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Road Accident Reporting & Blackspot Detection System

Project Description Document

Project Idea

The **Road Accident Reporting & Blackspot Detection System** is designed to collect comprehensive information about road accidents, including location, date and time, severity, cause, and number of injuries or deaths. The system analyzes patterns in the accident data and automatically identifies accident-prone areas, known as blackspots. By providing timely insights, the system aims to help traffic authorities improve road safety, prioritize interventions, and reduce the likelihood of future accidents. The system will be implemented using PL/SQL with automation through triggers and stored procedures for real-time updates and analysis.

Database Schema

The system will use the following tables:

Table Name	Field	Description
ACCIDENTS	Accident_ID	Primary key, unique accident identifier
	Location_ID	Foreign key linking to LOCATIONS table
	Date_Time	Date and time of the accident
	Severity	Minor, Serious, or Fatal
	Cause	Speeding, Drunk Driving, Weather, Mechanical, etc.
	Injuries	Number of injured people
	Deaths	Number of deaths
LOCATIONS	Location_ID	Primary key, unique road section identifier
	Road_Name	Name or code of the road segment
	GPS_Coordinates	Latitude and Longitude for mapping
BLACKSPOTS	Blackspot_ID	Primary key, unique blackspot identifier
	Location_ID	Foreign key linking to LOCATIONS table

Table Name	Field	Description
	Accident_Count	Total accidents detected in the period
	Risk_Level	High, Medium, Low based on accident frequency/severity
USERS	User_ID	Primary key, unique system user identifier
	Name	User name
	Role	Traffic authority role (Admin, Analyst, Operator)
	Username	Login username
	Password	Login password
ANALYTICS	Analytics_ID	Primary key, unique identifier for each analytics record
	Location_ID	Foreign key linking to LOCATIONS table
	Time_Period	Date range for the analysis
	Total_Accidents	Total number of accidents during the period
	Fatal_Accidents	Number of fatal accidents during the period

Innovation and Improvement

The key innovation of this project lies in the automatic identification of blackspots using pre-defined accident frequency and severity thresholds. Traditional reporting systems rely on manual aggregation of accident data, which delays intervention. This system automates the analysis and provides actionable insights in near real-time, enabling traffic authorities to:

- Identify high-risk road segments quickly.
- Prioritize road safety improvements efficiently.
- Generate real-time and periodic reports.
- Improve emergency response planning and resource allocation.

The combination of PL/SQL triggers, procedures, and summary tables ensures continuous monitoring, automated blackspot updates, and accurate analytics, which are not present in conventional manual or semi-automated systems.