Database Management System Lab Experiment No: - 01

Aim: - Select a case study and formulate the detailed problem definition

Detailed Problem Statement

In the realm of database management systems (DBMS), a problem statement succinctly outlines an issue or challenge requiring resolution. It defines the scope, objectives, constraints, and potential impact of the problem. By delineating these aspects, professionals can grasp the challenge comprehensively and devise effective solutions. This statement serves as a road map, guiding the design, implementation, and evaluation of strategies within the DBMS context, ensuring efficient data management and system optimization.

Law enforcement agencies, fueled by advancements in technology and the evolving nature of crime, require a comprehensive Police Database Management System to streamline operations, enhance investigative capabilities, and ensure public safety. The system aims to provide a robust and user-friendly platform that can handle the complexities of managing criminal records, case information, personnel details, and administrative tasks. This system is designed to improve overall operational efficiency for police departments.

Problem Statement for Police Database Management System:

Key Requirements:

- Criminal Records Management: The system should allow law enforcement agencies to manage criminal records efficiently. This includes recording details such as suspect information, charges, arrest records, court proceedings, and related case details.

- Case Information Management: It is crucial to keep track of ongoing and closed cases. The system should maintain an accurate inventory of case information, including case status, assigned officers, evidence details, and case outcomes.

- Personnel Information Management: The system must collect and store personnel information securely. This includes details such as officer names, badge numbers, contact information, rank, and training records.

- Administrative Functions: The system should provide administrative tools for police staff to manage various aspects of the database system. This includes monitoring case progress, generating reports on crime trends, managing personnel records, and performing system maintenance tasks.

- Security and Privacy: Data security and privacy are paramount. The system should implement robust security measures to protect sensitive information and comply with relevant regulations such as GDPR or HIPAA.

- Evidence Management: The system should facilitate the storage and retrieval of evidence related to criminal cases. This includes details such as evidence ID, description, storage location, and chain of custody.

- Incident Reporting: The system should allow officers to efficiently report and document incidents. This includes details such as date, time, location, involved parties, and a brief description of the incident.

Database Management System Lab Experiment No: - 01

Aim: - Select a case study and formulate the detailed problem definition

Overall, the goal of the Police Database Management System is to provide a seamless and efficient experience for law enforcement agencies while ensuring the effective management of criminal records, case information, personnel details, and administrative tasks. By addressing these key requirements, the system aims to enhance investigative capabilities, optimize resource utilization, and improve overall public safety.

List Of Entities, Relationships, and Attributes:

List Of Entities, Relationships, and Attributes:

1. Entity: POLICE_OFFICER
   - Attributes: id_no, name, designation, contact info

2. Entity: CRIME
   - Attributes: crime_id, description, time, location, crime_type

3. Entity: DEPARTMENT
   - Attributes: department_code, state

4. Entity: CRIMINAL
   - Attributes: criminal_id, prison, criminal_history, name, city_name, state

5. Entity: ACCUSED
   - Attributes: accused_id, age, name, crime

6. Entity: VICTIM
   - Attributes: victim_id, victim_name, contact info

7. Entity: COURT PROCEEDINGS
   - Attributes: case_no, type, city, state, judge_info
8. Entity: FIR
   - Attributes: fir_id, type, info

Certainly, here's the separation without brackets, including the relationship types in the constraints:

Relationships:
1. POLICE OFFICER works in DEPARTMENT.
2. CRIMINAL commits CRIME.
3. POLICE OFFICER arrests CRIMINAL in CRIME.
4. CRIME is issued FIR.
5. FIR is registered by CRIMINAL.
6. VICTIM is contacted by POLICE OFFICER.
7. COURT PROCEEDINGS resolves CRIME.
8. COURT PROCEEDINGS passes verdict on ACCUSED.

Constraints:
1. Each CRIMINAL can be associated with multiple CRIMES (M:N relationship between CRIMINAL and CRIME).
2. Each POLICE OFFICER can be associated with multiple FIRs (1:M relationship between POLICE_OFFICER and FIR).

Database Management System Lab Experiment No: - 01

Aim: - Select a case study and formulate the detailed problem definition

3. Each CRIME is associated with a single FIR (1:1 relationship between CRIME and FIR).
4. Each VICTIM is associated with a single POLICE OFFICER (M:1 relationship between VICTIM and POLICE_OFFICER).
5. Each COURT PROCEEDINGS can be associated with multiple CRIMES (1:M relationship between COURT PROCEEDINGS and CRIME).
6. Each ACCUSED is associated with a single COURT PROCEEDINGS (1:1 relationship between ACCUSED and COURT PROCEEDINGS).

Conclusion: LO1 mapped