Adventist University of Central Africa (AUCA)

Faculty of Information Technology
Course: PL/SQL Practicum Project
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Project Title: *SecureRehab: Security-Focused Criminal Rehabilitation & Jail Overload Prevention System*
Category: *Security*

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Project Description Document

1. Project Overview

Short Description:
SecureRehab is a security-focused database management system designed to track offender rehabilitation, behavior, and progress toward early release. It aims to reduce prison overcrowding and recidivism by supporting data-driven decision-making in Rwanda's correctional institutions.

Problem Statement:
Rwandan prisons face increasing overcrowding, making it difficult to manage rehabilitation effectively. Current systems lack real-time monitoring of offender progress, resulting in inefficient parole decisions. SecureRehab addresses these issues by introducing a centralized database with automated monitoring, risk analysis, and rehabilitation tracking to identify low-risk offenders eligible for early release while flagging high-risk cases.

2. Objectives

1. Develop a PL/SQL-based database system for storing and managing offender, offense, and rehabilitation data.
2. Implement logic to calculate risk scores and trigger alerts for authorities.
3. Support early-release and parole decisions through accurate data analysis.
4. Automate administrative monitoring tasks and improve overall security efficiency.
5. Prepare for integration with government justice systems and reporting dashboards.

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3. Innovation and Improvement

- SecureRehab goes beyond static prison databases by actively evaluating offender behavior and rehabilitation progress.
- Uses **PL/SQL triggers and procedures** to generate automated alerts when offenders meet early-release or high-risk conditions.
- Provides a **data-driven tool** to prevent overcrowding while improving rehabilitation outcomes.
- Supports **future expansion** with dashboards, mobile access, and role-based interfaces for authorities.

4. Proposed Database Schema

Tables:

1. offenders – *(offender_id PK, name, age, gender, address, risk_score)*
2. offenses – *(offense_id PK, offender_id FK, offense_type, date_committed, severity)*
3. sentences – *(sentence_id PK, offender_id FK, start_date, end_date, status)*
4. rehab_programs – *(program_id PK, name, description, duration)*
5. program_participation – *(participation_id PK, offender_id FK, program_id FK, start_date, completion_status)*
6. alerts – *(alert_id PK, offender_id FK, alert_type, alert_date, description)*

5. PL/SQL Logic Overview

Procedures

- `register_offense()` – records new offenses and updates offender risk score.
- `assign_rehab_program()` – assigns programs and tracks participation progress.

Triggers

- `AFTER INSERT` on *offenses*: evaluates offender's updated risk score and creates alerts.
- `AFTER UPDATE` on *program_participation*: adjusts risk score after program completion.

Functions

- `eligible_for_release()` – returns TRUE for offenders meeting early-release criteria.
- `check_risk_score()` – analyzes trends and returns a risk category (low, medium, high).

6**. Expected Benefits**

- **Prevents Jail Overload:** Identifies low-risk offenders for early release, reducing overcrowding.
- **Improves Rehabilitation:** Monitors participation and outcomes in programs.
- **Enhances Security:** Alerts authorities about high-risk individuals.

- **Supports Data-Driven Decisions:** Helps parole boards make accurate, fair judgments.
- **Scalable Impact:** Can later connect to government dashboards or mobile applications.

References / Context:

1. Rwanda Correctional Service initiatives on rehabilitation and reintegration (newtimes.co.rw).
2. Government programs supporting alternatives to imprisonment (tirwanda.org).
3. Reports on rising recidivism and challenges in offender reintegration (newtimes.co.rw).