Software Test Plan

for

Urban Areas Crime Detection and Public Safety System

Version 3.0 approved

Prepared by

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Date: 03-02-2025

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Revision History

Revision	Date	Updated by	Update Comments
0.1	2025.01.29	Wasifur Rahaman Chowdhury Alvi	First Draft
0.2	2025.01.31	Abdullah Al Faisal	Improved & Refined Test Cases
0.3	2025.02.02	Wasifur Rahaman Chowdhury Alvi	Final Report (Performed minor improvements)

1. TEST PLAN IDENTIFIER:

1. UCD-001
2. UCD-00**2**
3. UCD-00**3**

2. REFERENCES

1. Book: Software Requirement, 3rd Edition2. The Software Requirement Memory Jogger
2. Website: https://www.guru99.com/software-testing.html

3. INTRODUCTION

Background to the Problem

As Bangladesh has developed rapidly over this century, the incidence of crimes in urban areas has also increased. According to statistics from macrotrends.net, the crime rate has been significantly rising year by year compared to previous years. In 2018, Bangladesh had a murder rate of 2.37% per 100,000 inhabitants, up from 2.22% in 2017. Additionally, there is a concerning increase in drug addiction among the young generation. Another significant social crime is snatching, which is alarmingly on the rise in urban areas.

It's evident in our society that the younger generation experiences dissatisfaction for various reasons, leading them to engage in social crimes. As a result, many people in our generation don't feel secure when going outside. However, there is currently no adequate support system to promote safe lifestyles for our residents.

To address these issues, we have developed a smartphone application integrated with artificial intelligence. This application aims to assist residents when they encounter criminal activity, feel frightened, or come across unethical behavior.

Problems:

I.   The root of this problem is Unemployment, drug addiction, frustration, family issues, bad politics.
II. Crime prevention may lower the long-term expenses of the criminal justice system as well as the economic and social consequences of crime, improving investment in the form of savings for social protection, welfare, and justice.

Solution to the Problem

❑ Project Objective:

i. Increase Crime Detection Efficiency:

The primary goal of the system is to enhance the efficiency of crime detection. By leveraging technologies such as TensorFlow for AI integration and Apache for real-time data processing, the system can analyze crime patterns and detect potential criminal activities more effectively. The application will allow users to capture and report crimes in real-time, which will be sent to the local police station for immediate action. This real-time reporting and analysis will help law enforcement agencies respond more quickly and accurately to criminal incidents, thereby increasing the overall efficiency of crime detection.

ii. Data Analysis and Modeling for Prediction Improvements:

The system will utilize advanced data analysis techniques and modeling to predict crime trends and patterns. By analyzing historical crime data and current incidents, the system can identify high-risk areas and times, enabling proactive measures to prevent crimes. This predictive capability will be crucial for law enforcement agencies to allocate resources more effectively and for citizens to stay informed about potential risks in their vicinity. The use of Django for the backend and Leaflet.js for geographical visualization will further enhance the system's ability to process and display data in a user-friendly manner.

iii. Enhancing Public Safety Awareness and Citizen Engagement:

The application will also focus on increasing public safety awareness and encouraging citizen participation in crime prevention. Features such as real-time notifications, safety alerts, and location sharing will empower citizens to stay informed and take necessary precautions. Additionally, the system will allow users to report crimes, share their locations with trusted contacts, and receive updates on criminal activities in their area. This increased engagement will foster a sense of community and collective responsibility, making urban areas safer for everyone.

To address this issue, we will utilize Django for the backend, Apache for real-time data processing, TensorFlow for AI integration, Leaflet.js for geographical visualization, and Flutter for mobile application development.

4. REQUEIREMNT SPECIFICATION

4.1 System Features

1. System Registration:

Functional Requirements:

1.1 The system shall allow new users to register by providing personal details such as name, phone number, and email address.

1.2 The system shall verify the user's email address or phone number through a verification code sent via email or SMS.

1.3 The system shall store user information securely and allow users to update their personal details as needed.

Priority Level: High

Precondition: Users must provide valid contact information for registration.

Cross Reference: 2.1, 2.7

2. System Login

Functional Requirements:

2.1 The system shall allow all existing users to log in with their email/mobile number and password.

2.2 To complete this step, the user shall verify they are human and not a script or bot.

2.3 If the username or password is incorrect, the system shall display an error message: "Invalid username or password."

2.4 If the user forgets their password, they shall be able to request a password reset through email/phone.

2.5 After three failed login attempts, the user account shall be blocked for 15 minutes.

2.6 If the user's credentials are correct, they shall be redirected to their account.

Priority Level: High

Precondition: User must have a valid username and password.

Cross Reference: 1.1, 1.3, 3.1

3. Location Sharing:

Functional Requirements:

3.1 A user shall be able to share their location with friends, parents, the local police station, or the councilor's office if they feel unsafe.

3.2 If the system detects unusual movement, it shall send an emergency message to emergency contacts.

3.3 If the phone battery is low and the phone shuts down, the last known location shall be shared automatically.

3.4 The system shall attempt to reconnect three times if the connection is lost.

Priority Level: High

Precondition: User must be logged in, and emergency contacts must be saved.

Cross Reference: 2.1, 2.6, 4.1

4. Help Alert

Functional Requirements:

4.1 This feature shall allow users to request help if they feel unsafe.

4.2 The system shall notify the police and family when the urgent help button is pressed.

4.3 If location sharing fails, the system shall display an error message and attempt to resend the location.

4.4 All communication between system components shall be encrypted to ensure data security.

Priority Level: High

Precondition: User must be logged in and emergency contacts must be saved.

Cross Reference: 3.1, 3.2, 5.1

5. Real-time capture crime:

Functional Requirements:

5.1 Users shall be able to capture crime scenes and send them to the admin, who shall forward them to the police.

5.2 There shall be an option for opening the camera and sharing location.

5.3 Computer vision shall analyze crime scenes, identify weapons, and notify law enforcement.

5.4 If a potential incident is detected, the system shall generate automated alerts to the authorities.

Priority Level: Medium

Precondition: User must be logged in.

Cross Reference: 4.1, 4.2, 6.1

5. Previous Crime History

Functional Requirements:

6.1 Users shall be able to view recent crimes near their location.

6.2 The system shall display statistics on crime numbers, types, and rates in the local area.

Priority Level: Medium

Precondition: User must be logged in.

Cross Reference: 5.1, 5.3

4.2 System Quality Attributes

QA1 - Usability
The system should be easy to use so that people can quickly find important information and act. The Urban Areas Crime Detection and Public Safety System should allow users to:
1. Sign up, log in, and explore crime reports and emergency services effortlessly.
2. Report crimes by capturing and sharing photos, videos, and descriptions.
3. Find and filter crime data based on location, crime type, and time.
4. Request emergency help quickly and easily.

Example: A user opens the app, enters their location, and instantly sees crime reports, emergency contacts, and safety alerts for their area.

QA2 - Performance
The system should be fast and responsive, ensuring real-time updates and quick access to safety services. It should:
1. Respond to user requests (like searching for nearby crime data or emergency contacts) in 2 seconds on average, and no more than 5 seconds during high traffic.
2. Send emergency alerts in under 1 second so help arrives as quickly as possible.
3. Analyze crime scene images using AI within 5 seconds to provide immediate insights.
4. Ensure smooth scrolling through maps and crime reports without delays or lag.

5. Ensure optimal performance for 2G, 3G, and 4G network conditions, adjusting content (like images and reports) to optimize slower speeds using data compression techniques.

6. Support Android 8.0 (Oreo) or higher and iOS 11 or higher to ensure compatibility with both older and newer devices.

QA3 - Reliability
People should be able to trust the system to work whenever they need it. It should:
1. The downtime should be no more than 0.01% of the time.
2. Handle errors smoothly if something goes wrong, it should be retrieved 3 times before informing users about the issue.
3. Have backup servers so that even if one goes down, the system remains functional.

Example: Even if a server crashes, users can still report crimes and request emergency help without disruption.

QA4 - Scalability
The system should handle more users as it grows without slowing down or crashing. It should:
1. Support up to 10, 00000 users at the same time without performance issues.
2. Automatically adjust resources when more people are using the app for this, we are using AWS cloud services.
3. Deliver crime alerts instantly, even during peak times.
Example: During a city-wide emergency, thousands of users should be able to report incidents at the same time without delays.

QA5 - Security
User data must be protected from unauthorized access. The system should:
1. Encrypt all personal and location data using AES-256 encryption for maximum security.
2. Require Multi-Factor Authentication (MFA) for admin and law enforcement accounts.
3. Use strict access controls to prevent unauthorized users from viewing sensitive data.
4. Perform regular security audits to ensure the system remains safe.
Example: A user's crime report remains private and secure, and only authorized personnel can access it.

QA6 - Maintainability
The system should be easy to update and fix without disrupting users. It should:
1. Deploy bug fixes and updates without downtime using rolling updates.
2. Apply security patches within 24 hours of discovering vulnerabilities.
3. Improve AI models for crime detection every 3 months to keep them accurate.

Example: A bug in the crime reporting feature gets fixed instantly, and users don't even notice the update.

QA7 - Availability

The system should be accessible 24/7 with minimal disruptions. It should:

1. It has backup systems, so it stays online even if a server fails.
2. Limit maintenance downtime to 30 minutes per month.
3. Notify users in advance about maintenance to prevent surprises.

Example: If a server goes down for maintenance, the app remains available, and users can still report crimes.

QA8 - Interoperability

The system should work well with other platforms and services. It should:

1. Connect with law enforcement databases to share crime data in real time.
2. Integrate with mapping services like Google Maps or OpenStreetMap for accurate location tracking.
3. Allow government agencies to access crime data through secure APIs.

Example: If the crime database is temporarily unavailable, the app shows cached data instead of failing completely.

QA9 - Efficiency

The system should use resources wisely to avoid draining users' batteries and data. It should:

1. Use less than 15 MB of data per hour of continuous use.
2. Optimize GPS tracking to prevent excessive battery drain (no more than 5% per 30 minutes).
3. Ensure AI processing runs efficiently without overloading the system.

Example: A user can use the app for hours without worrying about their phone battery draining too quickly or using too much mobile data.

QA10 - Testability

The system should be thoroughly tested to ensure it works as expected. It should:

1. Have at least 95% test coverage for key features like crime reporting and emergency alerts.
2. Run automated tests every time new code is added to catch bugs early.
3. Simulate heavy traffic loads to ensure they remain stable even during peak usage.

Example: Before launching a new feature, tests confirmed that crime alerts and location tracking still work perfectly without needing manual checks.

4.3 System Interface

FIGURE 1: Registration Page

FIGURE 2: Log-in Page

FIGURE 3: Forget Password Page
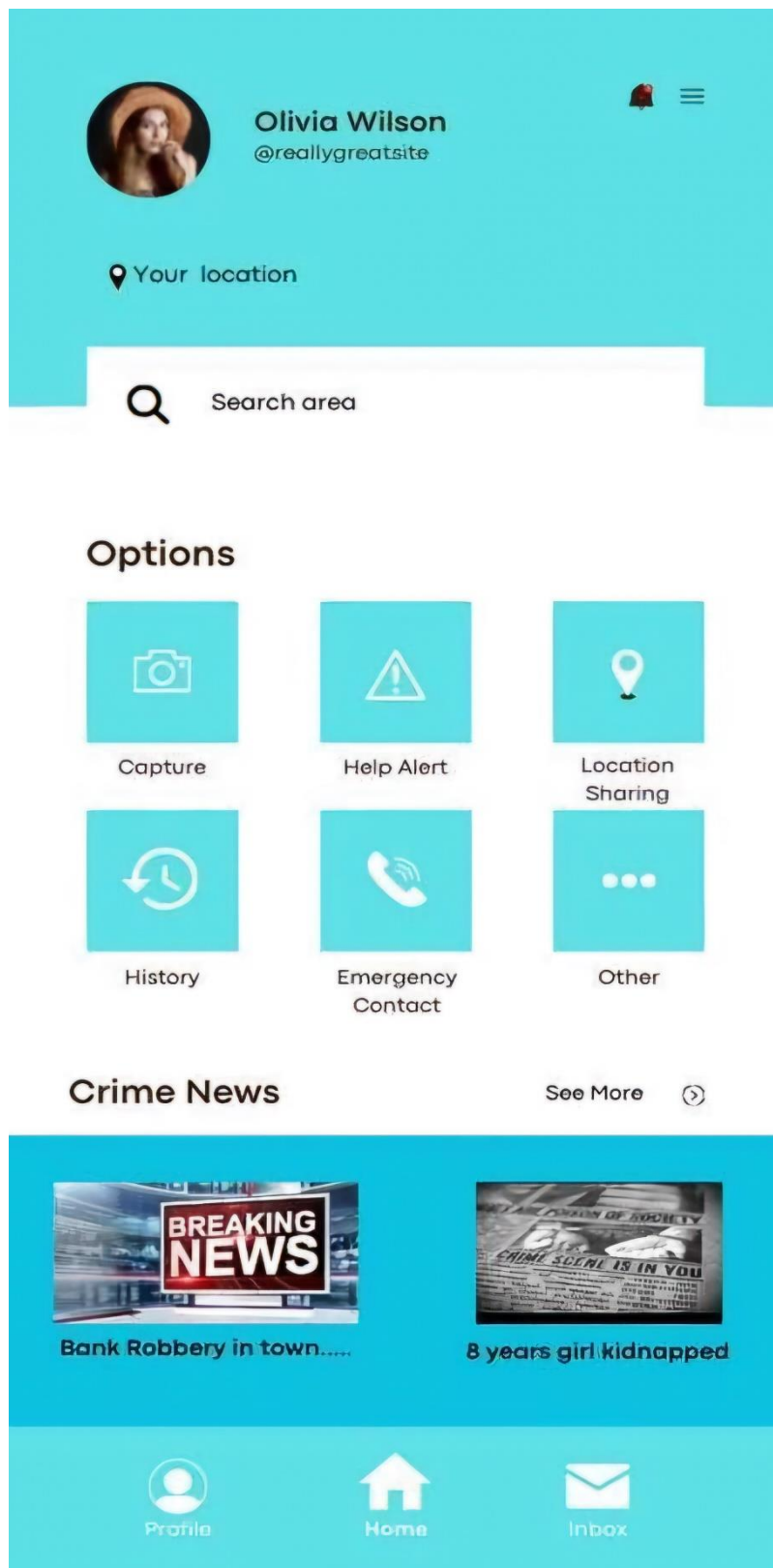
FIGURE 4: Home Page
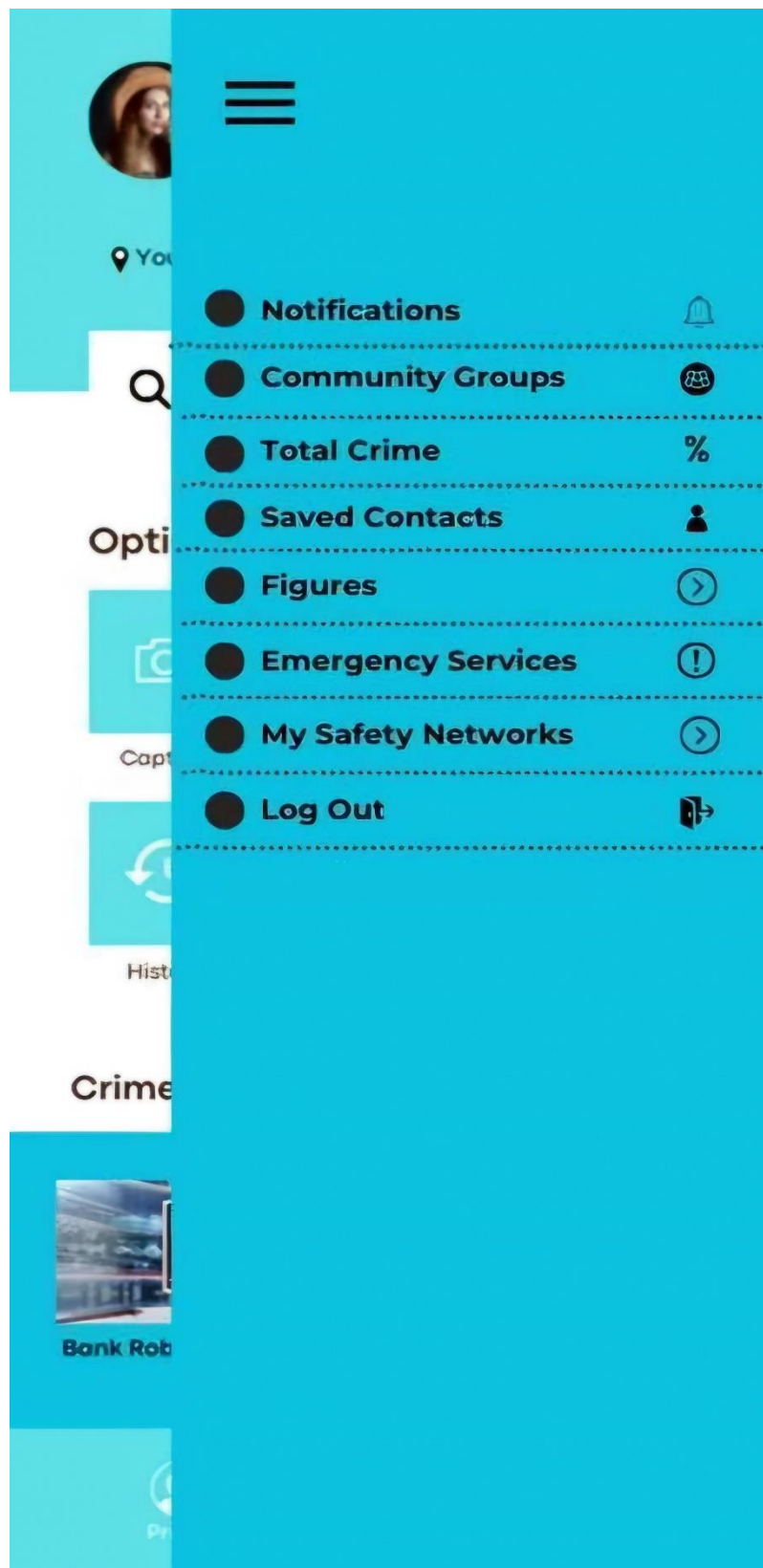
FIGURE 5: More Option Page
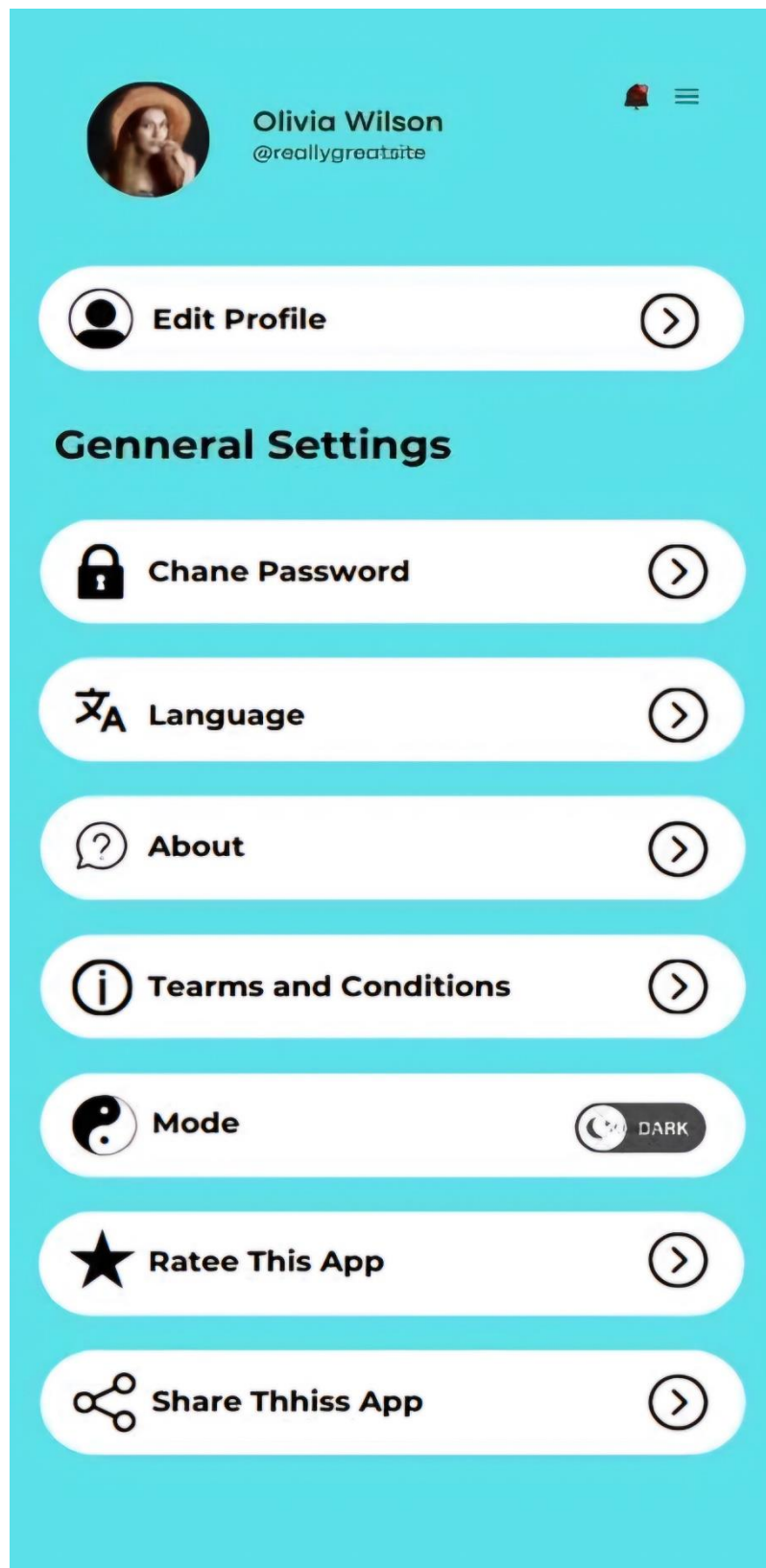
FIGURE 6: Setting Page

FIGURE 7: Capture Page

FIGURE 8: Help Alert Page
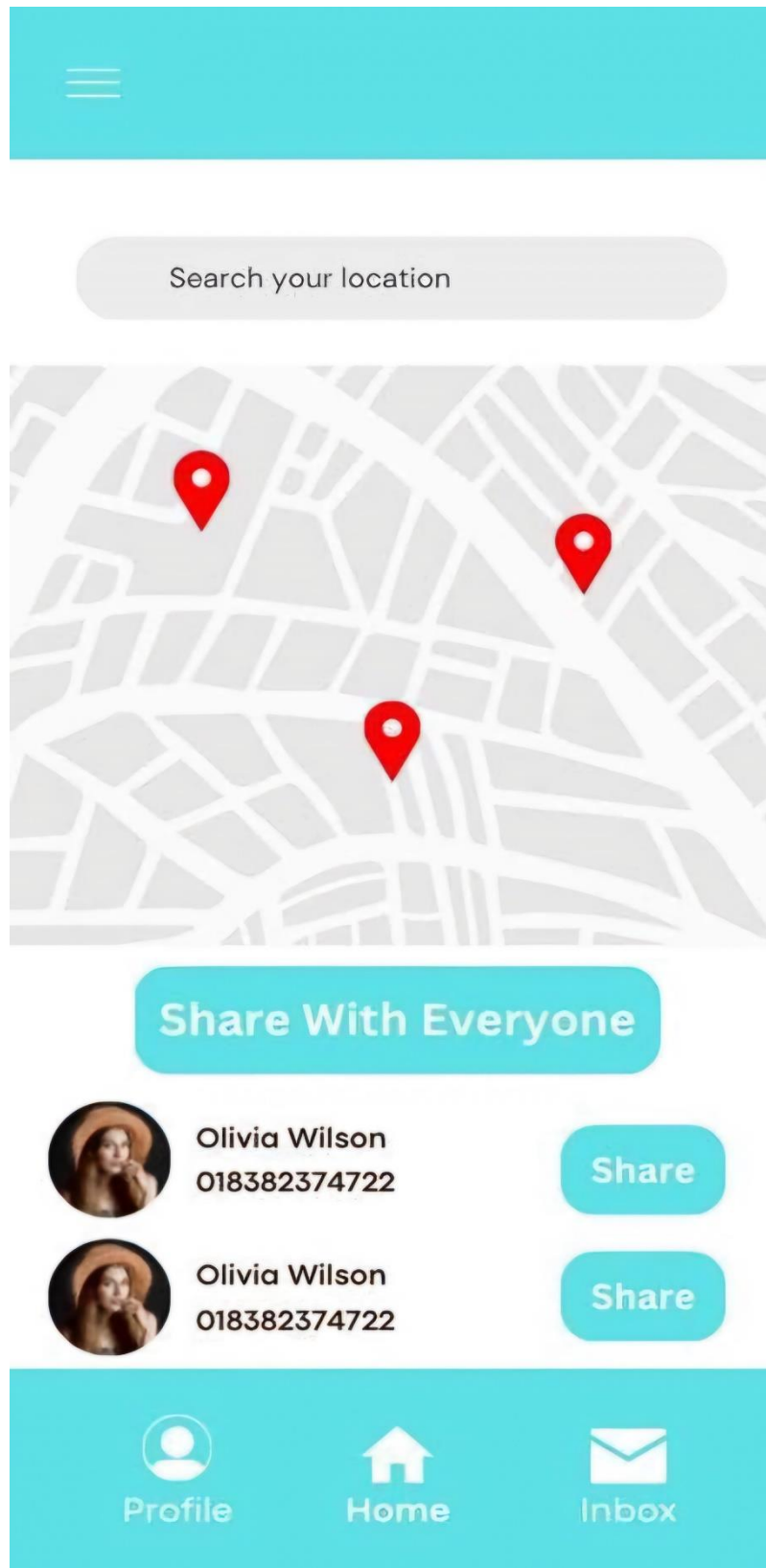
FIGURE 9: Location Sharing Page
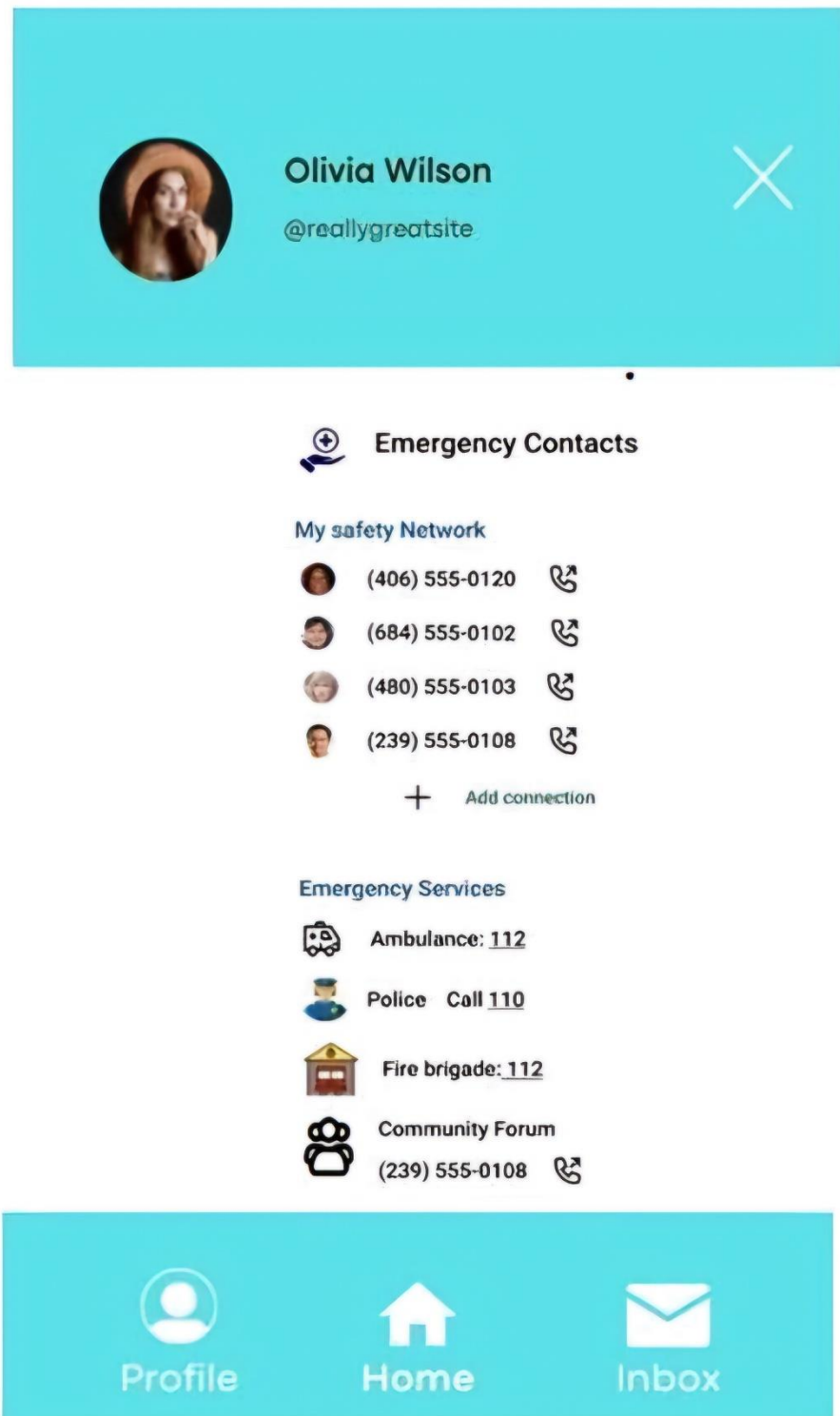
FIGURE 10: Emergency Contact Page

FIGURE 11: History Page (1)

Olivia Wilson
@reallygreatsite

Type | **Total Crimes** | Distribution

Search address

TOTAL CRIMES TRENDS

1y | 5y | 10y

2013 2014 2015 2016 2017 2018 2019
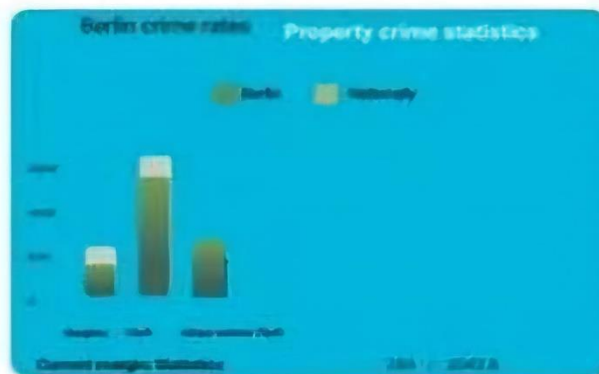
Profile | Home | Inbox

FIGURE 12: History Page (2)

FIGURE 13: History Page (1)

4.4 Project Requirements

Team Cost, Time Contribution & Earnings Breakdown

Team Members, Hourly Rates & Time Contribution:

Team Member Name	Cost (Per Hour)	Hours work
Alvi	110	26.4
Faisal	110	26.4
Orpita	80	19.2
Total	300	72

Project Duration & Cost:

- Testing Hours Per Week: 18 hours

- Total Weeks: 4 weeks

- Total Testing Hours: 72 hours

- Weekly Cost: 5,400 BDT

- Total Project Cost: 21,600 BDT

5. FEATURES NOT TO BE TESTED

- **Non-Critical UI Elements:** The settings page or other UI elements that are not essential to the main functionality might not need to be tested immediately, especially if they don't affect core performance.
- **Performance Under Extreme Load:** Testing system performance under heavy traffic (e.g., 5 seconds during high traffic) might be excluded initially if the application is in its early stages of development. Performance testing may be deferred until after core functionalities are more stable.
- **Battery or Low Connectivity Handling:**
  The feature where the system sends location data even when the phone's battery is low or the phone shuts down might be skipped. Testing this behavior requires specialized conditions (e.g., running the app with minimal battery), and might not be a priority in the early test cycles.

6. TESTING APPROACH

The Urban Areas Crime Detection and Public Safety System will implement a structured and comprehensive testing strategy to ensure its accuracy, security, performance and reliability. The system will undergo multiple levels of testing, leveraging appropriate tools and team collaboration to uphold a high standard of quality assurance.

6.1 Testing Levels

Unit Testing
Unit testing will be performed by developers to verify that individual components function correctly before they are integrated into the system.
Using Features to be Tested:
- User Authentication: Registration, Login, Forgot Password, Logout.
- Crime Reporting: Real-time crime captures and submission.
- Emergency Alerts: Help Alert system, Location Sharing and emergency notifications.
- Database Management: Secure storage and retrieval of data.

Integration Testing
Integration testing will validate the interaction between different system components, ensuring seamless communication and functionality.
Using Areas to Test:
- Mobile Application ↔ Backend Communication (Django Framework).
- Crime Reporting Module ↔ Database Storage & Retrieval.
- Location Sharing ↔ Real-Time Map Integration.
- Emergency Alerts ↔ Notifications Sent to Contacts.

System Testing:
System testing will assess the overall functionality of the application under various real-world conditions.
Primary Focus Areas:
- Performance: Validating the efficiency of real-time alerts under normal and high-load scenarios.
- Security: Ensuring user data, location details, and reports are protected.
- Usability: Assessing the application's ease of use and intuitive design.
- Reliability: Checking the system's stability over extended periods.

Acceptance Testing:
Acceptance testing will be conducted with end users (law enforcement, city officials, and the public) to ensure the system meets their practical needs and usability expectations.
Validation Areas:
User Experience: Evaluating ease of navigation and accessibility across all features.
Emergency Response Time: Measuring the efficiency of real-time alert dispatch and acknowledgment.

Feature Accessibility: Ensuring users can route through all system functions effortlessly.

Data Security & Privacy: Verifying that personal information, crime reports, and emergency alerts remain confidential.

System Stability: Assessing reliability under various real-world scenarios and extended use.

6.2 Test Tools

To maintain efficient and accurate testing, the following tools will be utilized:

- Postman → API testing to verify backend functionality.

- TestRail→ Managing test cases and tracking execution progress.

- Fake Filler → Automated form testing for input validation.

- Lightshot → Capturing screenshots for bug reporting.

- OBS Studio / Loom → Recording test execution for documentation purposes.

6.3 Meetings

Emergency Bug-Fix Meetings: Immediate action on critical defects.

Scrum Meeting: 15 minutes scrum meeting.

Monthly QA Team Meetings: Reviewing test progress and identifying issues.

Quarterly Test Reviews: Collaborative discussions among testers, developers, and project managers.

Emergency Bug-Fix Meetings: Immediate action on critical defects.

Communication Tools: Microsoft Teams, Skype → For real-time discussions and coordination.

7. TEST CASES/TEST ITEMS

Project Name: Urban Areas Crime Detection and Public Safety System.			Test Designed by: Abdullah Al Faisal		
Test Case ID: Fr_SL_001			Test Designed date: 25/01/2025		
Test Priority (Low, Medium, High): High			Test Executed by:		
Module Name: Login Session			Test Execution date:		
Test Title: verify login with valid username and password					
Description: Test application 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 application 2. Enter username 3. Enter password 4. Click Log In	Username: Alvi Password: 321 "Log in Successfully" Username: Faisal Password: 123 "Log in Failed Incorrect password"	Users 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					

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SR_001	Test Designed date: 24/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Registration Session	Test Execution date:

Test Title: Provide email with valid mail address and password

Description: Test application registration page

Precondition (If any): User must have valid information.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application. 2. Click on sign up. 3. Enter email. 4. Enter full name. 5. Enter username. 6. Enter password. 7. Repeat password. 8. Click on create account	Email: a****@gmail.com Full Name: Abdullah Al Faisal Username: Faisal Password: 321 Confirm password: 321	User should create an account into the application		

Post Condition: User information will be saved in database and successfully create an account.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_HA_001	Test Designed date: 23/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Help Alert	Test Execution date:

Test Title: Sending emergency help message or call.

Description: Test application help alert page.

Precondition (If any): User must be logged in and emergency contacts must be saved.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Enter username 3. Enter password 4. Click Log In 5. Click on Help Alert 6. Click on Police Emergency for police help 7. Click on Medical Emergency for medical help 8. Click on Fire Emergency for fire service help 9. Click on Call Emergency for friends and family's help	For Police: 999 For Medical: 999 For Fire Service: 999 For Emergency: 01******77	Users message or call should successfully send.		

Post Condition: User messages will be successfully delivered and receive support from required contacts.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_LS_001	Test Designed date: 24/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Location sharing	Test Execution date:

Test Title: Sending current location of user.

Description: Test application location sharing page.

Precondition (If any): User must be logged in and emergency contacts must be saved to share location individually.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Enter username 3. Enter password 4. Click Log In 5. Click on location sharing 6. Search for your specific location 7. Click on share with everyone or click on share to share individually	Location: Sector 6, Uttara, Dhaka.	User location should successfully be sent.		

Post Condition: User location will be successfully delivered to every emergency contact or any individual contact and receive support from required contacts.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_CH_001	Test Designed date: 25/01/2025
Test Priority (Low, Medium, High): Low	Test Executed by:
Module Name: Previous Crime History	Test Execution date:

Test Title: Verify the history of local areas crime

Description: Test application History page.

Precondition (If any): User must be logged in and, on the location, to show the history of various types of crime in that location.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Enter username 3. Enter password 4. Click Log In 5. Click on History 6. Click on Type 7. Click on Total Crimes 8. Click on Distribution	Type: Total percentage of various types of crime like drug offences, property damage etc.	Users should show the history of various types of crime.		

Post Condition: User must show the previous crime history of his current location successfully.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_CC_001	Test Designed date: 02/04/2024
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Capture Crime	Test Execution date:

Test Title: Capturing an ongoing crime or upload information about it

Description: Capturing information about a crime to inform emergency service and other users

Precondition (If any): User must be logged in

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Enter username 3. Enter password 4. Click Log In 5. Click Capture 6. Capture a video/photo or upload a file. Describe the scene	Photo: Photo of the crime Information: Description of the scene	A notification will be sent to emergency services and to the users in the area		

Post Condition: Users of that area will be notified about the crime

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_CH_002	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: Previous Crime History	Test Execution date:

Test Title: Getting information about Local area

Description: User can get all the information about Local area including crime rates, past crimes, safety

Precondition (If any): User must be logged in

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Enter username 3. Enter password 4. Click Log In 5. Click History	Location: Basundhara R/A,Dhaka.	User will see numbers, types, rate of crimes in local area		

Post Condition: User will get all information regarding Local area

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SL_002	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Forget Password	Test Execution date:

Test Title: Verify password reset via email

Description: Forget Password functionality to ensure users can reset their password.

Precondition (If any): User must have a registered account

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the login page 2. Click "Forget Password." 3. Enter email 4. Enter OTP 5. Set new password	faisal@gmail.com OTP: 123456 New Password:789	Reset password link visible. OTP sent to email. System prompts for OTP. Password reset successful. User redirected to login page.		

Post Condition: User can log in with the new password.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SL_003	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Login Session	Test Execution date:

Test Title: Verify login with invalid credentials

Description: Ensure that the system rejects incorrect email or password and provides an error message.

Precondition (If any): User must have an existing account.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Enter incorrect username 3. Enter incorrect password 4. Click Log In	Username: Invalid User Password: Wrong Pass	The system should display an error message: "Invalid username or password. Please try again."		

Post Condition: The system does not log in the user and prompts for correct credentials.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_LS_002	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Location Sharing	Test Execution date:

Test Title: Verify location sharing fails when GPS is off

Description: Ensure that the system prompts users to enable GPS before sharing location.

Precondition (If any): GPS is turned off on the user's device

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Disable GPS on the device 2. Go to the application 3. Click on location sharing		The system should display an error message: "Location services are disabled. Please enable GPS to share location."		

Post Condition: No location is shared.

Project Name: Urban Areas Crime Detection and Public Safety System.			Test Designed by: Abdullah Al Faisal		
Test Case ID: FR_LS_003			Test Designed date: 27/01/2025		
Test Priority (Low, Medium, High): High			Test Executed by:		
Module Name: Location Sharing			Test Execution date:		
Test Title: Verify location sharing fails when GPS is off					
Description: Ensure that the system prompts users to enable GPS before sharing location.					
Precondition (If any): GPS is turned off on the user's device					
Test Steps	Test Data	Expected Results	Actual Results		Status (Pass/Fail)
1. Disable GPS on the device 2. Go to the application 3. Click on location sharing		The system should display an error message: "Location services are disabled. Please enable GPS to share location."			
Post Condition: No location is shared.					

Project Name: Urban Areas Crime Detection and Public Safety System.			Test Designed by: Abdullah Al Faisal		
Test Case ID: FS_SR_002			Test Designed date: 27/01/2025		
Test Priority (Low, Medium, High): High			Test Executed by:		
Module Name: Registration Session			Test Execution date:		
Test Title: Verify registration fails for duplicate email					
Description: Ensure the system prevents duplicate registrations with the same email.					
Precondition (If any): The email is already registered in the system.					
Test Steps	Test Data	Expected Results	Actual Results		Status (Pass/Fail)
1. Go to the application 2. Click on crime reporting 3. upload a corrupted file or unsupported file 4. click on Submit	File: corrupted_file.exe	The system should display an error message: "Invalid file format. Please upload a valid image or video file."			
Post Condition: No invalid reports are sent.					

Project Name: Urban Areas Crime Detection and Public Safety System.			Test Designed by: Abdullah Al Faisal		
Test Case ID: FS_CR_002			Test Designed date: 27/01/2025		
Test Priority (Low, Medium, High): High			Test Executed by:		
Module Name: Crime Reporting			Test Execution date:		
Test Title: Verify error handling for missing mandatory fields					
Description: Ensure that the users cannot submit a crime report without required details.					
Precondition (If any): User must be logged in.					
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	
1. Go to the application 2. Click on crime reporting 3. Leave the crime description field empty 4. click on Submit	Description: (empty)	The system should display an error message: "Please provide a crime description."			
Post Condition: The crime report is not submitted until required fields are filled					

Project Name: Urban Areas Crime Detection and Public Safety System.			Test Designed by: Abdullah Al Faisal		
Test Case ID: FR_US_001			Test Designed date: 27/01/2025		
Test Priority (Low, Medium, High): Medium			Test Executed by:		
Module Name: User Session			Test Execution date:		
Test Title: Verify user can successfully log out					
Description: Ensure that users can log out of their accounts.					
Precondition (If any): User must be logged in.					
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)	
1. Go to the application 2. Click on Profile 3. click on Log Out		The user should be logged out and the app should return to the login page.			

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_EA_001	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Emergency Alert	Test Execution date:

Test Title: Verify error handling when no contacts are saved

Description: Ensure the system notifies users when no emergency contacts are available.

Precondition (If any): User must be logged in, but no emergency contacts are saved

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Help Alert 3. Click Emergency Alert		The system should display an error message: "No emergency contacts saved. Please add contacts in settings."		

Post Condition: The alert is not sent until contacts are added.

Post Condition: The user session is cleared and authentication is required to log in again.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_US_002	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: User Profile	Test Execution date:

Test Title: Verify users can update their profile details

Description: Ensure users can update their profile information successfully.

Precondition (If any): User must be logged in.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Profile Settings 3. Update full Name 4. Update Email 5. Click Save Changes	Name: John Smith Email: alvi@gmail.com	The system should save the updated profile and display a success message.		

Post Condition: The updated information is stored in the database.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_EA_002	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Emergency Alert	Test Execution date:

Test Title: Verify emergency contacts are displayed correctly.

Description: Ensure users can view and manage their emergency contacts.

Precondition (If any): User must have at least one emergency contact saved.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Emergency Contacts 3. View the list of saved contacts		The system should display the saved emergency contacts correctly.		

Post Condition: The user can select contacts for emergency alerts.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_US_003	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: User Session	Test Execution date:
Test Title: Verify password change functionality	
Description: Ensure users can update their password successfully.	
Precondition (If any): User must be logged in.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Settings 3. Click change Password 4. Enter current password 5. Enter new Password 6. Confirm new password 7. Click Update Password	OldPass123 NewPass456 NewPass456	The system updates the password and confirms the change.		

Post Condition: User must log in with the new password next time.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_US_004	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: User Settings	Test Execution date:

Test Title: Verify system prevents password change with incorrect old password

Description: Ensure users cannot update their password if they enter the wrong old password.

Precondition (If any): User must be logged in.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Settings 3. Click on Change Password 4. Enter incorrect old password 5. Enter new Password	WrongPass123 NewPass456	The system should display an error message: "Incorrect current password."		

Post Condition: The password remains unchanged.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SL_003	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: Login System	Test Execution date:

Test Title: Verify the "Remember Me" functionality retains login details

Description: Ensure the selecting "Remember Me" allows user to stay logged in after closing and reopening the app.

Precondition (If any): User must have an existing account and must enable the "Remember Me" option

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Login page 3. Enter valid email and password 4. Click the "Remember Me" box 5. Click Login 6. Close the application 7. Reopen the application	Email: alvi@gmail.com Password: 123	The system should remain logged in and be directed to the home page without entering credentials again.		

Post Condition: The login session remains active unless the user manually logs out

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SL_004	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: Login System	Test Execution date:

Test Title: Verify that logging out disables "Remember Me"

Description: Ensure that logging out removes stored login details, even if "Remember Me" was enabled.

Precondition (If any): User must have previously selected "Remember Me" during login.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Profile Setting 3. Click Log Out 4. Click and reopen the application		The system should prompt the user to enter their credentials again, as the "Remember Me" feature is disabled after logout.		

Post Condition: The session is completely cleared and login is required for the next session.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SR_003	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Registration Session	Test Execution date:
Test Title: Verify System rejects weak passwords	
Description: Ensure user cannot register using a weak password	
Precondition (If any): User must be on the registration page.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Sign Up 3. Enter Full Name 4. Enter email 5. Enter weak password 6. Click Register	John John12@gmail.com 12345	The system should display an error message: "Password is too weak. Use a mix of letters, numbers, and special characters."		

Post Condition: User must enter a stronger password to proceed.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SR_004	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Registration Session	Test Execution date:

Test Title: Verify system rejects invalid email format

Description: Ensure users must provide a valid email format.

Precondition (If any): User must be on the registration page.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Sign Up 3. Enter Full Name 4. Enter invalid email 5. Enter password 6. Click Register	John John12@g.com jane@123	The system should display an error message: "Invalid email format. Please enter a valid email address."		

Post Condition: Registration is not completed, and the user must enter a valid email.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_LS_004	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Location Sharing	Test Execution date:

Test Title: Verify users can share location with multiple contacts

Description: Ensure users can share their location with multiple emergency contacts.

Precondition (If any): User must have at least two emergency contacts saved.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Location Sharing 3. Select emergency contacts 4. Click Share Location	Father, Mother, Police	The system successfully sends the location to all selected contacts.		

Post Condition: The contacts receive the shared location.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_LS_005	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Location Sharing	Test Execution date:

Test Title: Verify location sharing fails without internet
Description: Ensure users cannot share location when offline.
Precondition (If any): The user must disable internet access.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Disable mobile data/Wi-Fi 2. Open the application 3. Click Share Location		The system should display an error message: "Internet connection required to share location."		

Post Condition: Location is not shared until internet access is restored.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_US_005	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: User Session	Test Execution date:

Test Title: Verify system auto-logs out users after inactivity

Description: Ensure users are automatically logged out after a period of inactivity.

Precondition (If any): User must be logged in.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Home Page 3. Leave the app idle for 15 minutes 4. Try performing an action		The system should log out the user and prompt for re-login.		

Post Condition: The user must re-enter credentials to access the system.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_UA_001	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: User Authentication	Test Execution date:
Test Title: Verify system prevents multiple active sessions	
Description: Ensure users cannot log in from multiple devices at the same time.	
Precondition (If any): User must be logged in one device.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Log in to the app on Device A 2. Attempt login on Device B		The system should log out Device A or prevent login on Device B with a message: "You are already logged in from another device."		

Post Condition: Only one active session per user is allowed.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_SR_005	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Registration Session	Test Execution date:

Test Title: Verify registration fails when required fields are left blank

Description: Ensure users cannot register without filling in required fields.

Precondition (If any): User must be on the registration page.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the application 2. Click on Sign Up 3. Leave some fields empty 4. Click Register	Name: (empty) John12@g.com Jane@123	The system should display an error message: "Please fill in all required fields."		

Post Condition: Registration is not completed until all fields are filled.

Project Name: Urban Areas Crime Detection and Public Safety System.	Test Designed by: Abdullah Al Faisal
Test Case ID: FR_CR_003	Test Designed date: 27/01/2025
Test Priority (Low, Medium, High): Medium	Test Executed by:
Module Name: Crime Reporting	Test Execution date:

Test Title: Verify users can report crimes anonymously

Description: Ensure users can submit reports without revealing their identity.

Precondition (If any): User must be logged in.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the application 2. Click Report Crime 3.Enable Anonymous Mode 4. Enter crime details 5. Click Submit	Robbery near main street at 8 PM	The system successfully submits the report without storing user details.		

8. ITEM PASS/FAIL CRITERIA

The item will pass when all test results align with the business goals, acceptance criteria, and validation requirements. It must meet the expected performance, functionality and user acceptance. If any aspect, such as validation or business goals, fails to meet the user's expectations or the defined criteria, the test case will be labeled as failed.

9. TEST DELIVERABLES
- Test plans document.
- Test cases documents.
- Test Design specifications.
- Test Data.
- Test Execution Logs.
- Test Results

10. STAFFING AND TRAINING NEEDS

Staffing Needs:

During the first week of the project the project manager performed the role of full-time test engineer with a part-time professional test engineer to assist in initial planning and one more personnel was hired to review the test cases and assist building more complex and new test cases.

Training Needs:

Two of the test team members were lagging in designing test cases and for this reason a training session was arranged for them. Test team members as well as test managers were not having trouble with available testing tools and with the help of part time professional test engineer, they were able to understand the functionalities.

11. RESPONSIBILITIES

Responsibilities	TM	PM	Dev Team	Test Team	Client
Acceptance Test Documentation & Execution	✓	✓		✓	✓
System/Integration Test Documentation & Exec.	✓		✓	✓	
Unit Test Documentation & Execution	✓		✓	✓	
System Design Reviews	✓	✓	✓		✓
Detail Design Reviews	✓	✓	✓	✓	
Test Procedures & Rules	✓	✓		✓	
Screen & Prototype Reviews			✓	✓	✓
Change Control and Regression Testing	✓	✓		✓	✓

12. TESTING SCHEDULE
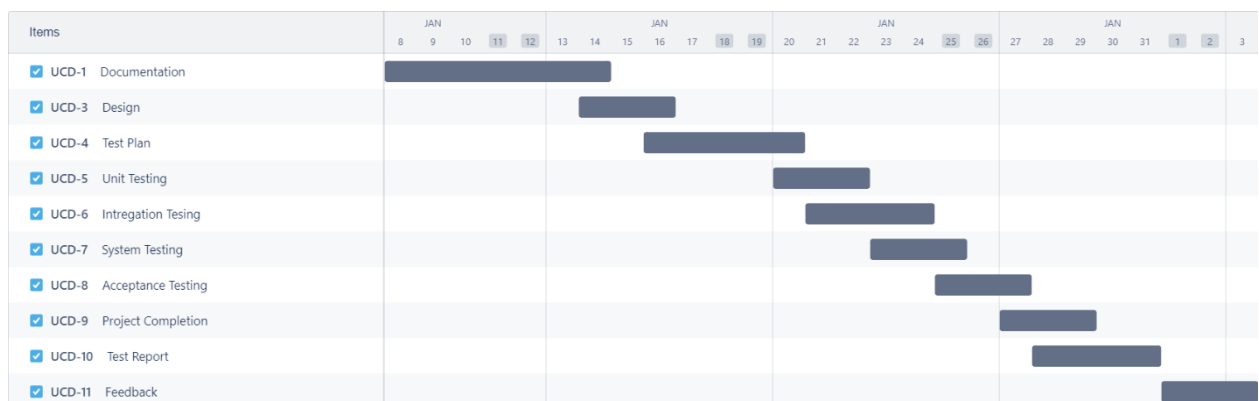
13. PLANNING RISKS AND CONTINGENCIES

- Lack of communication between cross functional teams.
- Complex design is hard to finish on time.
- Due to lack of proper testing skills.
- Poor management skills.
- Budget Changes.
- Employee turnover or unavailability (leave).
- Inaccurate estimation and scheduling.
- Server down for huge traffic. (overload).
- Unexpected user request.
- Application may crash in some of the operating systems version.
- Product instability after Monkey Testing.
- Requirement gaps are causing additional issues and delays.
- Improper knowledge transfer of the product.

14. APROVALS

Project Sponsor	
Development Management	
EDI Project Manager	
RS Test Manager	
RS Development Team Manager	
Reassigned Sales	
Order Entry EDI Team Manager	