**Ideation Phase**

**Define the Problem Statements**

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID30146 |
| Project Name | Garage management system |
| Maximum Marks | 2 Marks |

**2.1 Problem Statement**

Many small and medium-sized garages struggle with efficiently managing vehicle service requests, diagnosing issues, tracking inventory, and maintaining smooth customer communication. Most existing garage software is either too costly, lacks AI-assisted troubleshooting, or requires extensive manual data entry.

**Challenges Identified:**

* Manual diagnosis of vehicle issues is time-consuming and heavily dependent on mechanic experience.
* Inefficient booking management, leading to scheduling conflicts or missed appointments.
* Inventory shortages due to lack of real-time tracking and reorder alerts.
* Poor customer communication — customers often need multiple follow-ups to get service updates.
* Language barriers when interacting with customers from diverse backgrounds.
* Lack of AI integration to provide instant repair suggestions or maintenance schedules.

**The Problem:**

There is currently no AI-powered Garage Management System that:

* Understands natural language queries about vehicle problems (e.g., “My car makes a grinding sound when braking”).
* Suggests probable causes and maintenance recommendations using an LLM (IBM Granite).
* Integrates seamlessly with Salesforce CRM for customer and service history tracking.
* Supports multi-language communication for diverse customer bases.
* Works in-browser with a simple, intuitive UI (via Gradio) for both staff and customers.

Garage owners often rely on manual registers, standalone POS systems, or fragmented tools, leading to inefficiencies, delays, and missed opportunities for customer retention.

**Why It Matters**

* Quick and accurate AI-driven diagnosis reduces service time and increases customer trust.
* Integrated booking, parts management, and AI chat in one system improves workflow efficiency.
* Multi-language AI communication bridges gaps between customers and service staff.
* Digital records in Salesforce help track customer loyalty and offer targeted services.

**The Need**

There is a critical need for a smart, AI-integrated garage management platform that:

* Provides instant, AI-based troubleshooting for vehicle issues.
* Manages service bookings, inventory, and customer communication in one dashboard.
* Works with Salesforce to maintain centralized customer records.
* Supports multi-language responses to cater to local communities.
* Runs on a browser-based UI with minimal technical setup.