Black Box Testing

Test Technique 1: Equivalence Partitioning

1. Create Account

Equivalence Classes:

Phone number: length must be at least 8

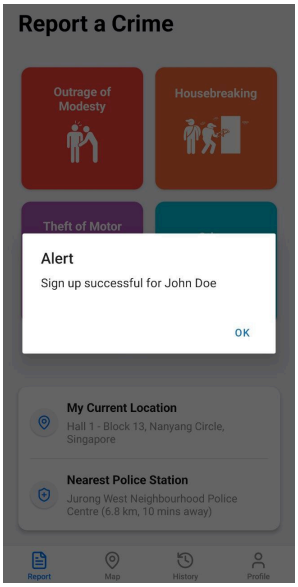
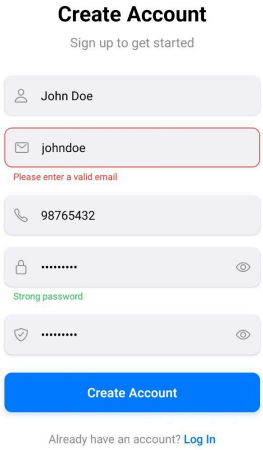
Email: must be in correct email format

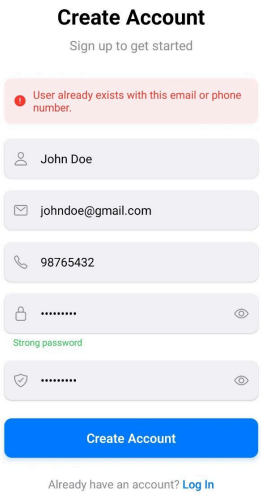
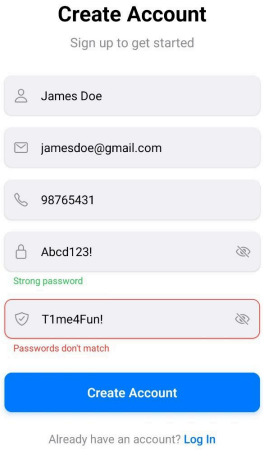
Password:

- Be at least 8 characters long
- Include at least one uppercase letter
- Include at least one number
- Include at least one special character (`!@#$%^&*/`)
- Not be empty

Valid Input: Correct phone number, email, password format, and confirm password is same as password

Invalid Input: Incorrect phone number or email or password format, confirm password not same as password

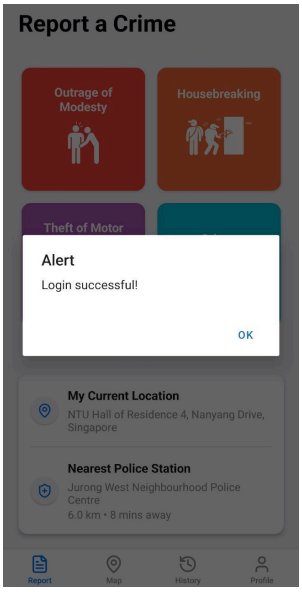
Create Account				
Test ID	**Test Input (Prompt)**	**Expected Output**	**Actual Output**	**Test Result**
1 (Valid Input: Create Account)	• Full Name: "John Doe" • Phone Number: "98765432" (valid) • Email: johndoe@gmail.com • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: "Sign up successfully for John Doe!" • Redirect to Home Page		Pass
2 (Invalid email format)	• Full Name: "John Doe" • Phone Number: "98765432" (valid) • Email: "johndoe" (invalid) • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: "Please enter a valid email address!"		Pass

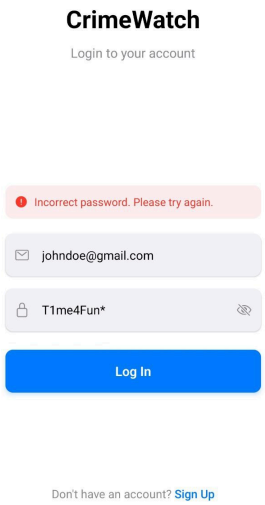
3 (Reuse phone number or email)	• Full Name: "John Doe” • Phone Number: "98765432" (reused) • Email: johndoe@gmail.com (reused) • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: “User already exists with this email or phone number.”		Pass
3 (Confirm password not same as password)	• Full Name: "James Doe” • Phone Number: "98765431" (valid) • Email: jamesdoe@gmail.com (valid) • Password: "Abcd123!" (valid) • Confirm Password: "T1me4Fun!" (valid) (does not match)	• Display message: “Passwords do not match”		Pass

2. Login

Equivalence Classes:

- **Valid Login**: Correct phone number and correct password.
- **Invalid Login**: Incorrect phone number, incorrect password, or both.

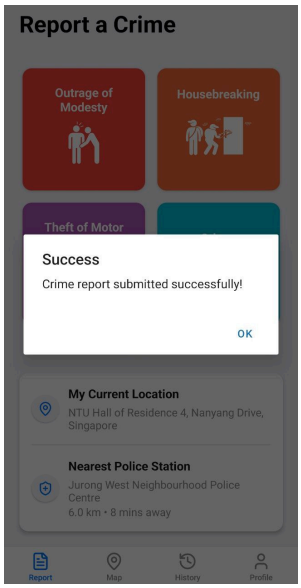
Login				
Test ID	**Test Input (Prompt)**	**Expected Output**	**Actual Output**	**Test Result**
1 (Valid Login)	• Email: "johndoe@gmail.com" • Password: "T1me4Fun!"	• Display message: "Login successful"		Pass

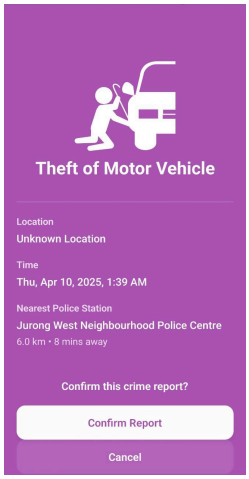
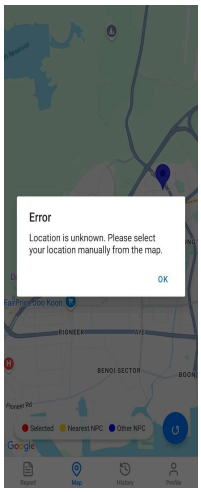
2 (Incorrect Password)	• Email: "johndoe@gmail.com" • Password: "T1me4Fun*" (Incorrect)	• Display message: "Incorrect password. Please try again.”		Pass

3. Make a Report

Equivalence Classes:

- **Valid Report**: Location is known
- **Invalid Report**: Unknown location

Make a Report				
Test ID	**Test Input (Prompt)**	**Expected Output**	**Actual Output**	**Test Result**
5 (Valid Report)	• Crime Type: "Snatch Theft" • Email: "johndoe@gmail.com" • Location: Hall 1 - Block 13, Nanyang Circle, Singapore • Police Station: "Nanyang Neighbourhood Police Centre"	• Display message "Crime Report submitted successfully ."		Pass

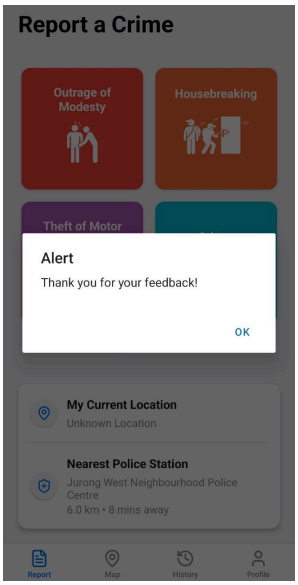
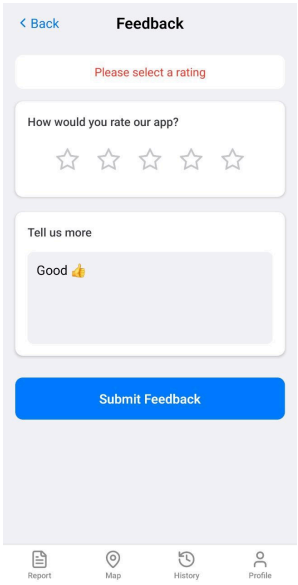
6 (Missing Crime Type)	• Crime Type: "Snatch Theft" • Email: “johndoe@gmail.com” • Location: Unknown Location • Police Station: “Nanyang Neighbourhood Police Centre”	• Error message: "Location is unknown. Please select your location manually from the map.” • Direct to map page	 	Pass

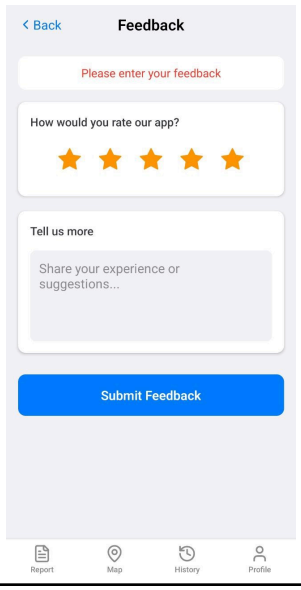
4. Submit Feedback

Equivalence Classes:

- **Valid Feedback**: Rating and feedback are entered
- **Invalid Feedback**:
  - Rating is not entered
  - Message is not entered

Make a Report				
Test ID	**Test Input (Prompt)**	**Expected Output**	**Actual Output**	**Test Result**

7 (Valid Feedback)	• Rating: 5 • Comment: Useful App	• Display message “Thank you for your feedback.” • Direct to home page		Pass
8 (Missing Rating)	• Rating: None • Comment: Useful App	• Error message: ”Please select a rating. "		Pass

9 (Missing Comment)	• Rating: 5 • Comment: None	• Error message: ”Please enter your feedback. "		Pass

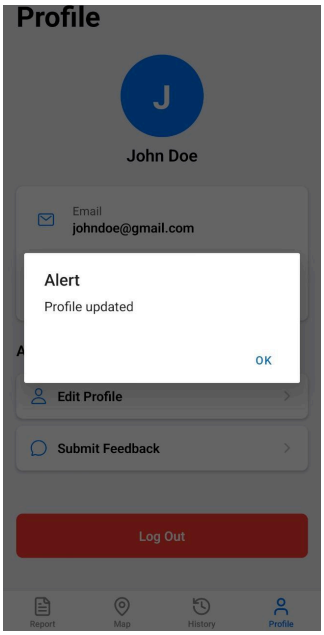
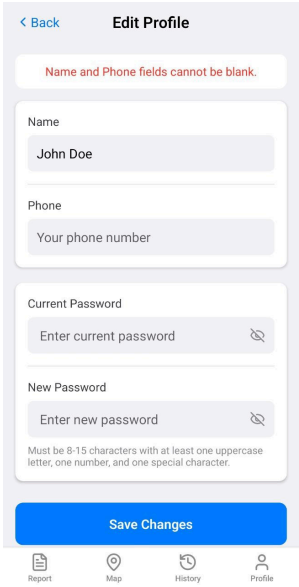
5. Edit Profile

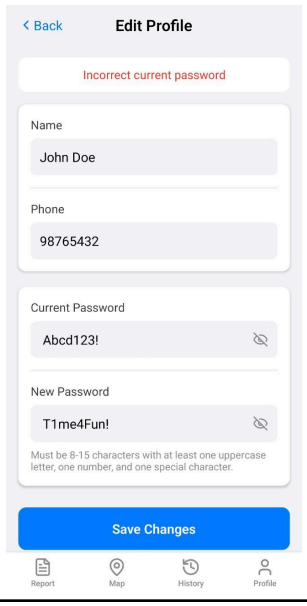
Equivalence Classes:

- **Valid profile update:**
  - Name, phone is not empty, password is needed to be correct before changing to new information

- **Invalid Feedback**:
  - Name is empty or phone is empty
  - Incorrect password while updating password

Make a Report				
Test ID	**Test Input (Prompt)**	**Expected Output**	**Actual Output**	**Test Result**

10 (Valid profile update)	• Name: John Doe • Phone: Change from “98765432” to “80006000” • Password: Change from “T1me4Fun!” to “T1me4Fun^”	• Display message “Profile updated” • Direct to profile page		Pass
11 (Missing Phone or Name)	• Name: John Doe • Phone: Change from “98765432” to empty	• Error message: ”Name and Phone fields cannot be blank. "		Pass

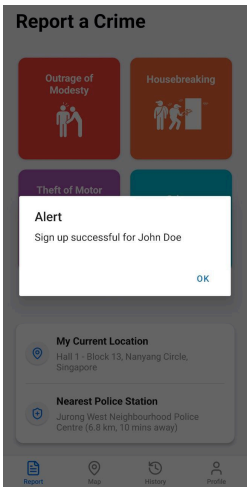
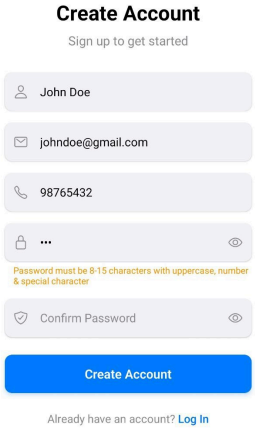
12 (Password incorrect while trying to change password)	• Name: John Doe • Phone: Change from “98765432” to “80006000” • Password: Change from “Abcd123!” to “T1me4Fun!”	• Error message: ”Incorrect current password. "		Pass

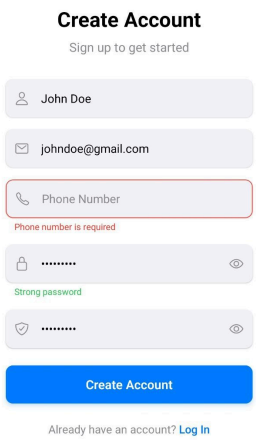
Test Technique 2: Boundary Value Analysis

Create Account

- **Boundary Values:**
    - **Upper Boundary**: Maximum number of characters allowed for fields (e.g., phone number, password).
    - **Lower Boundary**: Minimum number of characters for fields (e.g., phone number, password).

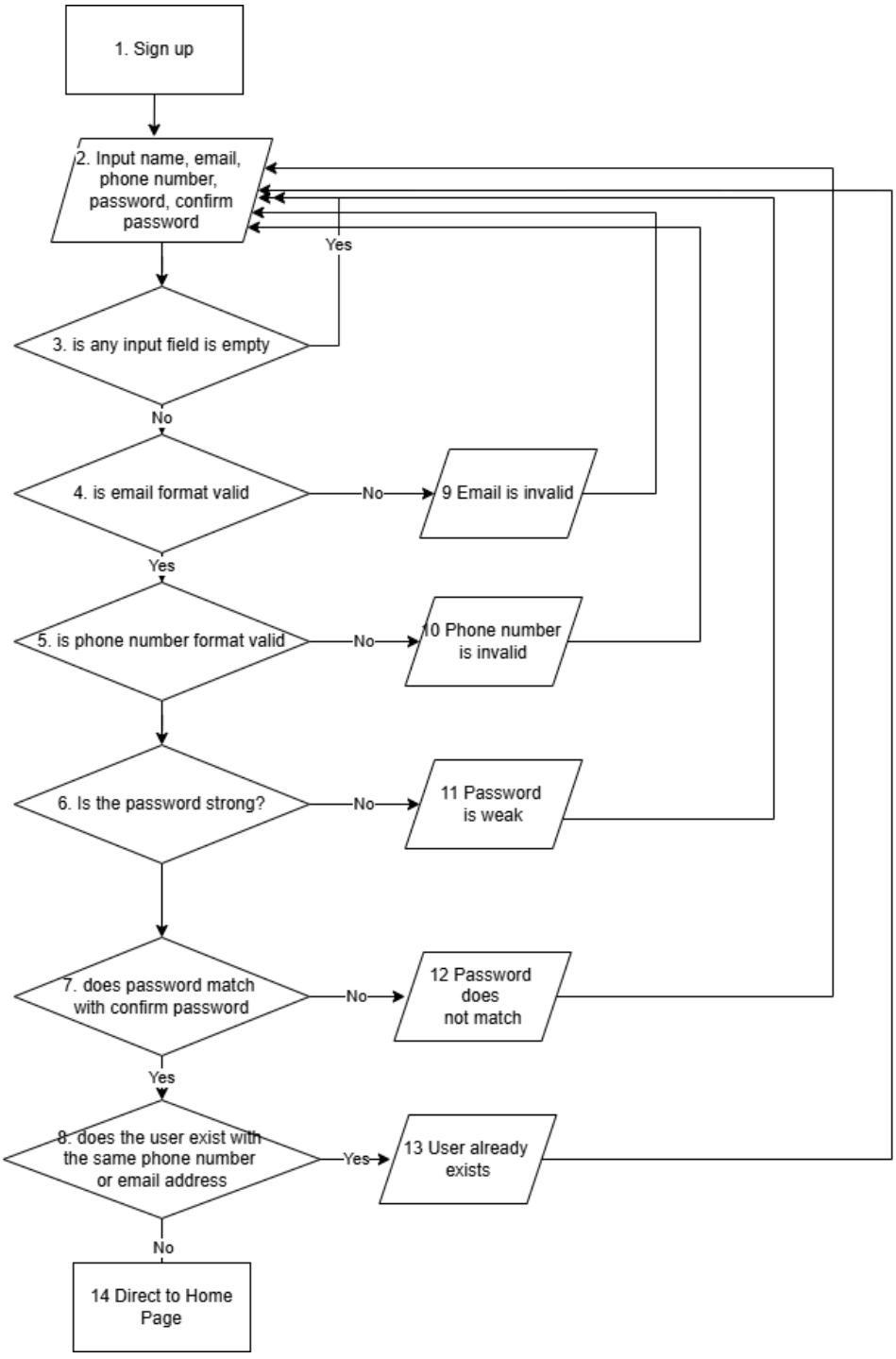
Test ID	Test Input (Prompt)	Expected Output	Actual Output	Test Result

10	• Name: John Doe • Email: johndoe@gmail.com • Phone Number: 6598765432, • Password: Ab1!abcD	Sign up successfully for xxx!		Pass
11	• Name: John Doe • Email: johndoe@gmail.com • Phone Number: 98765432, • Password: 123	Error message: "Password is weak. Please use at least 8 characters, including an uppercase letter, a number, and a special character.."		Pass

12	• Name: John Doe • Email: johndoe@gmail.com • Phone Number: • Password: Ab1!abcD	Error message: "Please fill in all the fields"		Pass

White Box Testing

1. Sign Up


1. Sign up
2. Input name, email, phone number, password, confirm password
3. is any input field is empty
Yes
No
4. is email format valid
No
9 Email is invalid
Yes
5. is phone number format valid
No
10 Phone number is invalid
6. Is the password strong?
No
11 Password is weak
7. does password match with confirm password
No
12 Password does not match
Yes
8. does the user exist with the same phone number or email address
Yes
13 User already exists
No
14 Direct to Home Page

Cyclomatic Complexity:

Cyclomatic complexity: Number of edges - number of nodes + 2 = 18 -14 + 2 = 7

Basic Paths:

1. Path 1: Sign up successfully (valid email and phone).
2. Path 2: Empty input
3. Path 3: Invalid email
4. Path 4: Invalid phone number
5. Path 5: Password is weak
6. Path 6: Password does not match
7. Path 7: User already exists

Test Cases

1. Full Name: "John Doe"; Phone Number: "98765432" (valid); Email: johndoe@gmail.com; Password: "T1me4Fun!" (valid); Confirm Password: "T1me4Fun!" (valid)
2. Full Name: "" (empty); Phone Number: "98765432" (valid); Email: johndoe@gmail.com; Password: "T1me4Fun!" (valid); Confirm Password: "T1me4Fun!" (valid)
3. Full Name: "John Doe"; Phone Number: "98765432" (valid); Email: johndoe(invalid); Password: "T1me4Fun!" (valid); Confirm Password: "T1me4Fun!" (valid)
4. Full Name: "John Doe"; Phone Number: "98765" (invalid); Email: johndoe@gmail.com; Password: "T1me4Fun!" (valid); Confirm Password: "T1me4Fun!" (valid)
5. Full Name: "John Doe"; Phone Number: "98765" (invalid); Email: johndoe@gmail.com; Password: "T1m" (weak); Confirm Password: "T1m" (weak)
6. Full Name: "John Doe"; Phone Number: "98765432" (valid); Email: johndoe@gmail.com; Password: "Abcd123#" (valid); Confirm Password: "T1me4Fun!" (valid) (does not match)
7. Full Name: "John Doe"; Phone Number: "98765432" (valid); Email: johndoe@gmail.com; Password: "T1me4Fun!" (valid); Confirm Password: "T1me4Fun!" (valid) (User already exists)

Real Execution Paths

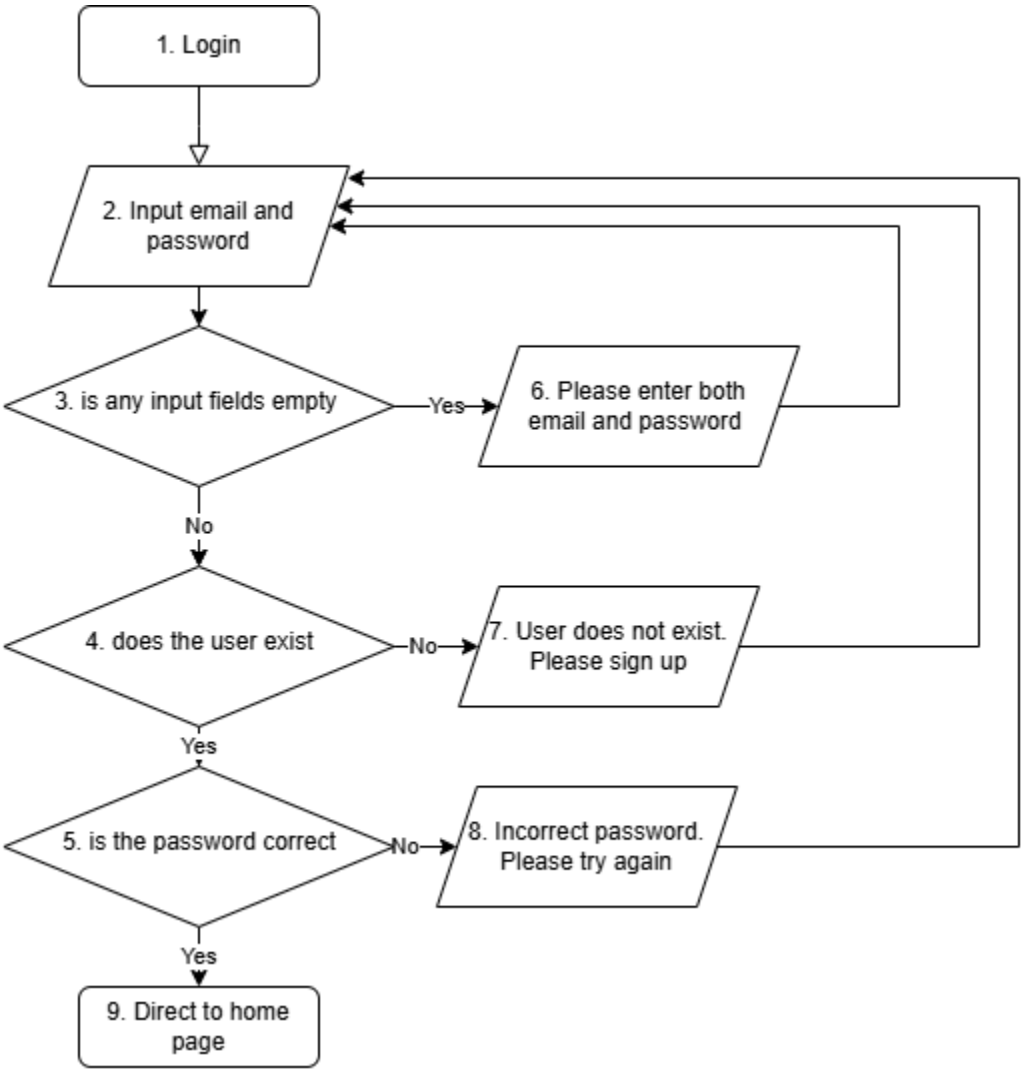
1. Path 1: 1,2,3,4,5,6,7,8,14
2. Path 2: 1,2,3,2,3,4,5,6,7,8,14
3. Path 3: 1,2,3,4,9,2,3,4,5,6,7,8,14
4. Path 4: 1,2,3,4,5,10,2,3,4,5,6,7,8,14
5. Path 5: 1,2,3,4,5,6,11,2,3,4,5,6,7,8,14
6. Path 6: 1,2,3,4,5,6,7,12,2,3,4,5,6,7,8,14
7. Path 7: 1,2,3,4,5,6,7,8,13,2,3,4,5,6,7,8,14

Test ID	Test Input (Prompt)	Expected Output	Actual Output
1 (Valid Input: Create Account)	• Full Name: "John Doe” • Phone Number: "98765432" (valid) • Email: johndoe@gmail.com • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: “Sign up successfully for John Doe!” • Redirect to Home Page	• Display message: “Sign up successfully for John Doe!” • Redirect to Home Page
2 (Empty input)	• Full Name: "” (empty) • Phone Number: "98765432" (valid) • Email: johndoe@gmail.com • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: “Please fill in all the fields.”	• Display message: “Please fill in all the fields.”
3 (Invalid email format)	• Full Name: "John Doe” • Phone Number: "98765432" (valid) • Email: "johndoe" (invalid) • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: “Please enter a valid email address!”	• Display message: “Please enter a valid email address!”

4 (Invalid phone number format)	• Full Name: "John Doe" • Phone Number: "98765" (invalid) • Email: johndoe@gmail.com • Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: "Please enter a valid phone number!"	• Display message: "Please enter a valid phone number!"
5 (Weak Passwordl)	• Full Name: "John Doe" • Phone Number: "98765" (invalid) • Email: johndoe@gmail.com • Password: "T1m!" (weak) • Confirm Password: "T1m!" (weak)	• Display message: "Password is weak. Please use at least 8 characters, including an uppercase letter, a number, and a special character."	• Display message: "Password is weak. Please use at least 8 characters, including an uppercase letter, a number, and a special character."
6 (Confirm password not same as password)	• Full Name: "James Doe" • Phone Number: "98765431" (valid) • Email: jamesdoe@gmail.com (valid) • Password: "Abcd123#!" (valid) • Confirm Password: "T1me4Fun!" (valid)	• Display message: "Passwords do not match"	• Display message: "Passwords do not match"
7 (User already exists)	• Full Name: "John Doe" • Phone Number: "98765432" (valid) • Email: johndoe@gmail.com	• Display message: "User already exists with this email or phone number"	• Display message: "User already exists with this email or phone number"

	• Password: "T1me4Fun!" (valid) • Confirm Password: "T1me4Fun!" (valid)		

1. Login


1. Login
2. Input email and password
3. is any input fields empty
Yes
6. Please enter both email and password
No
4. does the user exist
No
7. User does not exist. Please sign up
Yes
5. is the password correct
No
8. Incorrect password. Please try again
Yes
9. Direct to home page

Cyclomatic Complexity:

Cyclomatic complexity: Number of edges - number of nodes + 2 = 11 -9 + 2 = 4

Basic Paths:

1. Path 1: Login successfully (valid email and phone).
2. Path 2: Empty input
3. Path 3: User does not exist
4. Path 4: Password Incorrect

Test Cases

1. Email: "johndoe@gmail.com", Password: "T1me4Fun!"
2. Email: "", Password: "T1me4Fun!"
3. Email: "jamesdoe@gmail.com" (does not exist), Password: "T1me4Fun!"
4. Email: "johndoe@gmail.com", Password: "T2me4Fun!" (incorrect)

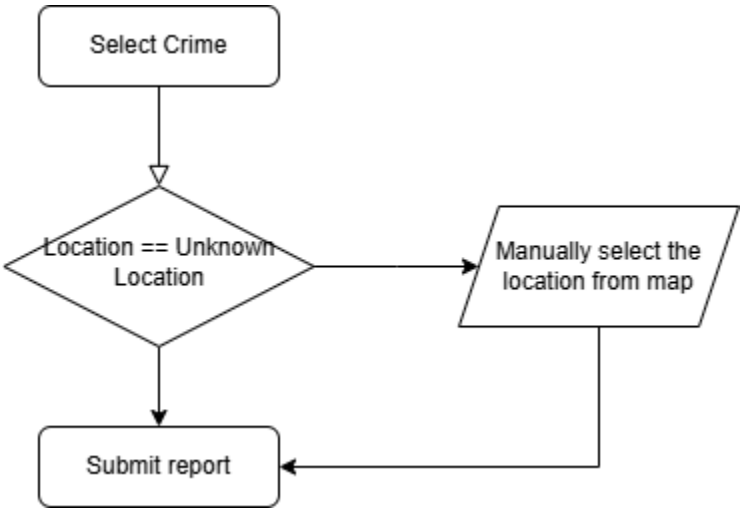
Real Execution Paths

1. 1,2,3,4,5,9
2. 1,2,3,6,2,3,4,5,9
3. 1,2,3,4,7,2,3,4,5,9
4. 1,2,3,4,5,8,2,3,4,5,9

Test ID	Test Input (Prompt)	Expected Output	Actual Output
1 (Login successful)	• Email: johndoe@gmail.com • Password: "T1me4Fun!" (valid)	• Display message: "Login successful"	• Display message: "Login successful"

2 (Empty input)	• Email: “” • Password: "T1me4Fun!" (valid)	• Display message: “Please fill in all the fields.”	• Display message: “Please fill in all the fields.”
3 (User does not exist)	• Email: “jamesdoe@gmail.com" (invalid) • Password: "T1me4Fun!"	• Display message: “User does not exist! Please sign up!”	• Display message: “User does not exist! Please sign up!”
4 (Incorrect password)	• Email: “jamesdoe@gmail.com" (invalid) • Password: "T2me4Fun!"	• Display message: “Incorrect password. Please try again.”	• Display message: “Incorrect password. Please try again.”

2. Report Submission



Cyclomatic Complexity:

Cyclomatic complexity: Number of edges - number of nodes + 2 = 4 - 4 + 2 = 2

Basic Paths:

1. Path 1: Successful Submission (valid location and confirmed report).
2. Path 2: Submission with Unknown Location (invalid location).

Test Cases:

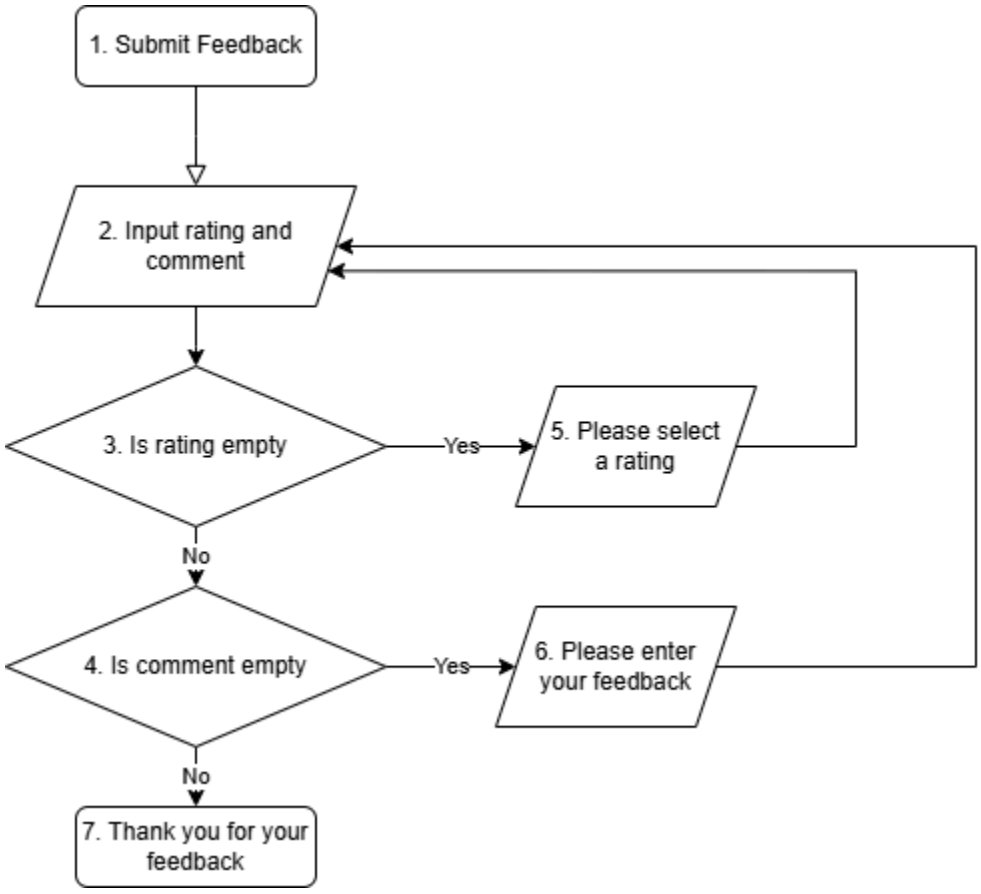
1. **Test Case 1: Successful Submission**
    - **Input:** Crime Type: "Others", Location: "Hall 1 - Block 13, Singapore", Police Station: "Nanyang Neighbourhood Police Centre".
    - **Expected Output:** "Crime report submitted successfully!"
2. **Test Case 2: Submission with Unknown Location**
    - **Input:** Crime Type: "Others", Location: "Unknown Location", Police Station: "Nanyang Neighbourhood Police Centre".
    - **Expected Output:** Error message: "Location is unknown. Please select your location manually from the map."

Real Execution Paths:

1. **Baseline path:** Path 1 → Location is valid → Police station is valid → Report successfully created → Confirmation message: "Crime report submitted successfully!"
2. **Basic path:** Path 2 → Location is invalid → Location is unknown. Please select your location manually from the map.

Test ID	Test Input (Prompt)	Expected Output	Actual Output
1 (Location is valid)	• Crime Type: "Others" • Location: "Hall 1 - Block 13, Singapore" • Police Station: "Nanyang Neighbourhood Police Centre".	• Display message: "Crime report submitted successfully!"	• Display message: "Crime report submitted successfully!"
2 (Location is Unknown Location)	• Crime Type: "Others" • Location: "Unknown Location" • Police Station: "Nanyang Neighbourhood Police Centre".	• Display message: "Location is unknown. Please select your location manually from the map."	• Display message: "Location is unknown. Please select your location manually from the map."

3. Feedback Submission



Cyclomatic Complexity:

Cyclomatic complexity: Number of edges - number of nodes + 2 = 8 - 7 + 2 = 3

Basic Paths:

1. Path 1: Feedback submitted successfully
2. Path 2: Please enter your rating
3. Path 3: Please enter your feedback

Test Cases:

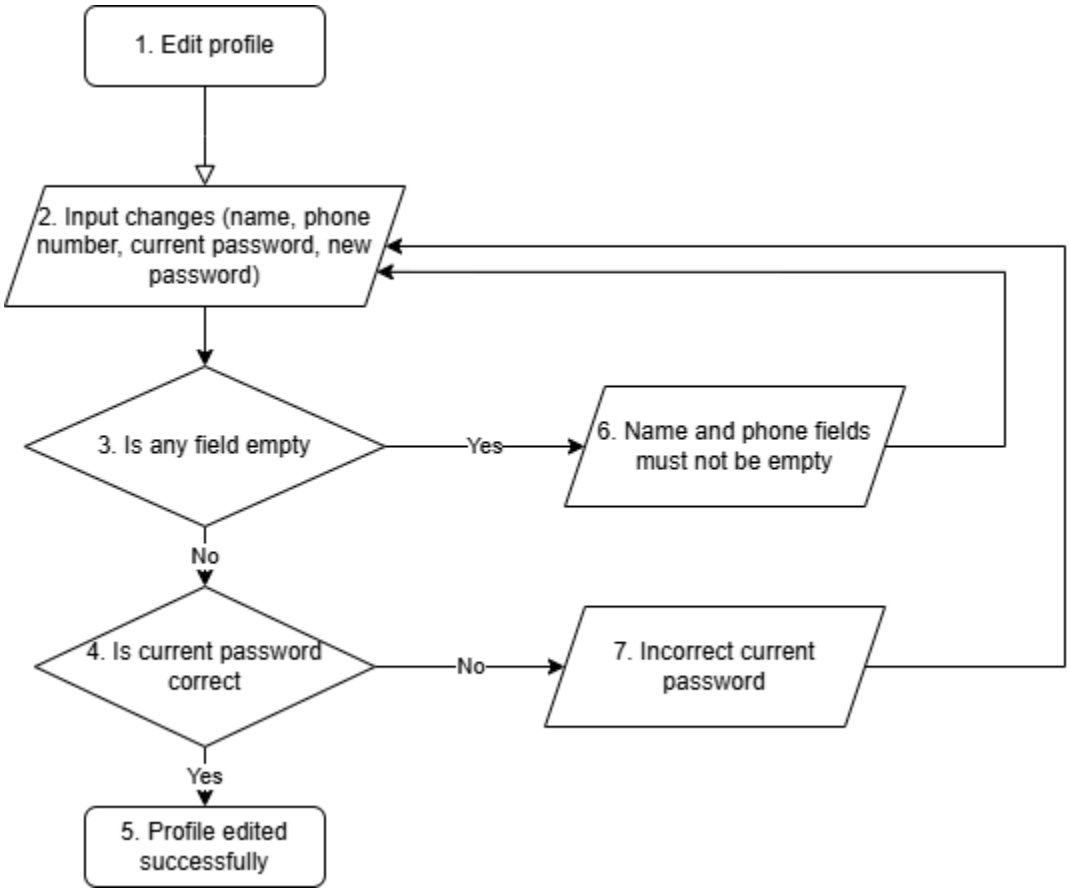
1. **Test Case 1: Successful Submission**
    - **Input:** Rating = 5, Message = Good
    - **Expected Output:** "Feedback submitted successfully!!"

2. **Test Case 2: Rating is empty**
    - **Input:** Rating = (empty), Message = Good
    - **Expected Output:** "Please enter your rating."

3. **Test Case 3: Message is empty**
    - **Input:** Rating = 5, Message = (empty)
    - **Expected Output:** "Please enter your feedback."

Test ID	Test Input (Prompt)	Expected Output	Actual Output
1 (Feedback submitted successfully)	• Rating = 5 • Message = Good	• Display message: “Feedback submitted successfully!!”	• Display message: “Feedback submitted successfully!!”
2 (Rating is empty)	• Rating: “” • Message: “Good”	• Display message: "Please enter your rating."	• Display message: "Please enter your rating."
2 (Message is empty)	• Rating: 5 • Message: “”	• Display message: "Please enter your message."	• Display message: "Please enter your message."

4. Profile update



Cyclomatic Complexity:

Cyclomatic complexity: Number of edges - number of nodes + 2 = 8 - 7 + 2 = 3

Basic Paths:

1. Path 1: Profile updated successfully!
2. Path 2: Name and phone must not be empty
3. Path 3: Incorrect current password

Test Cases:

1. **Test Case 1:** Profile updated successfully!
    - **Input:** Name: James Doe, Phone: 80000000, Current Password: T1me4Fun!, New Password: T2me4Fun!
    - **Expected Output:** "Profile updated successfully!"

2. **Test Case 2: Name and phone are empty**
    - **Input:** Name= (empty), phone = (empty), Current Password: T1me4Fun!, New Password: T2me4Fun!
    - **Expected Output:** "Name and phone must not be empty"

3. **Test Case 3:** Incorrect current password
    - **Input:** Name: James Doe, Phone: 80000000, Current Password: Abcd123#, New Password: T2me4Fun!
    - **Expected Output:** "Incorrect current password"

Test ID	Test Input (Prompt)	Expected Output	Actual Output
1 (Profile updated)	• Name: James Doe • Phone: 80000000 • Current Password: T1me4Fun! • New Password: T2me4Fun!	• Display message: "Profile updated successfully!"	• Display message: "Profile updated successfully!"
2 (Name and phone are empty)	• Name: • Phone: • Current Password: T1me4Fun! • New Password: T2me4Fun!	• Display message: "Name and phone must not be empty"	• Display message: "Name and phone must not be empty"
2 (Incorrect current passsword)	• Name: James Doe • Phone: 80000000 • Current Password: Abcd123# • New Password: T2me4Fun!	• Display message: "Incorrect current password"	• Display message: "Incorrect current password"