## **Software Testing Report**

### **Test Plan**

The Incident Management System has undergone comprehensive testing to ensure its reliability, accuracy, and functionality. The test plan includes various test cases that cover all logical paths through the system.

#### Test Scenarios

* Test Scenario: Create Incident
* Test Case 1: Valid Inputs
* Test Case 2: Invalid Reporter Name
* Test Case 3: Invalid Phone Number
* Test Case 4: Invalid Date Format
* Test Case 5: Invalid Time Format
* Test Case 6: Invalid GPS Location
* Test Scenario: Assign Resource
* Test Case 1: Valid Inputs
* Test Case 2: Invalid Resource Number
* Test Case 3: Invalid Resource Code
* Test Case 4: Invalid Number of Resource Units
* Test Scenario: Update Incident
* Test Case 1: Valid Inputs (All Fields)
* Test Case 2: Valid Inputs (Partial Fields)
* Test Case 3: Invalid Reporter Name
* Test Case 4: Invalid Phone Number
* Test Case 5: Invalid Date Format
* Test Case 6: Invalid Time Format
* Test Case 7: Invalid GPS Location
* Test Scenario: Display Incidents
* Test Case 1: Display All Incidents
* Test Case 2: Display Empty Incidents List
* Test Scenario: Save and Load from CSV
* Test Case 1: Save Incidents and Resources to CSV
* Test Case 2: Load Incidents and Resources from CSV

### **Test Data**

#### Test Data for Incident Creation (Test Scenario 1)

Test Case 1 (Valid Inputs):

* Incident Number: 1
* Reporter Name: John Doe
* Reporter Phone Number: 1234567890
* Date: 10/08/2023
* Time: 15:30
* GPS Location: 40.7128, -74.0060
* Incident Details: Fire reported in Building A

Test Case 2 (Invalid Reporter Name):

* Incident Number: 2
* Reporter Name: 12345
* Reporter Phone Number: 9876543210
* Date: 10/08/2023
* Time: 14:45
* GPS Location: 37.7749, -122.4194
* Incident Details: Suspicious package found

Test Case 3 (Invalid Phone Number):

* Incident Number: 3
* Reporter Name: Jane Smith
* Reporter Phone Number: 12345
* Date: 10/08/2023
* Time: 12:15
* GPS Location: 34.0522, -118.2437
* Incident Details: Vandalism reported in Park B

... (similar test cases for other scenarios)

### **Expected Results**

#### Test Case 1 (Valid Inputs):

* The incident should be successfully created with all the provided details.
* The incident should be added to the Incident Management System.
* The system should display a success message: "Incident created successfully!"

#### Test Case 2 (Invalid Reporter Name):

* The system should prompt the user to enter a valid reporter name.
* The incident should not be created, and the user should be allowed to re-enter a valid reporter name.

#### Test Case 3 (Invalid Phone Number):

* The system should prompt the user to enter a valid phone number.
* The incident should not be created, and the user should be allowed to re-enter a valid phone number.

#### Test Case 4 (Invalid Date Format):

* The system should prompt the user to enter the date in the correct format (dd/mm/yyyy).
* The incident should not be created, and the user should be allowed to re-enter a valid date.

#### Test Case 5 (Invalid Time Format):

* The system should prompt the user to enter the time in the correct format (hh:mm).
* The incident should not be created, and the user should be allowed to re-enter a valid time.

#### Test Case 6 (Invalid GPS Location):

* The system should prompt the user to enter the GPS location in the correct format (latitude, longitude).
* The incident should not be created, and the user should be allowed to re-enter a valid GPS location.

... (similar expected results for other scenarios)

### **Testing Approach**

The Incident Management System has been tested using both manual and automated testing approaches.

* **User Acceptance Testing (UAT):** The system was tested by end-users to ensure it meets their requirements and expectations. Testers provided feedback on the user interface, ease of use, and overall functionality.
* **Functional Testing:** Each function and method in the system was individually tested to ensure they perform as intended. Test cases were designed to cover all possible scenarios and edge cases.
* **Regression Testing:** After implementing bug fixes or updates, the entire system was tested to ensure that the changes did not introduce new issues and that existing functionalities remained intact.
* **Integration Testing:** The interactions between different modules of the system were tested to ensure seamless integration and data flow.

### **Conclusion**

The Incident Management System has undergone thorough testing, and the results indicate minimal errors during typical use. The implementation of input validation ensures that users are guided to enter correct and valid information, reducing the risk of errors and system failures.

Overall, the testing process has validated the reliability, functionality, and user-friendliness of the Incident Management System, making it an efficient tool for incident tracking and resolution.