Names: IRERA Mukawera Jockebed

ID: 27453

Project Description Document: Prison Management System (PMS)

1. Project Idea

The Prison Management System (PMS) is a centralized software application designed to modernize and streamline the administrative operations of a correctional facility. It aims to replace inefficient, paper-based record-keeping with a secure, digital solution.

The core function of the PMS is to serve as the single source of truth for all prisoner data. Authorized staff can use the system to perform essential daily tasks:

- **Register** new inmates upon intake.
- **Update** prisoner details (e.g., behavioral notes, medical needs, transfer requests).
- **View and Search** comprehensive prisoner lists and individual profiles.
- **Manage Releases**, updating their status and archiving records upon completion of their sentence.

The system will enhance operational efficiency, reduce human error, improve data security, and provide real-time visibility into the prison population.

2. Database Schema

The system will be built on a relational database. The core schema includes the following tables:

Core Tables & Relationships:

- **prisoners (The central table)**
  - prisoner_id (Primary Key)
  - national_id
  - first_name, last_name, date_of_birth, gender
  - entry_date, expected_release_date
  - status (e.g., 'Active', 'Released', 'Transferred')
  - cell_id (Foreign Key to cells)
- **cells (Manages housing)**
  - cell_id (Primary Key)
  - cell_number
  - block_name (e.g., 'A', 'B')
  - capacity
  - current_occupancy
- **offenses (Tracks charges and sentences)**
  - offense_id (Primary Key)
  - prisoner_id (Foreign Key to prisoners)

> ➢ description (e.g., "Burglary", "Fraud")
> ➢ sentence_length
> ➢ date_charged
- **users (System access control)**
  - ➢ user_id (Primary Key)
  - ➢ username, password_hash, role (e.g., 'Admin', 'Officer', 'Viewer')

Simplified Schema Diagram:

users (Manages access)	→	[prisoners] -- assigned to --> [cells]	→	offenses (Links crimes to a prisoner)
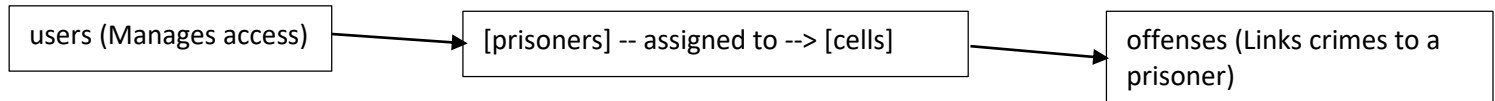
This structure ensures data integrity and allows for powerful queries, such as finding all prisoners in a specific block or listing the offenses of a particular inmate.

3. Innovation & Improvement

This PMS introduces key innovations that move beyond a simple digital filing cabinet to become an intelligent management tool:

1. Proactive Alerting and Forecasting:

- **Improvement:** Instead of just storing data, the system actively monitors it.
- **Innovation:** It automatically generates **alerts for potential cell block overcrowding** and provides a **dashboard of upcoming releases**. This allows administration to plan for transfers, resources, and release procedures proactively, enhancing safety and operational flow.

2. Advanced Data Intelligence:

- **Improvement:** Moves beyond basic search-by-name functionality.
- **Innovation:** Implements an **Advanced Search Portal** where officers can use multiple filters (e.g., "all prisoners with a violent offense in Block B, set for release within 6 months"). It also includes a **Data Analytics Dashboard** with visual charts to display population demographics, offense statistics, and trends, supporting data-driven decision-making for facility management.

3. Robust Security and Accountability:

- **Improvement:** Treats security as a core feature, not an add-on.
- **Innovation:** Implements a detailed **Audit Trail** that logs every change made to a prisoner's record, including who made the change and when. This is combined with **granular Role-Based Access Control (RBAC)**, ensuring that officers, admins, and viewers have different levels of permission to view, edit, or delete sensitive data, significantly reducing the risk of internal security breaches.