# Functional Requirement

1. Functional Requirements  
  
1.1 Complaint Registration Function   
Function ID: FR-01   
Description: Citizens can register a new complaint with detailed incident information and supporting documents.   
Input: Incident description, location, date, supporting documents, citizen ID.   
Output: A unique complaint ID, confirmation message, and complaint data stored in the database.  
  
1.2 View Complaint Details Function   
Function ID: FR-02   
Description: Police Personnel and Administrators can view detailed information about a complaint, including its current status and any related automated investigation data.   
Input: Valid complaint ID and user login credentials.   
Output: Complaint details, including incident description, location, date, status, and associated automated investigation information.  
  
1.3 Update Complaint Status Function   
Function ID: FR-03   
Description: Police Personnel and Administrators can update the status of a complaint and provide an optional comment.   
Input: Valid complaint ID, new status, optional comment.   
Output: Updated complaint status in the database, status change logged in the ComplaintStatusLog, and a notification sent to the Citizen.  
  
1.4 Delete Complaint Record Function   
Function ID: FR-04   
Description: Administrators can permanently delete a complaint record from the system.   
Input: Valid complaint ID and confirmation from the Administrator.   
Output: Deleted complaint record, deletion logged in the system, and notification sent to the Citizen and associated Police Personnel.  
  
1.5 Automated Investigation Initiation Function   
Function ID: FR-05   
Description: Police Personnel and Administrators can initiate an automated investigation for a registered complaint.   
Input: Valid complaint ID and user login credentials.   
Output: AutomatedInvestigation record created in the database, complaint status updated to "Automated Investigation In Progress," and notification sent to relevant Police Personnel.  
  
1.6 Modify Investigation Data Function   
Function ID: FR-06   
Description: Police Personnel and Administrators can modify data associated with an ongoing automated investigation, such as evidence, witness information, or investigation notes.   
Input: Valid complaint ID, editable investigation fields (e.g., evidence, notes), and user login credentials.   
Output: Updated AutomatedInvestigation data, complaint status updated if necessary, and notification sent to the Citizen and associated Police Personnel.  
  
1.7 View Investigation Progress Function   
Function ID: FR-07   
Description: Citizens, Police Personnel, and Administrators can view the progress of an automated investigation.   
Input: Valid complaint ID and user login credentials.   
Output: InvestigationProgress details displayed, access logged in the system, and any additional information such as pending actions or findings.  
  
1.8 Court Case Registration Function   
Function ID: FR-08   
Description: Administrators and Police Personnel can register a new court case linked to a complaint.   
Input: Valid complaint ID, court name, case type, filing date, and involved parties.   
Output: CourtCase record created and stored in the database, linked to the complaint, and notification sent to the Citizen.  
  
1.9 Update Court Case Status Function   
Function ID: FR-09   
Description: Police Personnel and Administrators can update the status of a court case and provide an optional comment.   
Input: Valid court case ID, new status, optional comment.   
Output: Updated court case status in the database, status change logged in the CaseStatusLog, and notification sent to the Citizen.  
  
1.10 View Court Case Details Function   
Function ID: FR-10   
Description: Citizens, Police Personnel, and Administrators can view detailed information about a court case, including related complaint data.   
Input: Valid court case ID and user login credentials.   
Output: CourtCase details displayed, access logged in the system, and related complaint information if applicable.  
  
1.11 Delete Court Case Record Function   
Function ID: FR-11   
Description: Administrators can permanently delete a court case record from the system.   
Input: Valid court case ID and confirmation from the Administrator.   
Output: Deleted court case record, deletion logged in the system, and notification sent to the Citizen and associated Police Personnel.  
  
1.12 Search for Crimes Function   
Function ID: FR-12   
Description: Police Personnel and Administrators can search for crime-related data using criteria such as keyword, date range, or location.   
Input: Search criteria (e.g., keyword, date, location).   
Output: List of matching crime-related records (complaints or court cases) with summary information and a log of the search activity.  
  
1.13 Search for Criminals Function   
Function ID: FR-13   
Description: Police Personnel and Administrators can search for criminal records using criteria such as name, age range, gender, or case ID.   
Input: Search criteria (e.g., name, age range, gender, case ID).   
Output: List of matching criminal records with summary information and a log of the search activity.  
  
1.14 Search for Investigation Records Function   
Function ID: FR-14   
Description: Police Personnel and Administrators can search for investigation records using complaint ID, investigation status, or keywords.   
Input: Search criteria (e.g., complaint ID, status, keyword).   
Output: List of matching investigation records with summary details and a log of the search activity.  
  
1.15 Citizen Submit Complaint Function   
Function ID: FR-15   
Description: Citizens can submit a new complaint through the system by filling out a form and uploading supporting documents.   
Input: Incident description, location, date, supporting documents, and valid citizen ID.   
Output: A unique complaint ID generated, complaint data stored in the database, and confirmation message sent to the Citizen.  
  
1.16 Citizen View Complaint Status Function   
Function ID: FR-16   
Description: Citizens can view the current status of a previously submitted complaint.   
Input: Valid complaint ID and user login credentials.   
Output: Complaint status displayed, including the stage of the automated investigation and any recent updates.  
  
1.17 Police Personnel Manage Complaints Function   
Function ID: FR-17   
Description: Police Personnel and Administrators can manage complaints by updating their status, escalating them, or adding notes.   
Input: Valid complaint ID and management action (e.g., update, escalate, add notes).   
Output: Updated complaint data in the database, management action logged, and notification sent to the Citizen if configured.  
  
1.18 Police Personnel Manage Investigations Function   
Function ID: FR-18   
Description: Police Personnel and Administrators can manage automated investigations by updating findings, pausing the investigation, or escalating to manual review.   
Input: Valid complaint ID and management action (e.g., update findings, pause, escalate).   
Output: Updated AutomatedInvestigation data, complaint status updated, and notification sent to the Citizen if configured.  
  
1.19 Administrator Manage Users Function   
Function ID: FR-19   
Description: Administrators can manage user accounts (Citizens, Police Personnel, and other Administrators) by creating, updating, or deleting them.   
Input: User details (e.g., name, role, contact information) and action (e.g., create, update, delete).   
Output: Updated user records in the database, management action logged, and notification sent to the affected user if configured.  
  
1.20 Administrator Configure System Settings Function   
Function ID: FR-20   
Description: Administrators can configure system-wide settings such as notification preferences, access control rules, and automated investigation parameters.   
Input: System settings configuration (e.g., notification settings, access rules).   
Output: Updated system settings stored in the database, configuration action logged, and new settings applied to the system.  
  
1.21 Manage Investigation Progress Function   
Function ID: FR-21   
Description: Police Personnel and Administrators can update the progress of an automated investigation, such as adding notes or marking a stage as completed.   
Input: Valid complaint ID and progress details (e.g., stage completed, findings).   
Output: Updated InvestigationProgress data, complaint status adjusted, and notification sent to the Citizen if configured.  
  
1.22 Manage Case Status Log Function   
Function ID: FR-22   
Description: Administrators and Police Personnel can view, edit, or delete entries in the CaseStatusLog to track changes in court case statuses.   
Input: Valid court case ID and action (e.g., view, edit, delete).   
Output: Updated CaseStatusLog data, management action logged, and notification sent to relevant personnel if configured.  
  
1.23 Manage Complaint Status Log Function   
Function ID: FR-23   
Description: Administrators and Police Personnel can view, edit, or delete entries in the ComplaintStatusLog to track changes in complaint statuses.   
Input: Valid complaint ID and action (e.g., view, edit, delete).   
Output: Updated ComplaintStatusLog data, management action logged, and notification sent to the Citizen if configured.  
  
1.24 Delete Automated Investigation Record Function   
Function ID: FR-24   
Description: Administrators and Police Personnel can delete an automated investigation record from the system.   
Input: Valid complaint ID and confirmation from the user.   
Output: Deleted AutomatedInvestigation record, complaint status updated, and notification sent to the Citizen and relevant Police Personnel.  
  
1.25 Manage Search Records Function   
Function ID: FR-25   
Description: Administrators and Police Personnel can manage search records by viewing, editing, or deleting them.   
Input: Valid search ID and action (e.g., view, edit, delete).   
Output: Updated or deleted search record, management action logged, and search history updated accordingly.  
  
1.26 Manage Citizen Records Function   
Function ID: FR-26   
Description: Administrators and Police Personnel can manage Citizen records by viewing, editing, or deleting them.   
Input: Valid citizen ID and action (e.g., view, edit, delete).   
Output: Updated or deleted Citizen record, management action logged, and notification sent to the Citizen if configured.  
  
1.27 Manage Police Personnel Records Function   
Function ID: FR-27   
Description: Administrators can manage Police Personnel records by viewing, editing, or deleting them.   
Input: Valid Police Personnel ID and action (e.g., view, edit, delete).   
Output: Updated or deleted Police Personnel record, management action logged, and notification sent to the Police Personnel if configured.  
  
1.28 Manage Administrator Records Function   
Function ID: FR-28   
Description: Administrators can manage other Administrator records by viewing, editing, or deleting them.   
Input: Valid Administrator ID and action (e.g., view, edit, delete).   
Output: Updated or deleted Administrator record, management action logged, and notification sent to the affected Administrator if configured.

# External Description

2. External Interfaces   
This section outlines the external interfaces required for the system to interact with users, hardware, software, and communication channels. These interfaces are essential for supporting the functional requirements and ensuring seamless data exchange and user experience.  
  
2.1 User Interface Output   
The system must provide a user interface for interaction with three types of users: Citizens, Police Personnel, and Administrators. The interface will be implemented through a web-based platform with a responsive design for accessibility across devices.  
  
- \*\*Complaint Registration Interface\*\*: Citizens can submit a new complaint by entering the incident description, location, date, and uploading supporting documents. The interface must also accept the citizen’s ID for verification.   
- \*\*Complaint View Interface\*\*: Police Personnel and Administrators can view detailed complaint information, including the status and associated automated investigation data.   
- \*\*Court Case View Interface\*\*: All users (Citizens, Police Personnel, and Administrators) can view court case details, including related complaint data.   
- \*\*Investigation Progress Interface\*\*: All users can view the progress of an automated investigation, including stages completed, pending actions, and findings.   
- \*\*Search Interface\*\*: Police Personnel and Administrators can search for crime-related records, criminal profiles, and investigation data using various criteria such as keywords, dates, and locations.   
- \*\*User Management Interface\*\*: Administrators can manage user accounts by creating, updating, or deleting user records. This interface includes fields for user roles, contact information, and login credentials.   
- \*\*System Configuration Interface\*\*: Administrators can configure system-wide settings, such as notification preferences, access control rules, and automated investigation parameters.   
- \*\*Log Management Interface\*\*: Administrators and Police Personnel can view, edit, or delete entries in the ComplaintStatusLog and CaseStatusLog.   
- \*\*Notification Interface\*\*: All users can receive notifications about changes in complaint status, court case status, or investigation progress.   
  
2.2 Hardware Interface Output   
The system does not require direct interaction with hardware devices. However, it may be accessed through various hardware platforms, including desktops, laptops, tablets, and mobile phones. The following hardware considerations must be addressed to ensure compatibility:  
  
- \*\*Input Devices\*\*: Support for standard input devices such as keyboards, mice, and touchscreen interfaces for data entry and navigation.   
- \*\*Output Devices\*\*: Compatibility with standard display devices for rendering the user interface and printing complaint or court case details if needed.   
- \*\*Storage Devices\*\*: Optional support for external storage devices to import or export documents (e.g., evidence files or PDF summaries of complaints and court cases).   
  
2.3 Software Interface Output   
The system must interface with the following software components to store, retrieve, and manage data:  
  
- \*\*Complaint Database\*\*: A relational database used to store and manage complaint records. Each complaint record includes the incident description, location, date, supporting documents, and a unique complaint ID. The system must support CRUD operations (Create, Read, Update, Delete) on this database.   
- \*\*Court Case Database\*\*: A relational database to store court case records, including court name, case type, filing date, and involved parties. The system must link court cases to their associated complaint records.   
- \*\*AutomatedInvestigation Database\*\*: A database to store records of automated investigations, including findings, evidence, witness information, and investigation status.   
- \*\*ComplaintStatusLog Database\*\*: A database to log all changes in complaint status, including the date of the change, user who made the change, and the new status.   
- \*\*CaseStatusLog Database\*\*: A database to log all changes in court case status, including the date of the change, user who made the change, and the new status.   
- \*\*User Database\*\*: A database to manage user accounts, including roles (Citizen, Police Personnel, Administrator), login credentials, and contact information.   
- \*\*Search Log Database\*\*: A database to store logs of all search activities performed by Police Personnel and Administrators.   
- \*\*Notification System\*\*: The system must interface with a notification module to send status updates and alerts to users. This may include internal notifications within the system or external communication channels (e.g., email).   
- \*\*Document Management System\*\*: The system must support document uploads and storage for supporting documents, evidence, and investigation notes. The documents must be stored securely and accessible via the complaint or court case records.   
  
2.4 Communication Interface Output   
The system must support communication interfaces for sending notifications, exchanging data, and ensuring secure access to the system.  
  
- \*\*Email Notification Interface\*\*: The system must send email notifications to citizens and police personnel when a complaint or court case status is updated, when an automated investigation is initiated, or when a search is performed. The interface must support secure email transmission and authentication.   
- \*\*User Authentication Interface\*\*: The system must provide a secure login interface for all users, including authentication mechanisms such as username/password, multi-factor authentication (MFA), or role-based access control.   
- \*\*Internal Communication Interface\*\*: Police Personnel and Administrators must be able to send internal messages or escalate cases to other users within the system. This includes status updates and investigation notes.   
- \*\*External API Interface (if applicable)\*\*: The system may integrate with external APIs for data validation, criminal record checks, or court scheduling. If an API is used, it must support secure data exchange and return structured responses (e.g., JSON or XML).   
- \*\*Web Browsing Interface\*\*: The system must be accessible through a web browser using standard HTTP/HTTPS protocols. All data exchanges must be encrypted to ensure security.   
- \*\*Data Export Interface\*\*: The system must allow Police Personnel and Administrators to export data in standard formats (e.g., CSV, Excel, or PDF) for reporting and analysis purposes.   
  
This section ensures that all external interfaces required by the system are clearly defined and categorized, providing developers with a comprehensive understanding of the interactions involved in implementing the system.