

RV College of Engineering®, Bengaluru – 59
Department of Computer Science and Engineering
Database Design Laboratory (21CS53)

Synopsis

TITLE: Next-Gen Car Showroom Management System		
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1. Introduction

The Car Showroom Management System is a comprehensive database management project aimed at streamlining the operations of a car showroom. The system incorporates advanced features such as Optical Character Recognition (OCR) for employee ID card scanning, customer registration, and detailed tracking of car features including mileage, date manufactured, miles driven, and engine type. This project focuses on enhancing efficiency, customer experience, and data management within a car showroom environment.

2. Existing System

The current system, prevalent in many showrooms, relies on manual entry for employee details, customer information, and car specifications. The lack of a centralized database leads to data redundancy, inconsistencies, and potential errors in the management process. Employee identification and customer registration are time-consuming tasks, and the absence of a systematic approach can result in a suboptimal customer experience.

3. Proposed System

The proposed system introduces a cutting-edge solution with OCR technology for quick and accurate retrieval of employee details. Customer registration is simplified through an intuitive interface, and detailed car features are systematically recorded. The system aims to automate mundane tasks, reduce errors, and enhance overall operational efficiency. The integration of OCR ensures swift employee identification, while the streamlined customer registration process enhances user experience.

For Optical Character Recognition (OCR) functionality, EasyOCR is chosen. EasyOCR is lightweight and easy to integrate with Python applications. It supports multiple languages, text detection, and can handle various image formats and document types, making it suitable for tasks like extracting text from images and documents for employee ID card scanning and customer registration.

Web development is facilitated by the use of Flask, a web development framework. Flask creates server-side logic and routes for the web application, handling user interactions, database connections, and API endpoints. It is a lightweight and flexible micro-framework that is easy to learn and use for small to medium-sized projects, offering good performance and scalability.

For styling the user interface, Tailwind CSS, a frontend framework, is employed. Tailwind CSS uses utility classes for rapid development, providing a consistent and customizable look and feel. It does not include pre-designed components, allowing complete control over the UI. The framework is highly customizable with a large collection of utility classes, promoting clean and maintainable code.

In terms of hardware requirements, high-resolution document scanners with OCR capabilities are essential for scanning documents. Reliable high-speed Ethernet is also necessary for maintaining consistent and reliable database connectivity with MongoDB at all times.

4. Relational Database Structure

The relational database structure incorporates tables for employees, customers, and cars. Employee tables include details such as ID, name, and position. Customer tables store information like name, contact details, and purchase history. Car tables capture specifications like mileage, manufacturing date, miles driven, and engine type. Relationships between these tables are established to maintain data integrity, reduce redundancy, and enhance query performance. MySQL is widely used, open-source, and community-supported, with the ability to handle complex queries efficiently and support ACID properties for reliable transactions.

5. RDBMS AND NoSQL Integration

In addition to the traditional Relational Database Management System (RDBMS), the project incorporates NoSQL databases for flexible storage of unstructured data. NoSQL databases handle non-relational data, such as images, OCR-processed information and feedback from customers. Integration between RDBMS and NoSQL ensures a comprehensive storage solution, optimizing the system for efficient data retrieval and management.

6. Societal Concern

The project addresses societal concerns related to data privacy and security. With the implementation of OCR technology, it is crucial to ensure that personal information is handled responsibly and securely. The system adheres to recent technological trends by incorporating OCR for quick employee identification. Additionally, it leverages the latest tools in the development world, ensuring that the car showroom stays at the forefront of technological advancements. This project not only streamlines operations but also prioritizes privacy and embraces innovative technologies to stay relevant in the ever-evolving automotive industry.