# Breaking Down the Requirements – CARS Project

1. **Define the Objective**  
   The system should record, manage, and analyze crime-related data efficiently to assist law enforcement or investigative workflows.
2. **Identify Core Functionalities**

Register new incidents

Assign victims and suspects

Update incident status

Create and manage cases involving multiple incidents

Search/filter incidents and cases

Generate summary reports

1. **Structure the System**  
   Follow a layered architecture:

**Entity Layer**: Classes like Incidents, Cases, Victims, Suspects

**DAO Layer**: Interface and implementation for DB operations

**Service Layer**: Business logic and validations

**Exception Layer**: Custom exceptions (e.g., IncidentNotFoundException)

**Util Layer**: Reusable utilities like DB connection

1. **Plan the Database Design**

Normalize tables: Incidents, Victims, Suspects, Cases

Use junction tables: IncidentVictims, IncidentSuspects, CaseIncident

Apply foreign key constraints to preserve data integrity

1. **Establish Error Handling**  
   Raise and catch user-defined exceptions to handle:

Missing incident IDs

Case creation errors

Invalid status updates

1. **Ensure Expandability**  
   Make the system scalable for future features like officer assignments, evidence tracking, or analytics dashboards.
2. **Test Thoroughly**  
   Write unit tests for each service function to validate correctness, reliability, and data consistency.