. So that, no criminal can attack your site or application electronically.

The platform will not only help the clients, but it will also help the security researchers. The researchers will be able to test their learnings and enhance their skills. Also, there is a need of giving a platform to security researchers and bug hunters where they can work as freelancers and earn money. Security wire will help the bug hunters and security researchers to work for different clients around the world and earn money with secure payment methods.

The vulnerabilities our platform will look are:

1. SQL Injection

The SQL injection is defined as the injecting of a SQL query through the input data. It is performed from the client side to the backend. These attacks used to execute user controlled query to extract to perform harm to the database.

2. XSS (Cross Site Scripting)

XSS attacks exist when an attacker uses a web input to send harmful javascript code, to harm or steal data from a different user. The malicious script can access any cookies and sensitive information stored by the web in browser.

3. Open Port Scanner

Port refers to a TCP, UDP number that is opened to accept traffic. Open ports can be harmful when services are exploited through security vulnerabilities introduced to a system. The hackers can use it with open ports to gain unauthorized access to sensitive system data.

4. EXIF Metadata

EXIF(Exchangeable_Image_File_Format) is a standard that store specific information of an image or media captured by a camera. It can store important data as camera exposure, date-time the image was captured, and even GPS co-ordinates.

1.2 Goals and Objectives

The main goal is to provide a platform in which:

- Users/ Companies can test their websites using an automated scanner.
- Users/ Companies can have manual penetration testing services for their website, android, and IOS applications from qualified security researchers around the globe.
- There will be both a manual and automated approach to ensure the safety of our clients from any possible future attacks.
- Security Researchers can participate in available bug bounty programs get rewards for their submissions.
- Security Researchers can gain hands-on experience by testing real-world applications to enhance their skills. They can also learn from the publicly disclosed reports previously submitted through our platform by other security researchers.
- Cybersecurity awareness will be spread locally to help the local companies by providing them a Pakistan-based platform. It will build trust and their digital stored assets will be secured against malicious attacks.

1.3 Problem Statement

- There are many people these days in Pakistan who know about bug hunting and ethical hacking. But, in Pakistan, there is no such platform made where they can provide their services. This platform will help will the researchers as well as Pakistani companies to secure their websites and mobile applications.
- All the other platforms working throughout the world have either an automated scanner or manual bug hunt testing. But security wire will provide both services without any complication.
- The researchers will be able to work freely without any fear of scams and damage payments.

1.4 Assumptions and Constraints

1.4.1 Assumptions

- This system will work on every kind of desktop, laptop, tablet, iPad, and smartphone.
- The system requires a good internet connection to work.
- All the information of users and researchers will be confidential.
- No ethical rules and regulations will be violated.
- The system will help to achieve maximum security of websites and applications.

1.4.2 Constraints

- The users must provide correct information.
- The users should have an online presence.
- The security researchers must have to opt-in for NDA (Non-Disclosure Agreement).
- The websites and applications will not be secure 100% because, with time, there can be hackers stealing data with some new methods. Therefore, penetration testing and security are required again from time to time.
- The automated scanner will only be used to test websites.

1.5 Scope

- The world is moving faster these days. Every person needs more work done in less time. Checking the whole website manually can take some time. This is because, in the manual process, the clients have to hire some researchers at first. Then, the researcher will check the whole website for vulnerabilities. It can take a while. So, the clients who want to check their website in seconds can use the automated scanner. They will put the link of the website in the scanner and results will be shown.
- There can be a fear of scams for the researchers to work online. Not all clients are fake. So, for reducing the fear of scams, the platform has secure payment methods inside so that freelance researchers can work without the fear of scams and damage payments.
- The clients will feel secure because working on a platform with a researcher is much safer than working with an individual hacker.
- The users can get every kind of help and support at any time.

1.6 Motivation

According to google almost 547200 new websites are created every single day. Not all of them are properly secured and even if they are claimed to be secured, still, there will be a great chance that there can be a new exploit out there which will automatically make their system vulnerable. In future, it can be exploited by an attacker which will cause a great negative impact on their reputation.

As it is said:

“It takes years to build a reputation and seconds to destroy it”.

So, we will be providing a platform which will ensure the security of all the websites. Also, it will allow the ethical hackers to have a freelance platform to get paid for any valid vulnerability submission under the given scope.

CHAPTER #2

REQUIREMENT

ANALYSIS



2 Requirement Analysis

2.1 Existing System

✓ **HackerOne:**

Calling HackerOne one of the largest Bug Bounty platforms will not be a mistake. Mainly it is famous for its Bug Bounty Programs all over the world. But there is something more. According to the reports, it has a record of more than 1700 companies who trust HackerOne for the security testing capabilities.

✓ **Bugcrowd:**

Bugcrowd is one of the most famous platforms in the field of Cyber Security. This platform supports the most creative and inventive Bug Bounty programs. It also provides the services in which the ethical hackers do traditional security testing, attack surface management, and many broad spectrum of penetration testing.

✓ **Synack:**

It is considered as one of the most reputed and professional bug bounty platforms, the researcher to apply before they can hunt on their programs. The rules are very tough, and it offer large number of private programs which is not available at any other bug bounty platform. The researcher can join either by applying directly through CV or they can pawn some machines at [HTB](#) and upon reaching specific level they can directly start hunting without any interview.

✓ **Detectify:**

Detectify provides web application vulnerability scanning services, fully supported by ethical hackers, it does not provide clients to have a bug bounty program.

No doubt the above two platforms are very famous for giving their security services and the Bug Bounty Programs. The major lack in the above platforms is that they do not have a process where companies can check their websites in a matter of seconds. We are adding something more to make our platform a bit more comprehensive than these two. The companies will be able to use the Automated Scanner for checking bugs in their websites that is not available on the above-mentioned platforms.

There will be manual vulnerability testing, a bug hunting scanner, and several bug bounty programs. Moreover, the security researchers will also be able to provide their security and hunting services by using Security Wire as a freelance marketplace.

2.2 Stake Holders

The stakeholders of our project are:

- Companies/ Individual Users
- Security Researchers/ Ethical Hackers
- Website and Application Admins
- Maintenance Engineers
- Payment Processors
- Developers
- Help and Support Managers

2.3 Requirement Elicitation

2.3.1 Functional Requirement

2.3.1.1 FR01: User Login (Admin, Researcher, Client)

Req.No.	Functional_Requirements
FR01-01	System permits user logging in into their account by using Login button.
FR01-02	system shall successfully login the user if all credentials are correct.
FR01-03	system permits the user to use “Forget Your Password” option on screen if they do not remember it.
FR01-04	User must provide the attached contact number or email address to restore the password by clicking on Forget Password option.
FR01-05	A confirmation link or code will be send to the email address or the contact number depending upon the option user selects. User shall be able to restore password.

Table 1 User Login Functional Requirement

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2.3.2 FR02: User Registration (Researcher, Client)

Req.No.	Functional_Requirements
FR02-01	This system permits for creating new accounts by clicking on signup button.
FR02-02	The system shall successfully create an account and register the user if all required information is provided and verification is done by email or confirmation code.
FR02-03	The system shall check if the information is already in the system's database. If yes, it will throw an error message.
FR02-04	If the system does not have information in the database, the user account shall be created successfully.

Table 2 User Registration Functional Requirement

2.3.3 FR03: User Registration (Admin)

Req.No.	Functional_Requirements
FR03-01	This system give permission to admins for making other admins.
FR03-02	Admin must login into the account.
FR03-03	Admin shall allow other admins by clicking register admins / moderators and entering the details of new admins / moderators.
FR03-04	New admins / moderators shall get their confirmation of their credentials via Email Confirmation.

Table 3 Admin Registration Functional Requirement

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2.3.4 FR04: View / Update Profile (Admin, Researcher, Client)

Req.No.	Functional_Requirements
FR04-01	The system permits users to look at their profile after successful login.
FR04-02	Users can view their profiles after clicking on the View Profile Button.
FR04-03	User can update the profile by clicking on Update Profile Button from the View Profile page.
FR04-04	User can update the information and then save the profile. The information will be updated.

Table 4 View/Update Profile Functional Requirement

2.3.5 FR05: View Users (Admin)

Req.No.	Functional_Requirements
FR05-01	The system allows the admin to see all the users using our website.
FR05-02	Admin must login into the system.
FR05-03	Admins can check the list of users by clicking on the tab from the sidebar menu.

Table 5 View User Functional Requirement

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2.3.6 FR06: Delete/ Block User (Admin)

Req.No.	Functional_Requirements
FR06-01	The system permits the admin to perform activities of deleting or blocking a user.
FR06-02	The admin must have to login into the system first.
FR06-03	Admin can delete or block a user by clicking on the tab from the sidebar menu. It will open the list of all the users.
FR06-04	From the list, the admin will select and delete or block the account of the user from the system.

Table 6 Delete/Block Functional Requirement

2.3.7 FR07: View Public Programs (Admin, Researcher, Client)

Req.No.	Functional_Requirements
FR07-01	This system will allow all the users to view the public programs.
FR07-02	Click on the Programs tab from navigation bar.
FR07-03	The users will be able to view a list of all the public programs with their details in a separate page.
FR07-04	For getting more information and details about a specific program, user can click on it.

Table 7 View Public Programs Functional Requirement

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2.3.8 FR08: View Private Programs (Admin)

Req.No.	Functional_Requirements
FR08-01	The system gives permission to the admin to check all the private programs after logging into the account.
FR08-02	Click on the private program tab from the menu.
FR08-03	The admin will be able to view a list of all the private programs with their details in a separate page.
FR08-04	For getting more information and details about a specific program, admin can click on it.

Table 8 View Private Programs Functional Requirement

2.3.9 FR09: Create Program (Client)

Req.No.	Functional_Requirements
FR09-01	For creating a new program, the user must login into the system.
FR09-02	Tap on the start now button from create new program option.
FR09-03	It will open a form where user will add the details of the program.
FR09-04	By completing all the steps, the user will be able to create a new program.

Table 9 Create Program Functional Requirement

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2.3.10 FR10: Edit Program Detail (Client)

Req.No.	Functional_Requirements
FR10-01	The system gives permissions to users for editing the programs after logging into the account.
FR10-02	The user will select the program to edit the details.
FR10-03	Once all the details are edited, the user can review and submit the program.

Table 10 Edit Program Functional Requirement

2.3.11 FR11: List of Invited Private Programs (Admin, Researcher)

Req.No.	Functional_Requirements
FR11-01	Our system permits all users for viewing the private program invites in the inbox.
FR11-02	The user must login to the account and look at the private message area to check the invites.

Table 11 Invited Private Program Functional Requirement

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2.3.12 FR12: Search Programs (Any User)

Req.No.	Functional_Requirements
FR12-01	Our system permits the user for searching the programs.
FR12-02	User clicks on the Program Tab from the navigation bar.
FR12-03	On the Program page, the user can search programs by using the search bar and filter bar.

Table 12 Search Program Functional Requirement

2.3.13 FR13: Delete Programs (Admin)

Req.No.	Functional_Requirements
FR13-01	The system gives permissions to admin to delete any program from the list.
FR13-02	Admin will login into the account.
FR13-03	The admin will click on the programs tab from the menu bar and will delete any program from the list of all the programs in the system.

Table 13 Delete Program Functional Requirement

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2.3.14 FR14: Delete Programs (Clients)

Req.No.	Functional_Requirements
FR14-01	The system gives permission to the user to delete a program.
FR14-02	The user will login into the account.
FR14-03	The user will click on the programs tab and will delete the user's programs only.

Table 14 User Delete Program Functional Requirement

2.3.15 FR15: Submit Report (Researcher)

Req.No.	Functional_Requirements
FR15-01	The system permits the user to submit reports after logging into the account.
FR15-02	The user will click on the Program tab and will see the list of different programs with Submit Report option.
FR15-03	The user will open the program and after completing all the steps, user will submit the report.

Table 15 Submit Report Functional Requirement

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2.3.16 FR16: Chat in Submission (Admin, Researcher, Client)

Req.No.	Functional_Requirements
FR16-01	The system gives permission to user to look at the submissions after logging into the account.
FR16-02	The user will click on the Submission Tab from the bar.
FR16-03	The user will be able to look at all the submissions.
FR16-04	After clicking on a specific submission, the user will be able to chat with other researchers, clients and admins.

Table 16 Chat in Submission Functional Requirement

2.3.17 FR17: Activity Notifications of Submission (Admin, Researcher, Client)

Req.No.	Functional_Requirements
FR17-01	Our system permits user to look at the notifications of every submission after logging into the account.
FR17-02	The user can see the notifications of all submissions and reports by clicking on the bell icon on the top bar.

Table 17 Activity Notifications Functional Requirement

SECURITY WIRE

2.3.18 FR18: Change Submission Status (Admin)

Req.No.	Functional_Requirements
FR18-01	Our system permits admin to change status of every submission after logging into the system.
FR18-02	The admin will be able to change the status of submissions to accepted or rejected by selecting it through the dropdown menu.

Table 18 Change Submission Status Functional Requirement

2.3.19 FR19: Search / View Submissions (Admin, Researcher)

Req.No.	Functional_Requirements
FR19-01	The system shall allow the user to search and view all the submissions.
FR19-02	User will log in to the account.
FR19-03	The user will click on the submission tab to see the list of submissions.
FR19-04	User can also search any submissions by using the search bar at the top.

Table 19 Search/View Submissions Functional Requirement

SECURITY WIRE

2.3.20 FR20: View Publicly Disclosed Reports (Admin, Researcher, Client)

Req.No.	Functional_Requirements
FR20-01	Our system gives permission to the users to view and learn from Special Submissions named as Disclosed Reports.
FR20-02	The users will be able to look at the reports by clicking on the View Disclosed Reports tab on the top navigation bar of the website.

Table 20 View Reports Functional Requirement

2.3.21 FR21: Delete Submission (Admin)

Req.No.	Functional_Requirements
FR21-01	The system shall allow the admin to delete a submission.
FR21-02	The admin will login to the account.
FR21-03	The admin will click the Submission Tab and delete any submission from the list of all submissions.

Table 21 Delete Submission Functional Requirement

SECURITY WIRE

2.3.22 FR22: Scan a Website (Client)

Req.No.	Functional_Requirements
FR22-01	System allows the user to scan the website for vulnerabilities by logging in to the account.
FR22-02	The user will enter the URL link of the website in the Scanning Bar made.
FR22-03	The user will click on the Start Scanning button to scan the website.

Table 22 Scan Website Functional Requirement

2.3.23 FR23: View Scan Files (Admin, Client)

Req.No.	Functional_Requirements
FR23-01	All users of the system can view the scan files.
FR23-02	After getting result files from the scanner, the user will click on the View button to see the files in the browser.

Table 23 View Scan Files Functional Requirement

SECURITY WIRE

2.3.24 FR24: Download Scan Files (Admin, Client)

Req.No.	Functional_Requirements
FR24-01	Our system permits to download the scan files.
FR24-02	The user can download the files by clicking on the Download button made below the Scanning Tab.

Table 24 Download Scan Files Functional Requirement

2.3.25 FR25: Payment Information (Admin, Researchers, Clients)

Req.No.	Functional_Requirements
FR25-01	Our system gives permission to the user to view all the information about the payments made.
FR25-02	The user will login to the account.
FR25-03	User will click on the Payment tab from the top bar to see all the information about the payments and invoices.

Table 25 Payment Information Functional Requirement

SECURITY WIRE

2.3.26 FR26: Create Payment (Client)

Req.No.	Functional_Requirements
FR26-01	The system allows the user to create payments for researchers after logging in to the account.
FR26-02	The user will click on the payment tab from the top bar.
FR26-03	The user will create new payments by selecting the New Payment button and giving all the details regarding the payments.

Table 26 Create Payment Functional Requirement

2.3.27 FR27: View All Payments (Admin)

Req.No.	Functional_Requirements
FR27-01	The system shall allow the admin to view and check all the payments.
FR27-02	The admin will login into the account.
FR27-03	The admin will click on the Payment tab to view all the payments made inside the whole system.

Table 27 View Payments Functional Requirement

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2.3.28 FR28: Withdraw Payment (Researcher)

Req.No.	Functional_Requirements
FR28-01	The system permits the researcher to get paid.
FR28-02	The researcher will login into the account.
FR28-03	The researcher will click on the Payment button from the tab.
FR28-04	The researcher will withdraw the payment into the bank account or any other third party payment method.
FR28-05	If the researcher has not set up the payment withdraw method, first the researcher will go to payment settings to set a validate method.
FR28-06	The researcher will enter the bank account details or third party account to withdraw payment from the website.

Table 28 Withdraw Payment Functional Requirement

2.3.29 Non-Functional Requirement

NFR01: Ethical Requirement:

NFR 1.1. User is obliged to provide correct and real information whenever required.

NFR02: Legislative Requirement:

NFR 2.1. Registering someone else's website is punishable by law.

NFR 2.2. Leaking information about vulnerabilities without consent of the client / company is punishable by law.

NFR03: Safety Requirement:

NFR 3.1. Every sensitive information will be safe by using different security measures.

NFR04: Privacy Requirement:

NFR 4.1. The private information of user is private and protected at all cost.

NFR 4.2. The personal information of the user will not be used without permission.

NFR 4.3. The passwords and card numbers will be encrypted.

NFR05: NDA Requirement:

NFR 5.1. The security researchers have to sign the NDA for security purposes.

NFR06: Product Requirement:

NFR 6.1. The mobile application will be available to all android and iOS users.

NFR 6.2. The researcher panel and client panel will be on mobile application.

NFR 6.3. The admin panel, researcher panel and client panel will be on website.

NFR07: Implementation Requirement:

NFR 7.1. The users should have good internet connection to use website and application.

NFR08: Space Requirement:

NFR 8.1. User must have enough space in device to download the application and work.

NFR09: Usability Requirement:

NFR 9.1. The system will provide an easy to use interface to the users.

NFR 9.2. The system will provide detailed guide and help to use website and application.

NFR10: Reliability Requirement:

NFR 10.1. The website will be reliable in case of any lost internet connection.

NFR 10.2. The application will be reliable in case of crash restart.

NFR 10.3. The data of users will be kept up to date.

NFR11: Performance Requirement:

NFR 11.1. The system should work in real time and consume less space on device.

NFR 11.2. In case of any failure, the website and application will notify the user before restarting.

NFR12: Security Requirement:

NFR 12.1. The system should allow authorized users only with correct login credentials to access the website and application.

NFR13: User Friendly:

NFR 13.1. The GUI of the website and application will be user friendly and easy to use.

2.3.30 Requirement Traceability Matrix

Requirement Number	Description	Objective	Deliverables
1.	Allows the admin to register other admins.	Registration	Admin Account
2.	Allows the admin to login.	Admin Login	Login
3.	Allows the admin to update the profile.	Update Profile	Admin Account
4.	Allows the researcher to register account using correct credentials.	Registration	Researcher Account
5.	Allows the researcher to login.	Researcher Login	Login
6.	Allows the researcher to update the profile.	Update Profile	Researcher Account
7.	Allows the user to register account using correct credentials.	Registration	User Account
8.	Allow the user to login.	User Login	Login
9.	Allow the user to update the profile.	Update Profile	User Account
10.	Allows the admin to change password.	Forget Password	Admin Account
11.	Allows the user to change password.	Forget Password	User Account

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12.	Allows the researcher to change password.	Forget Password	Researcher Account
13.	Allows the admin to delete any user or researcher.	Delete User	Admin Account
14.	Allows the user to create a new program.	Create Program	User Account
15.	Allows the user to delete a private program.	Delete Private Program	User Account
16.	Allows the admin to delete any public program.	Delete Public Program	Admin Account
17.	Allows the user to scan a website.	Scan a Website	User Account
18.	Allows the user to download the scan report.	Download Scan Result	User Account
19.	Allows to the researcher to submit a report.	Submit Report	Researcher Account
20.	Allows the admin to delete any submission.	Delete Submission	Admin Account
21.	Allows the admin to change submission status.	Submission Status	Admin Account
22.	Allows the user to create new payments.	Payment	User Account
23.	Allows the security researcher to withdraw payments.	Payment	Researcher Account
24.	Allow the help and support manager to contact or answer the queries of user.	Contact User	Help and Support
25.	Allows the user to provide feedback of website and mobile application.	Feedback	User Account
26.	Allows the user to report any problems.	Report	User Account

Table 29 Requirement Traceability Matrix

2.4 Use_Case_description.

2.4.1 Admin Registration Use_Case

Use_Case ID:01		Use_Case Name: Admin Registration	
Actors: Admin			
Use_Case Summary		The Use_Case grants the admin to register other admins / moderators.	
Pre-condition:		The admin should login to the system.	
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case begins when the admin access other accounts.			
2. The admin will select the new accounts to make them admins.		2a. If the admin is registered already then already registered message will be shown.	
3. Admin will send the new credentials via email to selected admins.			
Post Conditions			
Admin can perform the function to register new admins by just a click.			
Use_Case Cross References			
Exceptions		A user can already registered as an admin.	

Table 30 Admin Registration Use_Case_description.

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2.4.2 Admin Login Use_Case

Use_Case ID:02		Use_Case Name: Admin Login	
Actors: Admin			
Use_Case Summary		The Use_Case grants the admin to log-in into the system.	
Pre-condition:		The admin should be registered already.	
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when the admin wants to login into the system.			
2. Admin will see required information and will fill that information to login.			
3. The Admin will press the login button to proceed.			
4. The system will verify all the information provided by the admin.		4a. The system will give some missing fields. 4b. The admin needs to enter the missing information.	
5. The system sees if the admin is registered and invisible captcha will verify the user is human or not.		5a. If the user is not human, then system will not allow the user to login or to enter the credentials.	
Post Conditions			
The admin is directed to the dashboard where he/ she can use all the functionalities.			
Use_Case Cross References			
Exceptions		Admin credentials may be wrong.	

Table 31 Admin Login Use_Case_description.

2.4.3 Update Admin Profile Use_Case

Use_Case ID:03		Use_Case Name: Update Profile	
Actors: Admin			
Use_Case Summary	This Use_Case allows the admin to update the profile.		
Pre-condition:	The admin must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when admin wants to update the information.			
2. To update profile, go to Dashboard.			
3. Click on the Edit Profile option from the page.			
4. Admin can update the information on this page.			
5. After clicking Update, the profile will be updated and account will log out.			
Post Conditions			
Admin Profile must be updates in the database.			
Use_Case Cross References			
Exceptions		Admin providing name or password errors.	

Table 32 Admin Update Profile Use_Case_description.

2.4.4 User Registration Use_Case

Use_Case ID:04		Use_Case Name: User Registration	
Actors: Security Researcher, Client			
Use_Case Summary	This Use_Case allows the user to register into the system.		
Pre-condition:	The user must have valid email address.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when the user tap on Create Account option.			
2. The user will add all the required information for the registration.			
3. The user will tap on the Signup button to create a new account.			
4. The user will get a mail for verification		4a. If the user did not get an email, he/ she can resend the mail from the system.	
5. The user will enter the verification code.		5a. If the user enters wrong code, then error message (Invalid Code. Try again) will be displayed.	
6. The user will be directed to welcome screen.			
Post Conditions			
The user will be directed to the Dashboard where he/ she can perform functionalities.			
Use_Case Cross References			
Exceptions	<ul style="list-style-type: none">• User enters wrong verification code.• User do not receive verification code.• User does not fill all required fields.		

Table 33 User Registration Use_Case_description.

2.4.5 User Login Use_Case

Use_Case ID:05		Use_Case Name: User Login	
Actors: Security Researcher / Client			
Use_Case Summary	The Use_Case allows the user to login into the system.		
Pre-condition:	The user must be registered before logging in to the system.		
Normal_Course_of_Events		Alternate_Path	
1. The user will tap on the login button.			
2. The user will provide the email / username and password.			
3. The user will click on the login button.		3a. The system will check the information in the database. 3b. If the information is not stored, the system will ask to register first.	
Post Conditions			
The user will be directed to the dashboard to perform the functionalities.			
Use_Case Cross References			
Exceptions		Email or Password can be incorrect.	

Table 34 User Login Use_Case_description.

2.4.6 Update User Profile Use_Case

Use_Case ID:05		Use_Case Name: User Login	
Actors: Security Researcher / Client			
Use_Case Summary		The Use_Case allows the user to update the profile..	
Pre-condition:		The user must be logged in into the system.	
Normal_Course_of_Events		Alternate_Path	
1. The user is on the View Profile Page.			
2. The user will can edit and update all the information.		2a. If any of the information is invalid, an error message will be shown to user.	
3. The user will click on the Confirm button to update profile.			
Post Conditions			
The user profile and database must be updated.			
Use_Case Cross References			
Exceptions		Email or Password can be invalid or empty.	

Table 35 Update User Use_Case_description.

2.4.7 Search User Admin Use_Case

Use_Case ID:07		Use_Case Name: View User (Admin)	
Actors: Admin			
Use_Case Summary	This Use_Case will allow the admin to search all the users.		
Pre-condition:	The admin must be login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when admin is at the Dashboard page.			
2. Admin must click on the Search user option from the dashboard.			
3.Admin will be able to search users by different options.			
Post Conditions			
Admin can see data of any user.			
Use_Case Cross References			
Exceptions		Admin searching un-registered user.	

Table 36 View User Use_Case_description.

2.4.8 Delete User Admin Use_Case

Use_Case ID:08		Use_Case Name: Delete User (Admin)	
Actors: Admin			
Use_Case Summary	The Use_Case will allow admin to delete any user.		
Pre-condition:	The admin must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when admin needs to delete a user.			
2. The admin goes to dashboard and view all the users.			
3. The admin selects and deletes the account of a user.			
Post Conditions			
The registered information of the deleted user will be deleted from the database.			
Use_Case Cross References			
Exceptions		Admin deletes the wrong account	

Table 37 Delete User Use_Case_description.

2.4.9 View Public Program Use_Case

Use_Case ID:09		Use_Case Name: View Public Program	
Actors: Admin, Security Researcher and Client			
Use_Case Summary	The Use_Case allows all the users to view the public programs.		
Pre-condition:	No pre-condition is required.		
Normal_Course_of_Events		Alternate_Path	
1. The users will surf the website.			
2. The users will click on the Programs tab.			
Post Conditions			
A new page will open up that will show all the public programs.			
Use_Case Cross References			
Exceptions			

Table 38 View Public Program Use_Case_description.

2.4.10 View Private Program Use_Case

Use_Case ID:10		Use_Case Name: View Private Program	
Actors: Admin, Clients			
Use_Case Summary	The Use_Case will allow the users to view the private programs.		
Pre-condition:	The users must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when the user clicks on the dashboard.			
2. The user click on the Program tab.			
Post Conditions			
The user will be able to see all the private programs.			
Use_Case Cross References			
Exceptions		No private program is made.	

Table 39 View Private Program Use_Case_description.

2.4.11 Create Program Use_Case

Use_Case ID:11		Use_Case Name: Create Program	
Actors: Clients			
Use_Case Summary	The Use_Case will allow the user to create new program.		
Pre-condition:	The user must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when user login into the system.			
2. The user clicks on Create New Program tab from the dashboard.			
3. The user add complete details of the program.		3a. The user does not add complete information and the system asks to add that.	
4. The user clicks on the Submit button.			
Post Conditions			
A new program will be created and shown on the dashboard.			
Use_Case Cross References			
Exceptions			

Table 40 Create Program Use_Case_description.

2.4.12 Search Program Use_Case

Use_Case ID:12		Use_Case Name: Search Program	
Actors: Admin			
Use_Case Summary		The Use_Case will allow the admin to search programs to get information.	
Pre-condition:		The admin must login into the system.	
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when the admin wants to search any program to get information.			
2. The admin will click on the Program option from the dashboard.			
3. The admin will search programs by list or by filter option.			
Post Conditions			
Admin can search program or get data from that program.			
Use_Case Cross References			
Exceptions		Admin searching for wrong or invalid program.	

Table 41 Search Program Use_Case_description.

2.4.13 Delete Program Admin Use_Case

Use_Case ID:13		Use_Case Name: Delete Program (Admin)	
Actors: Admin			
Use_Case Summary		The Use_Case will allow the admin to delete a program.	
Pre-condition:		The admin must login into the system.	
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case starts when the admin is on the dashboard page.			
2. The admin clicks on the Programs tab.			
3. The admin searches the program.			
4 The admin chooses the program and select delete.			
Post Conditions			
The program will be deleted from the system.			
Use_Case Cross References			
Exceptions		Admin selects the wrong program.	

Table 42 Delete Program Use_Case_description.

2.4.14 Delete Program User Use_Case

Use_Case ID:14		Use_Case Name: Delete Program (User)	
Actors: Client.			
Use_Case Summary	The Use_Case will allow user to delete a private program.		
Pre-condition:	The user must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case will start when the user is on the dashboard page.			
2. The user will select the program and delete it.			
3. The user will tap on the confirm button.			
Post Conditions			
The private program will be deleted from the system.			
Use_Case Cross References			
Exceptions			

Table 43 Delete Program Use_Case_description.

2.4.15 Submit Report Use_Case

Use_Case ID:15		Use_Case Name: Submit Report	
Actors: Security Researcher			
Use_Case Summary	The system will allow the user to submit a report.		
Pre-condition:	The user must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case will start when the user is at the dashboard.			
2. The user will tap on the Programs button.			
3. The user will select a program from the list.			
4. User will add all the details regarding the program.			
5. The user will click on the Submit button.			
Post Conditions			
The user will submit a vulnerability report across the allowed programs.			
Use_Case Cross References			
Exceptions			

Table 44 Submit Report Use_Case_description.

2.4.16 Search Submission Use_Case

Use_Case ID:16		Use_Case Name: Search Submission	
Actors: Admin, Security Researcher			
Use_Case Summary	The Use_Case will allow the user to search the submission inside the system.		
Pre-condition:	The user must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case will start when the user is on the dashboard page.			
2. The user will click on the Submission tab.			
3. The user will search the submission using list or filters.			
Post Conditions			
The user will search the submission and will get all information about it.			
Use_Case Cross References			
Exceptions		User is searching for an invalid submission.	

Table 45 Search Submission Use_Case_description.

2.4.17 View Publicly Disclosed Report Use_Case

Use_Case ID:17		Use_Case Name: View Publicly Disclosed Report	
Actors: Admin, Client, Security Researcher			
Use_Case Summary	The Use_Case will allow the users to view and learn from the reports.		
Pre-condition:	No pre-condition is required.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case will start when the users will surf the website.			
2. The users will click on the Publicly Disclosed Report button.			
Post Conditions			
The users will be directed to the page of disclosed reports.			
Use_Case Cross References			
Exceptions			

Table 46 View Publicly Disclosed Report Use_Case_description.

2.4.18 Delete Submission Use_Case

Use_Case ID:18		Use_Case Name: Delete Submission	
Actors: Admin			
Use_Case Summary	The Use_Case will permit the admin for deleting submissions.		
Pre-condition:	The admin must login into the system.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case will start when the admin goes to dashboard.			
2. Admin will tap on the Submission Button.			
3. The admin can select a submission and delete it.			
Post Conditions			
The submission will be deleted from the system.			
Use_Case Cross References			
Exceptions		Admin can delete invalid or wrong submission.	

Table 47 Delete Submission Use_Case_description.

2.4.19 Scan Website Use_Case

Use_Case ID:19		Use_Case Name: Scan Website	
Actors: Clients			
Use_Case Summary	The Use_Case will allow the users to scan website.		
Pre-condition:	No pre-condition is required.		
Normal_Course_of_Events		Alternate_Path	
1. The Use_Case begins while user surfs website.			
2. User will put link of the website in the scanning bar.			
3. User clicks on the Submit button.			
Post Conditions			
The user will get the results in form of a report.			
Use_Case Cross References			
Exceptions			

Table 48 Scan Website Use_Case_description.

2.4.20 View and Download Scan Report Use_Case

Use_Case ID:20		Use_Case Name: View and Download Scan Report	
Actors: Admin, Clients			
Use_Case Summary	The Use_Case will permit the user to view and download report.		
Pre-condition:	The user must put link of the website in the scanner.		
Normal_Course_of_Events		Alternate_Path	
1. The user will click on the view button to view the report online.			
2. The user will click on the Download button to start downloading.			
Post Conditions			
The user will get the scan report as result.			
Use_Case Cross References			
Exceptions			

Table 49 View and Download Scan Report Use_Case_description.

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2.4.21 Add Payment Use_Case

Use_Case ID:21		Use_Case Name: Add Payment	
Actors: Client			
Use_Case Summary	The Use_Case will permit to add amount into the account.		
Pre-condition:	The user should be logged in into the system.		
Normal_Course_of_Events		Alternate_Path	
1. User will click on Add Amount.			
2. User will choose the method to pay.			
3. The user will confirm the payment.			
Post Conditions			
User will be shown the recharged amount on the payment screen.			
Use_Case Cross References			
Exceptions		<ul style="list-style-type: none">• User card is not connected.• User did not select amount.• User card is invalid.• User entered wrong details.	

Table 50 Add Payment Use_Case_description.

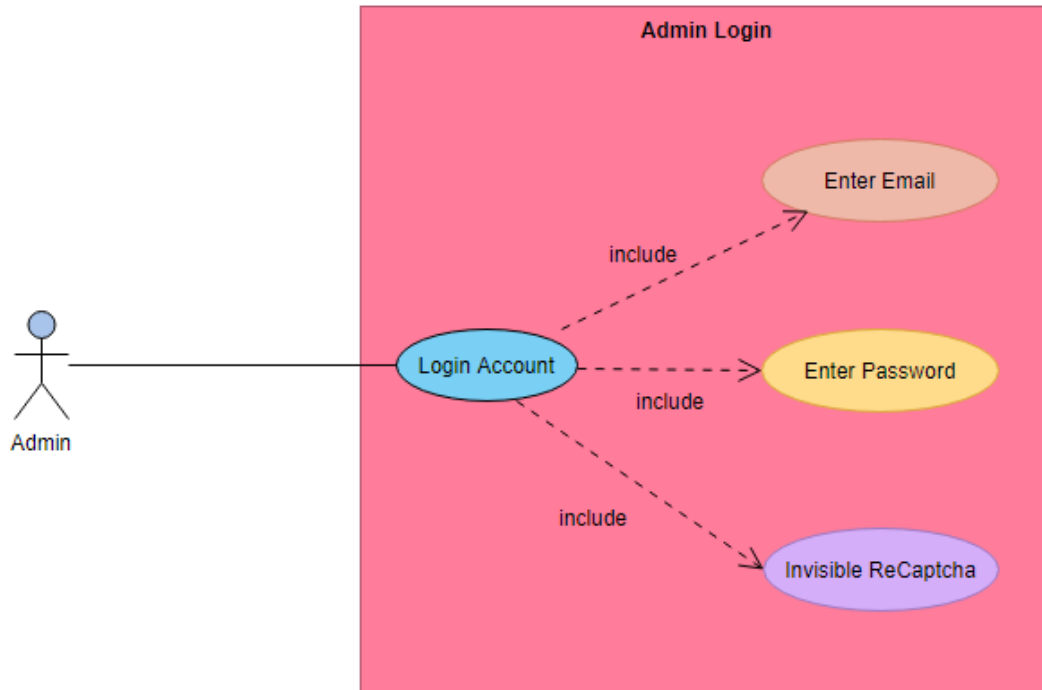
2.4.22 Help and Support Use_Case

Use_Case ID:22		Use_Case Name: Help and Support	
Actors: Client, Security Researcher			
Use_Case Summary	Given Use_Case permits user to lodge complaint and access frequently asked questions.		
Pre-condition:	The user should be logged in into the system.		
Normal_Course_of_Events		Alternate_Path	
1. User is at Dashboard page.			
2. The user will click on help icon.			
3. The user will be directed to help page.			
Post Conditions			
User can lodge a complaint regarding an issue or ask for guidance.			
Use_Case Cross References			
Exceptions		User may not see the question he was looking for in FAQs.	

Table 51 Add Payment Use_Case_description.

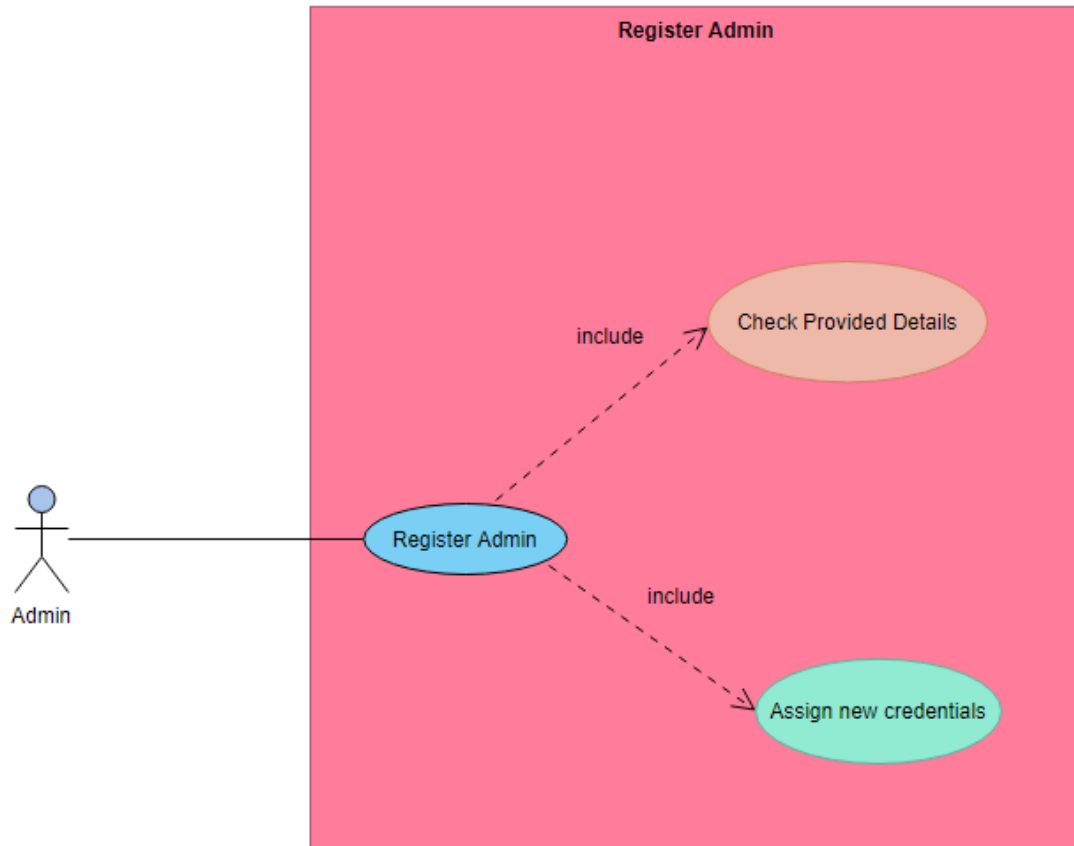
2.5 Use_Case Design

2.5.1 Admin Login:



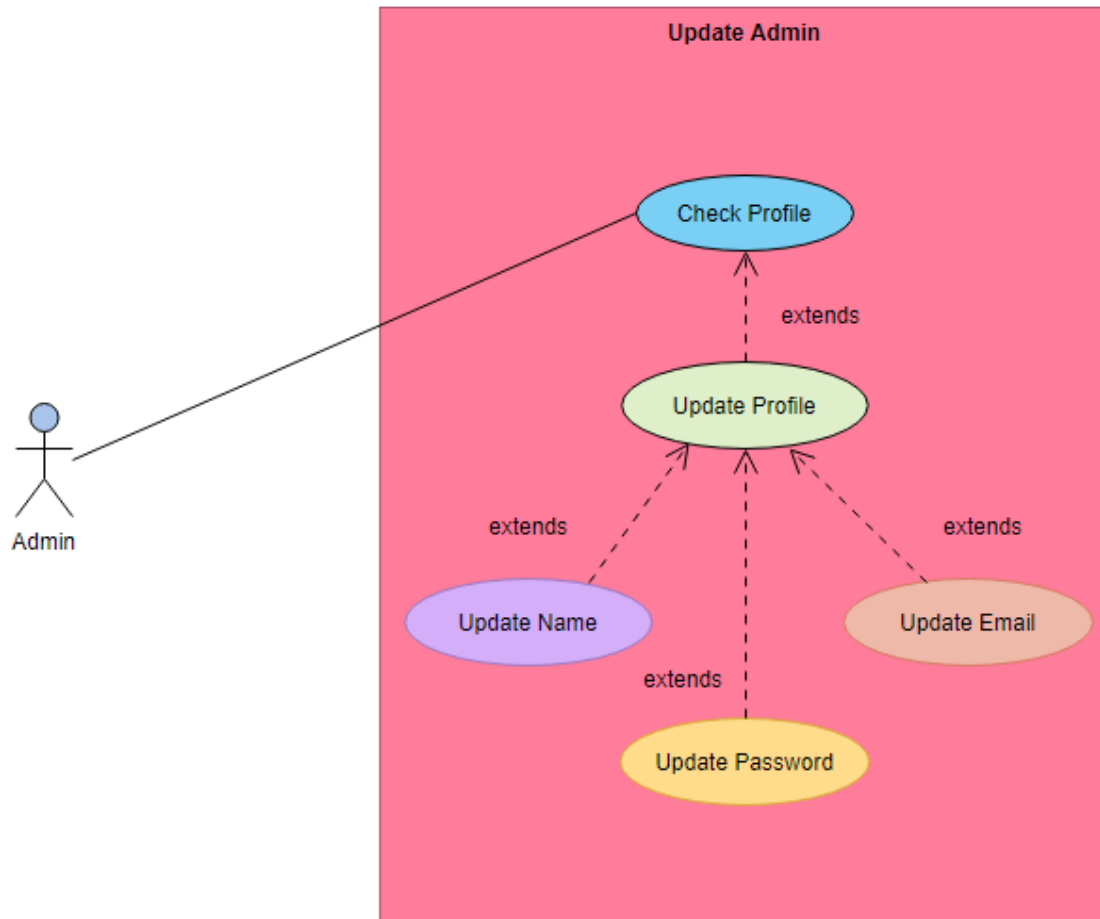
Figure# 1 Admin Login Diagram

2.5.2 Register New Admin:



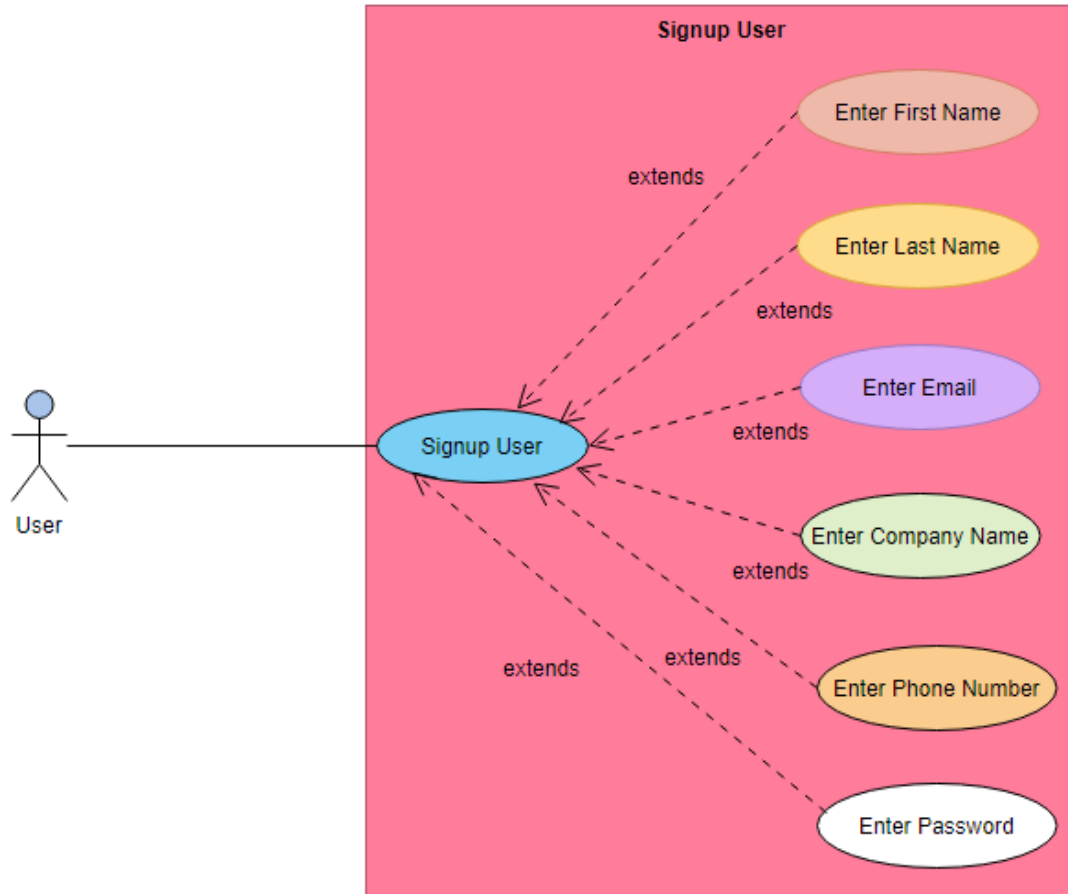
Figure# 2 Admin Registration Diagram

2.5.3 Update Admin Profile:



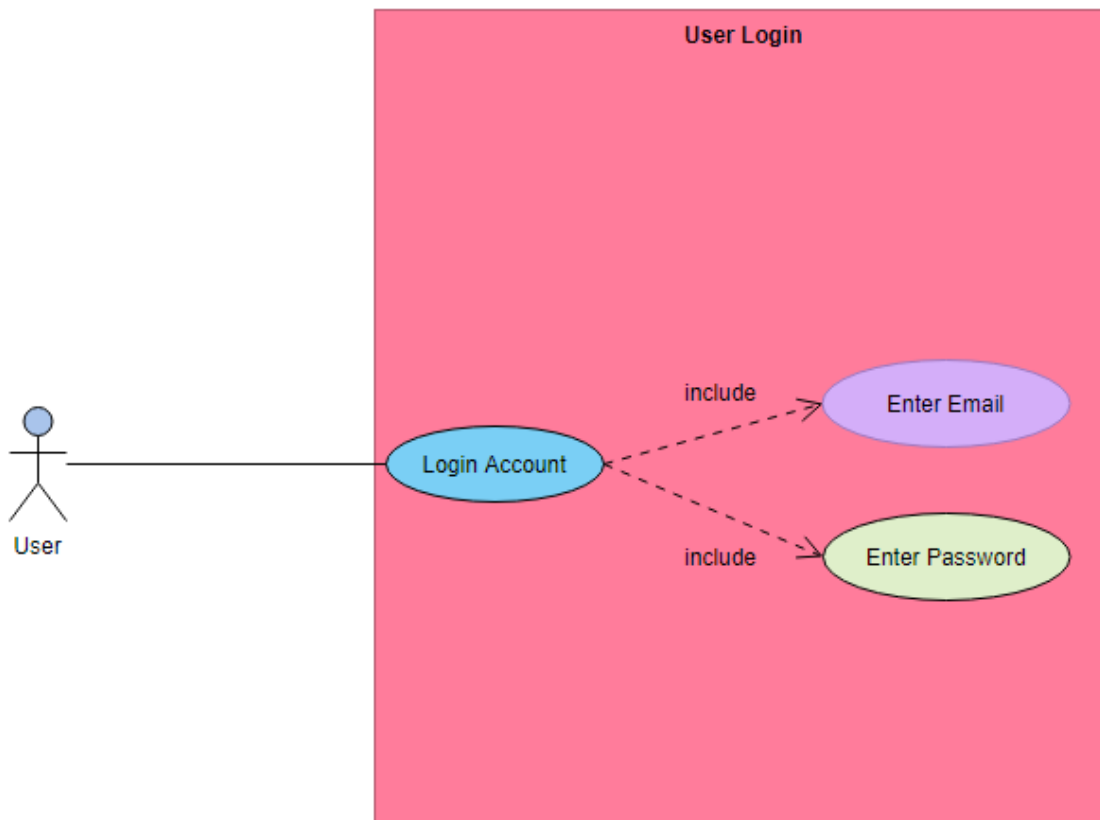
Figure# 3 Admin Update Diagram

2.5.4 Signup User:



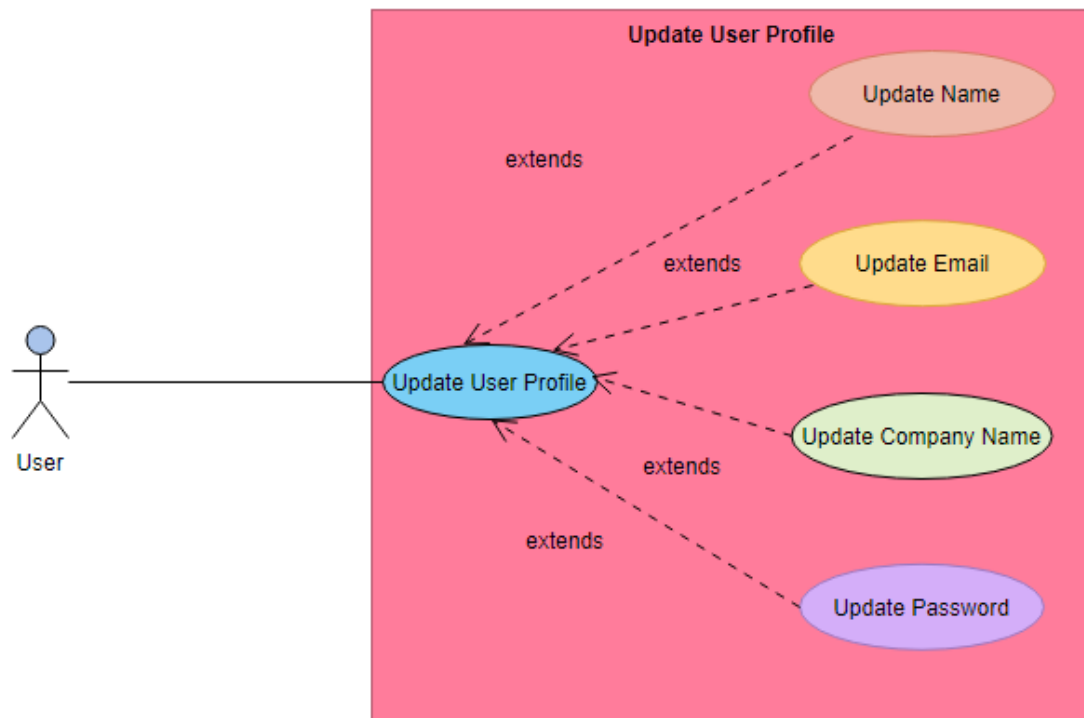
Figure# 4 User Signup Diagram

2.5.5 User Login:



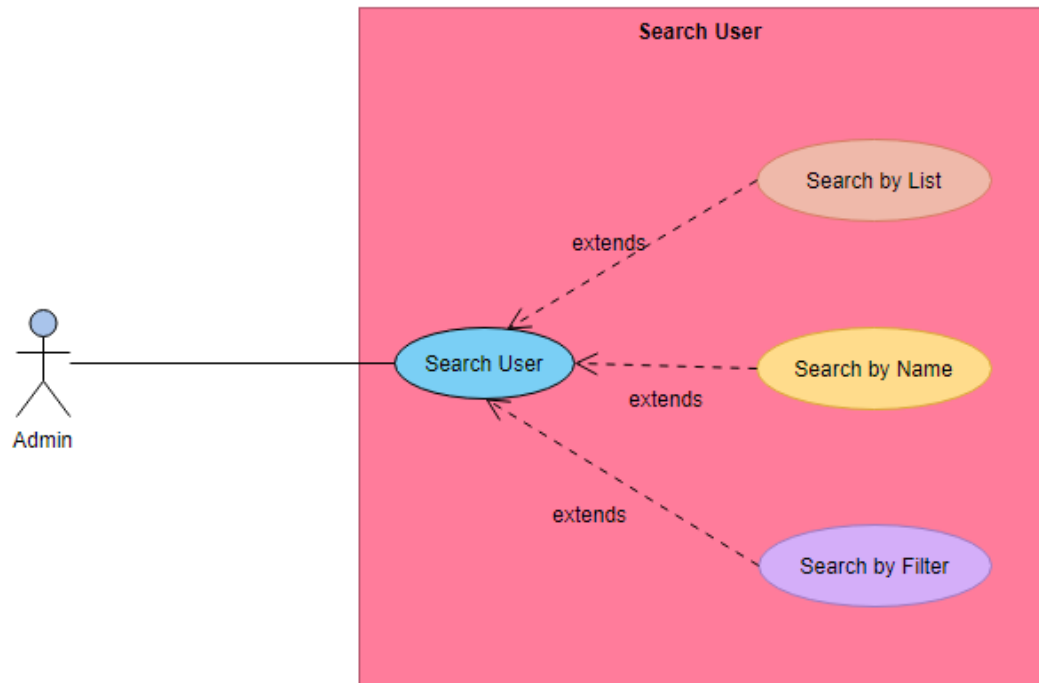
Figure# 5 User Login Diagram

2.5.6 Update User Profile:



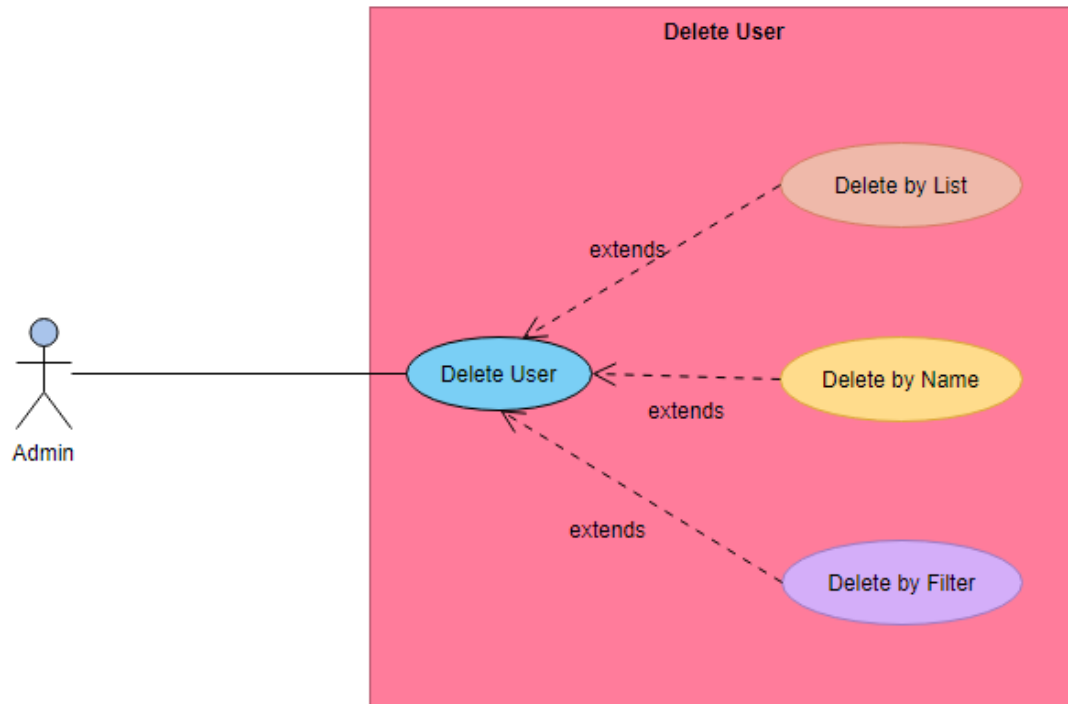
Figure# 6 Update User Diagram

2.5.7 Search User:



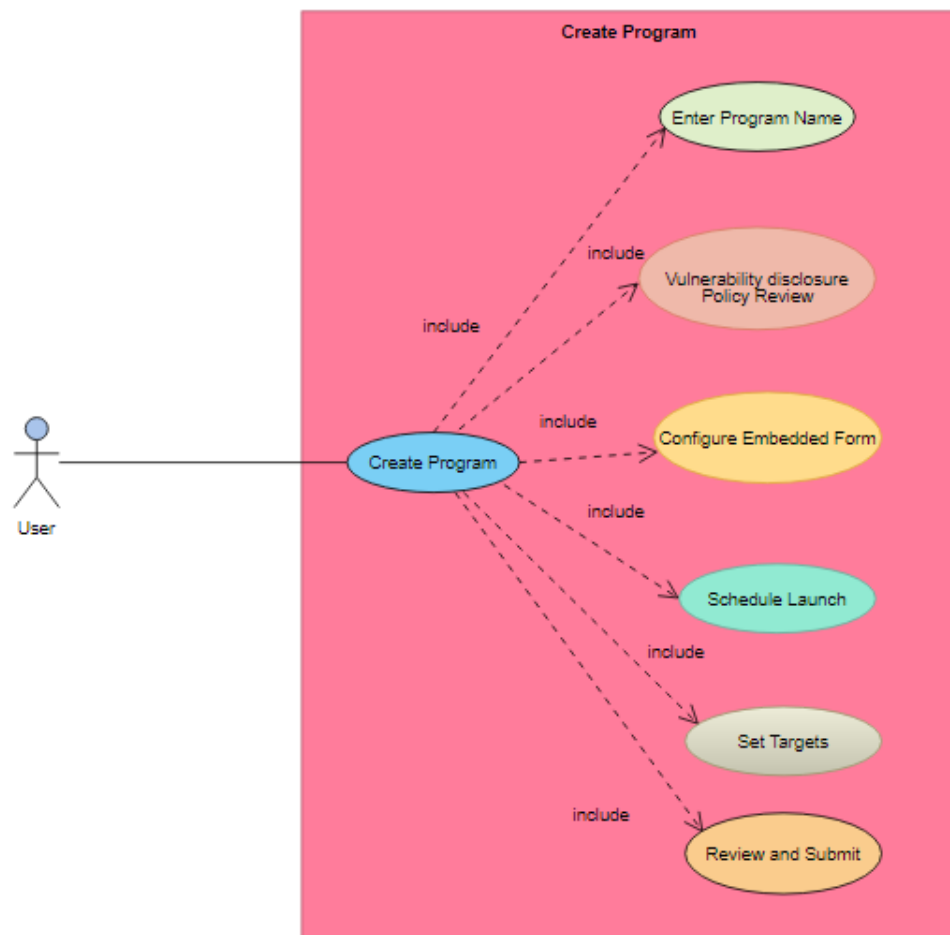
Figure# 7 Search User Diagram

2.5.8 Delete User:



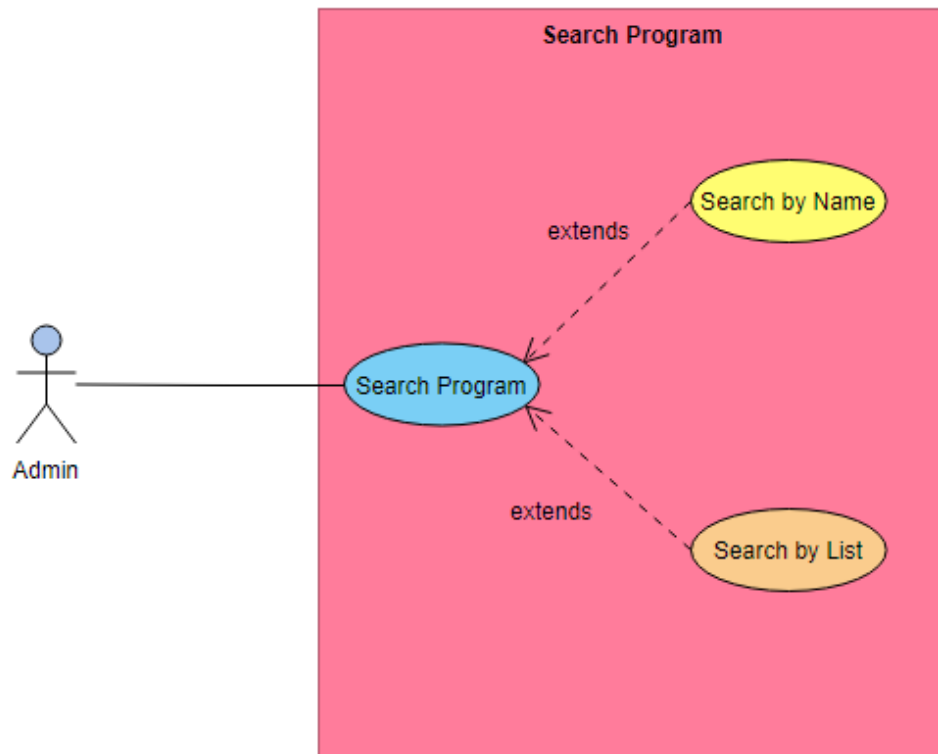
Figure# 8 User Login Use_Case Diagram

2.5.9 Create Program:



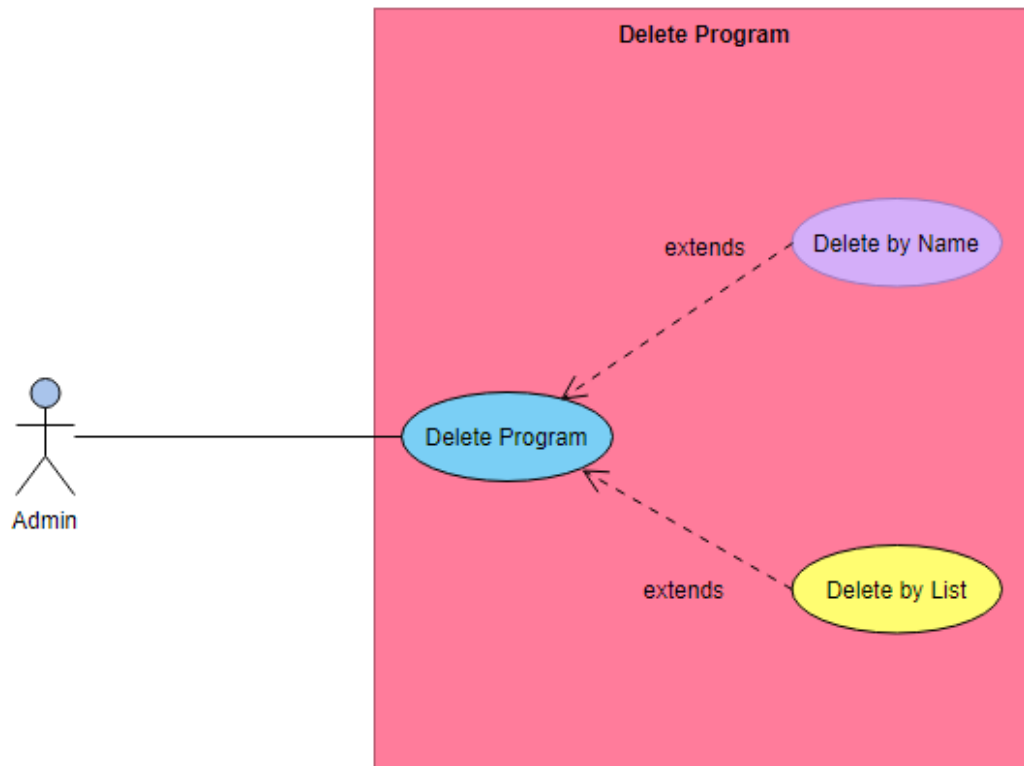
Figure# 9 Create Program Diagram

2.5.10 Search Program:



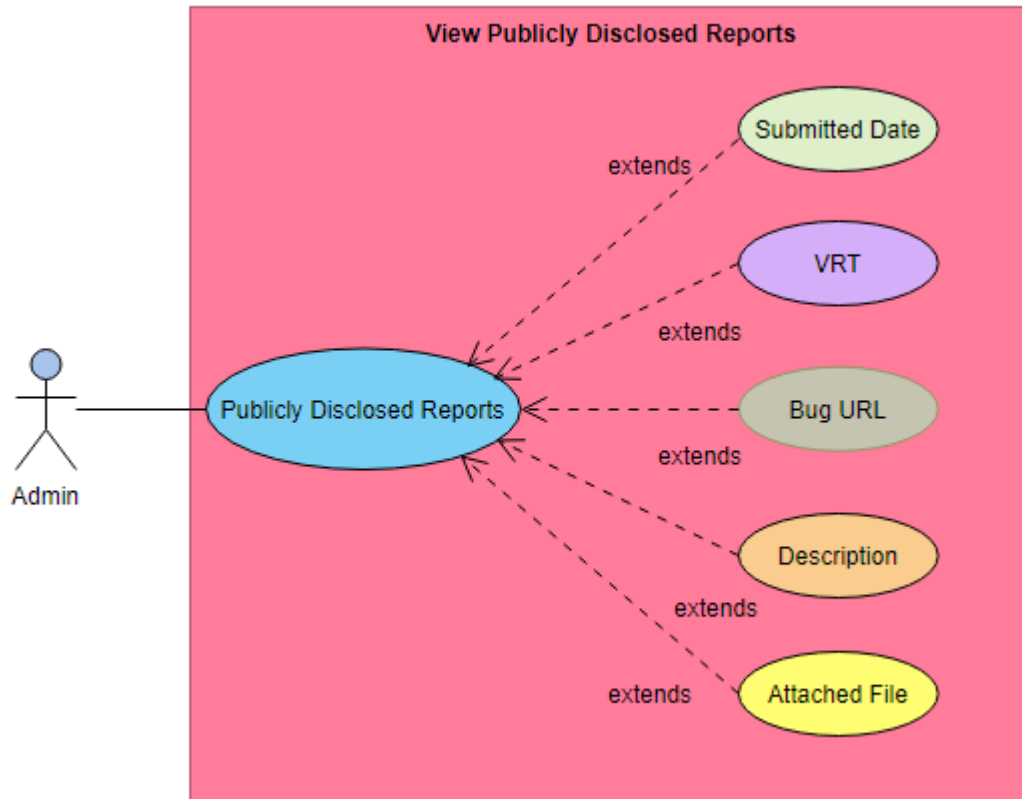
Figure# 10 Search Program Diagram

2.5.11 Delete Program:



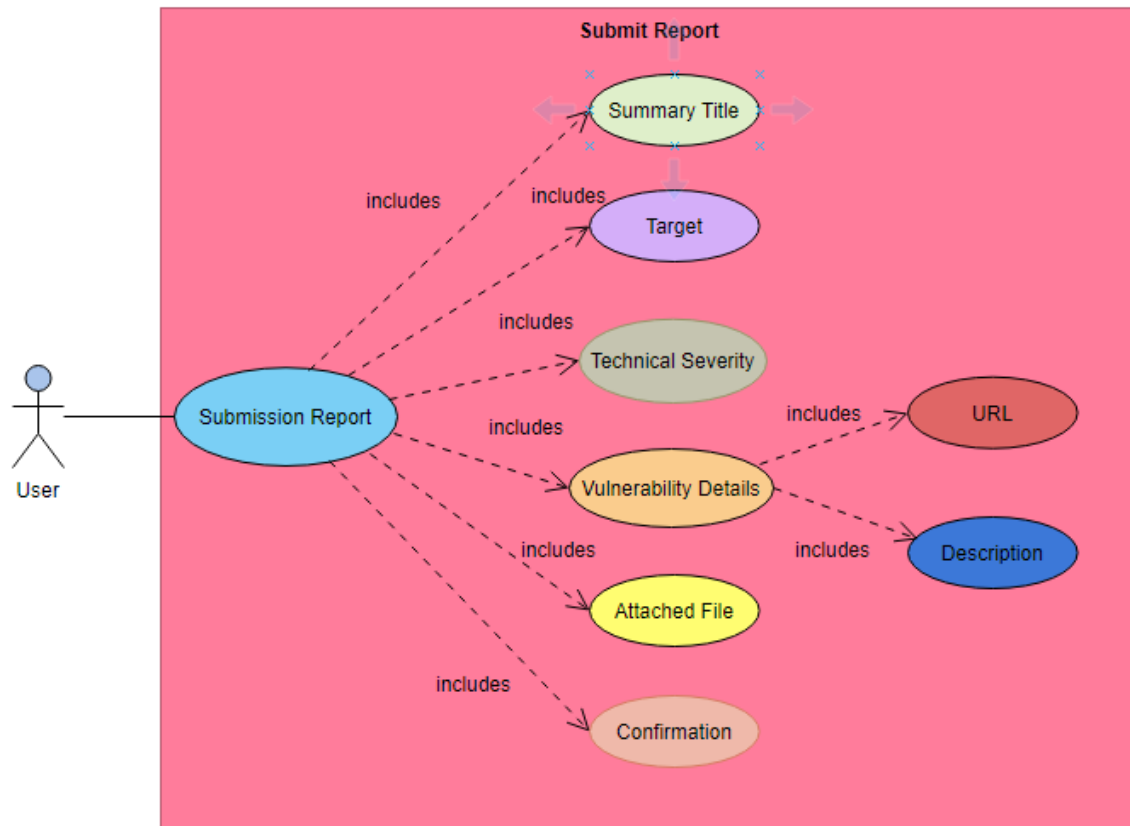
Figure# 11 Delete Program Diagram

2.5.12 View Publicly Disclosed Reports:



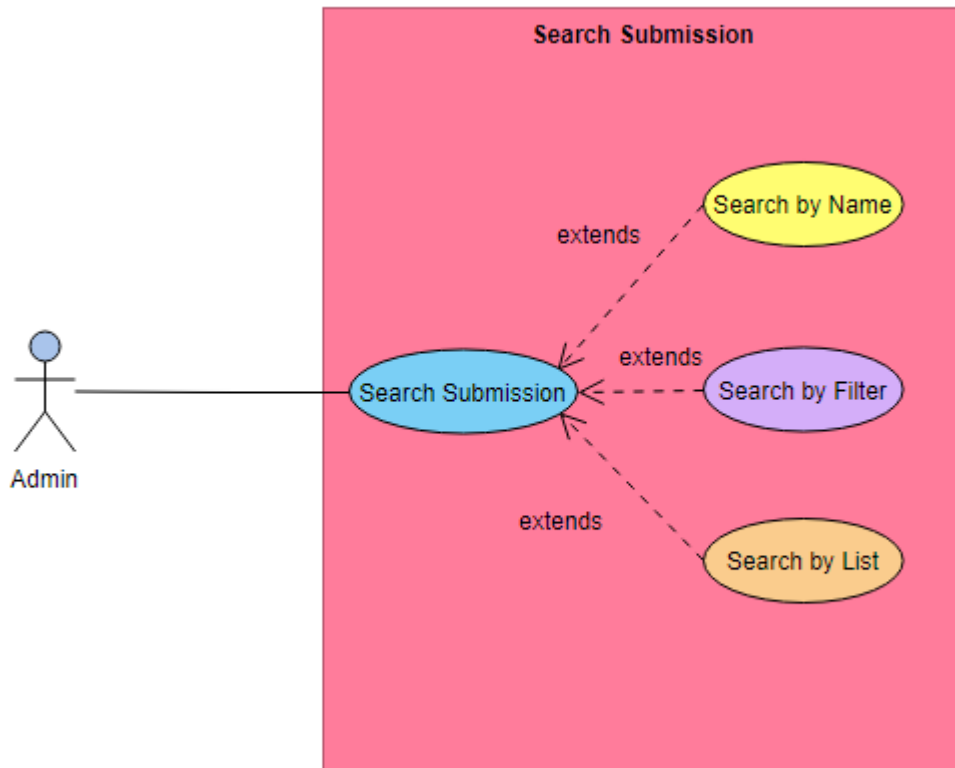
Figure# 12 Publicly Disclosed Report Diagram

2.5.13 Submit Report:



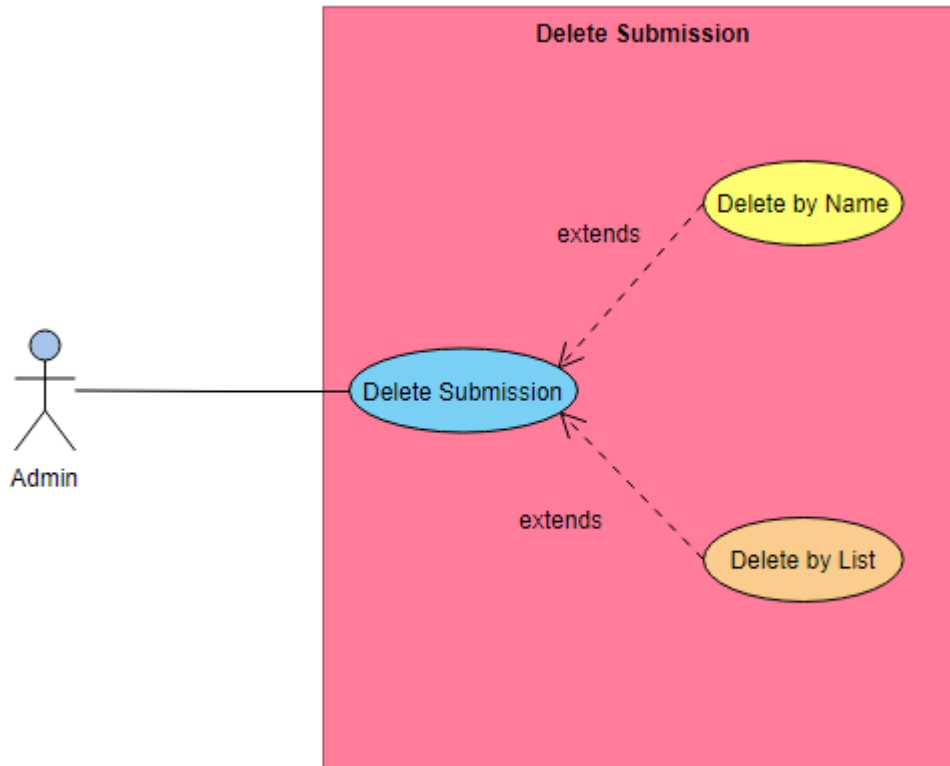
Figure# 13 Submit Report Diagram

2.5.14 Search Submission:



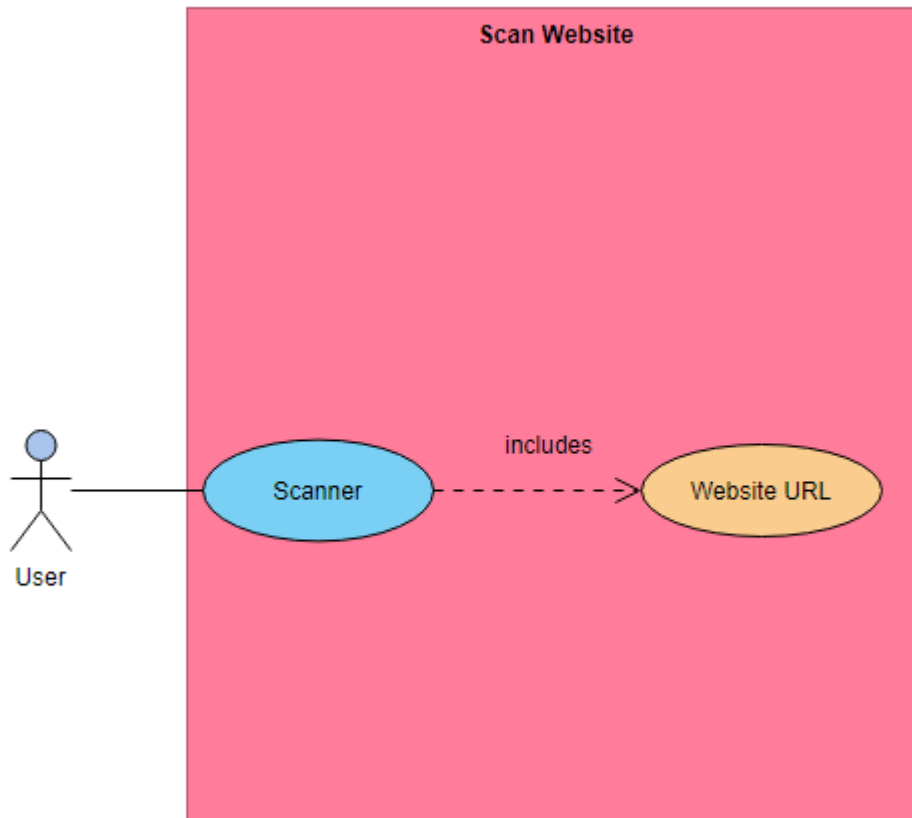
Figure# 14 Search Submission Diagram

2.5.15 Delete Submission:



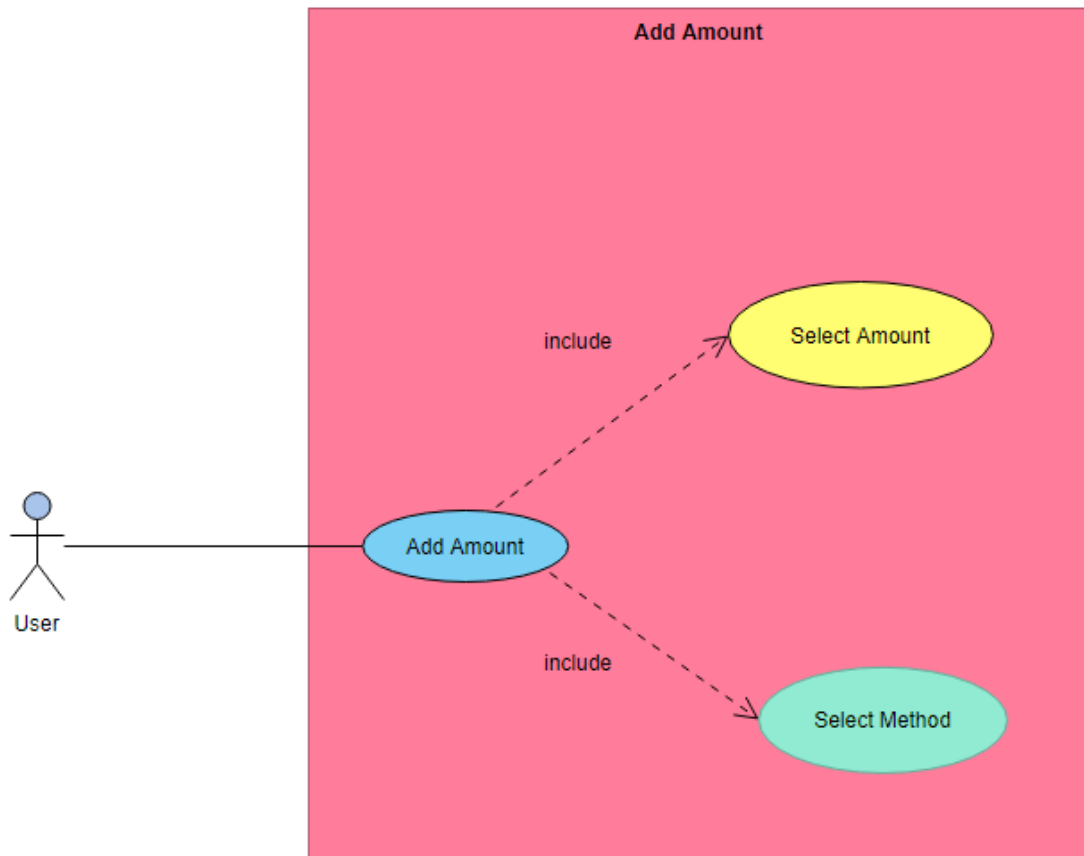
Figure# 15 Delete Submission Diagram

2.5.16 Scan Website:



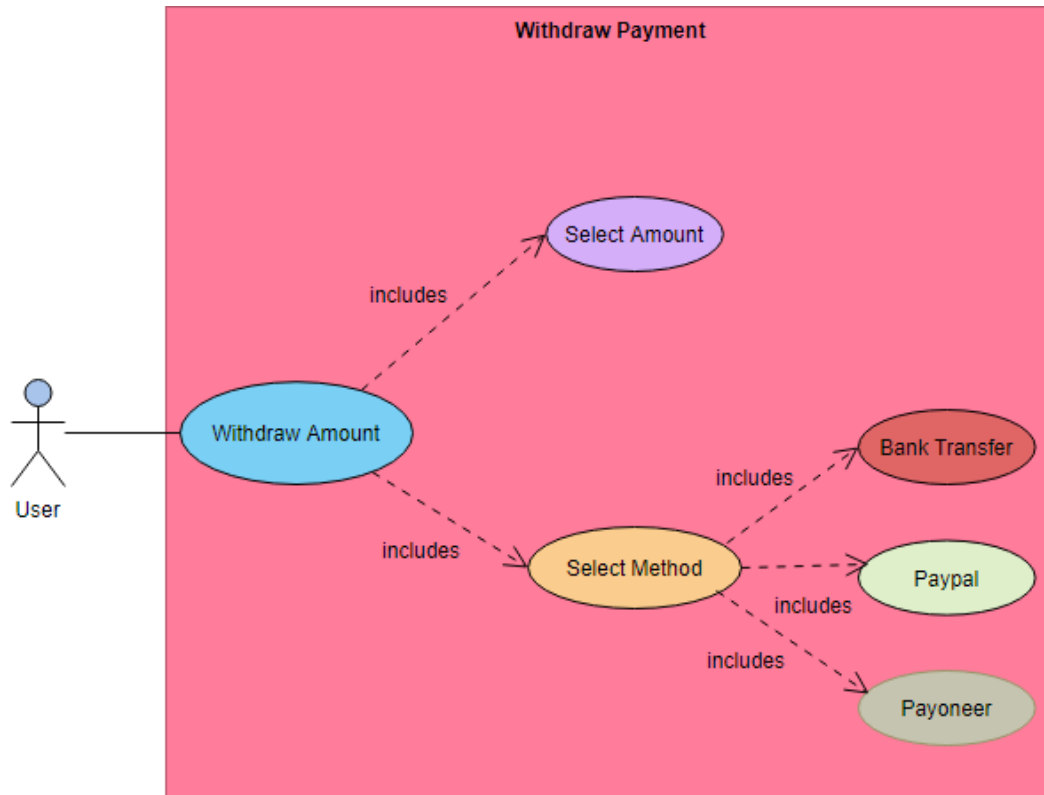
Figure# 16 Delete Submission Diagram

2.5.17 Add Amount:



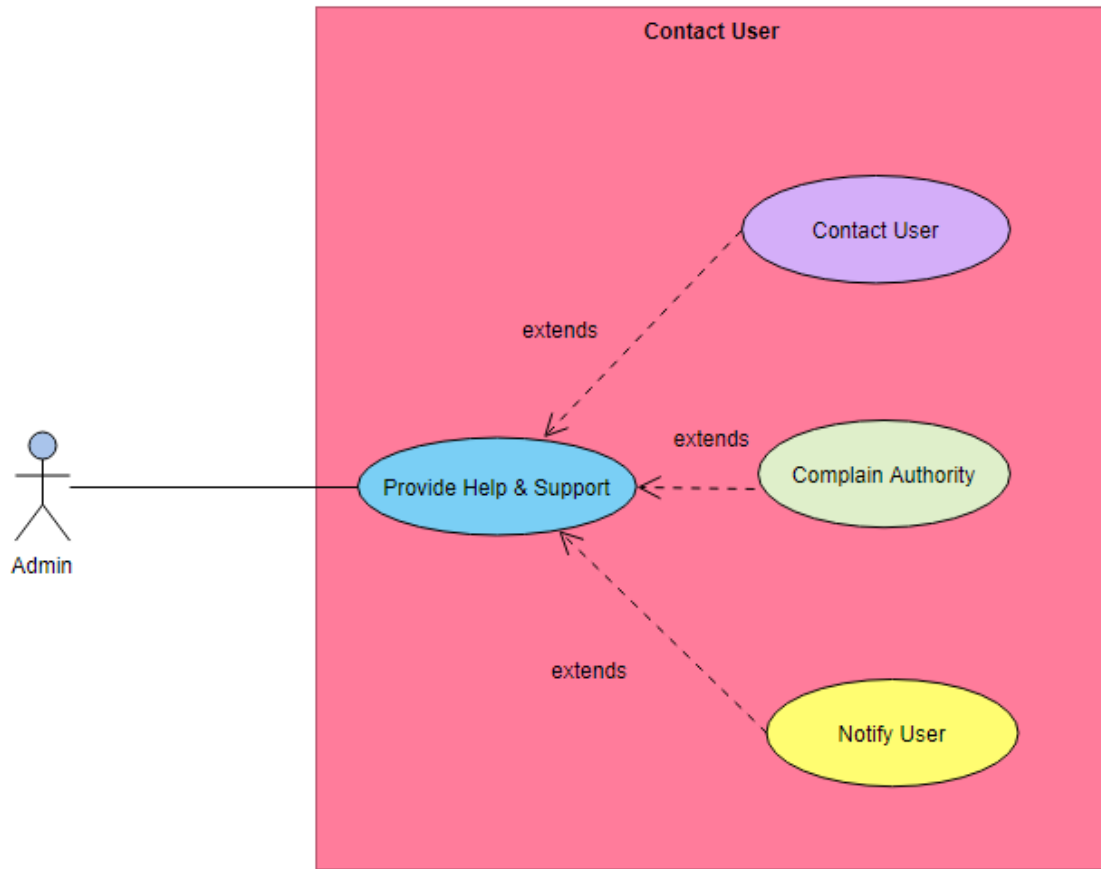
Figure# 17 Add Amount Diagram

2.5.18 Withdraw Payment:



Figure# 18 Add Amount Diagram

2.5.19 Contact User:



Figure# 19 Contact User Diagram

2.6 Software Development Cycle Model

Model: Incremental Model

We will use incremental model for the development in our project. The reason behind is that it allows to make changes during the development phase. Also, we can work on the development system in small modules and then integrate them at last.

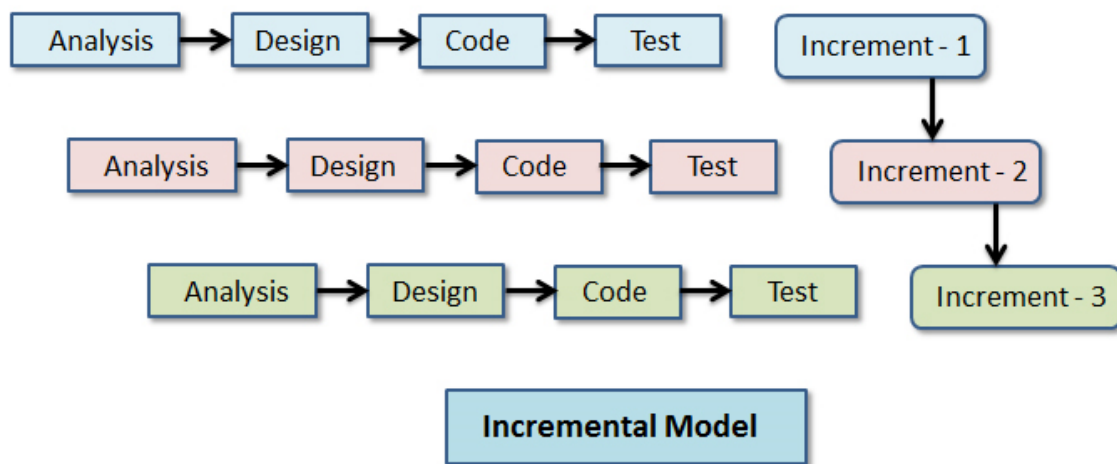


Figure 20 Software Development Lifecycle Model

CHAPTER #3

SYSTEM DESIGN



3 System Design

3.1 Break Down Structure

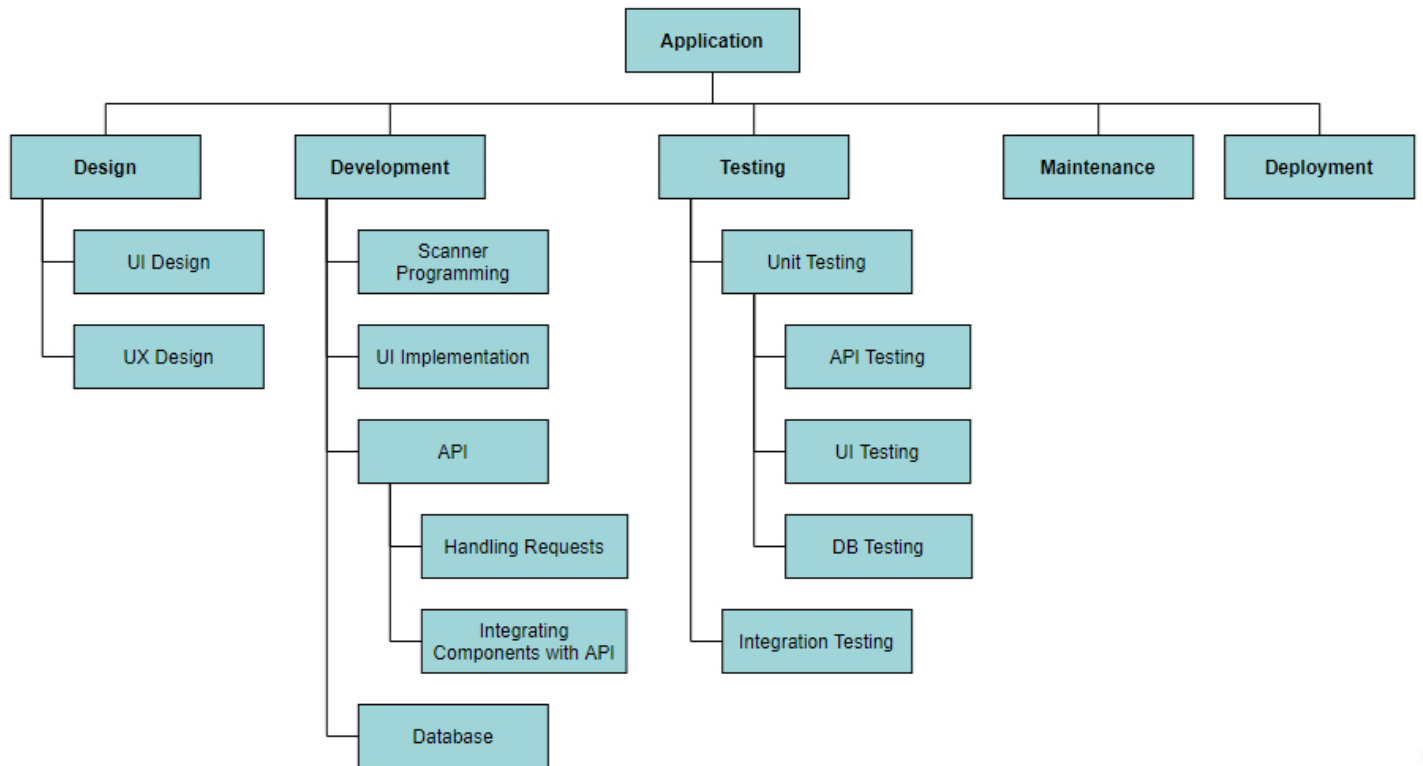
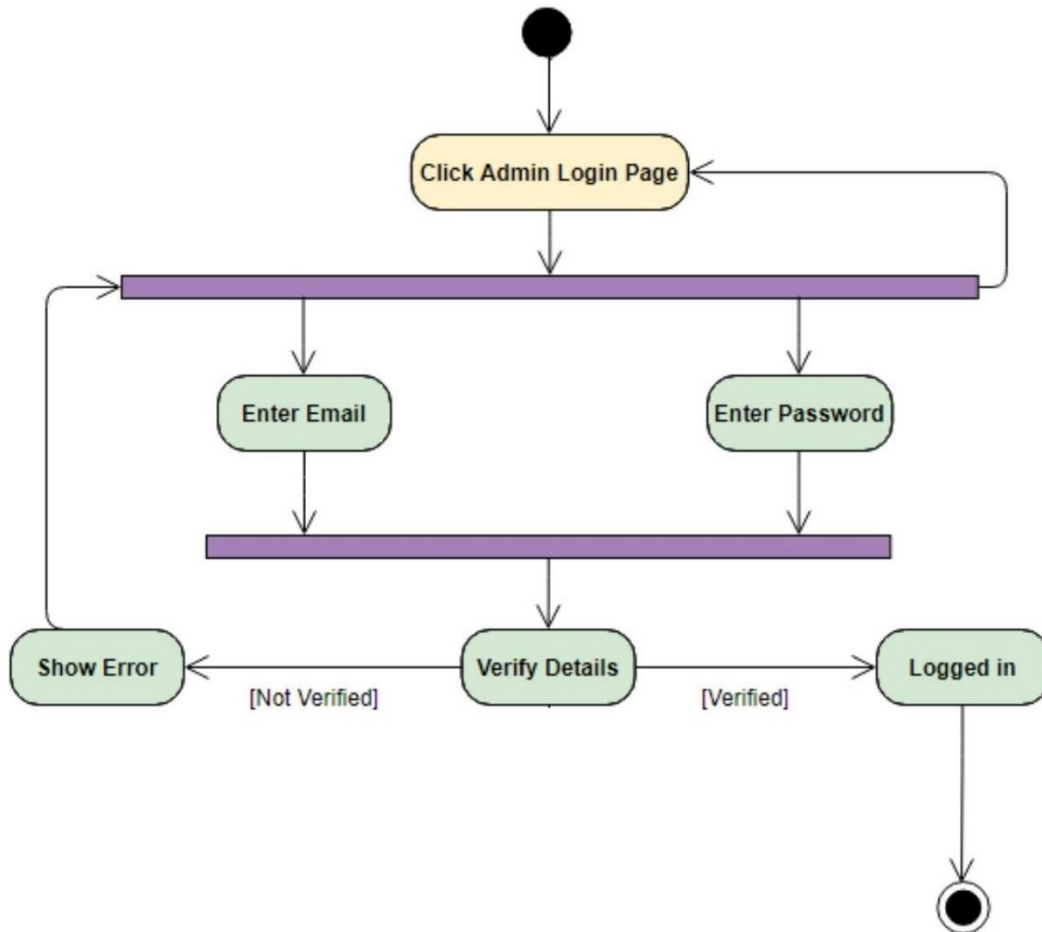


Figure 21 Work Breakdown Structure

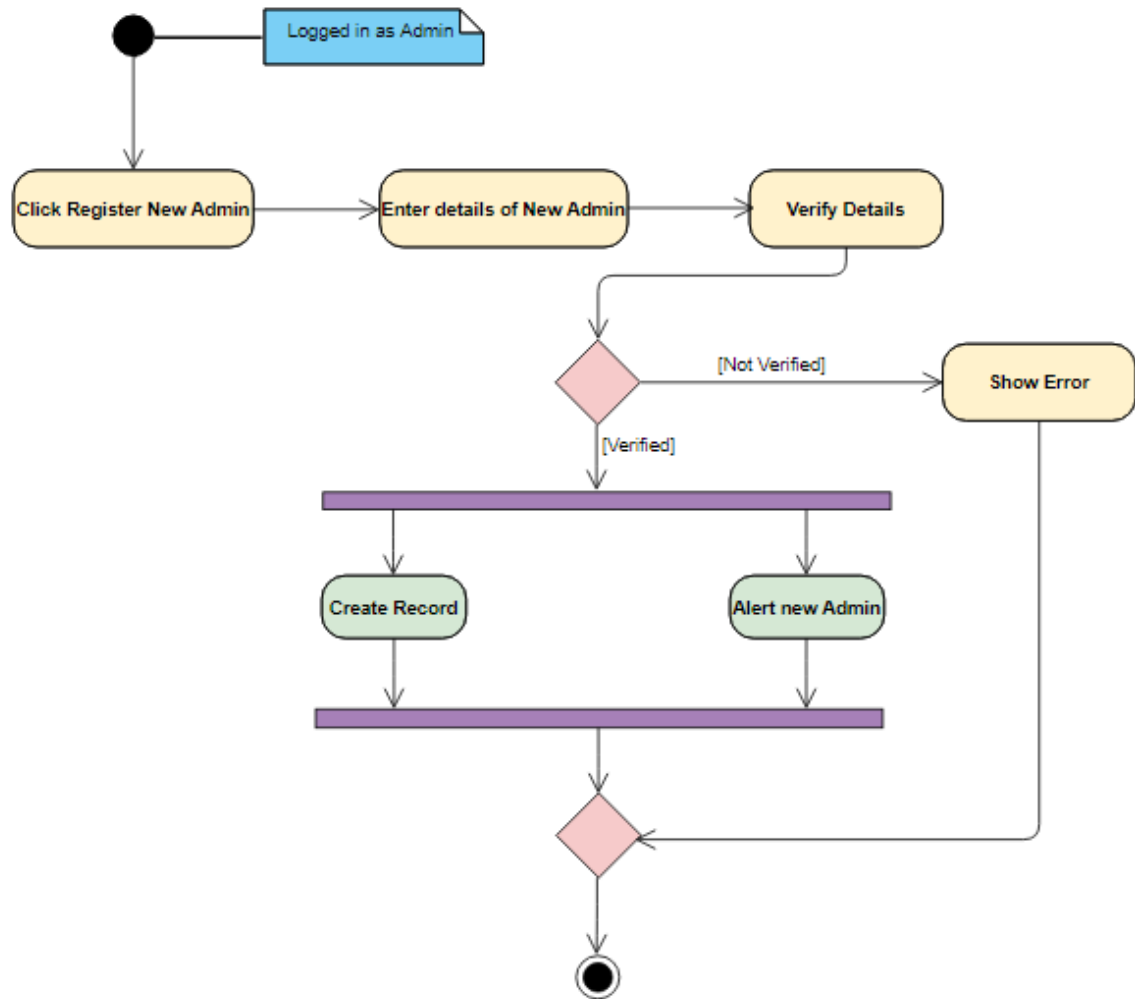
3.2 Activity_Diagram

3.2.1 Login Admin Activity_Diagram



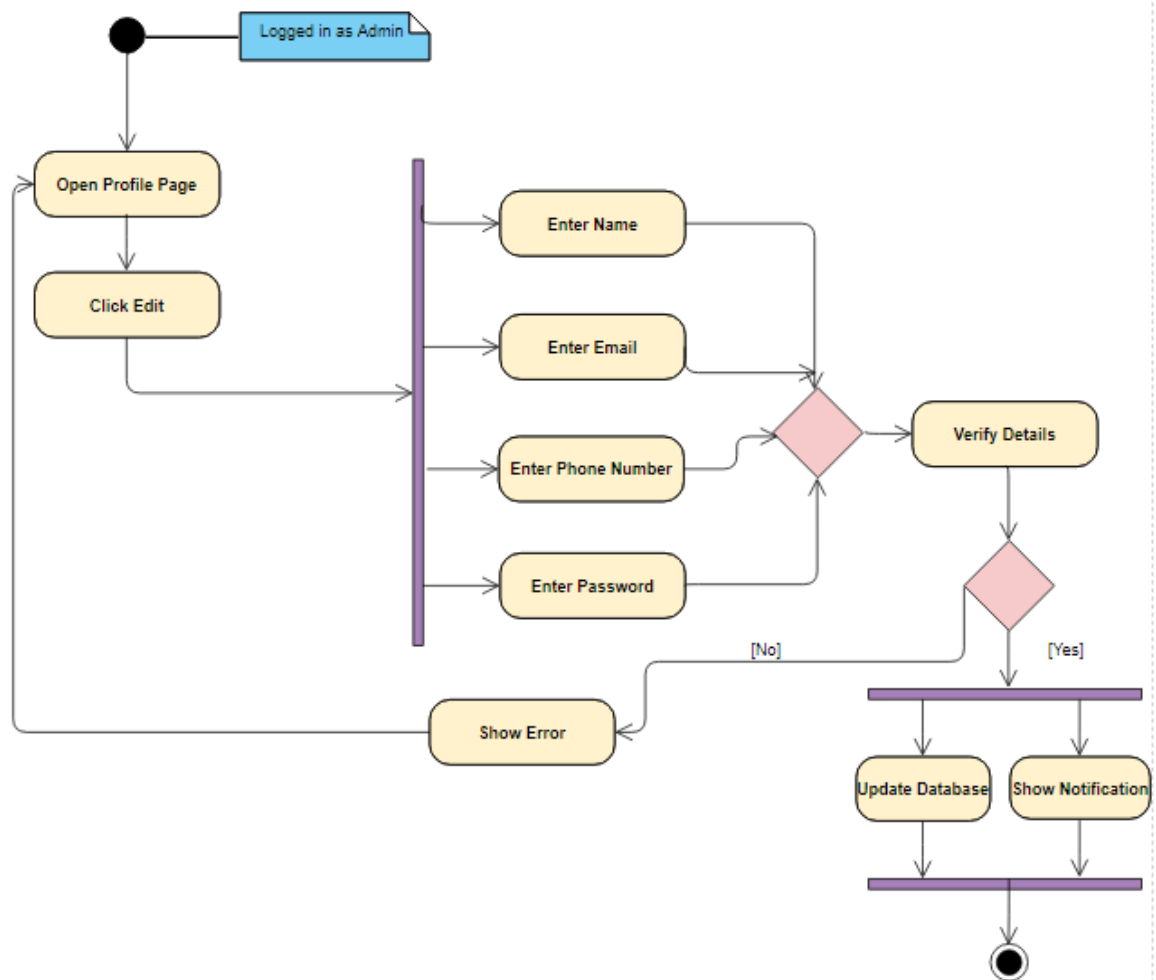
Figure# 22 Login Admin Activity diagram

3.2.2 Register New Admin Activity_Diagram



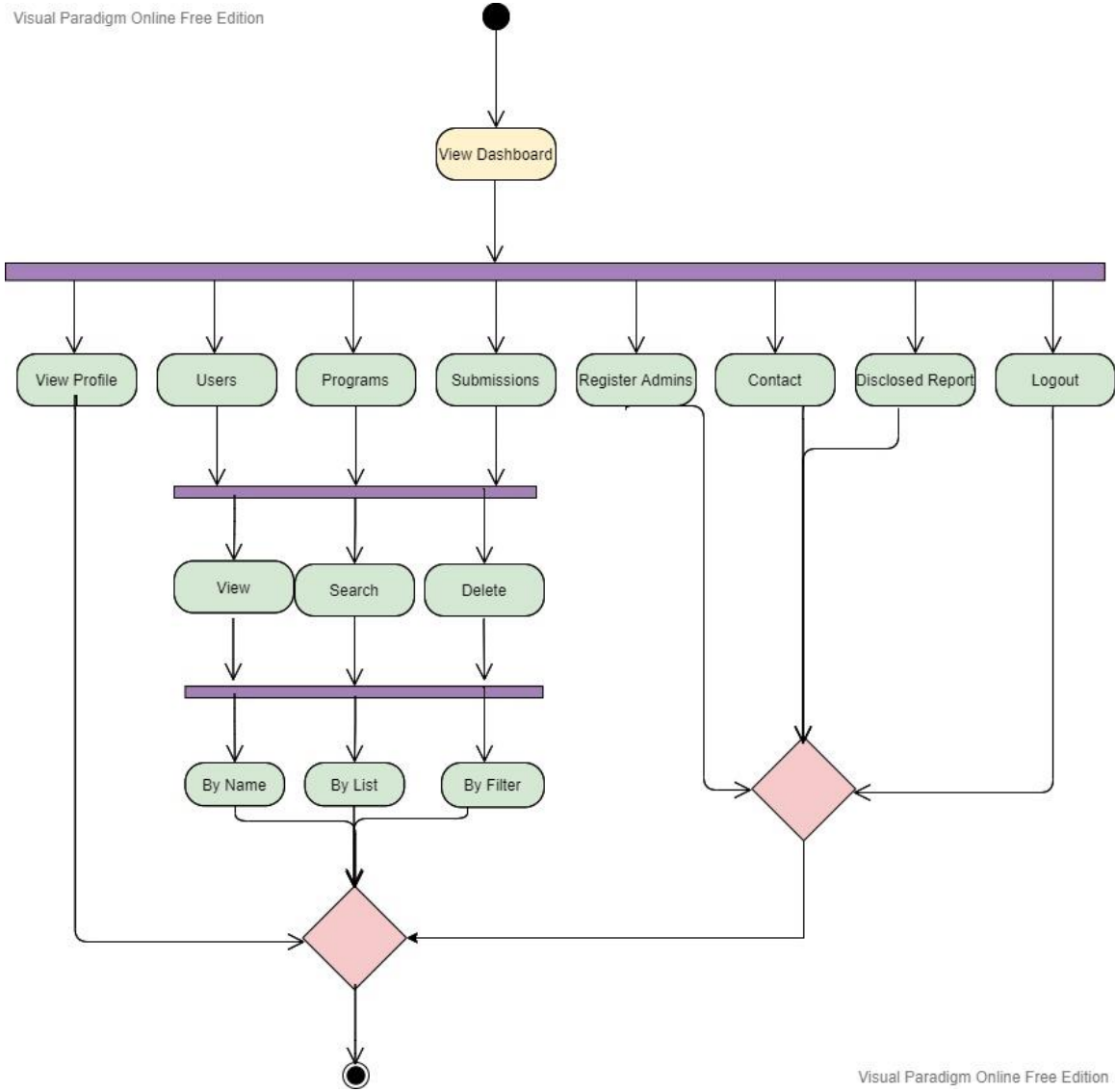
Figure# 23 Register New Admin Activity diagram

3.2.3 Update Admin Profile Activity_Diagram



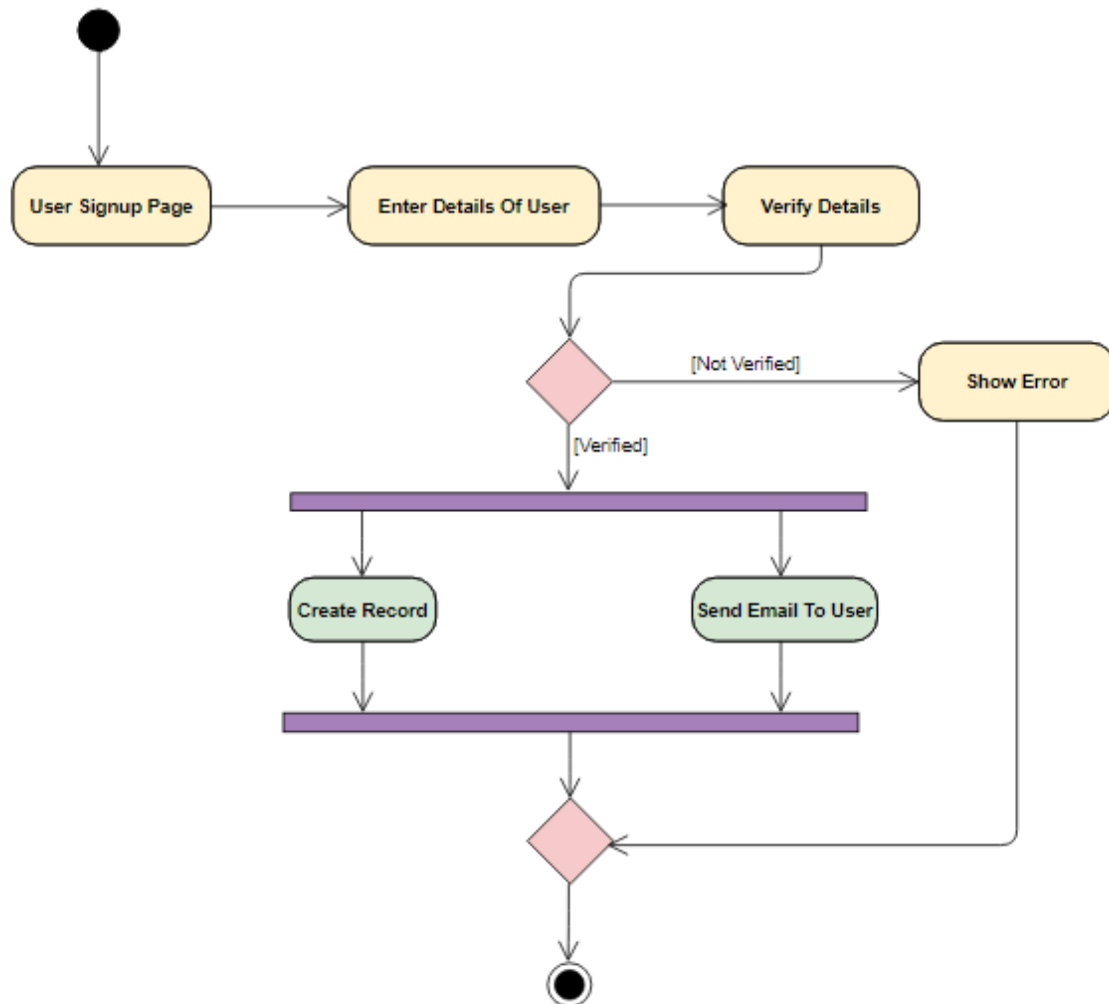
Figure# 24 Update Admin Activity diagram

3.2.4 Admin Dashboard Activity_Diagram



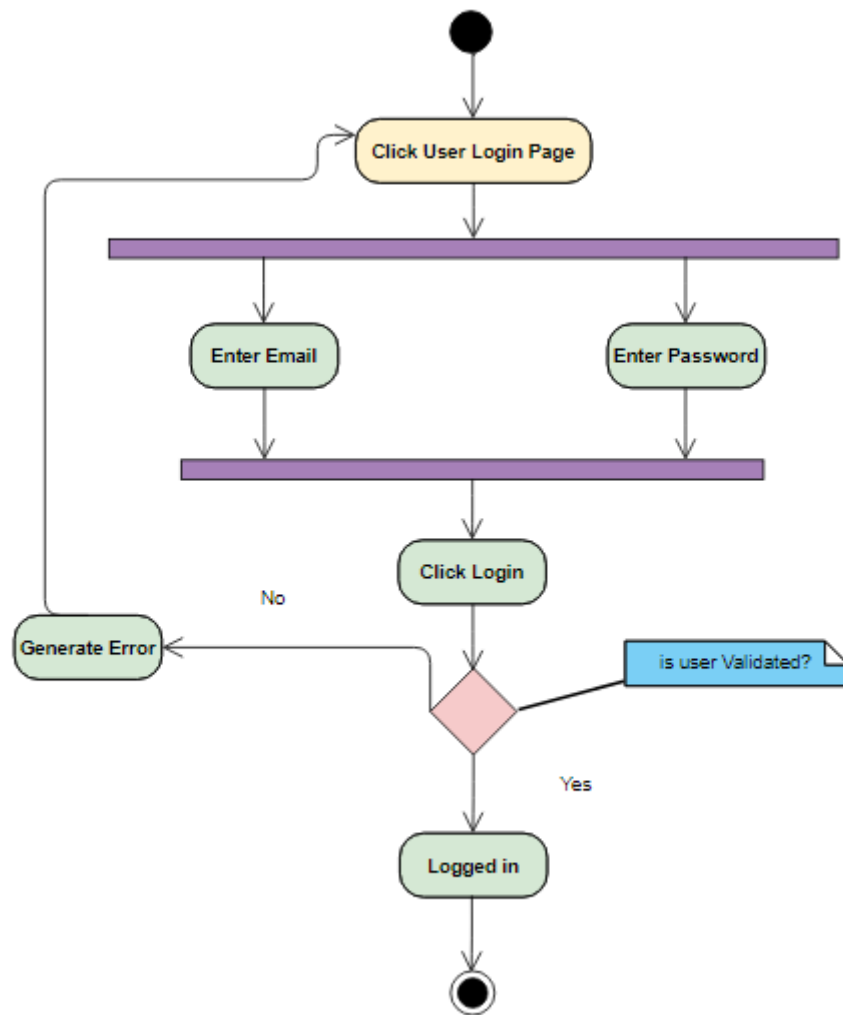
Figure# 25 Dashboard Admin Activity diagram

3.2.5 User Signup Activity_Diagram



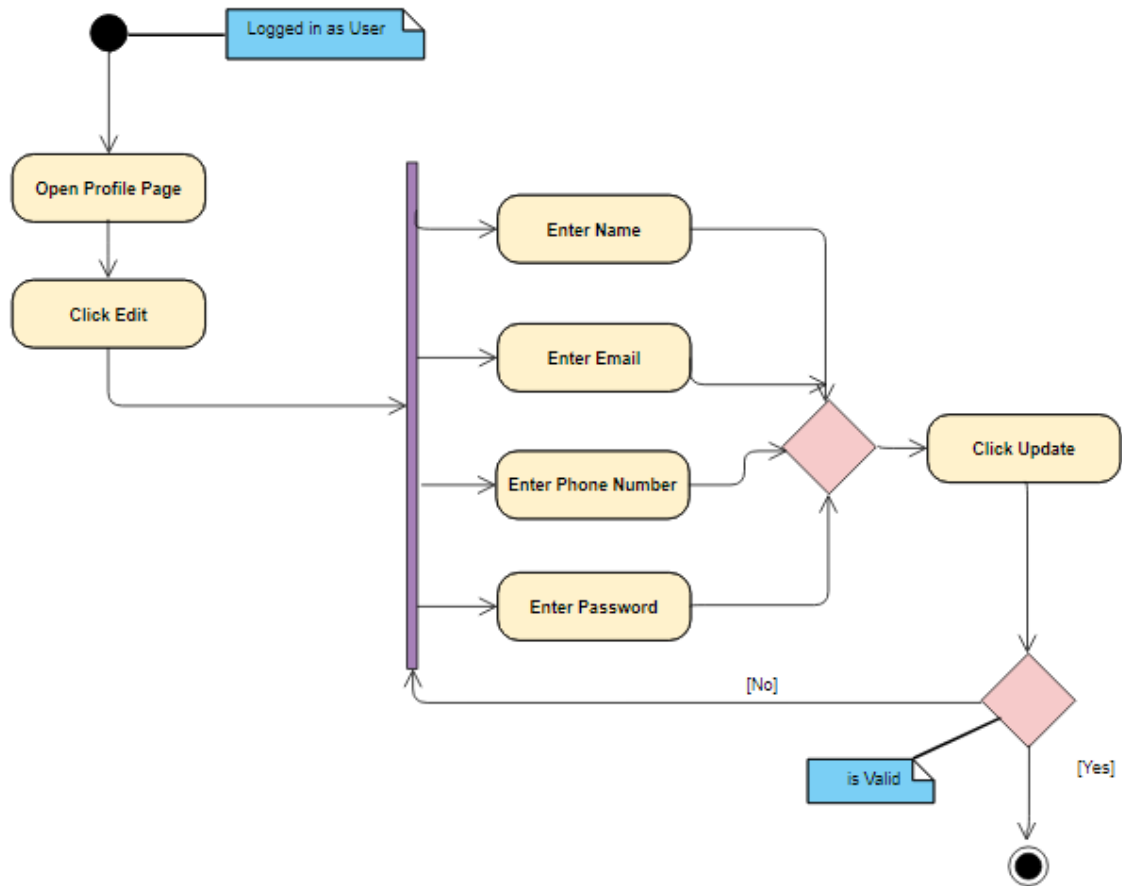
Figure# 26 User Signup Activity diagram

3.2.6 User Login Activity_Diagram



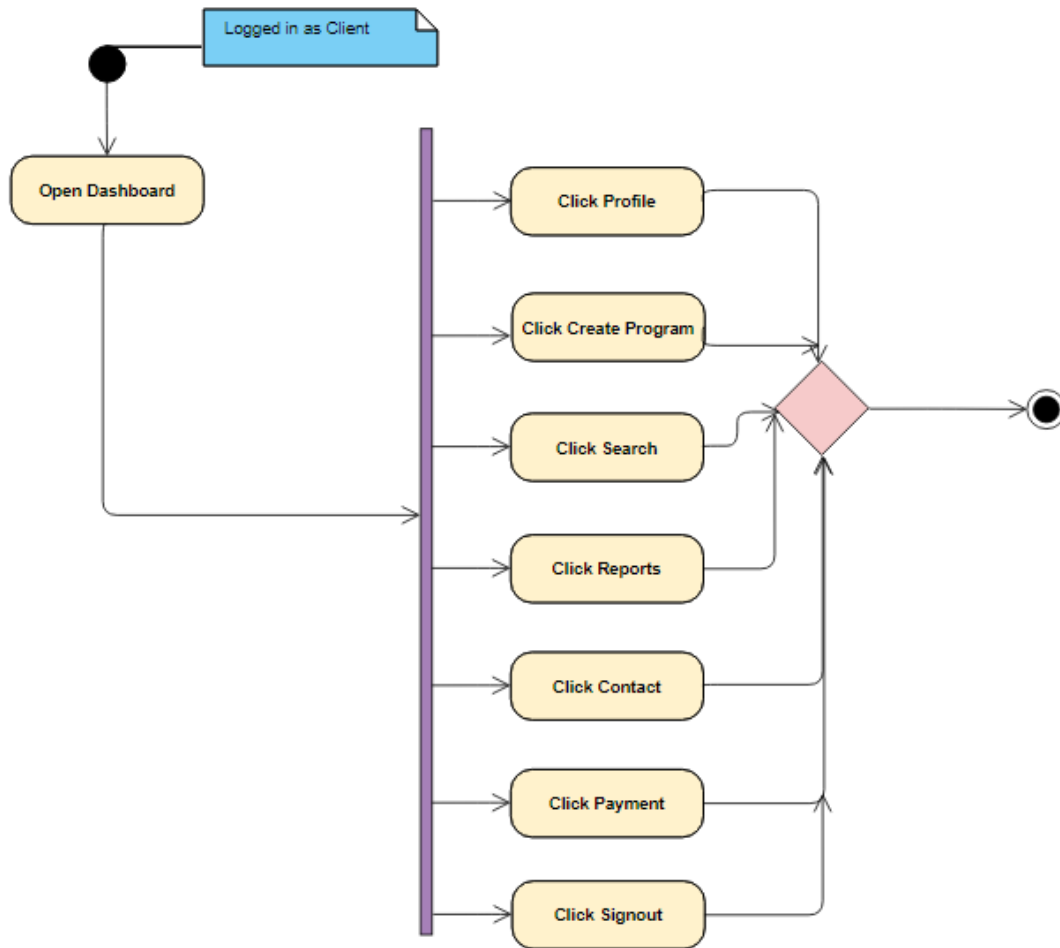
Figure# 27 Login User Activity diagram

3.2.7 Update User Profile Activity_Diagram



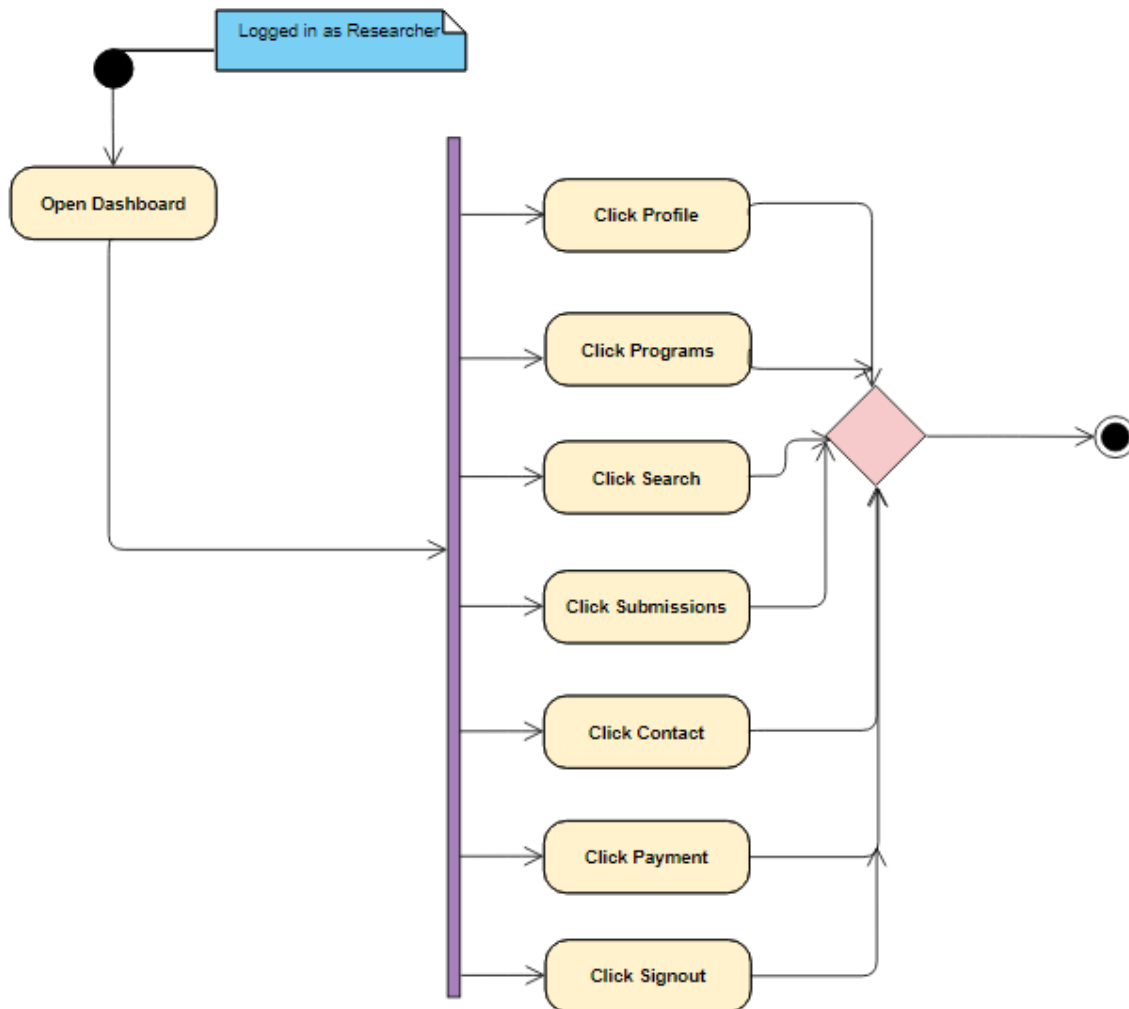
Figure# 28 Login User Activity diagram

3.2.8 User Dashboard (Client) Activity_Diagram



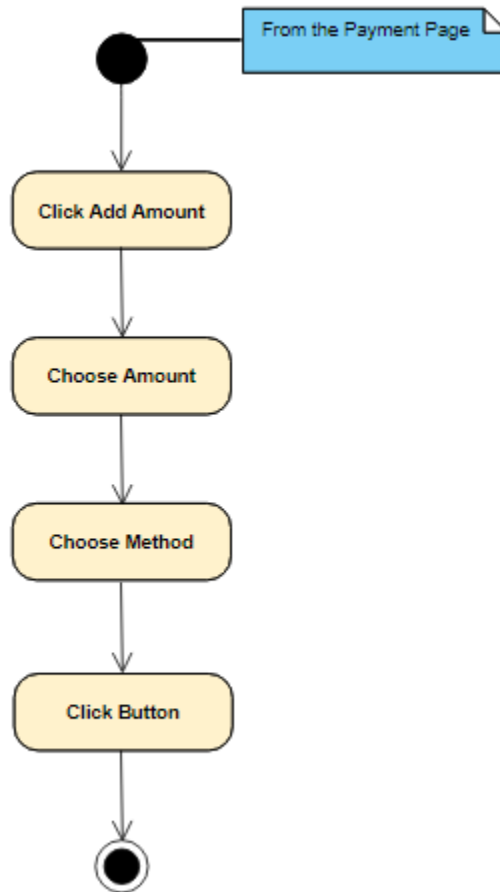
Figure# 29 Dashboard (client) Activity diagram

3.2.9 User Dashboard (Security Researcher) Activity_Diagram



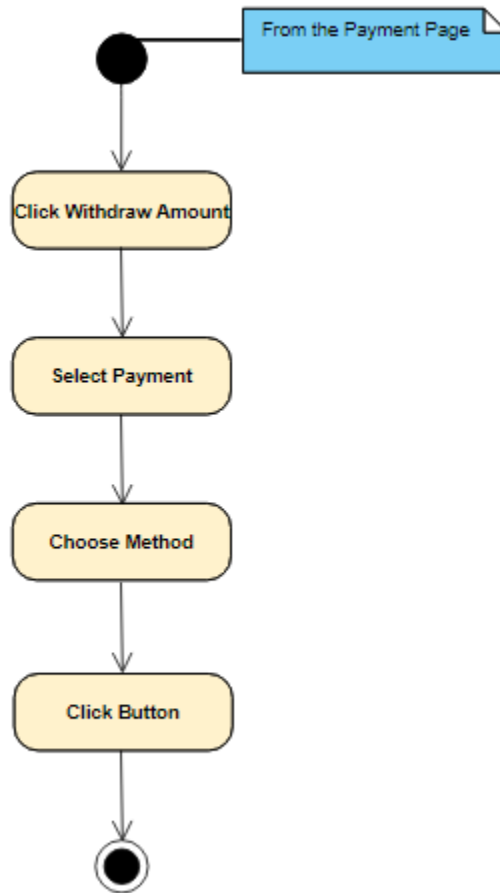
Figure# 30 Dashboard (researcher) Activity diagram

3.2.10 User Add Amount Activity_Diagram



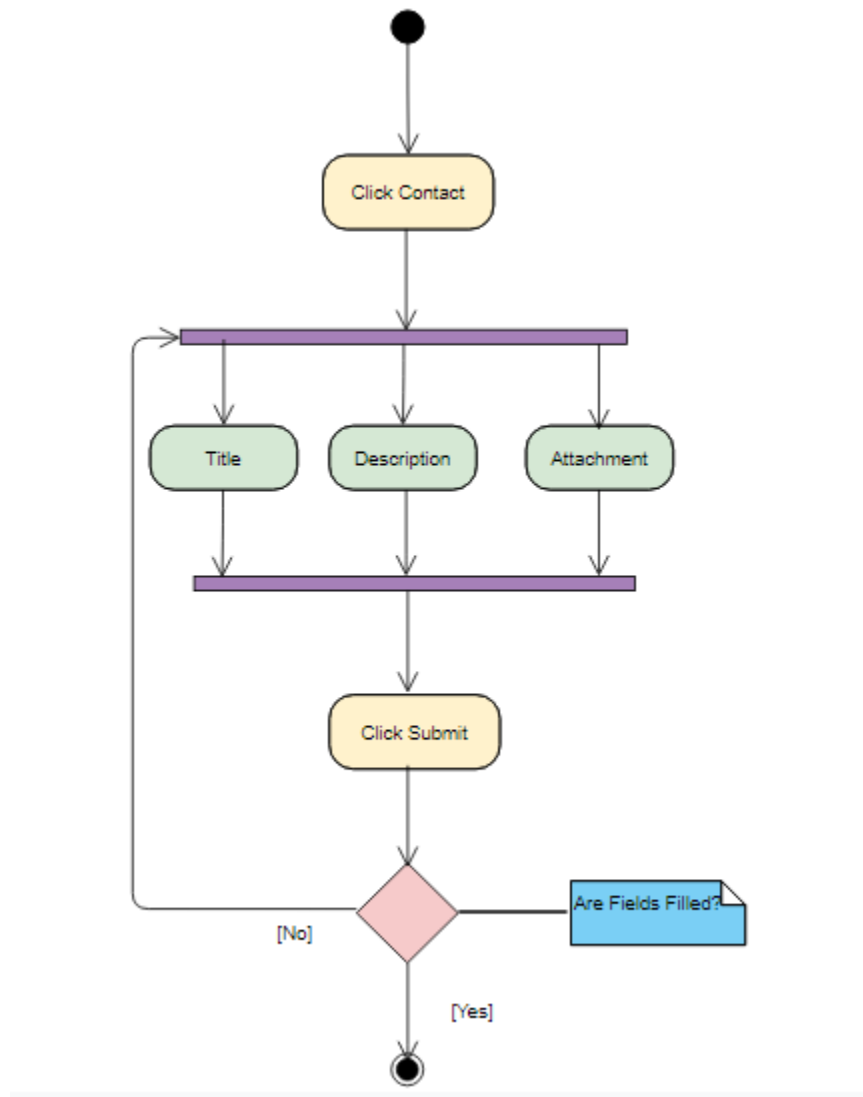
Figure# 31 Add Amount Activity diagram

3.2.11 User Withdraw Amount Activity_Diagram



Figure# 32 Withdraw Amount Activity diagram

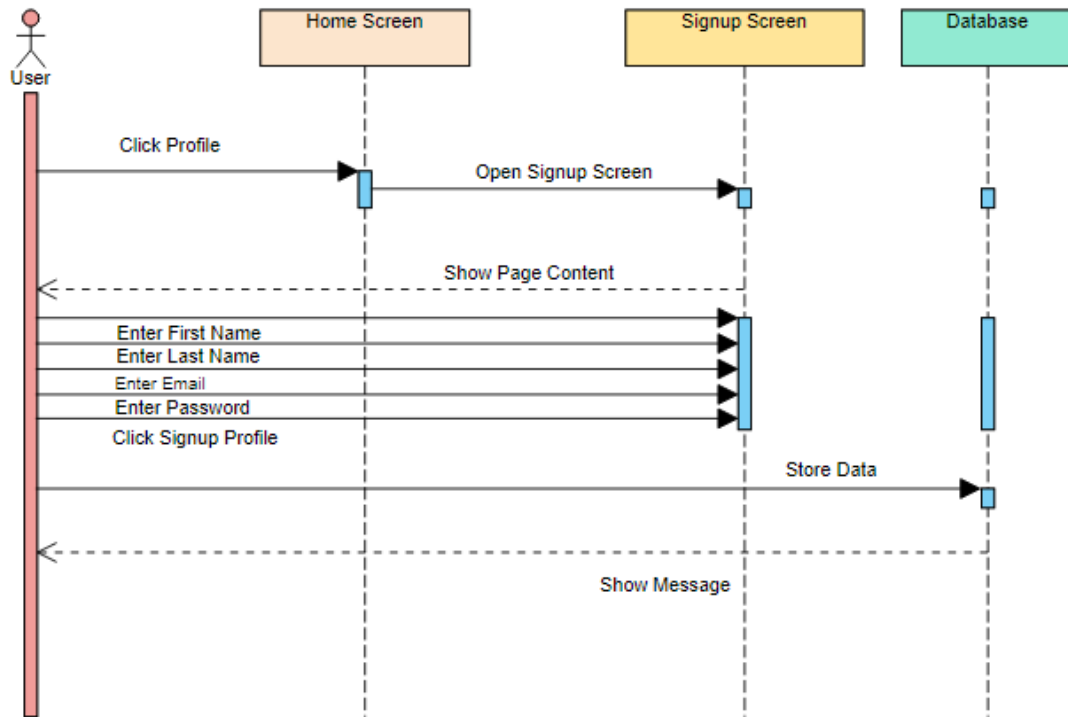
3.2.12 User Contact Support Activity_Diagram



Figure# 33 Contact Support Activity diagram

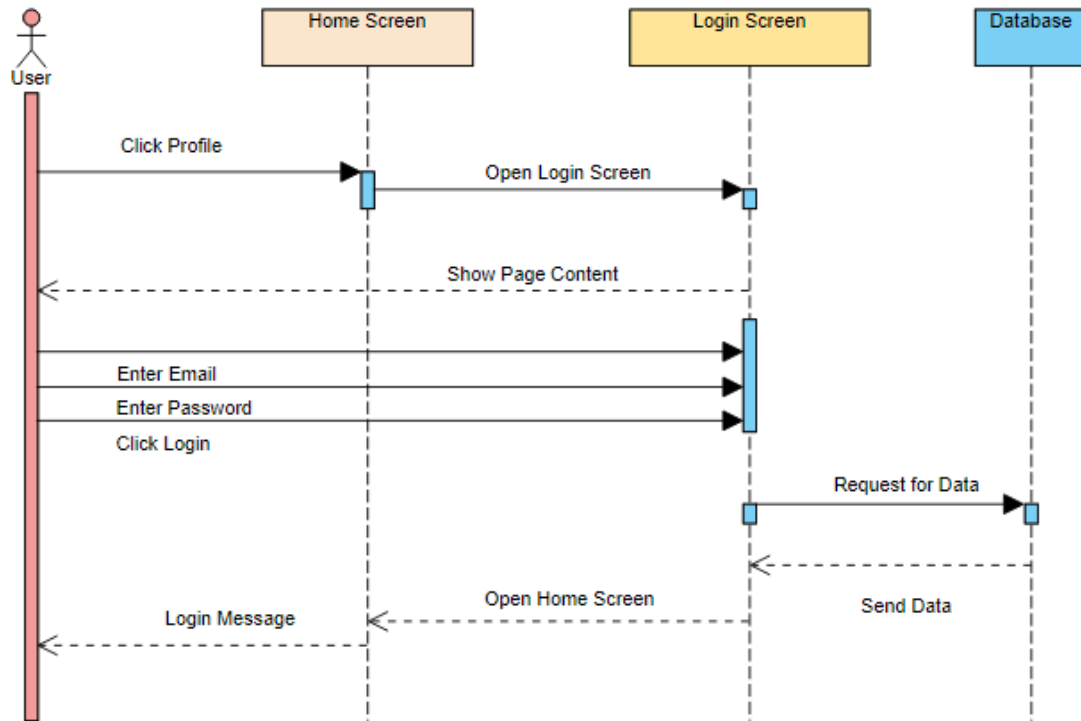
3.3 Sequence_Diagram

3.3.1 Signup



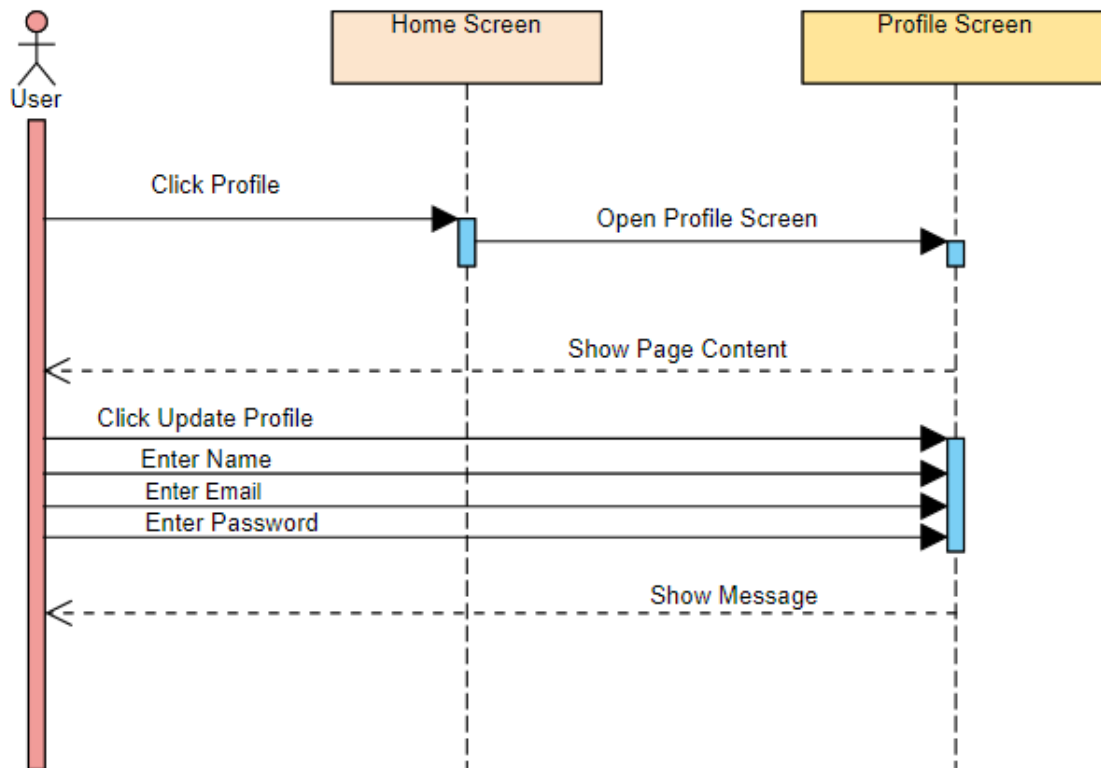
Figure# 34 Signup Seq. Diagram

3.3.2 Login



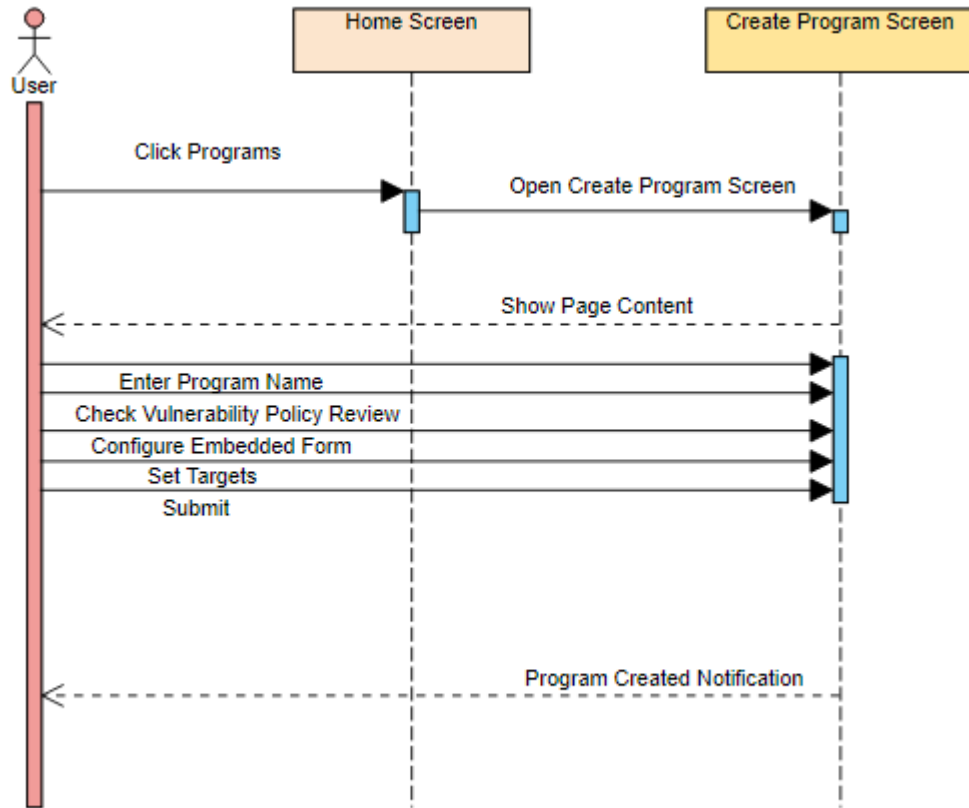
Figure# 35 Registration Seq. Diagram

3.3.3 Update Profile



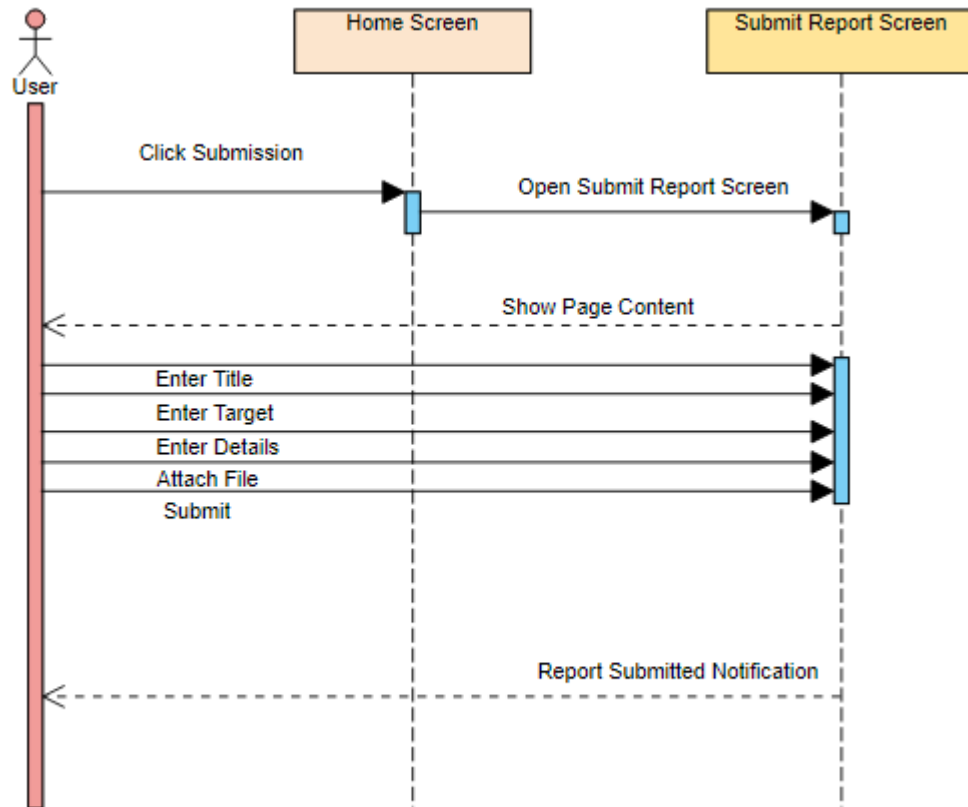
Figure# 36 Update Profile Seq. Diagram

3.3.4 Create Program



Figure# 37 Create Program Seq. Diagram

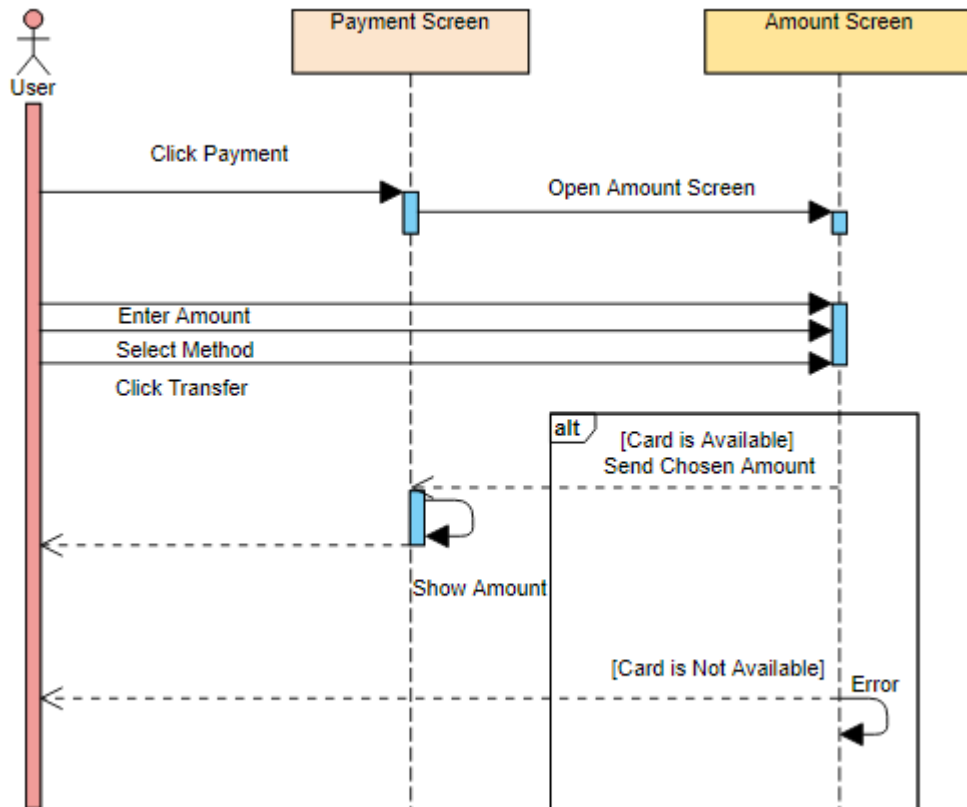
3.3.5 Submit Report



Figure# 38 Submit Report Seq. Diagram

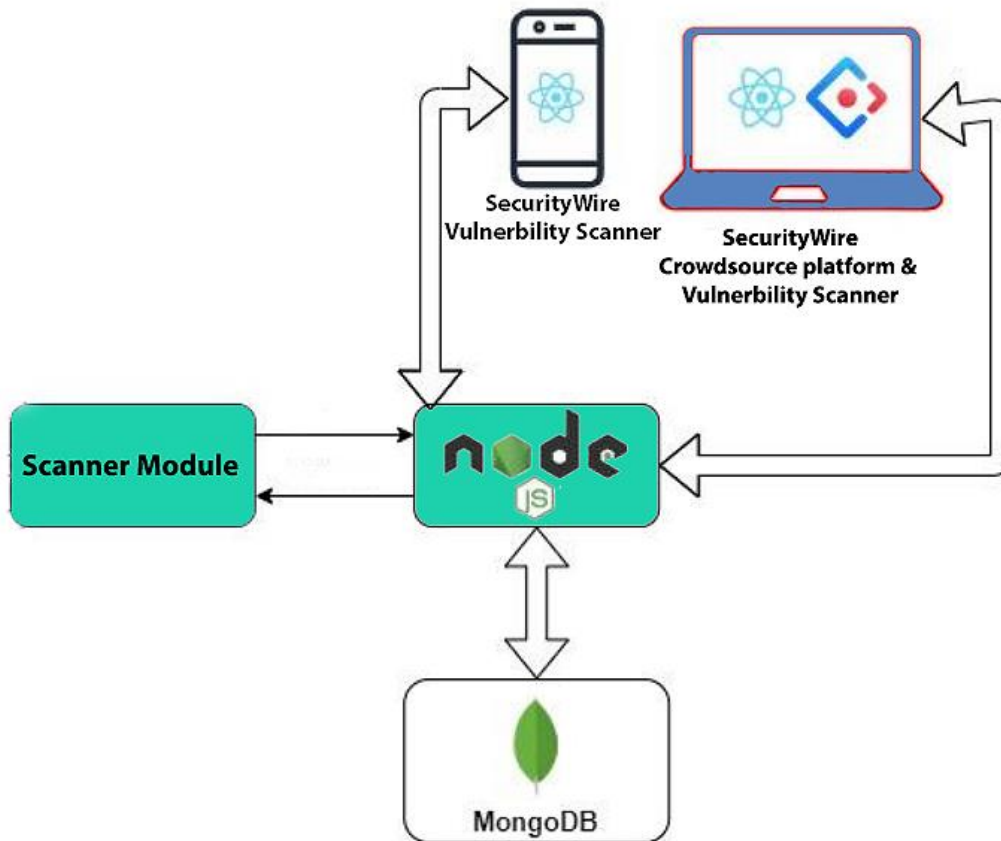
SECURITY WIRE

3.3.6 Payment



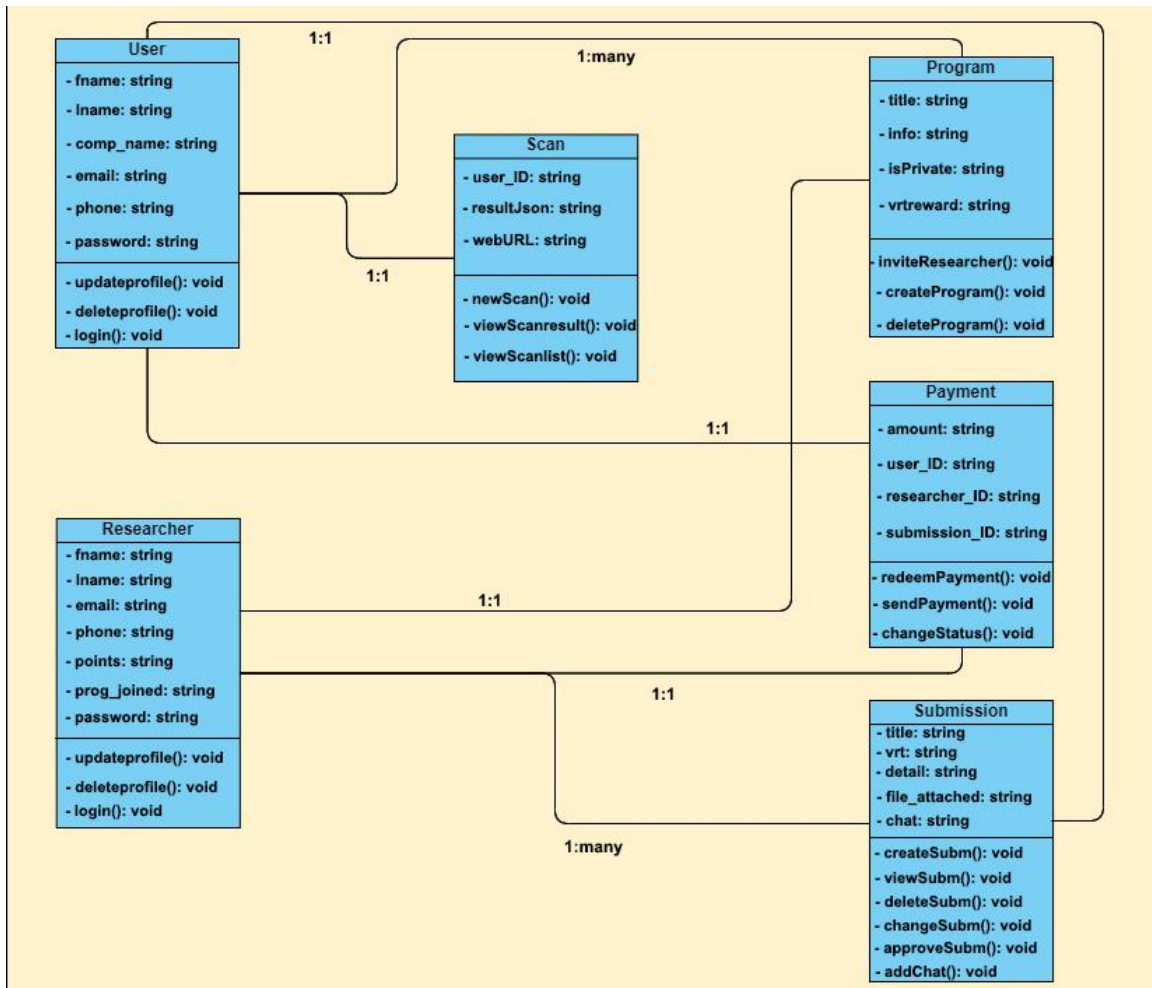
Figure# 39 Payment Seq. Diagram

3.4 Software Architecture



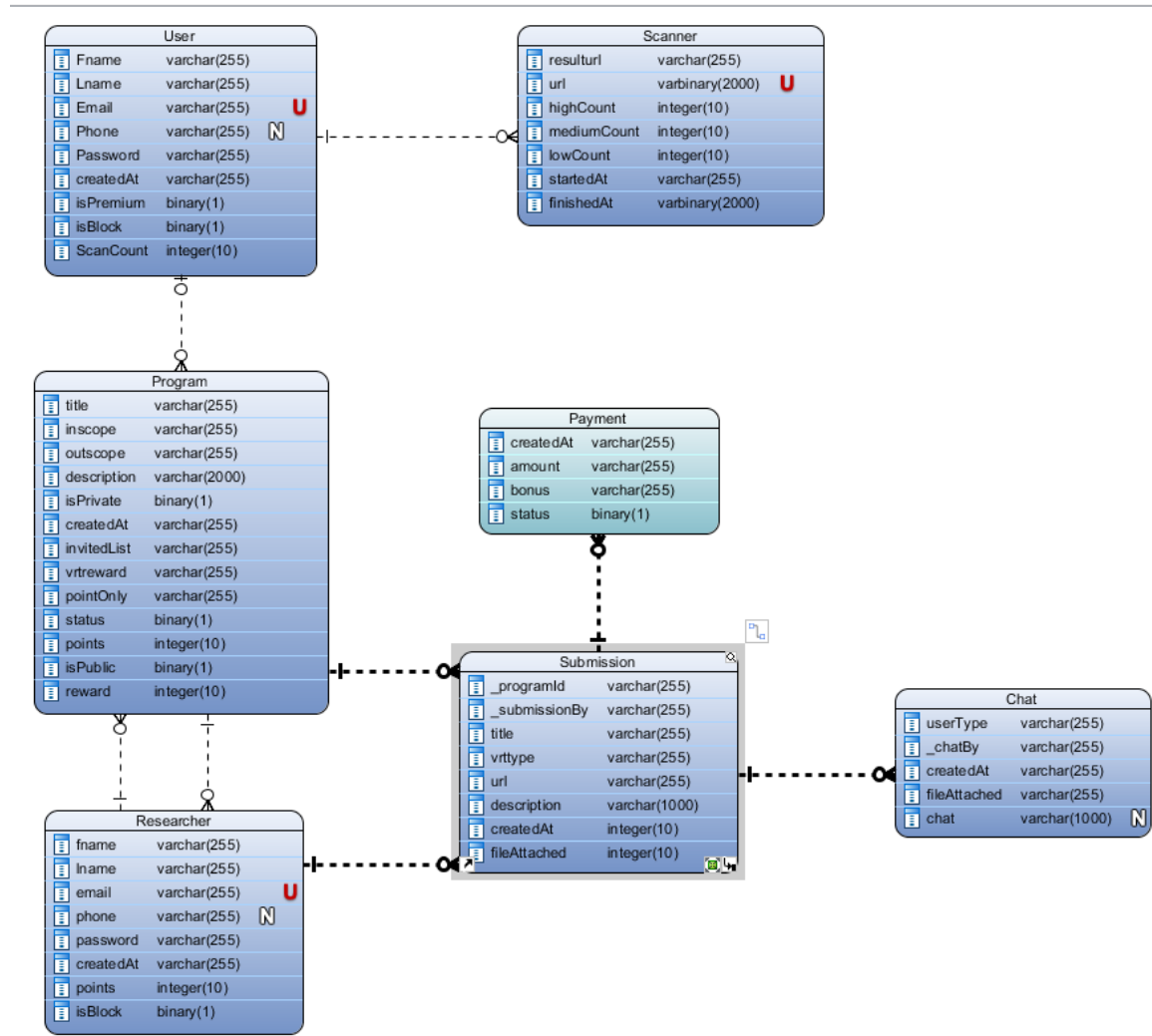
Figure# 40 Software Architecture

3.5 Class Diagram



Figure# 41 Class-diagram

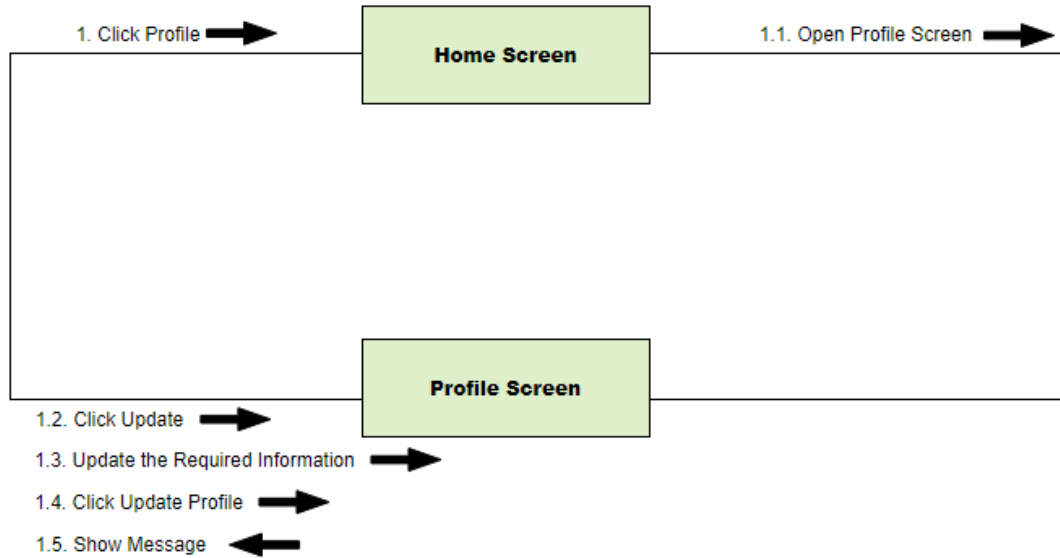
3.6 Database Diagram



Figure# 42 Database Diagram

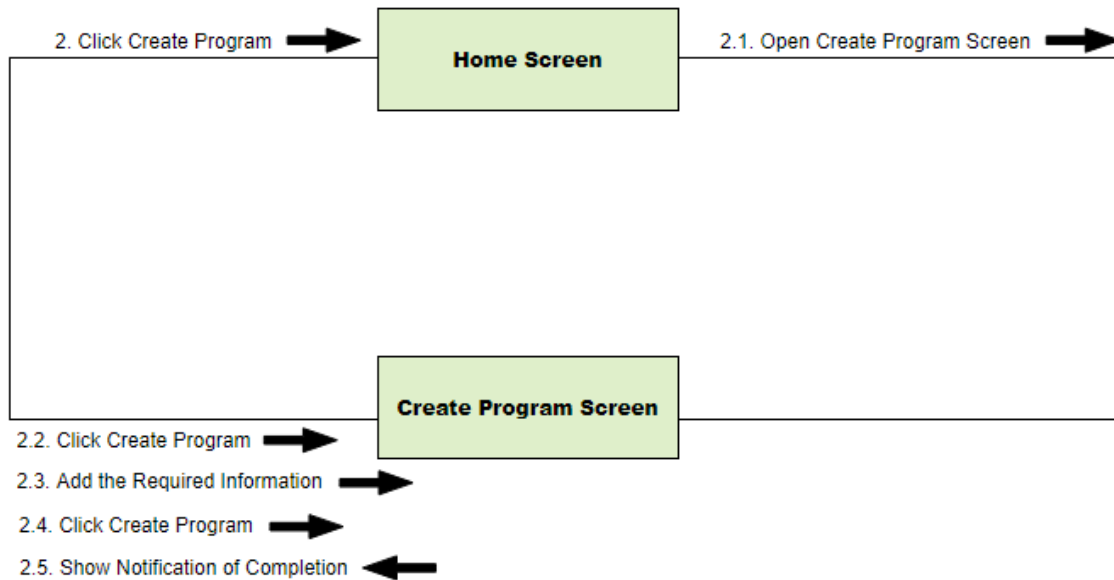
3.7 Collaboration Diagram

3.7.1 Update Profile



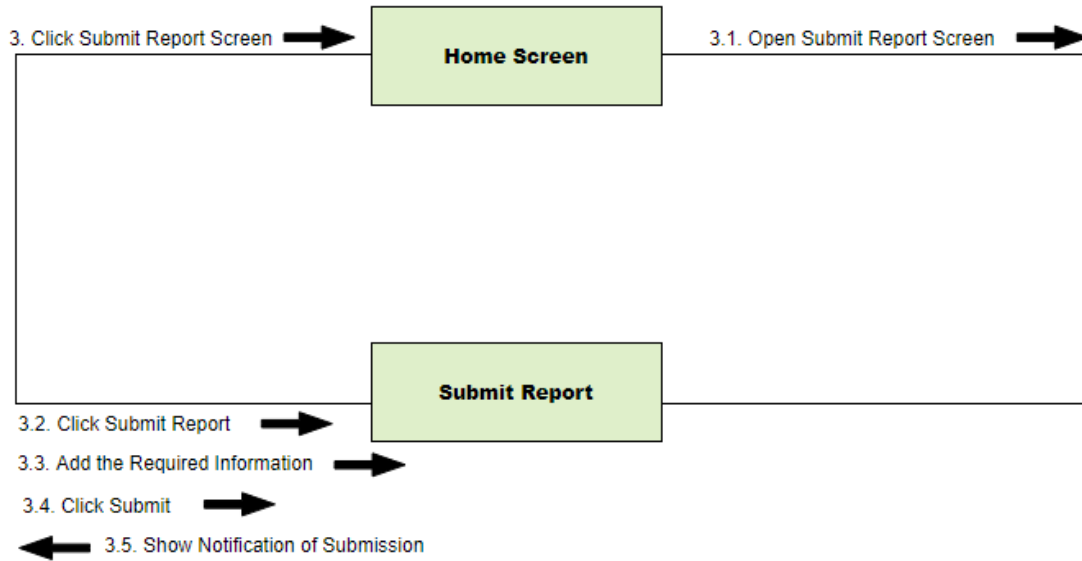
Figure# 43 Update Profile Collab Diagram

3.7.2 Create Program



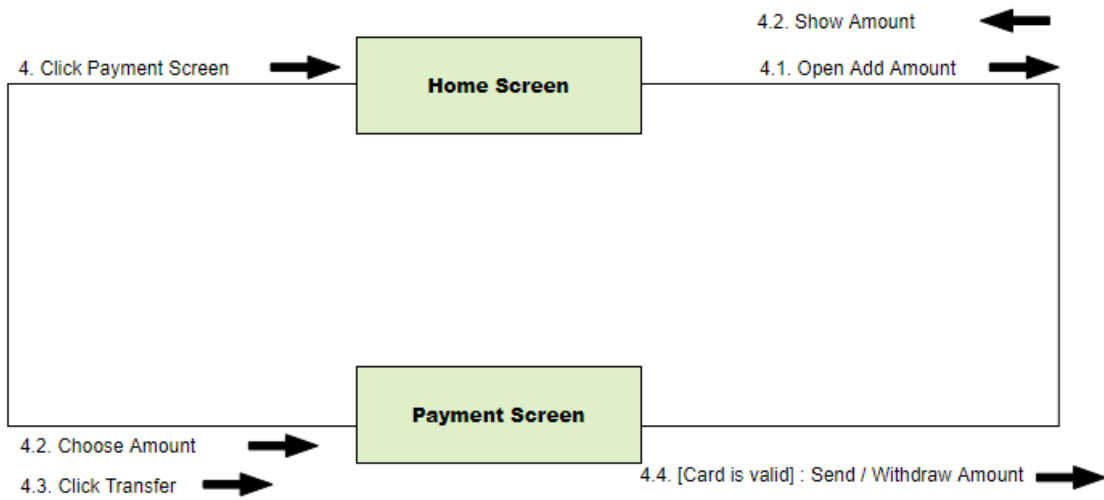
Figure# 44 Create Program Collab Diagram

3.7.3 Submit a Report



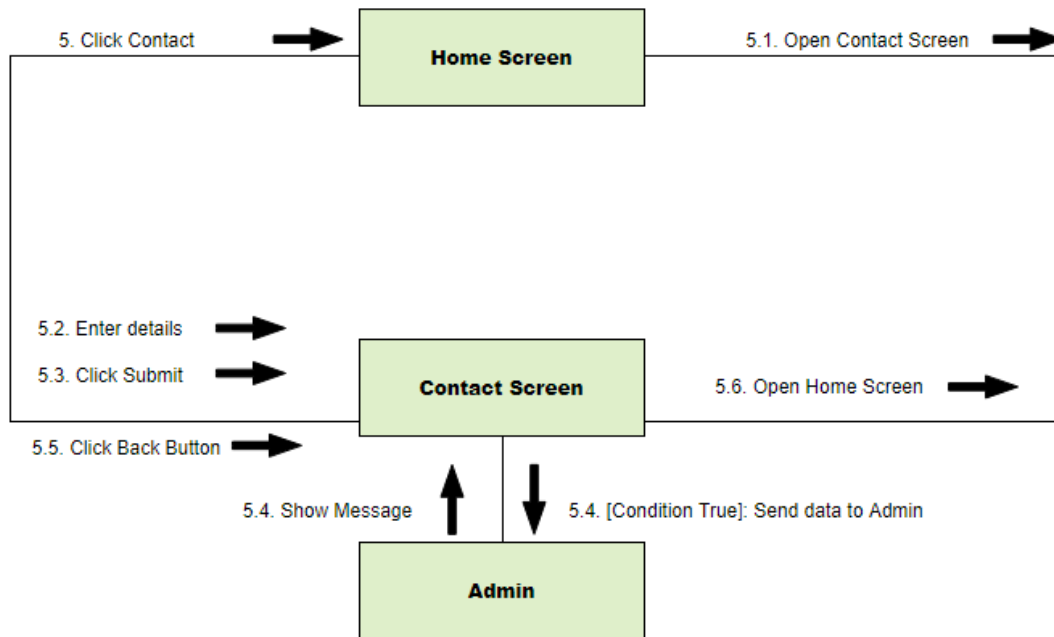
Figure# 45 Submit Report Collab Diagram

3.7.4 Payment



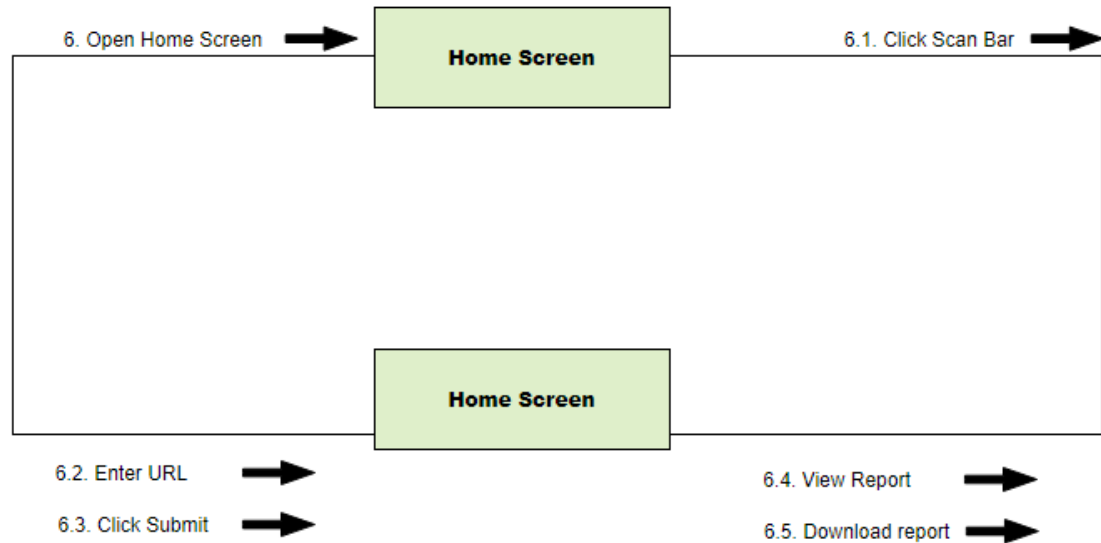
Figure# 46 Payment Collab Diagram

3.7.5 Contact and Support



Figure# 47 Contact and Support Collab Diagram

3.7.6 Vulnerability Scanner

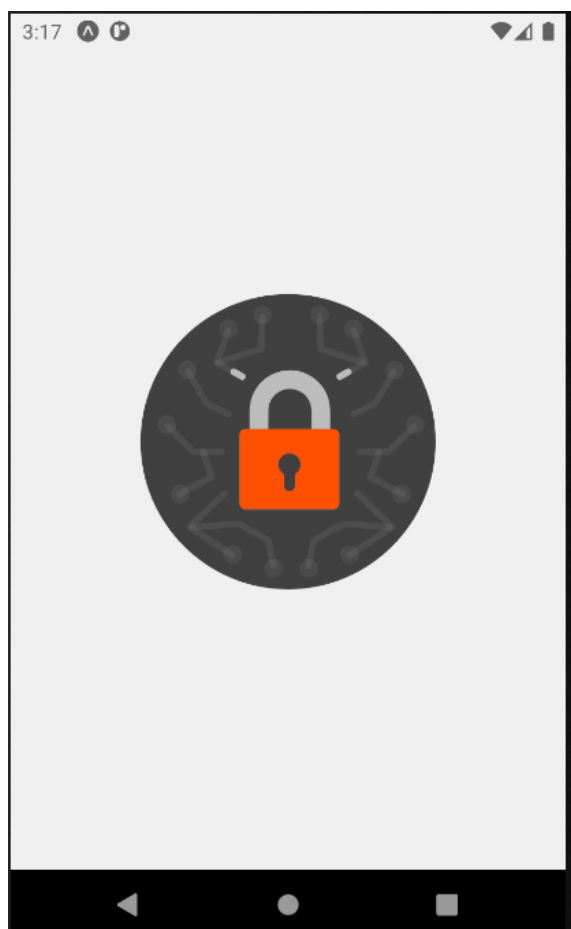


Figure# 48 Vulnerability Scanner Collab Diagram

3.8 [[HIGH]] Fidelity Prototypes

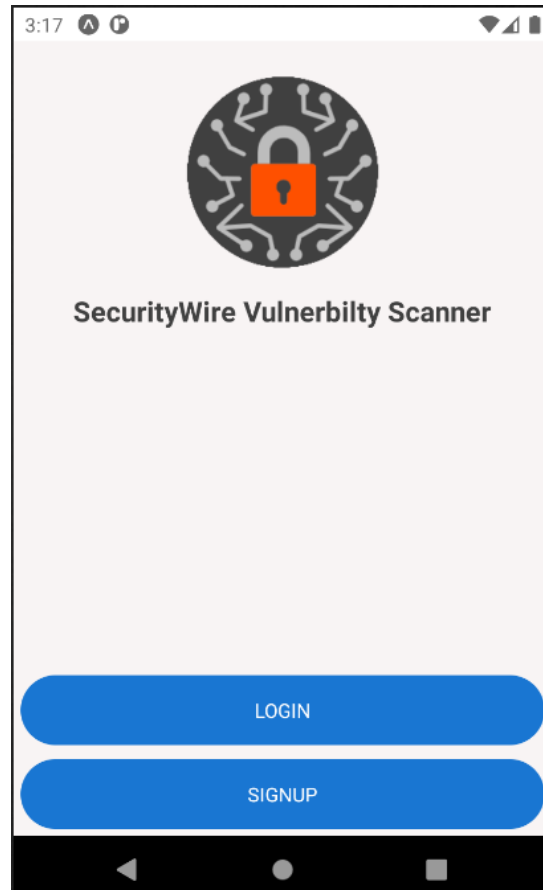
Mobile Application:

3.8.1 Welcome Screen



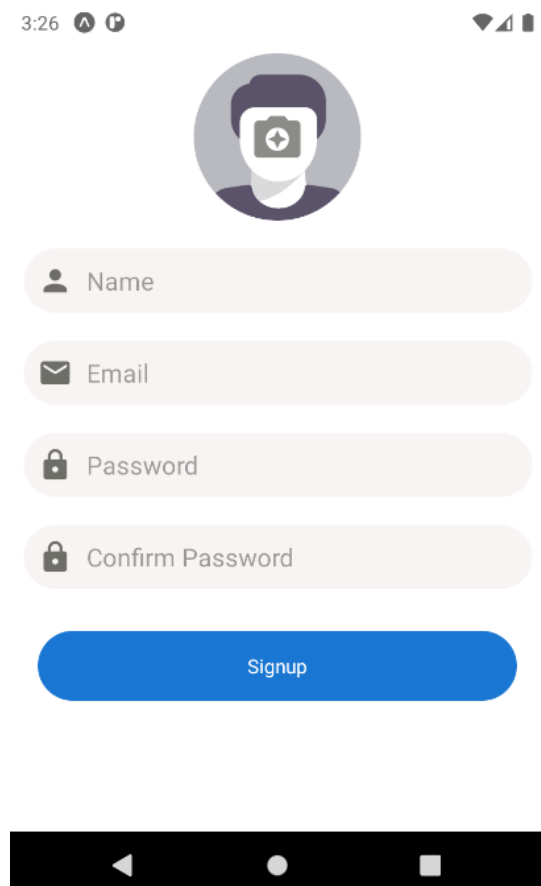
Figure# 49 Welcome Screen (App)

3.8.2 Home Screen



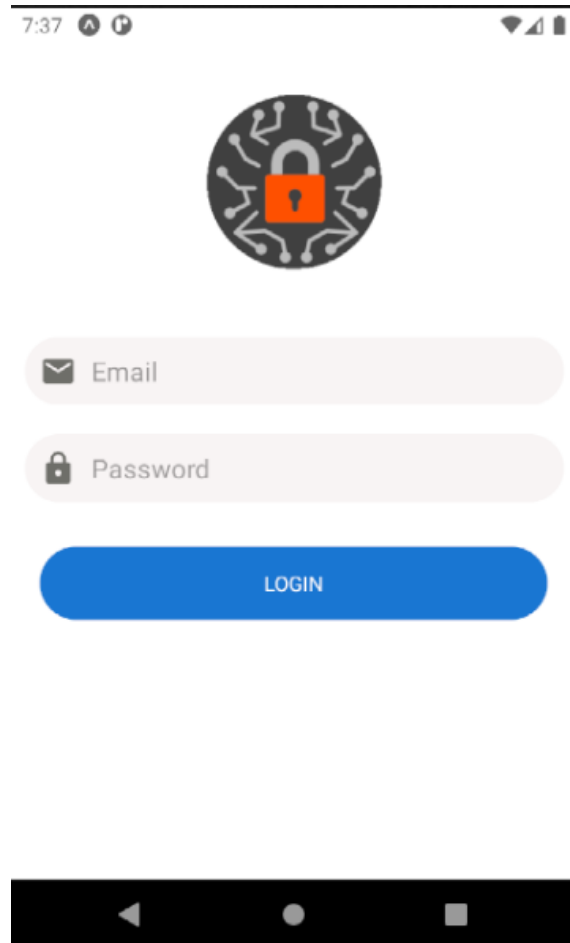
Figure# 50 Home Screen (App)

3.8.3 Signup Screen



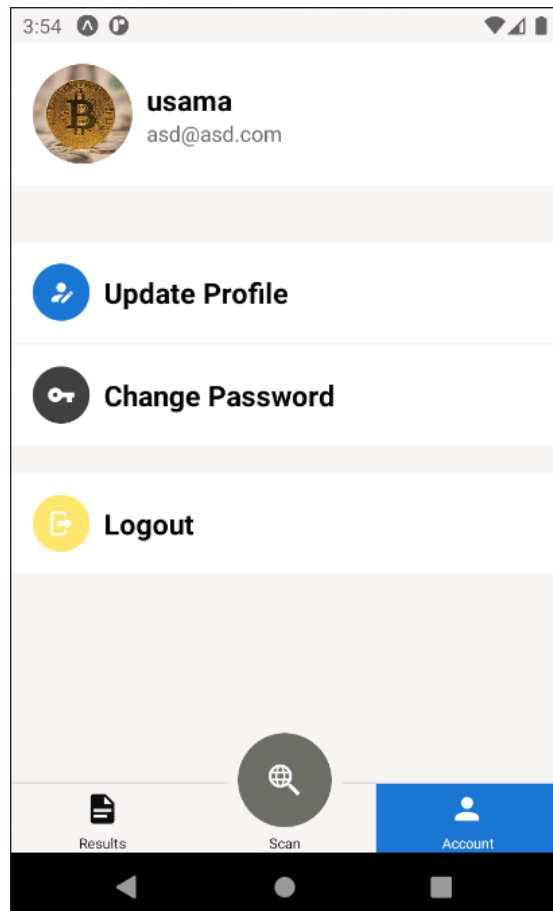
Figure# 51 Signup Screen (App)

3.8.4 Login Screen



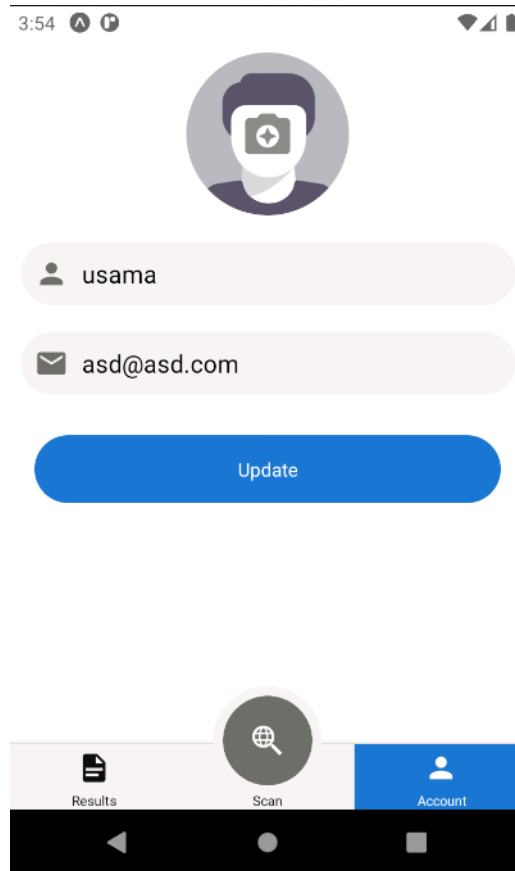
Figure# 52 Login Screen (App)

3.8.5 Account Screen



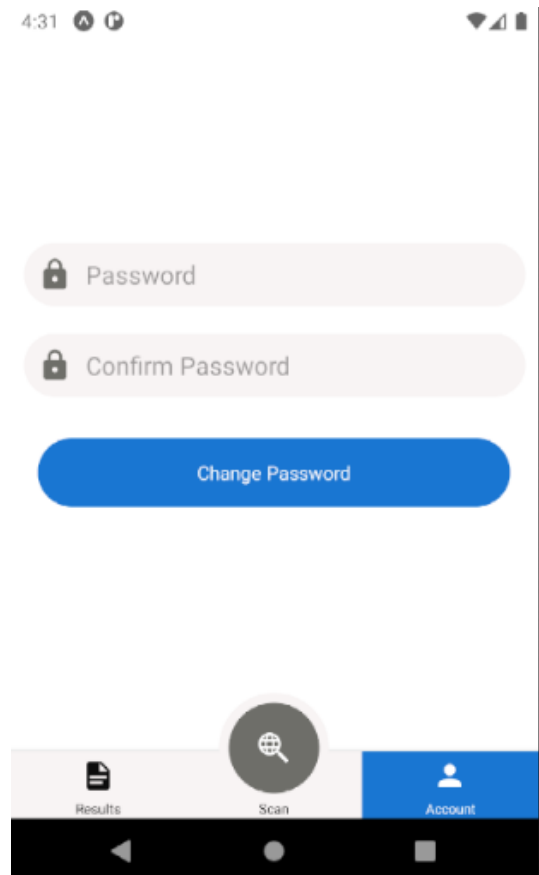
Figure# 53 Account Screen (App)

3.8.6 Update Profile Screen



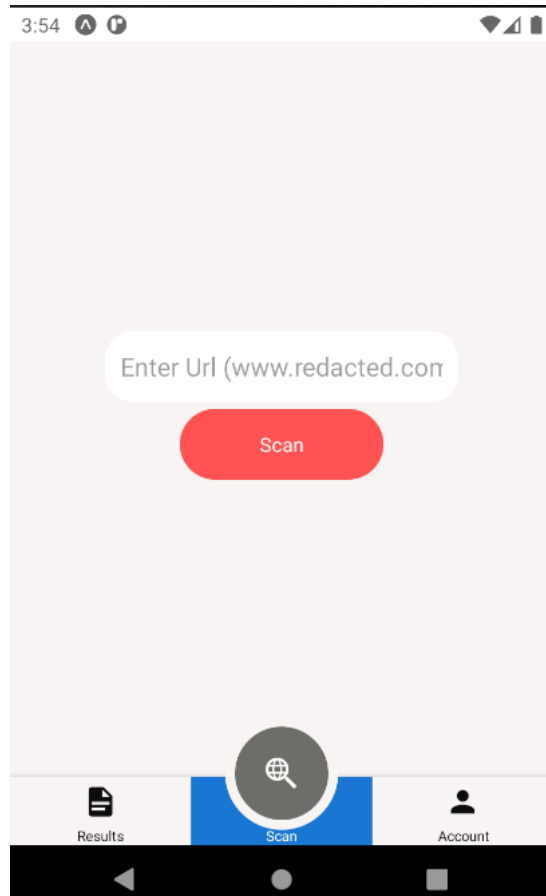
Figure# 54 Update Profile Screen (App)

3.8.7 Change Password Screen



Figure# 55 Change Password Screen (App)

3.8.8 Scanner Screen



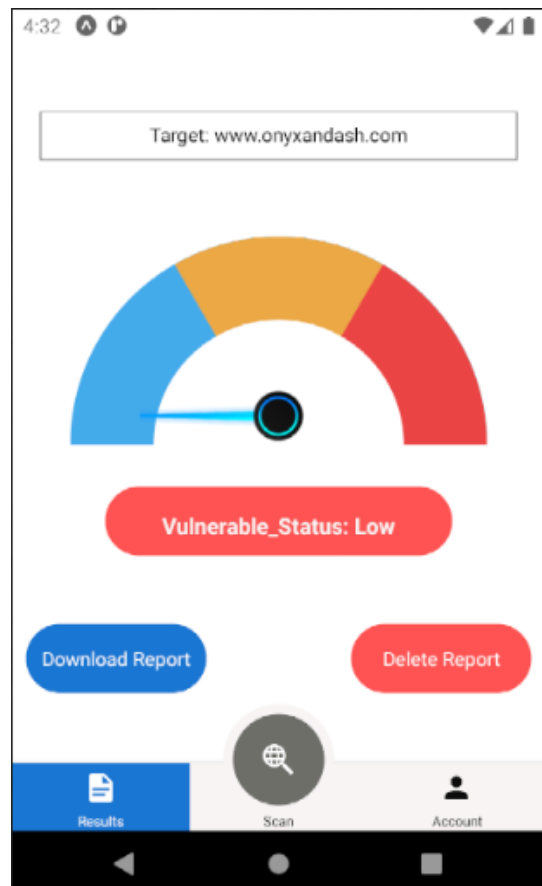
Figure# 56 Scanner Screen (App)

3.8.9 Scan Results Screen



Figure# 57 Scan Results Screen (App)

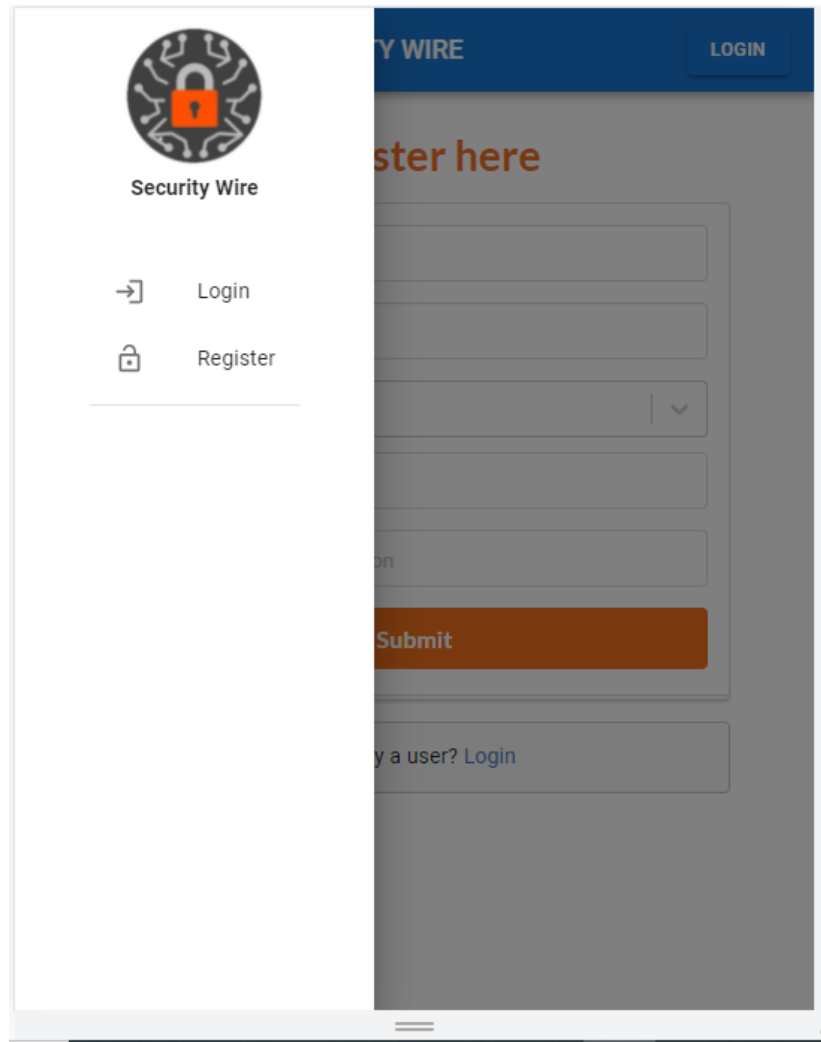
3.8.10 Report Screen



Figure# 58 Report Screen (App)

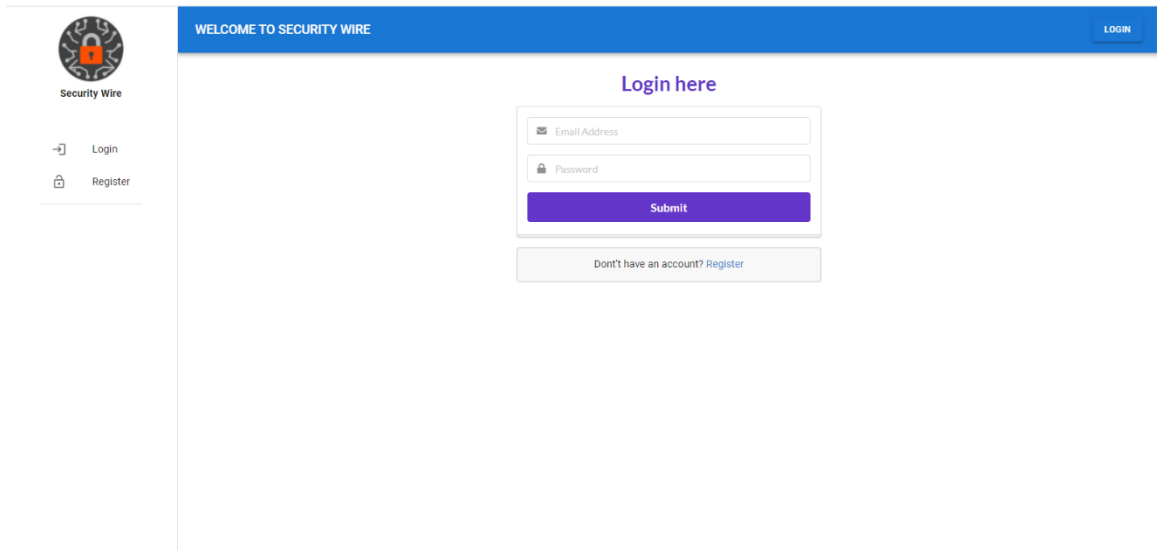
Website Application:

3.8.11 Responsive Navigation bar



Figure# 59 Responsive Navigation (Web)

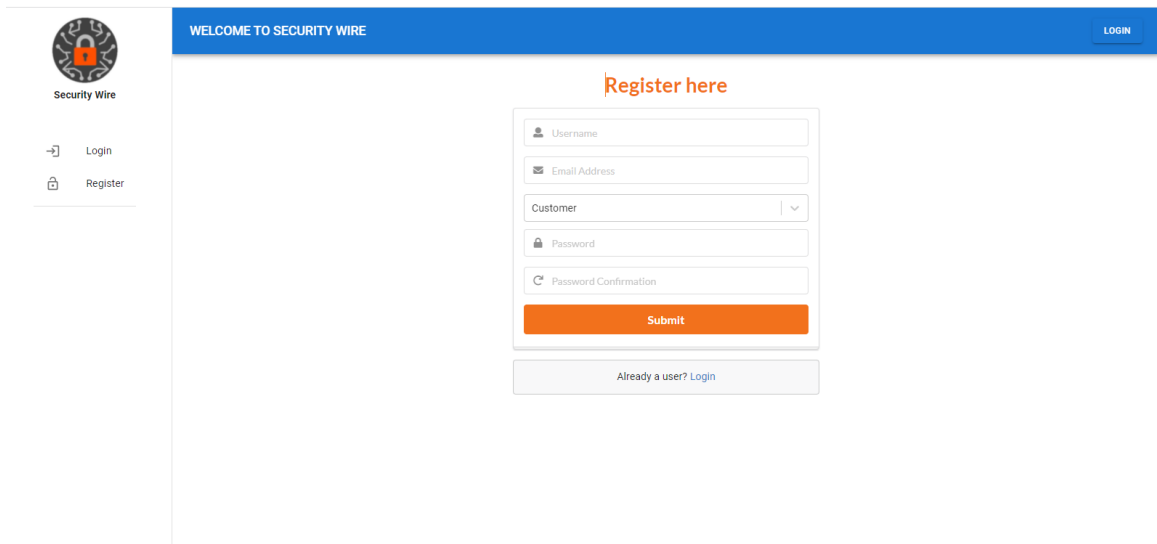
3.8.12 Login Screen



The screenshot shows the login interface for Security Wire. On the left is a sidebar with the Security Wire logo and links for Login and Register. The main header is blue with the text 'WELCOME TO SECURITY WIRE' and a 'LOGIN' button. The central area is titled 'Login here' and contains a form with fields for 'Email Address' and 'Password', a 'Submit' button, and a link for users who don't have an account to 'Register'.

Figure# 60 Login Screen (Web)

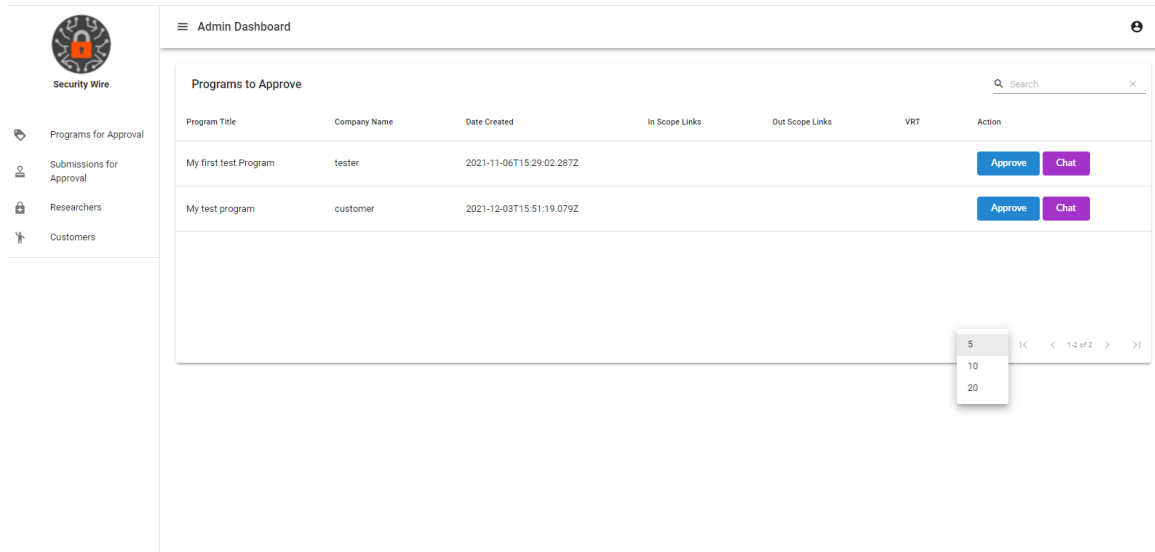
3.8.13 Register Screen



The screenshot shows the registration interface for Security Wire. The layout is consistent with the login screen. The sidebar and header remain the same. The central area is titled 'Register here' and contains a form with fields for 'Username', 'Email Address', 'Customer' (a dropdown menu), 'Password', and 'Password Confirmation'. It includes an orange 'Submit' button and a link for existing users to 'Login'.

Figure# 61 Register Screen (Web)

3.8.14 Admin Dashboard



Admin Dashboard

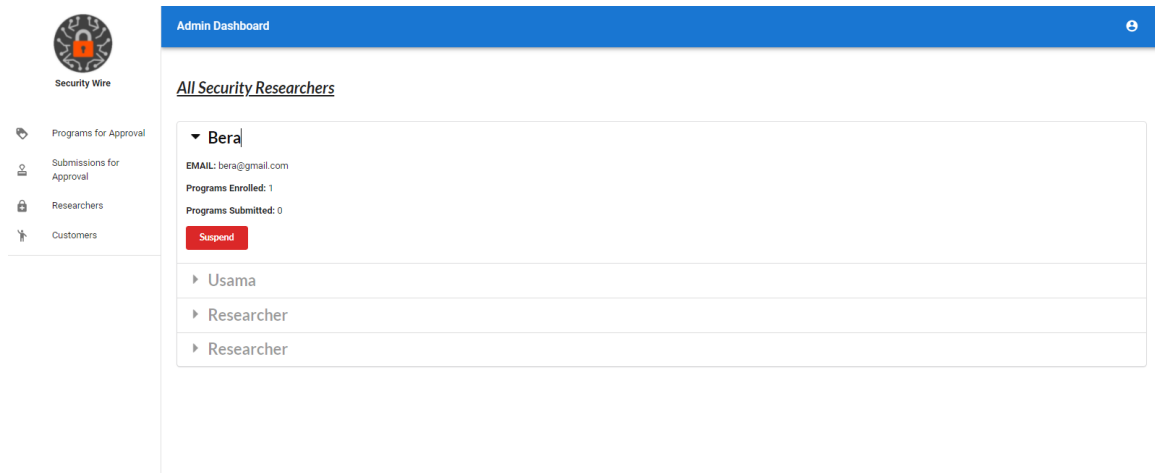
Programs to Approve

Program Title	Company Name	Date Created	In Scope Links	Out Scope Links	VRT	Action
My first test Program	tester	2021-11-06T15:29:02.287Z				Approve Chat
My test program	customer	2021-12-03T15:51:19.079Z				Approve Chat

Search

5
10
20

Figure# 62 Admin Dashboard-1 (Web)



Admin Dashboard

All Security Researchers

▼ Bera

EMAIL: bera@gmail.com

Programs Enrolled: 1

Programs Submitted: 0

[Suspend](#)

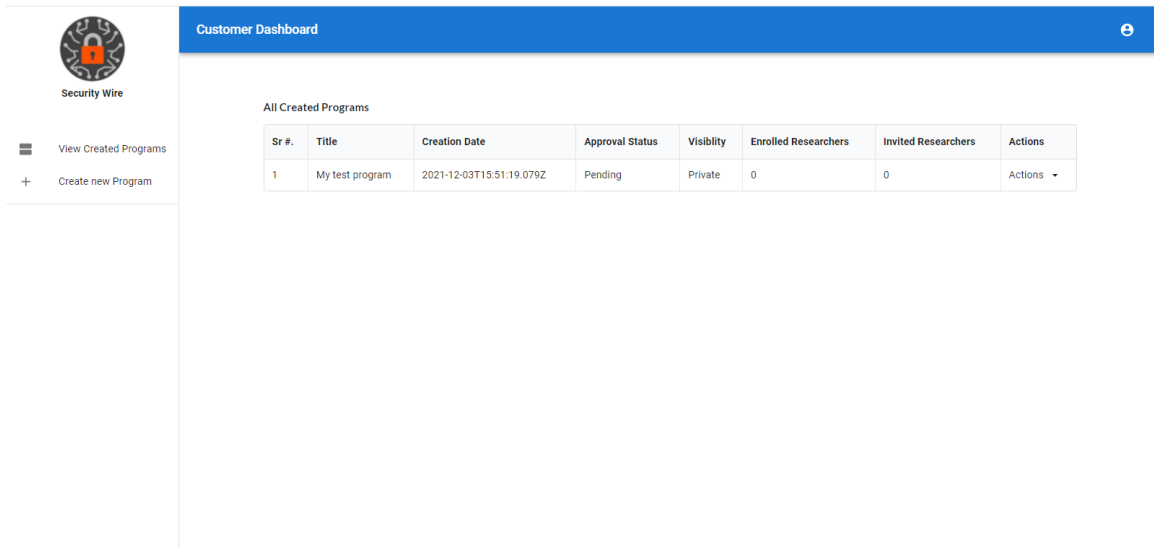
► Usama

► Researcher

► Researcher

Figure# 63 Admin Dashboard-2 (Web)

3.8.15 Customer Dashboard

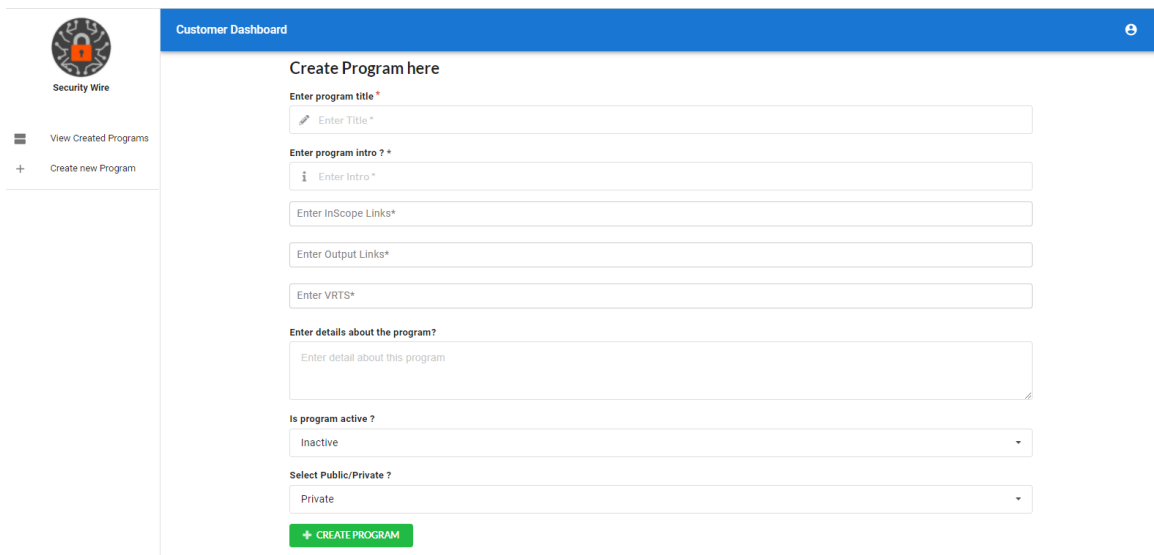


The screenshot shows the Security Wire Customer Dashboard. On the left is a sidebar with the Security Wire logo and two menu items: "View Created Programs" and "Create new Program". The main content area has a blue header "Customer Dashboard" with a user icon. Below the header, it says "All Created Programs" and displays a table with one program entry.

Sr #.	Title	Creation Date	Approval Status	Visibility	Enrolled Researchers	Invited Researchers	Actions
1	My test program	2021-12-03T15:51:19.079Z	Pending	Private	0	0	Actions

Figure# Customer Dashboard (Web)

3.8.16 Customer Create Program



The screenshot shows the Security Wire Customer Create Program form. The sidebar is the same as in the previous figure. The main content area has a blue header "Customer Dashboard" with a user icon. Below the header, it says "Create Program here". The form contains several input fields and dropdowns for creating a new program.

Create Program here

Enter program title *

Enter Title *

Enter program intro ? *

Enter Intro *

Enter InScope Links*

Enter Output Links*

Enter VRTS*

Enter details about the program?

Enter detail about this program

Is program active ?

Inactive

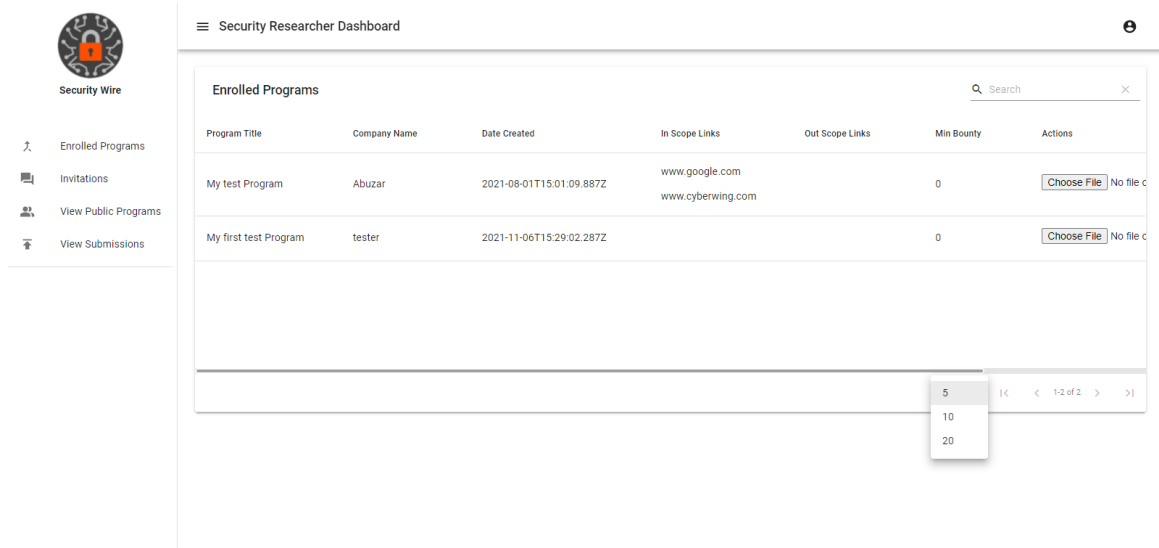
Select Public/Private ?

Private

+ CREATE PROGRAM

Figure# 65 Customer Create Program (Web)

3.8.17 Researcher Dashboard



Security Wire

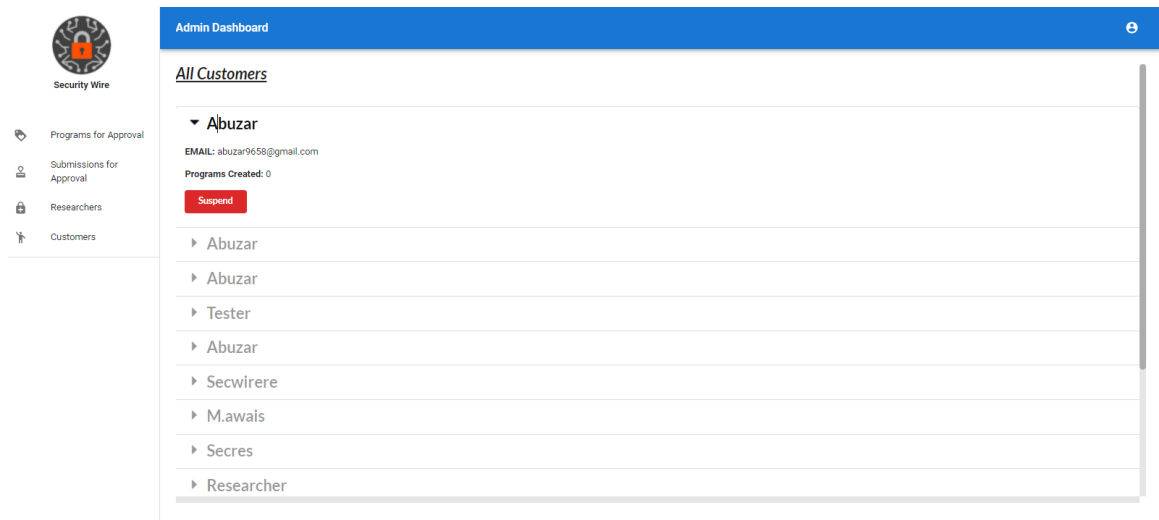
Security Researcher Dashboard

Enrolled Programs

Program Title	Company Name	Date Created	In Scope Links	Out Scope Links	Min Bounty	Actions
My test Program	Abuzar	2021-08-01T15:01:09.887Z	www.google.com www.cyberwing.com		0	Choose File No file c
My first test Program	tester	2021-11-06T15:29:02.287Z			0	Choose File No file c

5 |< < 1-2 of 2 > >|

Figure# 66 Researcher Dashboard-1 (Web)



Security Wire

Admin Dashboard

All Customers

▼ Abuzar

EMAIL: abuzar9658@gmail.com

Programs Created: 0

[Suspend](#)

- ▶ Abuzar
- ▶ Abuzar
- ▶ Tester
- ▶ Abuzar
- ▶ Secwirere
- ▶ M.awais
- ▶ Secres
- ▶ Researcher

Figure# 67 Researcher Dashboard-2 (Web)

3.8.18 Frontend Validation

The screenshot shows a web login form titled "Login here" in purple. It features a text input field with an email icon and the text "researcher". Below the input field, a yellow error message box with an exclamation mark icon contains the text: "Please include an '@' in the email address. 'researcher' is missing an '@'." Below the error message is a purple "Submit" button. At the bottom of the form is a light gray button with the text "Don't have an account? Register".

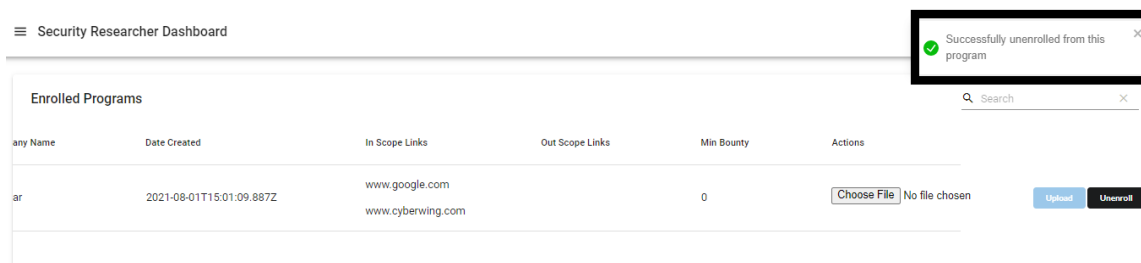
Figure# 68 Frontend Validation Screen (Web)

3.8.19 Backend Validation

The screenshot shows a web login form titled "Login here" in purple. It features two text input fields: the first with an email icon and the text "researcher@ymail.com", and the second with a password icon and a series of dots. Below the input fields is a purple "Submit" button. Below the "Submit" button is a light red error message box with the text: "Error" in bold, followed by "Incorrect email or password". At the bottom of the form is a light gray button with the text "Don't have an account? Register".

Figure# 69 Report Screen (Web)

3.8.20 Server Response



Figure# 70 Server Response Screen (Web)

CHAPTER #4

SYSTEM TESTING



4 SYSTEM TESTING

4.1 TEST_CASES

For mobile application:

4.1.1 Test-case:1

Test Scenario ID	Begin Application	Test_Case_ID	TC-01		
Test Case Description	Begin Application test case	Test Priority	Medium		
Pre_Requisite	Application should be installed.	Post Requisite	Access to Application		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Start Application	Click on the app	Application starts	Application starts	Pass

Table 52 Test_case # 1

SECURITY WIRE

4.1.2 Test-case:2

Test Scenario ID	Register User	Test_Case_ID	TC-02		
Test Case Description	Register User test case	Test Priority	High		
Pre_Requisite	Application should start working.	Post Requisite	New customer will be created.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Click Signup from home page.	Click Signup	Opens form to fill.	Opens form to fill.	Pass
2	Enter the information on the form.	Enter details and password.	Creates a new account.	Creates the user account.	Pass

Table 53 Test_case # 2

SECURITY WIRE

4.1.3 Test-case:3

Test Scenario ID	User Login	Test_Case_ID	TC-03		
Test Case Description	User Login test case	Test Priority	High		
Pre_Requisite	A User should be registered first.	Post Requisite	User gets logged in into the application.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Launch the Application.	Click on the app icon.	A home page will appears.	Homepage appears on screen.	Pass
2	Click on the Login button from the home page.	Click Login	A login form will be generated.	A login form appears.	Pass
3	Enter all details and click login.	Give user name and passcode and click Login.	Fill the details and move forward to verify.	Move forward to verify the details.	Pass
4	Verify details	Verify details from database.	User will login into the account.	User logins into the account.	Pass

Table 54 Test -case # 3

SECURITY WIRE

4.1.4 Test-case:4

Test Scenario ID	Scan a website.	Test_Case_ID	TC-04		
Test Case Description	Scan Website test case	Test Priority	High		
Pre_Requisite	First, the user should get logged in into the app.	Post Requisite	Website will be scanned for vulnerabilities.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Launch the application.	Click on App icon	App will be launched.	The app opens	Pass
2	Login the account.	Click Login and enter details	User will login into the account.	User logs in.	Pass
3	Enter the website URL and click the scan button.	Enter URL and tap Scan button.	The website will start scanning.	Website starts getting scanned.	Pass

Table 55 Test_case # 4

SECURITY WIRE

For Website:

4.1.5 Test-case:5

Test Scenario ID	Client Register	Test_Case_ID	TC-05		
Test Case Description	Client Register test case	Test Priority	High		
Pre_Requisite	Visit the website	Post Requisite	New Client will be registered.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Visit homepage of website and click on Register.	Click on Register button.	A form will be opened.	A new form opens.	Pass
2	Enter all the details and fill the form.	Enter all details.	The details enter.	Detail entering.	Pass
3	Choose Client from the option to register as a client and submit	Click on Client option and then submit button.	User will be registered as client.	User gets registered as client	Pass

Table 56 Test_case # 5

SECURITY WIRE

4.1.6 Test-case:6

Test Scenario ID	Register Researcher	Test_Case_ID	TC-06		
Test Case Description	Register researcher test case	Test Priority	High		
Pre_Requisite	Visit the website	Post Requisite	New Researcher will be registered.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Visit homepage of website and click on Register.	Click on Register button.	A form will be opened.	A new form opens.	Pass
2	Enter all the details and fill the form.	Enter all details.	The details enter.	Detail entering.	Pass
3	Choose Researcher from the option to register as a client and submit	Click on Researcher option and then submit button.	User will be registered as security researcher.	User gets registered as security researcher	Pass

Table 57 Test_case # 6

SECURITY WIRE

4.1.7 Test-case:7

Test Scenario ID	Create Program	Test_Case_ID	TC-07		
Test Case Description	Create Program test case	Test Priority	High		
Pre_Requisite	Client should be logged in.	Post Requisite	New program will be created.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Click on Login from the homepage.	Click on Login button	A form will appear	Login form appears	Pass
2	Enter details and click login.	Details entering and clicking Login	User will login into the account once details are verified.	User gets logged in	Pass
3	From dashboard, click on Create Program option.	Click on Create Program	A form will appear to enter details of program.	The form appears	Pass
4	Enter the details of the program to create and click on Create Program button.	Enter every details required and click button.	A program should be created.	The program has created.	Pass

Table 58 Test_case # 7

SECURITY WIRE

4.1.8 Test-case:8

Test Scenario ID	Submit Report	Test_Case_ID	TC-08		
Test Case Description	Submit Report test case	Test Priority	High		
Pre_Requisite	Researcher should be logged in.	Post Requisite	A report for the related program will be submitted.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Click on Login from the homepage.	Click on Login button	A form will appear	Login form appears	Pass
2	Enter details and click login.	Details entering and clicking Login	User will login into the account once details are verified.	User gets logged in	Pass
3	From dashboard, click on Choose File.	Click on choose file button.	User can choose and upload file	User will select and upload file	Pass
4	Click on Upload button.	Click Upload	A report will be submitted.	The user submits the report for the program	Pass

Table 59 Test_case # 8

SECURITY WIRE

4.1.9 Test-case:9

Test Scenario ID			Approve Program	Test_Case_ID	TC-09		
Test Case Description			Approve Program test case	Test Priority	High		
Pre_Requisite			Admin should be logged in.	Post Requisite	A program will be approved.		
Sr No.			Action	Input	Expected Output	Actual Output	Test Result
1			Click on Login from the homepage.	Click on Login button	A form will appear	Login form appears	Pass
2			Enter details and click login.	Details entering and clicking Login	Admin will login into the account once details are verified.	Admin gets logged in	Pass
3			From dashboard, click on Programs for approval.	Click on Programs for Approval	Admin can see all the programs to approve.	Admin looks at programs to approve	Pass
4			Click on Approve button.	Click Approve	A program will be approved	Admin approves a program	Pass

Table 60 Test_case # 9

SECURITY WIRE

4.1.10 Test-case:10

Test Scenario ID	Approve Submission	Test_Case_ID	TC-10		
Test Case Description	Approve Submission test case	Test Priority	High		
Pre_Requisite	Admin should be logged in.	Post Requisite	A submission will be approved.		
Sr No.	Action	Input	Expected Output	Actual Output	Test Result
1	Click on Login from the homepage.	Click on Login button	A form will appear	Login form appears	Pass
2	Enter details and click login.	Details entering and clicking Login	Admin will login into the account once details are verified.	Admin gets logged in	Pass
3	From dashboard, click on Submissions for approval.	Click on submissions for Approval	Admin can see all the submissions to approve.	Admin looks at submissions to approve	Pass
4	Click on Approve button.	Click Approve	A submission will be approved	Admin approves a submission	Pass

Table 61 Test_case # 10

4.2 Unit Testing

For the unit testing, we have tested all the modules independently before integrating them. On different inputs we have tested the modules and their expected outputs. After that we resolved the bugs that existed.

4.3 Integration Testing

For the integration testing, we have combined all the dependent modules and again tested them. We linked and checked the front end with backend and then solved all the minor issues.

5 Conclusion

5.1 Problems Faced and Lessons Learned

The project includes a lot of API work and integration of API's with Admin Website, using web sockets for real-time communication, Mobile App and payment features.

Following are some major problems:

- ✓ Analyzing the requirements to build the Application.
- ✓ Time Management.
- ✓ Difficulty making our system real-time.
- ✓ Determining correct Development Tools and technology.
- ✓ Analyzing the project scope according to market value.

5.2 Project Summary

The security of websites and mobile applications is essential to hold back the hackers and cyber criminals away from getting sensitive data. With a proactive security, our project SecurityWire will help local and international organizations to keep their websites and applications secure by using our automated and manual scanner. Automated scanner cannot find all logical vulnerabilities in any web application. Therefore, bug bounty programs are introduced to do the manual scanning. Security researchers around the globe will be able to participate in bug bounty programs via our platform.

5.3 Future_Work

In the future, we have decided to reduce admin responsibilities of verifying programs and reports before sending them to the customer. And for this, we are planning to use Deep NLP techniques. Apart from this, we will add more vulnerabilities to the scanner and make it faster and efficient by using Artificial intelligence. The manually submitted reports will become a dataset for the scanner Ai model. Lastly, the enhanced WAF (Web Application Firewall) bypass or protection bypass mechanism scanner will also support vulnerability management for all Android and IOS applications.

6 References

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