PROJECT DOCUMENTATION

FINAL REPORT

TOPIC:

Forensic Case Management System

(FCMS)

TEAM:

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PROJECT REPORT

Problem:

Law-enforcement and forensic departments require a software application that can handle multiple aspects of case and evidence management efficiently. The key challenges faced include:

1. Case Data Centralization: Manual or non-centralized systems lead to data mismanagement, security risks, and slow investigation processing.

2. Evidence Tracking: There is a critical need to record, tag, store, and track forensic evidence with full metadata and source history.

3. Chain of Custody Maintenance: Legal integrity requires detailed digital logs of evidence custody transfers with timestamps and responsible personnel.

4. Investigation Progress Monitoring: Departments need to monitor case status, assign officers, and track investigation milestones in real-time.

5. Secure Access & Audit Compliance: The system must ensure role-based secure access, maintain data immutability, and provide comprehensive audit logs for accountability.

Solution:

To address these challenges, we will design a **web-based Forensic Case Management System (FCMS)** using Java technology, combining centralized database management with role-based workflow automation.

Reasoning for Using a Web-Based Multi-User System:

1. Centralized Case Management:
All case records, evidence data, custody logs, and reports are stored in a single secure database, accessible to authorized personnel from any location, improving collaboration and reducing data silos.

2. Role-Based Workflow Automation:
The system supports predefined roles (Admin, Investigator, Lab Officer) with specific permissions, ensuring secure and structured workflow from case registration to evidence analysis and reporting.

By developing a web-based FCMS with integrated modules for case management, evidence tracking, chain of custody, and reporting, forensic departments can effectively

manage investigations from initial report to resolution. This approach not only meets current operational needs but also provides scalability for increasing case volumes and evolving legal and technological requirements.

Here's how each aspect can be handled:

1. Case Management Module:

- Develop a secure interface for registering new criminal cases with categories, descriptions, suspect/witness data, and assigned officers.
- Include real-time case status tracking (Open, Under Investigation, Closed, etc.).
- Allow filtering and searching capabilities to quickly locate case records.

2. Evidence Management Module:

- Implement a detailed evidence entry system with tagging, storage details, source information, and metadata (time, date, location).
- Set up alerts for evidence nearing storage expiration or requiring re-testing.
- Provide restricted access based on user roles to maintain evidence integrity.

3. Chain of Custody Module:

- Digital custody transfer logs with timestamps and digital signatures.
- Maintain a complete history of personnel handling each evidence item.
- Support legal documentation and compliance reporting.

4. Reporting & Lab Integration Module:

- Manage lab test requests and result recording.
- Attach digital reports (PDF, images) to cases.
- Implement verification and approval workflows for lab findings.

5. Security & Audit Module:

- Role-based authentication (Admin, Investigator, Lab Officer).
- Immutable activity logs for all user actions.
- Data encryption and access control mechanisms.

INTRODUCTION

This report outlines the design and functionality of the Forensic Case Management System (FCMS), developed to transform manual and fragmented forensic processes into a streamlined, secure, and efficient digital platform.

System Overview:

The FCMS is a multi-user web application built using Java, designed for use by law enforcement and forensic departments.

• The system centralizes all case-related data, evidence records, custody logs, and lab reports into a single secure repository.

• Users interact with the system through role-specific interfaces that control access and workflow capabilities.

Key System Features:

- **Case Registration & Tracking:** From initial report to case closure.
- **Evidence Lifecycle Management:** Entry, storage, transfer, and disposal.
- **Chain of Custody Automation:** Digital logs for legal compliance.
- **Integrated Lab Reporting:** Request, upload, and verify forensic test results.
- **Comprehensive Security:** Authentication, authorization, and audit trails.

Expected Benefits:

- Reduced manual errors and data duplication.
- Faster case resolution through improved information access.
- Enhanced legal integrity with automated custody tracking.
- Stronger security and accountability via role-based access and audit logs.

USECASE DOCUMENTATION

UC ID: FCMS-001
Title: Register New Case
Primary Actor: Investigator
Pre-Conditions: Investigator is logged into the system with appropriate permissions.
Post-condition: New case is created, assigned a unique ID, and saved in the database.

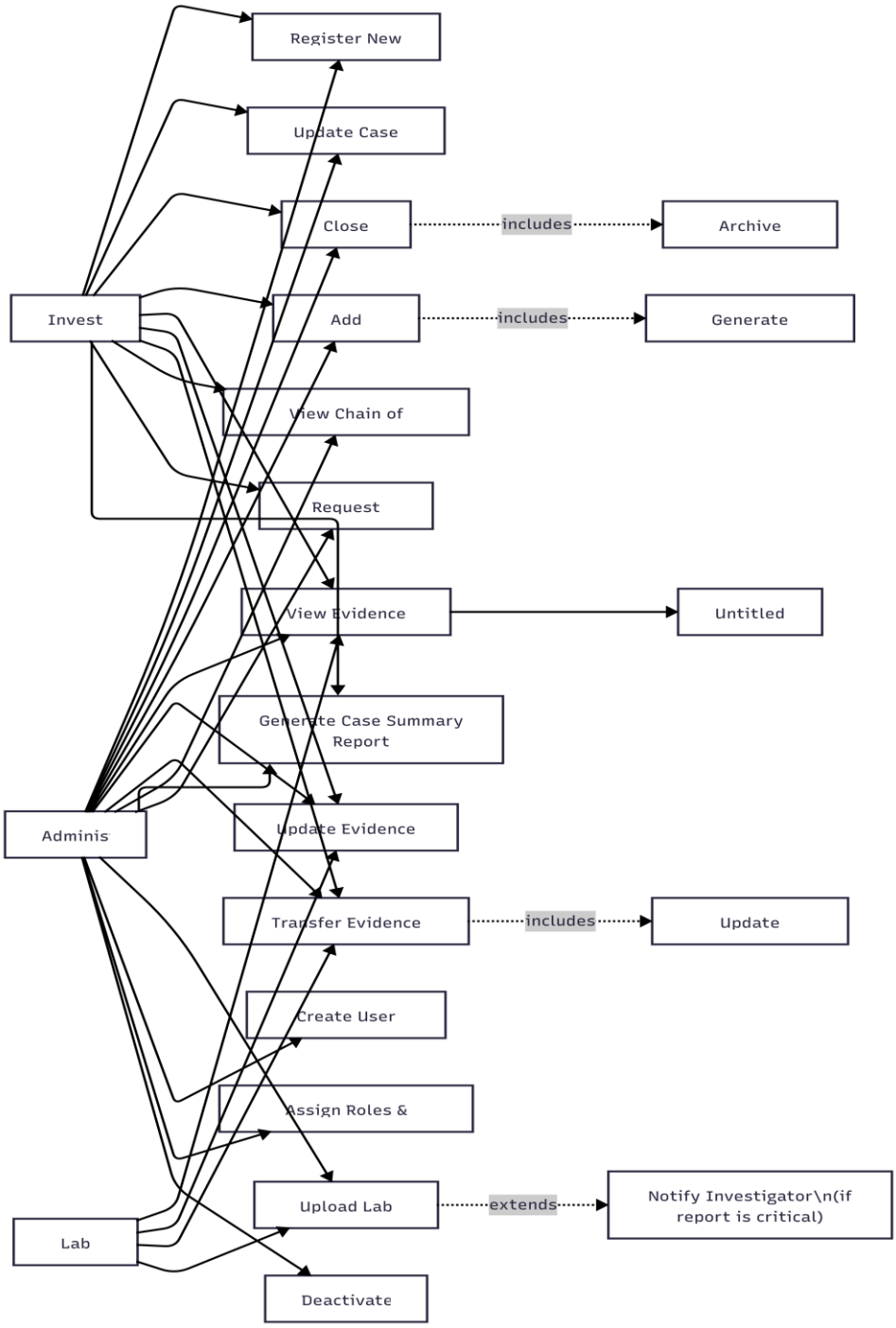
MAIN FLOW:

1. Investigator selects "Register New Case" from the dashboard.
2. System displays a new case registration form.
3. Investigator enters case details: category, description, incident date, location.
4. Investigators add suspect and witness information (if available).
5. System validates required fields.
6. Investigator assigns the case to an investigation officer (or self).
7. System generates a unique Case ID and sets initial status to "Open".
8. System saves the case record and displays a confirmation message with the Case ID.

Alternative Flows:

- **5.1.** If required fields are missing, system highlights them and prevents submission until corrected.
- **7.1.** If Case ID generation fails, system logs error and prompts user to retry.

USE CASE DIAGRAM



DOMAIN MODEL

The **Administrator** initiates the **system setup** by creating **user accounts** and assigning **roles**. The **Investigator** logs in using secure **credentials** and accesses the **dashboard** displaying **active cases**. The Investigator selects **Case Registration** to create a new **case record**, entering details such as **case category**, **description**, **suspect list**, and **witness information**. The system assigns a unique **Case ID** and logs the **creation timestamp**.

Once a case is active, the **Investigator** or **Lab Officer** can add **evidence items** to the case. Each **evidence** record includes **type**, **collection details**, **storage location**, and **digital attachments**. The system tracks the **chain of custody** through **transfer logs**, recording each **custody event** with **timestamps**, **transferor**, **recipient**, and **signature**.

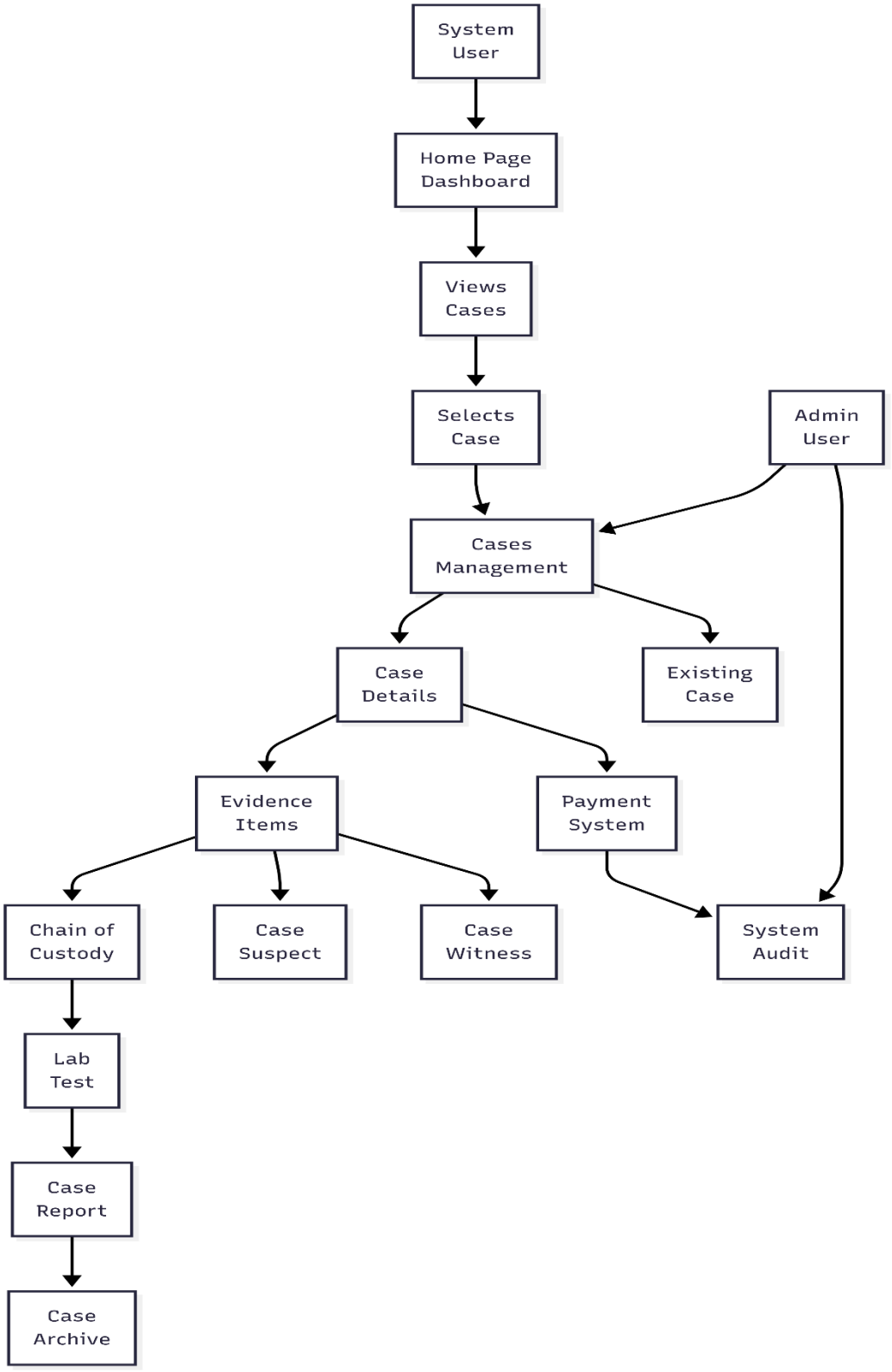
When **lab tests** are required, the **Lab Officer** receives a **test request**, performs the **analysis**, and uploads the **lab report** to the system. The report undergoes a **verification workflow** before being attached to the case. Throughout the process, the **audit log** captures all **user activities**, ensuring **data integrity** and **accountability**.

Finally, when a case is resolved, the **Investigator** updates the **case status** to "Closed", and the system archives the complete **case file**, including all **evidence records**, **custody logs**, and **reports**, for future **legal reference**.

ENTITIES

CANDIDATE ENTITIES	DISCARDED ENTITIES
Case	System
Evidence	Dashboard
ChainOfCustodyLog	Credentials
User	Timestamp
Role	Signature
LabReport	Attachment
AuditLog	Notification
Suspect	
Witness	
InvestigationOfficer	

DOMAIN MODEL DIAGRAM



ACTIVITY DIAGRAM