Project Design Phase
Solution Architecture

Date	01 November 2025
Team ID	NM2025TMID04024
Project Name	Garage Management System
Maximum Marks	4 Marks

Solution Architecture:

Goals of the Architecture:

- Streamline garage operations by automating vehicle service tracking, mechanic assignments, and customer communication to reduce manual effort and improve productivity.
- Safeguard all service, customer, and billing information through centralized data management, ensuring consistent and error-free records across the system.

Key Components:

- **Mechanic Table** – Stores details of all mechanics working in the garage.
- **Service Job Table** – Records all active and completed vehicle service tasks, linked to assigned mechanics
- **Business Rule (Before Delete)** – Prevents deletion of any mechanic currently assigned to an active service job.

Development Phases:

- Create Test Mechanic**s** (e.g., Ajay, Hari)
- Assign Mechanics to Service Jobs
- Implement Business Rule to Prevent Deletion
- **Test Mechanic Deletion** (for both assigned and unassigned cases)

Solution Architecture Description:

The solution architecture for the **Garage Management System** is designed to maintain data integrity and operational efficiency by preventing the deletion of mechanics who are currently assigned to active service jobs. The system architecture connects the **Mechanic** and **Service Job** tables through an assignment relationship, ensuring that each service task is properly linked to its responsible mechanic.

A **"Before Delete" Business Rule** is implemented on the Mechanic table to automatically check for any ongoing service assignments before allowing deletion. If the mechanic is still linked to an active job, the system blocks the deletion and displays an appropriate alert message.

The development process includes creating test mechanic records, assigning them to service jobs, applying the business rule, and testing both assigned and unassigned deletion scenarios. This architecture minimizes manual errors, preserves service continuity, and strengthens accountability within the garage's daily operations.

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Example - Solution Architecture Diagram:

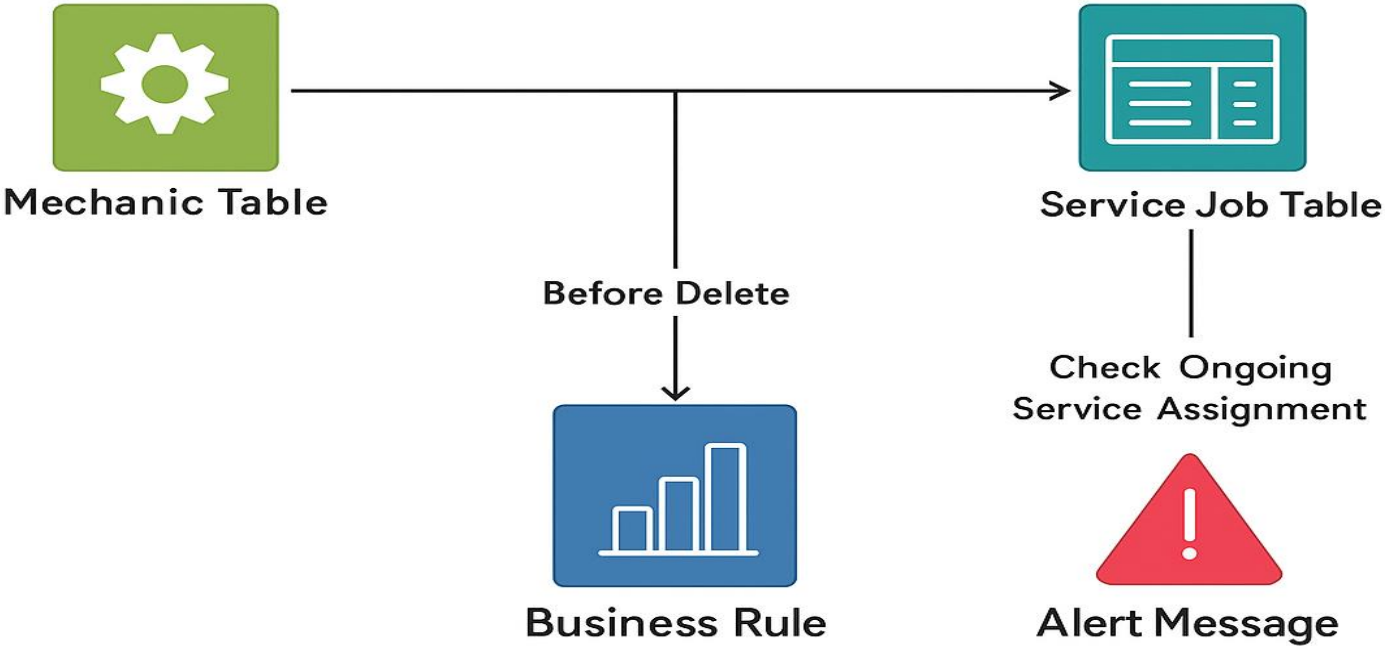

Figure 1: Architecture and data flow of the Garage Management System — Solution Architecture

Reference:

https://creately.com/diagram/example/issz1fyn2/garage-management-system-classic