



American International University-Bangladesh (AIUB)
Department of Computer Science
Faculty of Science & Technology (FST)

Urban Crime Detection and Public Safety System

A Software Quality and Testing Project Submitted
 By

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The project will be Evaluated for the following Course Outcomes

EVALUATION CRITERIA	Total Marks (50)	
Revision History, Test Plan Identifier, Reference Materials, Problem Background, Solutions	[10 Marks]	
Requirements Specification (System feature, Quality Attributes, System Interface, Project Requirements)	[10 Marks]	
Item Not to be tested, Testing approach (Testing levels, tools, meetings), Test cases	[10 Marks]	
Item pass/fail criteria, Test deliverables, Staffing and Training, Responsibilities, Scheduling, Risk	[10 Marks]	
Approval, Format, Submission, and Defense	[10 Marks]	

Software Test Plan

for

Urban Crime Detection and Public Safety System

Version 1.0 approved.

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AIUB

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Revision History

Revision	Date	Updated by	Update Comments
0.1	2023.12.24	Afrin Saidatun Neshat, Al Fesani	First Draft

1. TEST PLAN IDENTIFIER: UCDPS-TP01.1

2. REFERENCE MATERIALS

[1] S. H. Sifat, "Crime Statistics of Bangladesh (2010-2019)," LinkedIn, [Online]. Available: <https://www.linkedin.com/pulse/crime-statistics-bangladesh-2010-2019-sajid-hasan-sifat>

[2] Goya, X. Zhang, K. Kitayama, and I. Nagayama, "A Method for Automatic Detection of Crimes for Public Security by Using Motion Analysis," in *2009 Fifth International Conference on Intelligent Information Hiding and Multimedia Signal Processing*, Kyoto, Japan, 2009, pp. 736-741, doi: 10.1109/IIH-MSP.2009.264.

3. INTRODUCTION

3.1 Background to the Problem

Crime rates in urban areas around the world are increasing, posing significant challenges to public safety and law enforcement agencies. Bangladesh is a developing country and like many other countries experiencing rapid urbanization, is confronted with a pressing challenge in the form of rising crime rates in its urban areas. Traditional policing methods are struggling to keep up with the evolving nature of criminal activities due to dense and rapidly growing urban populations, as well as a variety of socioeconomic factors. According to crime statistics of Bangladesh (2010-2019), Dhaka Metropolitan Police and Chittagong Metropolitan Police have the highest total cases, indicating higher crime rate in these areas. In 2018, the total number of cases in were 221419.[1]

One of the root causes contributing to this problem is the rapid urbanization experienced by Bangladesh in recent years. As people migrate to urban areas in search of better economic opportunities, the resulting overcrowded cityscapes become breeding grounds for various forms of criminal activities. Furthermore, economic imbalances and unemployment worsen societal difficulties, making it easier for criminal forces to grow. In 2018 the murder cases were increased by 8% over the year 2017. Women and child repression were one of the major crime issues which has 15.98% of the overall crime category. [1] Due to a lack of real-time data and actionable information, Bangladesh's traditional reactive law enforcement faces difficulty in addressing criminal activity beyond geographical bounds. Addressing this issue is essential for public safety, citizen well-being, and the stability of urban communities, and it requires a proactive, technologically sophisticated approach.

3.2 Solution to the Problem

In response to the rapid increasing crime and public safety issues, this report dedicates to build and deploy a strong Urban Area Crime Detection and Public Safety System. Using cutting-edge technologies like artificial intelligence, data analytics, and sensor networks, law enforcement agencies may better anticipate, identify, and respond to criminal activity. The

project proposes to create an artificial intelligence-based mobile application in which citizens can report crimes to a nearby police station, a local NGO, a local government organization, or a public safety organization. The system can also learn about the types of crimes using artificial intelligence and data analysis. A paper published by IEEE “A Method for Automatic Detection of Crimes for Public Security by Using Motion Analysis” (2009) states A Public Safety System (PSS) is an automated video surveillance system for crime scene detection, utilizing statistical characteristics to classify video streams into criminal and non-criminal scenes, detecting unusual situations and automatically reporting to agencies.[2]

A citizen can be knowledgeable about crime hotspots near him using mobile application, which will aid in his alertness. One of the essential features would be if a citizen witnesses a crime or witnesses criminal behavior, he can contact the local police station by sending text messages, capturing images or video clips, transmitting voice clips, or pushing a button in the application. The Police Station will then take the next actions. This technology would also be able to detect other forms of crimes by reading information given by citizens about their perceptions. A user can also send a message for assistance to a loved one or request for security while going from one location to another via location sharing.

4. REQUIREMENT SPECIFICATION

4.1 System Features

1. System Login Functional Requirements

- 1.1 Users will be able to log in to the software using username and password.
- 1.2 The system will create a random verification code to attempt login if the username and/or password have been entered incorrectly more than three times. The user can also get verification code via phone number or email if he forgets his password.
- 1.3 The system will prevent a user account from being logged in for one hour if they attempt to log in more than five times.

Priority Level: High

Precondition: Valid username and password.

Cross reference: 2

2. Register Functional Requirements

- 2.1 Every new user registering on the software will be able to create an account with their NID, username, password, email address, Address, and phone number.
- 2.2 The password must have more than eight characters, including capital, lowercase, digits, and special symbols. The username may only have letters and numbers.
- 2.3 NID will be verified through scanning and NID number validation.
- 2.4 A phone number need to have eleven characters.

2.5 The user will not be able to register if any of the fields are left empty.

Priority Level: High

Precondition: Users must have a valid email/phone number, full-fill every field of the registration page.

Cross Reference: None

3. Local Area Information

Functional Requirements

3.1 A user will have access to basic data about the location where they are.

3.2 Users get access to information about nearby red zones and crime rates.

3.3 The user can check the nearest police stations and public safety organizations and contact the local police station.

Priority Level: Medium

Precondition: Turn on location

Cross Reference: None

4. Internal City Different crystal crime Zones Information

Functional Requirements

4.1 The user can learn about the city's high-crime areas and areas that are at risk.

4.2 The user can also be aware of areas with low crime rates.

4.3 The user can view the highest crime rate, the cause, and how to receive help from authorized officials.

Priority level: Medium

Precondition: User must input valid city.

Cross Reference: 3.1, 3.2

5. Find Family and friends.

Functional Requirements

5.1 The option to "find family and friends" will be available to users in an emergency or when they become lost. By using this option, they can locate friends or family members nearby.

5.2 Within the Find relatives and friends section, there are two options.

- i. I lost my way: This will assist the user in locating his closest friends or family.
- ii. Track my friends and family: This feature be beneficial if user have any friends or family members who needs help or in danger. It will first ask for their name and then send a message. The user can seek for assistance at that person's closest support center if they haven't heard back from anybody within ten minutes.

Priority level: High

Precondition: Device location should be turned on and family member should be added to the application.

Cross Reference: 6.1

6. Location Sharing Functional Requirements

- 6.1 In the event of an emergency dangerous situation, the user can share his whereabouts with his parents, friends, and the local police station.
- 6.2 The software will provide a location sharing feature that allows the user to share their current position.
- 6.3 The user's every step is monitored when this option is on, and in the event of an emergency, the location can be forwarded to the user's parents, friends, and the local police department.
- 6.4 The phone will automatically disclose its last location if the battery runs out and it switches off.

Priority level: High

Precondition: Device location should be turned on.

Cross Reference: 5

7. Help Alert Functional Requirements

- 7.1 A "Help Alert" function that enables users to transmit distress signals or ask for help in an emergency is built into the software.
- 7.2 When the user triggers the "Help Alert," the system need to swiftly alert local emergency services and law enforcement to their whereabouts.
- 7.3 The system must give users the ability to designate the type of emergency (medical, safety danger) when they initiate a "Help Alert."
- 7.4 Law enforcement officers who get the alert ought to have access to the user data, such as medical background or unique circumstances.
- 7.5 A real-time tracking system should be activated by the "Help Alert" so that authorities can keep an eye on the user's whereabouts until help arrives.
- 7.6 The system ought to confirm the cancellation if the user tries to stop the "Help Alert" within the specified time frame, to avoid unintentional activations.

Priority level: High

Precondition: Device location should be turned on.

Cross Reference: 6

8. Snatching Alert Functional Requirements

- 8.1 Automatic Detection: Upon a user's entry into a high-snatching area, the feature will automatically detect.
- 8.2 User Notification: When a user enters a high-snatching region, they will be notified visually and with a discreet vibrating alarm. They can adjust the settings for this feature.

8.3 Emergency Assistance: To provide users with immediate assistance, the application must have a "Notify Police" button that sends their position to the closest police station.

Priority level: Medium

Precondition: User valid information

Cross Reference: 6

9. Capture Crime Functional Requirements

9.1 A user can take a picture of the crime scene and email it to the police department.

9.2 By capturing this crime scene, the police will be able to identify the perpetrators.

9.3 The user will be presented with a capture choice. If they select it, their camera will open, allowing them to record the crime.

9.4 By scanning the image, this feature can occasionally also detect the weapon used in the crime.

9.5 The local police force can respond to the crime scene right away when it is reported to the police station.

Priority level: Medium

Precondition: User valid information

Cross Reference: 3,4

10. Drug Information Alert Functional Requirements

10.1 Reporting Suspected Drug Activity: If a user sees someone, a student or not, engaging in drug-related activity, they can report it to the police station.

10.2 Drug Supplier Identification: Users can submit information about those who are involved in the drug supply chain.

10.3 Easy-to-use Reporting Features: The application has a feature that allows users to report behaviors related to drugs. They will then be presented with three sub-options: Student Reports, Reporting on People in General, Covering Children on the Streets.

10.4 Information's destination: Information about reporting on students or street children will be sent to the neighborhood drug treatment facility. If reporting on the public, the data will be forwarded to the local law enforcement agency as well as rehabilitation center.

Priority level: Low

Precondition: Users must provide valid and accurate information when reporting suspected drug activities.

Cross Reference: 3,4

11. Intelligent Video Surveillance Functional Requirements

11.1 In order to effectively monitor security camera feeds, the system must use AI-based video analytics. Artificial intelligence systems will automatically examine camera footage, spotting irregularities and trends linked to questionable activity.

11.2 In order to guarantee timely identification and reaction to possible security concerns, the system must provide real-time processing of video data.

11.3 Users will have access to a central dashboard that shows real-time feeds and warnings produced by the intelligent video surveillance system, especially security professionals. To reduce false positives, the AI systems will be trained to discern between legitimate activity and possible security risks.

11.4 To reduce false positives, the AI systems will be trained to distinguish between legitimate activity and possible security risks.

11.5 When suspicious activity is detected, the system will send alerts or notifications to security staff, along with pertinent information and timestamps. For conducting a more thorough investigation, security professionals must be able to access and examine recorded video material connected to situations that have been identified.

11.6 In order to increase accuracy over time, the intelligent video surveillance system must constantly learn and modify its algorithms in response to user feedback and fresh data.

Priority level: Medium

Precondition: The system must be connected to surveillance cameras that can provide video feeds.

Cross Reference: 12

12. Predictive Policing Functional Requirements

12.1 Examine past crime data using machine learning techniques, paying particular attention to the kinds, occurrences, and locations of recorded incidents.

12.2 To guarantee accuracy and applicability, put into practice a prediction model that dynamically refreshes with fresh crime data on a regular basis.

12.3 Give law enforcement officers access to an easy-to-use dashboard that shows confidence indicators, risk assessments, and anticipated crime areas.

12.4 Give law enforcement the ability to enter data in real-time, modify the predictive model, and get notifications when the level of estimated risk in a particular location above a certain threshold.

Priority level: High

Precondition: Sufficient historical crime database for effective machine learning analysis.

Cross Reference: 4,8

13. Medical Helpline Functional Requirements

13.1. A user can use the Medical Help Option to request assistance.

13.2. When an injury occurs, user can get medical attention by choosing the option.

13.3 When a user notices an emergency medical need in their immediate surroundings, they can also request medical assistance.

13.4 After providing the appropriate information, the medical team will arrive at the designated site where medical attention is required.

Priority level: Low

Precondition: Medical Team should relate to the system.

Cross Reference: 6

14. Settings

Functional Requirements

14.1 User can customize their profile, choose language preference, choose notification preference.

14.2 User can update or change password.

Priority level: Low

Precondition: Have a digital phone and mobile number.

Cross Reference: 6

15. Previous crime history

Functional Requirements

15.1 User can see previous crime history and share experience.

15.2 Based on the history, the application can analyze essential data.

Priority level: Low

Precondition: If help was taken from the software.

Cross Reference: 1,2,5,6,7

16. System Logout

Functional Requirements

16.1 The "Logout" option will enable user to securely exit the user from their account.

16.2 Clicking the "Logout" button should terminate the user's session, directing them back to the login page.

16.3 If a user tries to access secure features post-logout, the system must redirect them to the login page.

16.4 After logout, attempts to use the browser's back button to revisit the previous page should be prevented, redirecting users to the login page.

16.5 The system must clear all session-related data upon logout to ensure the protection of user information.

16.6 Automatic logout should occur if a user remains inactive for a specified period, enhancing security.

Priority level: High

Precondition: User must be logged into the system.

Cross Reference: 1

4.2 System Quality Attributes.

QA01 - Usability: The system should achieve a user satisfaction rating of at least 85% based on feedback from law enforcement personnel during usability testing.

Cross Reference: 3, 12, QA03

Precondition: The AI-based mobile application is deployed and accessible.

Priority Level: Medium

QA02 - Accuracy: The system should achieve an accuracy rate of 95% or higher in identifying and categorizing illegal activity, measured through precision and recall metrics.

Cross Reference: 7,8,9,10,11, QA04

Precondition: The AI-based mobile application is deployed and operational.

Priority Level: High

QA03 - Responsiveness:

The system must issue alerts to law enforcement officials within 10 seconds of detecting a major occurrence, ensuring a swift response.

Cross Reference: 3, 5

Precondition: The system is deployed and operational with the latest version of the software.

Priority Level: High

QA04 - Reliability: The system should operate continuously for 72 hours without any critical failures, achieving a system uptime of 99.9%.

Cross Reference: 3,12

Precondition: The system is deployed and operational with the latest version of the software.

Priority Level: High

QA05 - Interoperability: The system must successfully integrate with existing law enforcement databases and communication systems, achieving a compatibility score of 95% or higher during interoperability testing.

Cross Reference: 3

Precondition: The system and existing law enforcement databases and communication systems are deployed and operational.

Priority Level: High

QA06 - Adaptability: The system should demonstrate adaptability by incorporating at least 80% of technological advancements related to crime detection and public safety over a one-year period.

Cross Reference: QA04

Precondition: The system is deployed and operational with the latest version of the software.

Priority Level: Medium

QA07 - Scalability: The system should scale to accommodate a 20% increase in data volume and users, maintaining consistent performance during scalability testing.

Cross Reference: 4, 12, QA03

Precondition: The system is deployed and operational with the latest version of the software.

Priority Level: High

QA08 - Security: The system must achieve a security compliance score of 90% or higher based on industry standards and legal requirements during security assessments.

Cross Reference: None

Precondition: The system is deployed and operational with the latest version of the software.

Priority Level: High

4.3 System Interface

Figure 1.1: UI/UX design of Homepage using Figma.

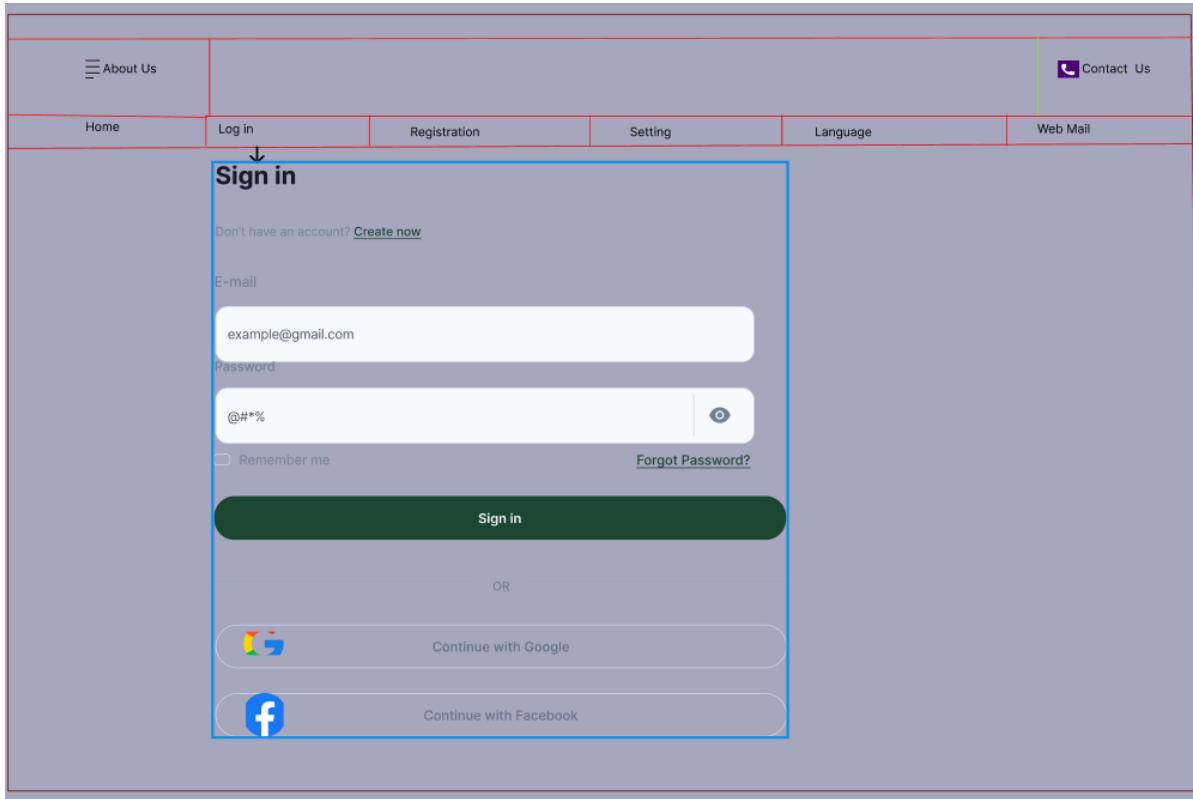


Figure 1.2: UI/UX design of Login page using Figma.

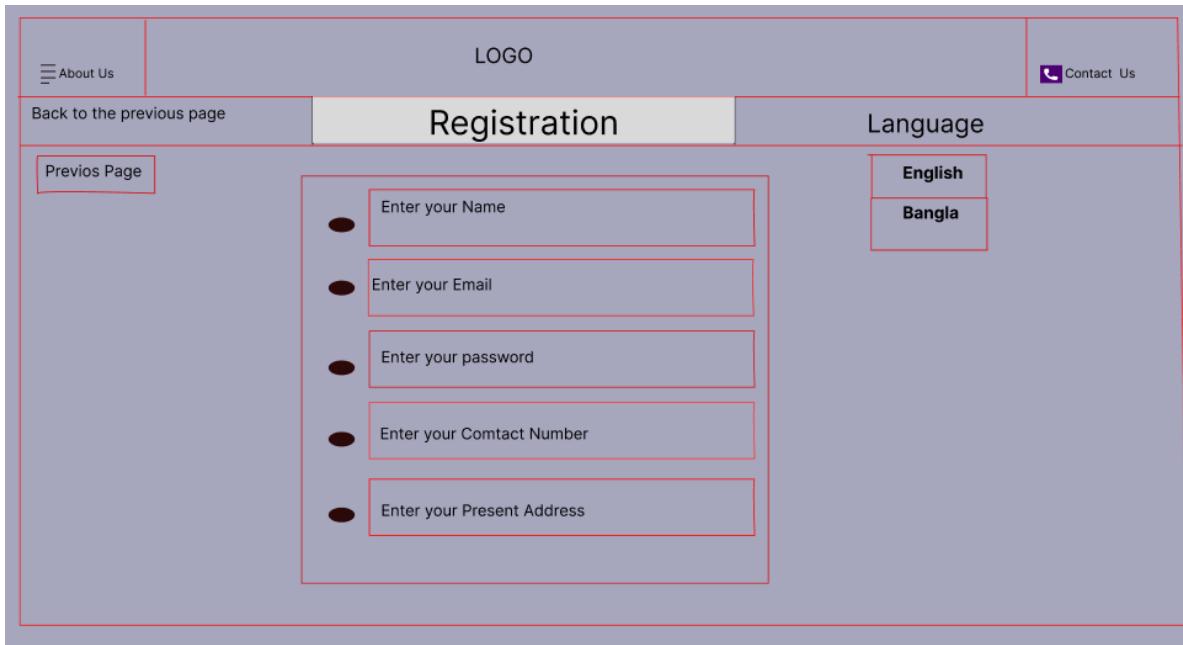


Figure 1.3: UI/UX design of Registration page using Figma.

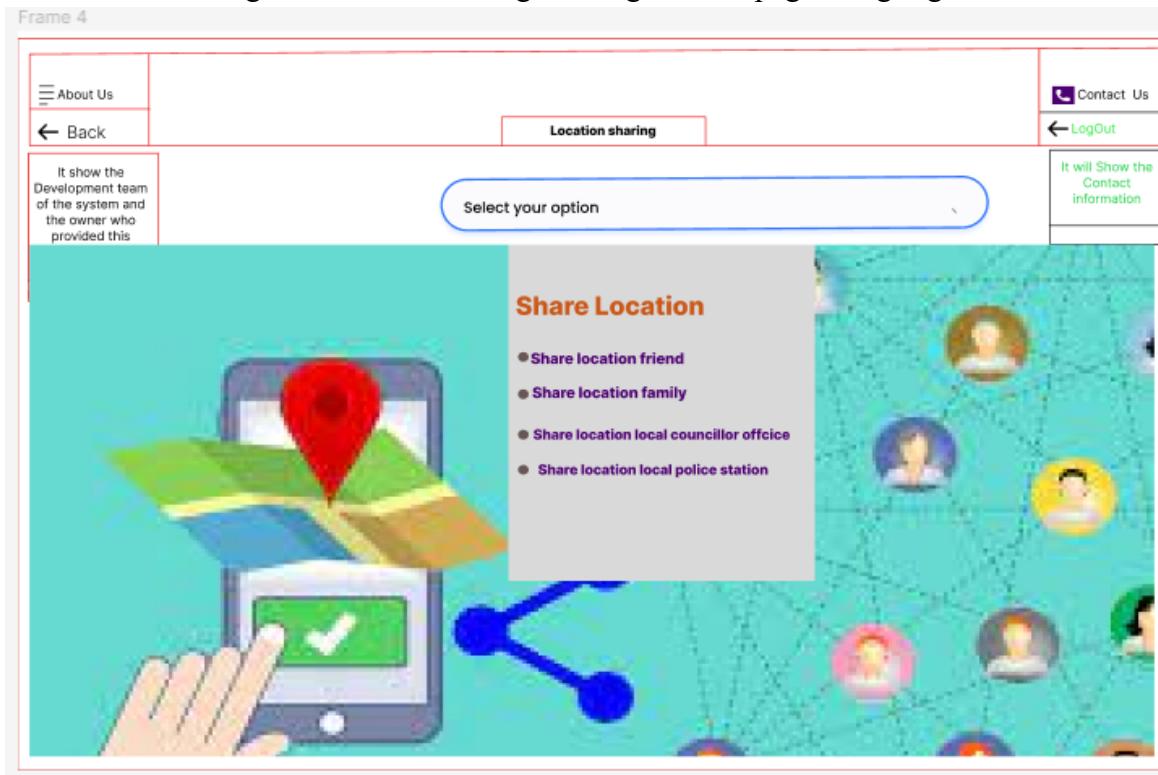


Figure 1.4: UI/UX design of Location Sharing feature using Figma.

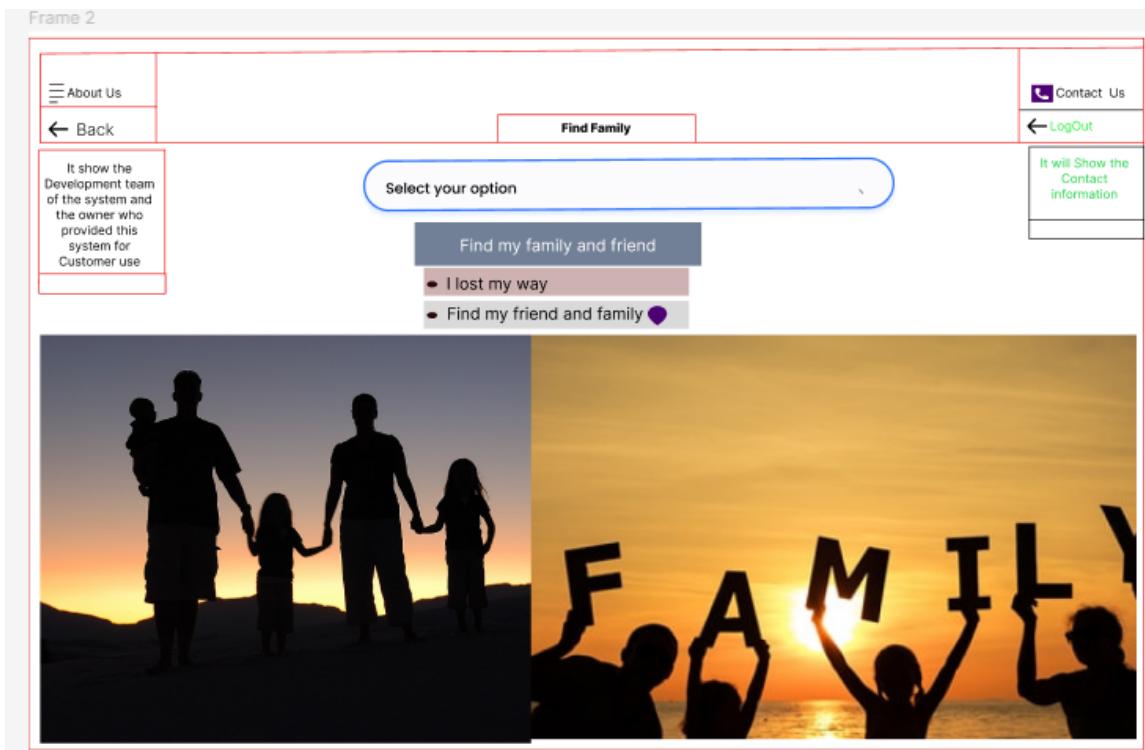


Figure 1.5: UI/UX design of Find Family and Friends feature using Figma.



Figure 1.6: UI/UX design of Help alert feature using Figma.



Figure 1.7: UI/UX design of Capture Crime feature using Figma.

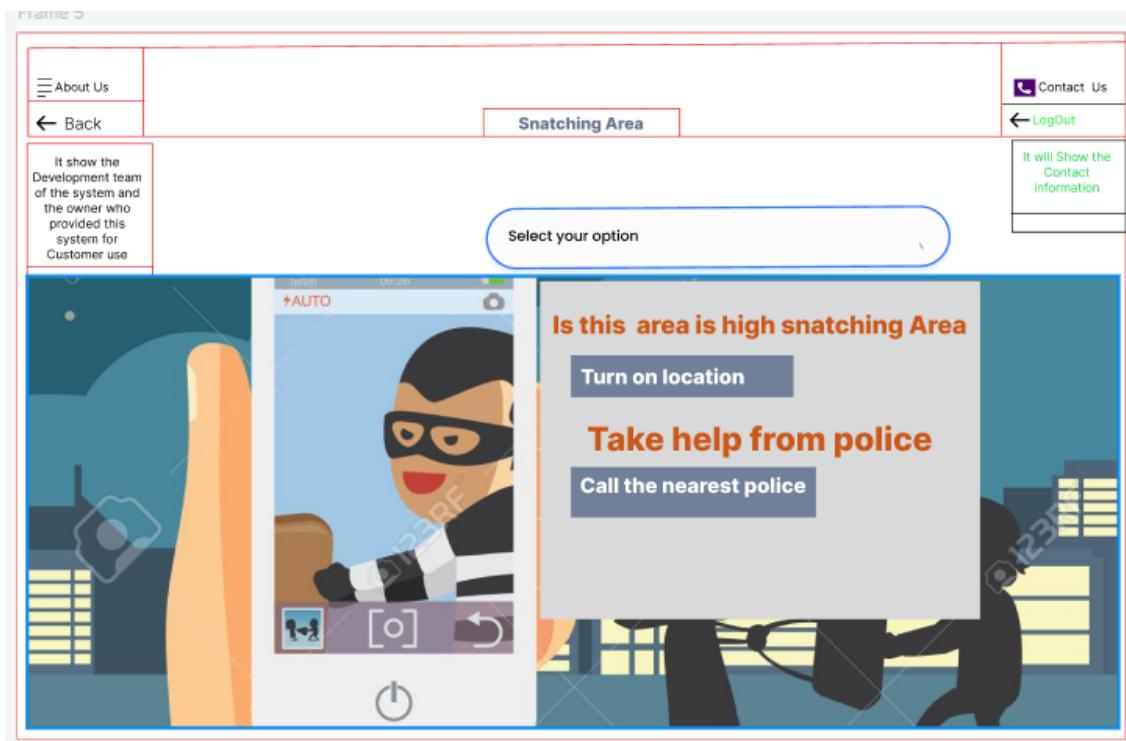


Figure 1.8: UI/UX design of Snatching Alert feature using Figma.

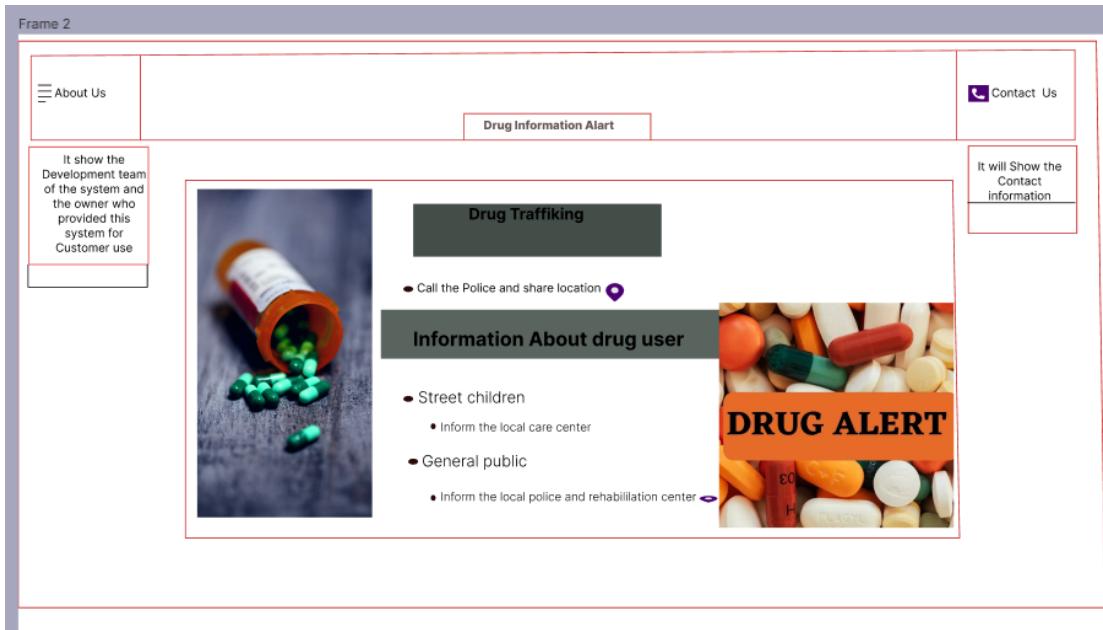


Figure 1.9: UI/UX design of Drug Information alert feature using Figma.

4.4 Project Requirements

Semi-Detached Model can be chosen for the software development model as some aspects of crime detection and public safety system may be well understood, the broader domain is fraught with obstacles and uncertainties, particularly if the solution incorporates novel ideas or technologies. There may be some novel components of the system that add complexity and unpredictability, making it more than a simple, well-defined project but not as vast or unexpected as a completely embedded project.

COCOMO: LOC = 60000

KLOC = 60000/1000 =60

Effort = $a * (KLOC)^b = 3.0 * (60)^{1.12} = 294$ Person-Month

Development Time = $c * (Effort)^d = 2.5 * (294)^{0.35} = 18$ Months

Average Staff Size = Effort/Development Time = 294/18 = 16 Person

Productivity = KLOC/Effort = 60/294 = 0.204 KLOC/Person-Month

Resources and Budget:

	A	B	C
1	RESOURCES	TYPE	COST
2	Surveillance camera	Material	6000
3	Gunshot Detector	Material	5000
4	Sensor	Material	2000
5	Geographical Information system	Data	10000
6	Pattern Recognition AI	Software	15000
7	CCTV Footage	Data	8000
8	Database management	Data	6000
9	Cloud service	Software	15000
10	APIs	software	20000
11	App development in Flutter	Software	20000
12	Collaboration with law enforcement	Work	12000
13	Training data	Software	10000
14	User interface design libraries	Software	25000
15	Wireshark for network troubleshooting	Software	500000
16	Computer-Aided Dispatch (CAD) software	Software	10000

Figure 2: Resource Sheet In excel.

5. FEATURES NOT TO BE TESTED

- **Hardware Compatibility:**

The software will not be evaluated for compatibility with specific hardware configurations, devices, or platforms that are not specifically stated in the project requirements. This includes testing on hardware that is not within the scope of the project.

- **Intelligent Video Surveillance:**

Accurate testing of real-time decision-making by AI algorithms in the system may be impossible. The emphasis is on the overall effectiveness of the AI models rather than minute, real-time decision validation.

- **Cross-Departmental Integration:**

Excluding testing the integration of the crime detection system with departments or agencies other than those mentioned in the project criteria. External interactions are tested by the various departments.

- **Predictive Policing:**

The unpredictable nature of criminal behavior, the necessity for accurate historical crime data, and the dynamic nature of machine learning models make it difficult to design controlled test scenarios that accurately imitate real-world settings. Furthermore, ethical problems and potential legal limits complicate the testing process.

6. TESTING APPROACH

6.1 Testing Levels

- **Unit Testing:** Unit testing will ensure individually the components and functionality works correctly.
 - Test login functionality with valid and invalid input.
 - Test and verify Registration by giving various input, check if it registers with valid input and show the error message correctly.
 - Test location services to ensure precise data retrieval.
 - Validate the accuracy of crime zone information.
 - Test each feature individually and validate that Find family and friends, Help Alert, Snatching Alert responses correctly.

Responsibility: Developers and Testers.
- **Integration Testing:** Integration testing will validate the interaction between various modules.
 - Test the integration of registration and login.
 - Validate the integration of location-based services with crime zone information.
 - Verify the integration of Help alert and Snatching alert.
 - Examine the integration of crime prediction characteristics into video surveillance.

Responsibility: Testers
- **System Testing:** System testing will ensure that the system works properly as a whole and validate end to end functionality.
 - Test the entire user experience, from the login to the different feature implementations.
 - Verify that the system responds appropriately in emergency situations.
 - Evaluate the elements of predictive policing for accuracy and efficacy.
 - Verify the communication and real-time tracking features.

Responsibility: Testers
- **Acceptance Testing:** Acceptance Testing verifies that the system meets user acceptance and fulfills user and business requirements.
 - Test law enforcement officials' usability and correctness through user acceptance testing.
 - Verify the system's capacity to adjust to various criminal patterns and contexts.
 - To confirm data protection procedures, do security testing.

Responsibility: Testers, Law Enforcement Representatives.

6.2 Test Tools

- UI/UX Design: Figma
- Integrated Development Environment (IDE): Visual Studio

- Project Management: Project Plan 365, Excel
- Database Management: Microsoft SQL Server Management Studio
- Version Control: Git
- Automated Unit Testing: NUnit (.NET)
- Static Code Analysis: Checkmarx
- Code Review: Github
- UI Testing: Selenium
- Integration Testing: RestAssured
- Performance Testing: Appium

6.3 Meetings

Meeting Type	Frequency and duration	Objective	Participants
Daily	Every Weekday (Sunday to Thursday) for 15 to 20 minutes.	1.Discuss progress from the previous day. 2.Discuss difficulties. 3.Listing the objectives and duties of current day.	Entire Testing Team
Weekly	Once a week (Monday) for 1 hours.	1.Review and plan the weekly testing plan. 2.Discuss if any changes are made in requirements. 3.Allocation about resource and responsibilities.	Test Manager, Team Leader, Testers.
Monthly	Once a Month (First Monday) for 1 hours.	1.Analyze the defect reports. 2.Discuss Testing metrices. 3. Identify which functionality need improvement.	Test Manager, Analysts.
Release Planning meeting	Before each major release for 2 hours.	1.Discuss the scope of the future release's testing. 2. Plan release testing in collaboration with the development and product teams.	Test Manager, Development leader, Product owner.

Table 01: Meetings

7. TEST CASES/TEST ITEMS

Project Name: Urban Crime detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_1		Test Designed date: 10.12.23		
Test Priority (Low, Medium, High): Medium				
Module Name: Login Session				
Test Title: verify login with valid username and password				
Description: Test website login page				
Precondition (If any): User must have valid username and password				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website. 2. Enter username. 3. Enter password. 4. Click submit	Username: Neshat123 Password: Neshat123!	User should login into the application		
Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database.				

Table 02: Test case for login session

Table-03: Test case for Registration Session.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_2		Test Designed date: 10.12.2023		
Test Priority (Low, Medium, High): High				
Module Name: User Registration				
Test Title: verify user Registration functionality				
Description: Test the registration process for creating a new account.				
Precondition: User must not have an existing account in the system and have a valid Email, Phone Number and NID.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the Registration Page. 2.Enter valid NID, username, password, Email address, address, and phone number.	Email: neshat@gmail.com Username: Neshat&123 Address: 12/2, Tejgaon, Dhaka Phone Number: 01922222222 Password: Neshat123! NID: Valid NID picture and number.	User is successfully registered to the login page.		
Post Condition: User's registration details are stored in database.				

Table-04: Test case for Local Area Information feature

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_3		Test Designed date: 10.12.2023		
Test Priority (Low, Medium, High): High				
Module Name: Local Area Information				
Test Title: Verify access to local area information.				
Description: Test the feature that allows users to get basic location data, such as nearby red zones and crime rates.				
Precondition: User must turn on device location and give permission for location access.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the website 2.Login to the system 3.Click Local Area Information. 4.Access the “Local Area Information” section. 5.Check the display of basic data about user’s location including nearby police station. 6.Check the visibility of information on nearby red zones and crime rates.	Location: Turn on Enter Area Name: Optional	User can see relevant data about the local area, including red zones and crime rates.		
Post Condition: The system retains the user’s location history for statistical analysis.				

Table- 05: Test case for Internal city Different Crystal Crime Zone’s Information feature

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_4		Test Designed date: 10.12.2023		
Test Priority (Low, Medium, High): Medium				
Module Name: Internal city Different Crystal Crime Zone's Information.				
Test Title: Verify access to internal city crime zone information.				
Description: Test the feature that Provides Information about different crime zones within the city.				
Precondition: User must input a valid city.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the website 2.Login to the system 3.Click internal city crime zone information. 4.Access the “Local Area Information” section. 5.Enter valid city. 6.Check the visibility of information about high crime and low crime areas within the city.	Enter Valid city: Tejgaon.	User can see information about the crime zones within the specified city.		
Post Condition: The system logs the user's request and displays relevant crime zone information.				

Table-06: Test case for Find Family and Friends feature.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_5		Test Designed date: 11.12.2023		
Test Priority (Low, Medium, High): High				
Module Name: Find Family and Friends				
Test Title: Verify communication access with family and friends.				
Description: Test the feature that allows user to find family and friends in emergency.				
Precondition: Device location is turned on and family members and friends should be added to the application.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the website 2.Login to the system 3.Click Find Family and Friends. 4.Access the added list. 5.Choose I lost my way or track my family and friends. 6. Share location or send emergency message.	1.Device Location: Holy cross College, Tejgaon. 2.Trace added friend. 3.Notify nearby police station/ safety organization of traced person.	User can successfully find family and friends and inform local police.		
Post Condition: The system logs the user's request and updates the location history of family and friends.				

Table-07: Test case for location sharing feature.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_6		Test Designed date: 11.12.2023		
Test Priority (Low, Medium, High): High				
Module Name: Location sharing.				
Test Title: Verify location sharing functionality.				
Description: Test the feature that allows user to share their location with local police station, safety organization, Family and Friends in emergency situations.				
Precondition: Device location is turned on.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Access location sharing option. 2. Turn on location sharing. 3. Verify the location is being shared with designated contact or local police.	Device location: Turn on. Location: Nilkhet, Dhaka. Share with: Nilkhet Police Station.	User location is successfully shared with designated contacts.		
Post Condition: The system logs the user's location sharing process and updates location history.				

Table-08: Test case for Help Alert feature.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_7		Test Designed date: 11.12.2023		
Test Priority (Low, Medium, High): High				
Module Name: Help Alert				
Test Title: Verify “Help Alert” functionality.				
Description: Test the feature that allows user to share their current location in emergencies.				
Precondition: Device location is turned on.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Access Help alert option. 2.Turn on location 3.Trigger help alert. 3.Attempt to cancel the “Help Alert” within the specified time frame.	Device location: Turn on. Location: Nilkhet, Dhaka. Share with: Nilkhet Police Station. Auto Call to 999	The distress signal has been successfully transmitted, and authorities have been notified. Cancellation is confirmed if it is attempted within the time range given.		
Post Condition: The system logs the user's Help Alert event and updates user's distress situation history, auto call to 999 is done.				

Table-09: Test case for Snatching Alert feature.

Project Name: Urban Crime Detection and Public Safety System	Test Designed by: Neshat			
Test Case ID: UCDPS_8	Test Designed date: 12.12.2023			
Test Priority (Low, Medium, High): Medium				
Module Name: Snatching Alert				
Test Title: Verify "Snatching Alert" functionality.				
Description: Test the automatic detection and notification features of the "Snatching Alert."				
Precondition: User valid information.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Trigger snatching alert. 2. Verify automatic detection. 3. Confirm Notification. 4.Attempt to notify local police.	User valid information.	The user receives an automatic detection alerting them to the high-snatching region. Police are effectively informed.		
Post Condition: The system logs the high snatching area detection and notification events.				

Table-10: Test case for Capture Crime feature

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_9		Test Designed date: 12.12.2023		
Test Priority (Low, Medium, High): Medium				
Module Name: Capture Crime				
Test Title: Verify “Capture Crime” functionality.				
Description: Test the feature that allows user to capture a crime scene and send it to local police.				
Precondition: User valid information.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Access “Capture Crime” section. 2. Capture a crime scene image. 3. Report the image to police. 4. Share location.	User valid information.	Crime image captured and sent to the local police.		
Post Condition: The system successfully sends user's picture and local police verifies it.				

Table-11: Test case for Drug Information Alert feature.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_10		Test Designed date: 12.12.2023		
Test Priority (Low, Medium, High): Low				
Module Name: Drug Information Alert				
Test Title: Verify easy to use reporting feature.				
Description: Check out the three sub-options in the software that let users report drug-related behaviors with ease.				
Precondition: User valid information.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Access “Drug Information Alert” section. 2. Choose easy-to-use reporting feature. 3. Select one of the three sub option. <ul style="list-style-type: none"> • Student Reports • Reporting on General People • Covering Children on street. 4. Provide information as required. 5. Submit report.	User valid and accurate information. (Report Copy.)	The system successfully records the report based on the selected sub-option.		
Post Condition: Based on the chosen sub-option, the system transfers the data to the specified location.				

Table-12: Test Case for Medical Helpline feature.

Project Name: Urban Crime Detection and Public Safety System	Test Designed by: Neshat			
Test Case ID: UCDPS_11	Test Designed date: 12.12.2023			
Test Priority (Low, Medium, High): Low				
Module Name: Medical Helpline				
Test Title: Verify the functionality of requesting medical assistance.				
Description: Test the option for users to request medical assistance through the Medical Help option.				
Precondition: Medical team connected to the system.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Navigate to the "Medical Helpline" area. 2.Select the option to make a medical aid request. 3.Give relevant information regarding the type of medical emergency. 4.Send in request for help.	<ul style="list-style-type: none"> • Valid location: Holy cross college, Tejgaon, Dhaka. • Notify nearest medical centers. • Auto call: 222 • Contract with nearest medical centers 	The system successfully records the request and forwards it to the connected Medical Team.		
Post Condition: Medical team receives the assistance request and responses accordingly.				

Table-13: Test case for settings functionality.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_12		Test Designed date: 13.12.2023		
Test Priority (Low, Medium, High): Low				
Module Name: Settings				
Test Title: Verify the functionality of user profile customization.				
Description: Test the option for users to customize their profile, choose language preferences, notification preferences.				
Precondition: User must have valid account.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the account settings . 2. Change general information 3. Change password 4.Change E-mail 5.Change Phone Number 6. Change Language 7.Change notification preference.	Old password: Neshat123! New password: Afrin1234! Phone Number: 01299999999 New phone number: 01701010101	The system successfully updates the user profile with the customized detail.		
Post Condition: Updated information saved into database and user profile.				

Table-14: Test case for Previous Crime history feature.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_13		Test Designed date: 13.12.2023		
Test Priority (Low, Medium, High): Low				
Module Name: Previous Crime history.				
Test Title: Verify access to previous crime history of own profile.				
Description: Test the option that allows user to check their previous crime history and sharing experience.				
Precondition: If help was taken from the software.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Access “Previous Crime History Section” 2.Verify the display of previous crime incidents including date, time, location. 3.Choose incident 4.Share experience.	Text: Crime description.	The system successfully displays previous crime history were user shared experience related incidents.		
Post Condition: The system stores the shared experience and updates the crime history log.				

Table-15: Test case for logout session.

Project Name: Urban Crime Detection and Public Safety System		Test Designed by: Neshat		
Test Case ID: UCDPS_14		Test Designed date: 22.12.2023		
Test Priority (Low, Medium, High): High				
Module Name: Logout Session				
Test Title: verify logout functionality with an active user				
Description: Test website logout functionality				
Precondition: User must log into the application.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website. 2. Enter username. 3. Enter password. 4. Click submit. 5. After successful login, locate and click on the "Logout" button	Username: Neshat123 Password: Neshat123!	User is logged out of the application and redirected to the Sign in Page.		
Post Condition: The user's session is ended, and they are sent to the login page. The account session information is updated in the database.				

Non-functional:

Table-16: Test case for System Security

Project Name: Urban Areas Crime Detection and Public Safety System		Test Designed by: Al Fesani		
Test Case ID: UCDPS_15		Test Designed date: 15-12-23		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: System Security		Test Execution date:		
Test Title: Evaluate System Security				
Description: During security assessments, make sure the system receives a security compliance score of 90% or greater based on industry standards and legal criteria....				
Precondition (If any): The system has been implemented and is working.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
<p>1. Determine the applicable legislative and industry security standards.</p> <p>2. Using the standards that have been identified, conduct a security assessment.</p> <p>3. Determine the security compliance score by utilizing the evaluation outcomes</p>	<p>1. Relevant legal and security standards.</p> <p>2. Security assessment tools and methodologies.</p> <p>3. Evaluation outcomes</p>	<p>1. Record the titles and details of the recognized standards.</p> <p>2. Determine and record compliance status and security flaws.</p> <p>3. Calculate the compliance rate: > 90%</p>		
Post Condition: Based on industry standards and regulatory criteria, the system is verified to acquire a security compliance score of 90% or above during security examinations.				

Table-17: Test case for Usability

Project Name: Urban Areas Crime Detection and Public Safety System		Test Designed by: Al Fesani		
Test Case ID: UCDPS_16		Test Designed date: 15-12-23		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: Usability		Test Execution date:		
Test Title: Evaluate System Usability				
Description: During usability testing, make sure the system receives feedback from law enforcement professionals and receives a user satisfaction rating of at least 85%.				
Precondition (If any): The system is operational and reachable.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
<ol style="list-style-type: none"> Grant access to the system and particular use cases to the participants. Get participant input by conducting interviews or questionnaires. Determine the user satisfaction score using the feedback that has been gathered. 	<p>1Tasks and circumstances related to usability.</p> <p>2.Interview questions or usability feedback forms.</p> <p>3.User comments information.</p>	<p>1.Users can comprehend and finish jobs with ease.</p> <p>2.Get feedback on the usability, intuitiveness, and general satisfaction.</p> <p>3.Find the user satisfaction percentage: $\geq 85\%$.</p>		
Post Condition: Commentaries from law enforcement officials during usability testing verify that the system receives a minimum of 85% of the possible points for user satisfaction.				

Table-18: Test case for Adaptability

Table-19: Test case for interoperability

Project Name: Urban Areas Crime Detection and Public Safety System	Test Designed by: Al FESANI			
Test Case ID: UCDPS _18	Test Designed date: 15-12-23			
Test Priority (Low, Medium, High): High	Test Executed by:			
Module Name: System Adaptability	Test Execution date:			
Test Title: Evaluate System Adaptability				
Description: Guarantee that the framework illustrates flexibility by consolidating at slightest 80% of innovative headways related to wrongdoing discovery and open security over a one-year period.				
Precondition (If any): The framework is sent and operational				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Monitor technological advancements related to crime detection and public safety. 2. Implement at least 80% of identified advancements into the system. 3. Verify that the recently added improvements work as intended	1. Stay updated with industry advancements. 2. Technological advancements identified in step 1. 3. Test scenarios for every addition.	1. Document advancements and their relevance to the system 2. Measure the incorporation rate: $\geq 80\%$ of identified advancements integrated. 3. Assure that every innovation is implemented successfully.		
Post Condition: It is verified that the system is flexible, having integrated at least 80% of the technical developments in public safety and criminal detection throughout a one-year period.				

Table 20: Test case for interoperability.

Project Name: Urban Areas Crime Detection and Public Safety System		Test Designed by: Al FESANI		
Test Case ID: UCDPS _20		Test Designed date: 15-12-23		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: System Interoperability		Test Execution date:		
Test Title: Evaluate System Interoperability				
Description: Make that the system connects to current law enforcement databases and communication platforms, passing interoperability testing with a compatibility score of at least 95%.				
Precondition (If any): The system is deployed and functional, as are the current law enforcement databases and communication networks.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
<ol style="list-style-type: none"> Turn on the system and let it run for seventy-two hours. During the test, mimic typical user interactions and system operations. Determine the system uptime by utilizing the entire test timeframe. 	<ol style="list-style-type: none"> N/A Typical user circumstances. Length of test and idle time. 	<ol style="list-style-type: none"> For the time, the system ought to function without experiencing any significant malfunctions. User interactions should be handled by the system without any serious mistakes. Over the course of the 72-hour test, the system uptime should be $\geq 99.9\%$. 		
Post Condition: The system has demonstrated its dependability by operating continuously for seventy-two hours without experiencing any major malfunctions, resulting in a 99.9% system uptime.				
Communication systems and receiving a compatibility score of 95% or above during interoperability testing, the system is verified to be interoperable.				

Project Name: Urban Areas Crime Detection and Public Safety System		Test Designed by: Al FESANI		
Test Case ID: UCDPS _21		Test Designed date: 15-12-23		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: System Accuracy		Test Execution date:		
Test Title: Evaluate System Accuracy				
Description: Make sure that, as determined by precision, and recall metrics, the system can identify and classify illegal conduct with an accuracy rate of 95% or greater.				
Precondition (If any): The system has been implemented and is working.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
<p>1. Determine which law enforcement databases and communication platforms are currently in use.</p> <p>2. Determine the interoperability needs for each system that has been identified.</p> <p>3. Test for compatibility with every system that has been identified.</p> <p>4. Determine the compatibility score by utilizing the outcomes of interoperability assessments</p>	<p>1.List of currently in use systems.</p> <p>2.Create an interoperability requirements document.</p> <p>3.Test situations for every system</p> <p>4. Step 3 test outcomes.</p>	<p>1. Note the systems' names and specifications that have been identified.</p> <p>2.Clearly specify the data exchange formats and integration points.</p> <p>3.Guarantee effective data transmission and system communication.</p> <p>4.Find the interoperability success percentage: $\geq 95\%$.</p>		
Post Condition: After successfully integrating with current law enforcement databases and communication systems and receiving a compatibility score of 95% or above during interoperability testing, the system is verified to be interoperable.				

Table-21: Test case for System Accuracy

8. ITEM PASS/FAIL CRITERIA

- Discuss how would you define your testing pass/fail criteria.

- **System Login:**

Pass Criteria:

- Successful user login with valid credentials.
- Consistent and accurate random verification code generation.
- User accounts correctly blocked after five unsuccessful login attempts.

Fail Criteria:

- User difficulties in logging in with valid credentials.
- Inconsistent or failed verification code generation.
- Unreliable account blocking functionality.

- **Register:**

Pass Criteria:

- Successful account creation with valid information.
- Effective password and username validation.
- Accurate NID verification and phone number validation.

Fail Criteria:

- User issues during the registration process.
- Ineffective password and username validation.
- Failed NID or phone number verification.

- **Local Area Information:**

Pass Criteria:

- Accurate information about the user's current location.
- Correct access to nearby red zones and crime rates.
- Successful contact with the local police station through the application.

Fail Criteria:

- Inaccurate location information.
- Issues accessing crime-related data.

- **Internal City Different Crime Zones Information:**

Pass Criteria:

- User access to information about high and low crime areas.
- Accurate data on crime rates, causes, and support mechanisms.

Fail Criteria:

- Inability to access crime zone information.
- Unreliable data on crime rates and causes.

- **Find Family and Friends:**

Pass Criteria:

- Successful user location of family and friends in emergencies.
- Functionality of both "I lost my way" and "Track my friends and family" options.

Fail Criteria:

- Difficulty in locating family or friends.
 - Failures in tracking or sharing location information.
- **Location Sharing:**
Pass Criteria:
 - User successful sharing of location in emergency situations.
 - Reliable real-time monitoring and sharing.**Fail Criteria:**
 - Issues in sharing location information.
 - Failures in real-time monitoring.
- **Help Alert:**
Pass Criteria:
 - Successful initiation of a "Help Alert" by users.
 - Timely alerts to emergency services and law enforcement.**Fail Criteria:**
 - "Help Alert" activation issues.
 - Delayed or ineffective communication with emergency services.
- **Snatching Alert:**
Pass Criteria:
 - Automatic detection of high-snatching areas is successful.
 - Users are appropriately notified.**Fail Criteria:**
 - Failures in automatic detection.
 - Users do not receive timely notifications.
- **Capture Crime:**
Pass Criteria:
 - User can capture and send crime scene images successfully.
 - Identification of weapons through image scanning is successful.**Fail Criteria:**
 - Issues in capturing and sending crime scene images.
 - Ineffective identification of weapons.
- **System Logout:**
Pass Criteria:
 - Users can securely log out, and the session terminates correctly.
 - Automatic logout after inactivity works as intended.**Fail Criteria:**
 - Issues in logging out securely.
 - Ineffective automatic logout.
- **Medical Helpline:**
Pass Criteria:
 - Users can request medical assistance successfully.
 - Medical teams respond to emergencies appropriately.**Fail Criteria:**
 - Inability to request medical assistance.
 - Delays or issues in medical team response.
- **Settings:**
Pass Criteria:

- Users can customize profiles and update passwords successfully.

Fail Criteria:

- Difficulties in profile customization or password updates.

- **Previous Crime History:**

Pass Criteria:

- Users can view and share previous crime history.

Fail Criteria:

- Inability to access or share crime history.

- **Drug Information Alert:**

Pass Criteria:

- Users can report suspected drug activities successfully.

- Information is directed to the appropriate authorities based on user choices.

Fail Criteria:

- Issues in reporting drug activities.

- Failures in directing information.

- **Usability (QA01):**

Pass Criteria:

- Law enforcement personnel can efficiently perform routine duties.

Fail Criteria:

- Difficulty in performing routine tasks.

- **Accuracy (QA02):**

Pass Criteria:

- System accurately identifies and categorizes illegal activities.

Fail Criteria:

- High proportion of false positives or negatives.

- **Responsiveness (QA03):**

Pass Criteria:

- Immediate alerts in the event of a live threat or criminal activity.

Fail Criteria:

- Delayed or no alerts during critical events.

- **Reliability (QA04):**

Pass Criteria:

- System runs continuously for 72 hours without critical failures.

Fail Criteria:

- Critical failures within the 72-hour timeframe.

- **Interoperability (QA05):**

Pass Criteria:

- System easily interacts with existing law enforcement databases and communication systems.

Fail Criteria:

- Issues in interacting with databases or communication systems.

- **Adaptability (QA06):**

Pass Criteria:

- System adapts to changing crime trends, technological advancements, and new threats.

Fail Criteria:

- Inflexibility to changing conditions.
- **Scalability (QA07):**
 - Pass Criteria:**
 - System scales to accommodate increasing data and user numbers.
 - Fail Criteria:**
 - Inability to handle increased data or users.
- **Security (QA08):**
 - Pass Criteria:**
 - Strong security mechanisms protect sensitive data.
 - Fail Criteria:**
 - Unauthorized access or data breaches.

9. TEST DELIVERABLES

Document	Detail
1. Test Plan	1. Outline of the testing approach which includes objective and scope of the test cases.
2. Test Cases	2. Test case design, execution, text input and expected output for each test case.
3. Test Script	3. For automated testing, scripts of code will be provided.
4. Test data	4. Dataset for input values
5. Test Environment	5. Description of test environment setup which includes hardware-software configuration, network setting.
6. Test logs	6. Test execution activities are documented, including test results, issues encountered, and actions made during testing.
7. Defect Report	7. Documentation describing any errors or failures discovered during testing.
8. Test summary	8. Summary of testing process, result, test coverage will be provided.
9. Release Note	9. Documentation on the tested features, known issues, and any release-specific considerations.
10. User manual	10. Documentation that explains how end users should conduct testing or evaluate test results.
11. Training materials	11. Training materials for testers, developers, or end users on testing procedures, tools, or methodologies.

Table 22: Test Deliverables

10. STAFFING AND TRAINING NEEDS

ROLE	RESPONSIBILITIES	SKILLS

Test manager	Test planning, Reporting and Monitoring	Technical Proficiency, Leadership and team management, Analytical skills, good communication skills.
Test Lead	Test design and execution, Defect management, Test planning, stakeholder Engagement.	Testing Experience, Understanding of SDLC and STLC, Analytical problem-solving skills.
Test analyst	Test case design, defect reporting.	Functional and technical understanding, defect understanding, Technical Proficiency.
Automation Engineer	Design and Development, Creating and maintaining documentation.	Programming and scripting, knowledge of testing tools, system design and Architecture.

Training Needs:

Training Area	Training Content	Training Method
Testing Tools	Advance Features, Training on testing tools	Online Training, Instructor Led Training
Automation Framework.	Programming, Understanding framework.	Programming
Security Testing	Security training concept	Automated scanning tools, online courses
Performance Testing	Fundamental Of Performance testing, Real world consideration	Workshop and lab, online training, Instructor Led Training

Table 23,24: Staffing and Training need

11. RESPONSIBILITIES

ROLE	RESPONSIBILITY
Customer/User	provides project requirements. Determine which requirements are fulfilled. Set priority for implementation
Programmer	Write the code to implement the requirements in the project.

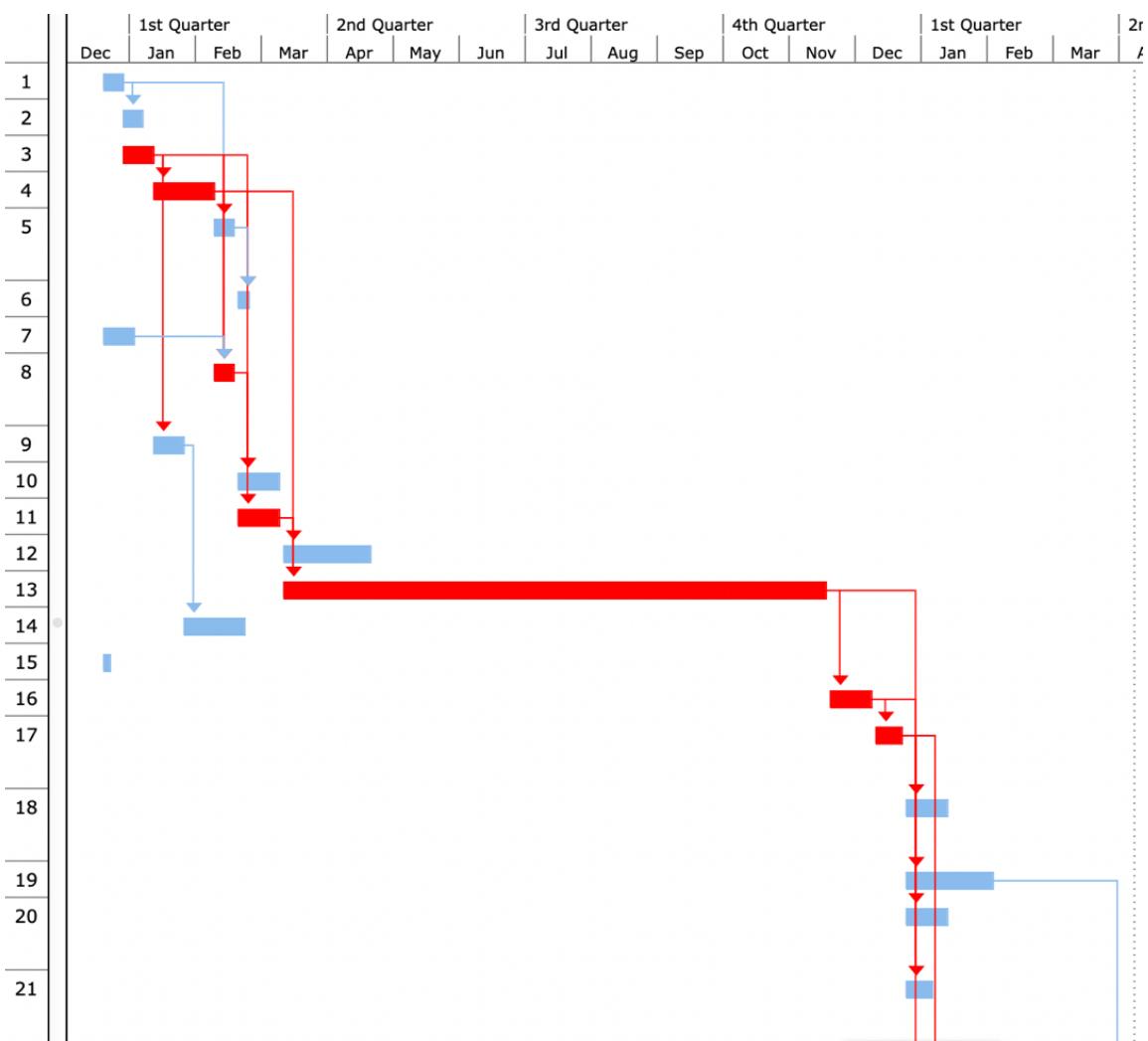
Tester	Assist the customer in writing functional tests. Regularly execute functional tests, broadcast test results, and maintain testing tools
Tracker	project progress comprehensively, Monitors progress, evaluates goal achievement potential within set constraints, assesses resource and time limitations, Provides feedback in an extreme manner
Coach	responsible for the whole project, guides the project members
Consultant	If any technical needed to the developer team guide developer team.
Manager (Big Boss)	makes all the decisions.

Table-25: Responsibilities

12. TESTING SCHEDULE

		Task Name	Resource Names	Duration	Start	Finish	Work	Predecessors
Calendar	1	Define Project Scope		7 days	Tue 12/19/23 8:00 AM	Wed 12/27/23 5:00 PM	0 hrs	
Gantt Chart	2	Stakeholder meetings		7 days	Thu 12/28/23 8:00 AM	Fri 1/5/24 5:00 PM	0 hrs	1
Resource Sheet	3	Requirement Gathering		10 days	Thu 12/28/23 8:00 AM	Wed 1/10/24 5:00 PM	0 hrs	
Risk View	4	Requirement Analysis		20 days	Thu 1/11/24 8:00 AM	Wed 2/7/24 5:00 PM	0 hrs	3
	5	Cost,Time,Effort Estimation		7 days?	Thu 2/8/24 8:00 AM	Fri 2/16/24 5:00 PM	0 hrs	3,4
	6	Risk Analysis		5 days?	Mon 2/19/24 8:00 AM	Fri 2/23/24 5:00 PM	0 hrs	4,5
Task Sheet	7	Resource Allocation		10 days?	Tue 12/19/23 8:00 AM	Mon 1/1/24 5:00 PM	0 hrs	
Enterprise Team Planner	8	System Architecture planning		7 days?	Thu 2/8/24 8:00 AM	Fri 2/16/24 5:00 PM	0 hrs	3,4,7,1
	9	Test Planning		10 days?	Thu 1/11/24 8:00 AM	Wed 1/24/24 5:00 PM	0 hrs	3
	10	Database Design		15 days?	Mon 2/19/24 8:00 AM	Fri 3/8/24 5:00 PM	0 hrs	3,8
	11	System UI/UX Design		15 days?	Mon 2/19/24 8:00 AM	Fri 3/8/24 5:00 PM	0 hrs	8
	12	Front End Development		30 days?	Mon 3/11/24 8:00 AM	Fri 4/19/24 5:00 PM	0 hrs	11
	13	Back End Development		180 days?	Mon 3/11/24 8:00 AM	Fri 11/15/24 5:00 PM	0 hrs	4,11
	14	Test Case Design		20 days?	Thu 1/25/24 8:00 AM	Wed 2/21/24 5:00 PM	0 hrs	9
	15	Test Environment setup		3 days?	Tue 12/19/23 8:00 AM	Thu 12/21/23 5:00 PM	0 hrs	
	16	Unit Testing(Developme		15 days	Mon 11/18/24 8:00 AM	Fri 12/6/24 5:00 PM	0 hrs	13
	17	Unit Testing(Functional Test Execution)		10 days?	Mon 12/9/24 8:00 AM	Fri 12/20/24 5:00 PM	0 hrs	16
	18	Defect reporting and Tracking		15 days?	Mon 12/23/24 8:00 AM	Fri 1/10/25 5:00 PM	0 hrs	17
	19	Bug Fixing		30 days?	Mon 12/23/24 8:00 AM	Fri 1/31/25 5:00 PM	0 hrs	17,13

Calendar	20	Retesting Unit or Particular function		15 days?	Mon 12/23/24 8:00 AM	Fri 1/10/25 5:00 PM	0 hrs	17
Gantt Chart	21	Data-Flow Testing And Control Flow Tesing		10 days	Mon 12/23/24 8:00 AM	Fri 1/3/25 5:00 PM	0 hrs	16,17
Resource Sheet	22	Performance Test Planni		10 days?	Tue 12/19/23 8:00 AM	Mon 1/1/24 5:00 PM	0 hrs	
Risk View	23	Performance Test Execution		7 days	Mon 12/23/24 8:00 AM	Tue 12/31/24 5:00 PM	0 hrs	17,22
Task Sheet	24	Security Test Planning		10 days	Tue 12/19/23 8:00 AM	Mon 1/1/24 5:00 PM	0 hrs	
Enterprise Team Planner	25	Security Test Execution		10 days	Tue 12/19/23 8:00 AM	Mon 1/1/24 5:00 PM	0 hrs	
Training	26	Usability Test Environment setup		10 days	Tue 12/19/23 8:00 AM	Mon 1/1/24 5:00 PM	0 hrs	
	27	Usability Test execution		10 days	Wed 1/1/25 8:00 AM	Tue 1/14/25 5:00 PM	0 hrs	23,26
	28	Usability Result Analysis and Reporting		3 days	Wed 1/15/25 8:00 AM	Fri 1/17/25 5:00 PM	0 hrs	27
	29	Integration Testing		20 days?	Wed 1/1/25 8:00 AM	Tue 1/28/25 5:00 PM	0 hrs	17,23
	30	System Testing		10 days?	Wed 1/29/25 8:00 AM	Tue 2/11/25 5:00 PM	0 hrs	29
	31	User Acceptance Testing		30 days?	Wed 2/12/25 8:00 AM	Tue 3/25/25 5:00 PM	0 hrs	30
	32	Documentation and Review		10 days?	Wed 3/26/25 8:00 AM	Tue 4/8/25 5:00 PM	0 hrs	31,19
	33	Final Report Submission		10 days	Tue 12/19/23 8:00 AM	Mon 1/1/24 5:00 PM	0 hrs	



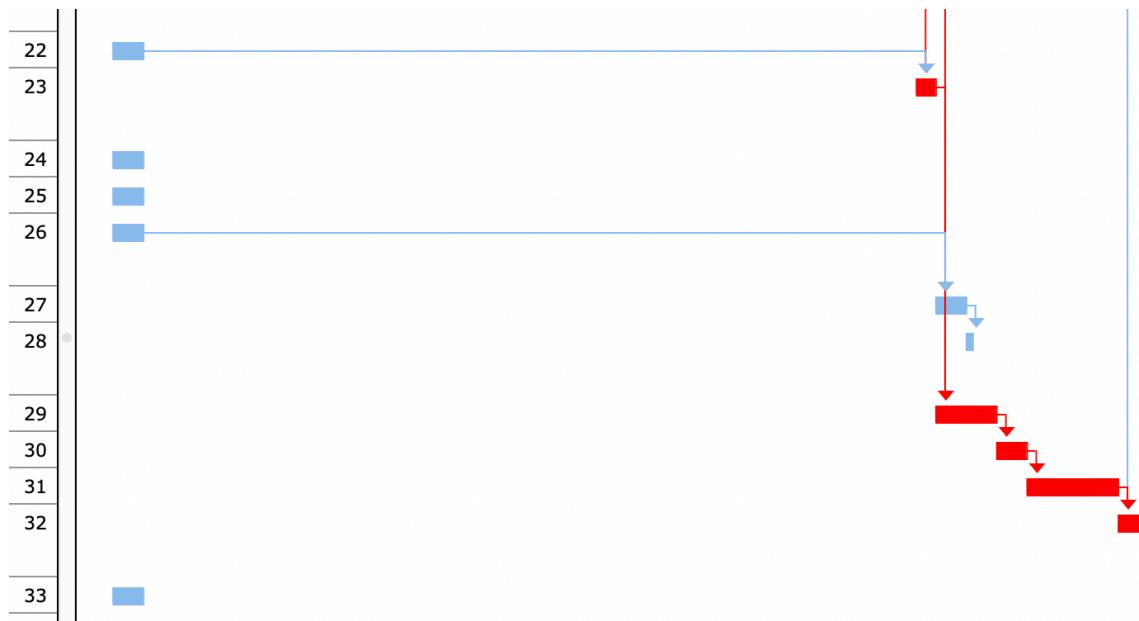


Figure 3: Gantt chart

13. PLANNING RISKS AND CONTINGENCIES

Table 26: Risk Mitigation Plan for testing

Unique ID	Risk Description	Caused	Probability	Impact	Risk	Impact
1211	Real Time Performance Problem	ST	Medium	High	High	3
1212	Data Loss	DE	Medium	Medium	Medium	2
1213	Late Changes of requirement	CU	Medium	Low	Low	1
1214	Budget Overrun	CU	High	High	High	3
1215	Delayed Due to lack of resources	DE	Low	Low	Low	1
1216	Large Number of user than Client	PS	Medium	High	High	3
1217	Insufficient User training	CU	Low	Medium	Low	1
1218	less reuse than planned	PS	Low	High	Medium	2
1219	Size estimation may below	PS	Medium	High	High	3
1220	Lack of management problem	ST	High	Medium	High	3
1221	Delivery Deadline will be tightened	BU	Medium	Medium	Medium	2
1222	Poor software quality	PR	Low	High	Medium	2
1223	Technology will not meet expectations	TE	Medium	Low	Low	1
1224	Handling sensitive information	DE	Low	Medium	Low	1

14. APROVALS

Customer/User	
Programmer	
Tester	
Tracker	
Coach	
Consultant	
Manager (Big Boss)	