

# SHELF CARE

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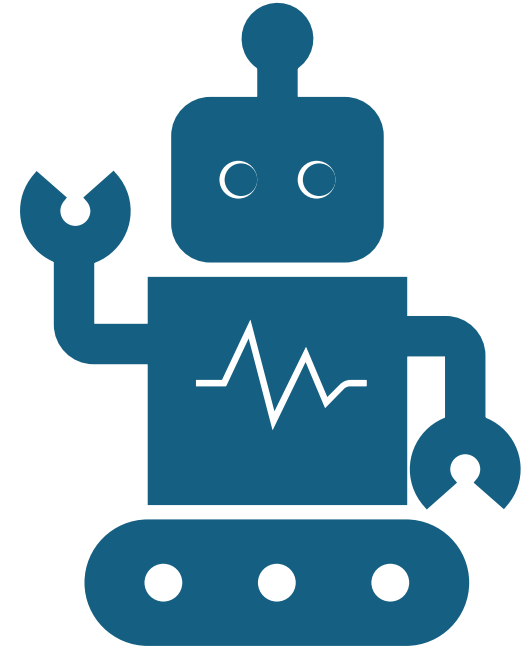
An intelligent solution for automated pharmaceutical inventory management and procurement, powered by Gemma 2.

# The Problem

Managing pharmaceutical inventory is a complex challenge, prone to inefficiencies, waste, and shortages.

- **Stock Shortages:** Critical medicines often run out of stock, impacting patient care.
- **Overstocking and Expiry Waste:** Overstocked items lead to financial losses and product waste.
- **Manual Effort:** Inventory management methods can be time-consuming and error-prone.
- **Lack of Predictive Insights:** Pharmacies struggle to anticipate future demands and manage expirations effectively.
- **Tracking Complexities:** Keeping track of stock levels and expirations requires either overly complex software or endless manual tables.

Need for an intelligent system to  
**optimise inventory,**  
**reduce waste,**  
provide **informative reports** and  
ensure **product availability.**



# The **Solution**

**ShelfCare:** A Gemma2-powered agent designed to automate and simplify pharmaceutical inventory management, addressing the challenges faced by pharmacies today.





**Real-Time Monitoring:** Tracks stock levels, identifies shortages, and provides live insights.



**Automated Procurement:** Automatically generates purchase orders based on inventory thresholds and demand forecasting.

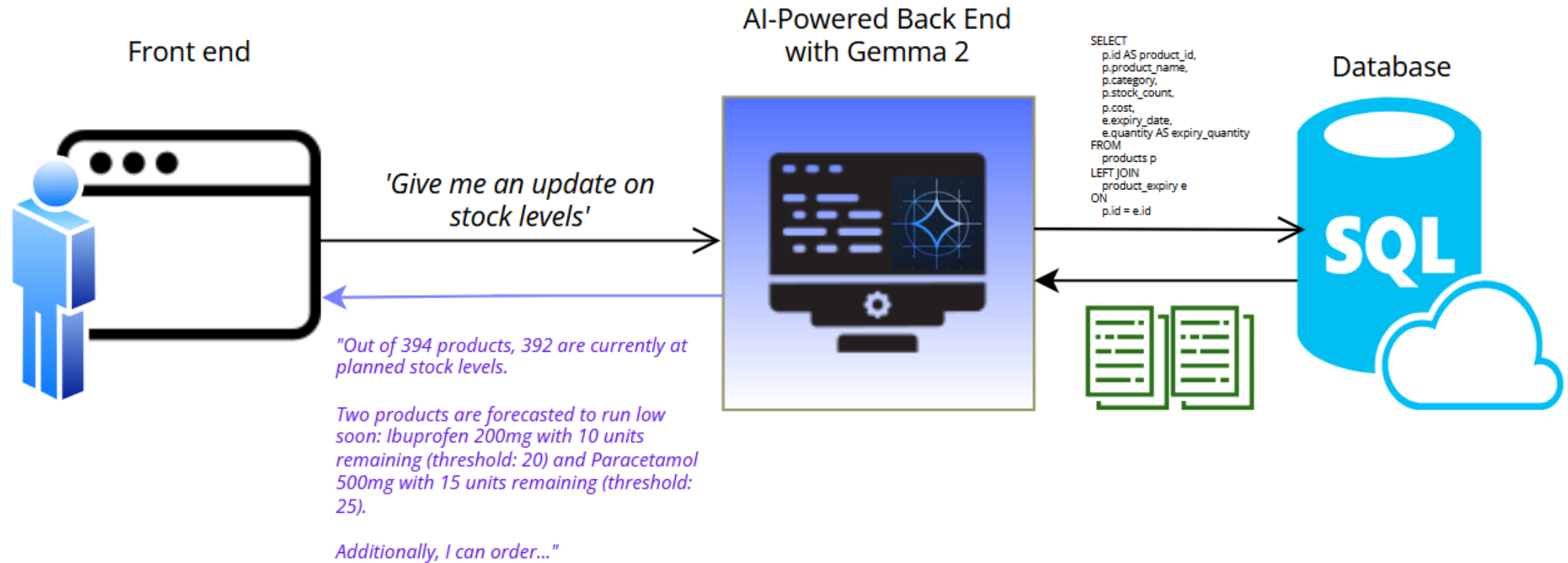


**Expiry Management:** Tracks batch expiration dates, prioritizing sales and usage to reduce waste.



**User-Friendly Interface:** With human-like communication, allowing users to ask specific questions and receive clear, actionable insights, simplifying inventory management and decision-making.

# Conceptual Diagram





## Data In, Insights Out

Good morning, Ben. I see that you have two orders due to arrive today and three products with approaching expiry dates. Shall we take a look?



# Workflow

- 1. User Interaction:** The user interacts with a friendly interface to query stock levels, check expirations, or generate reports.
- 2. AI Logic with Gemma2:** User requests are processed by the Gemma2-powered decision-making engine to provide actionable insights or automate tasks.
- 3. Database Integration:** The system retrieves and updates structured inventory data from a MySQL database hosted on Google Cloud.
- 4. Automated Actions:** Replenishment orders are generated and low stock alerts are triggered based on system predictions.
- 5. Real-Time Feedback:** Results, such as inventory summaries or order suggestions, are delivered to the user instantly.





# Technology Stack

## Gemma2

The core **AI engine**, responsible for decision-making, predictions, and generating insights through natural, human-like communication.

## Streamlit

Powers the **front-end**, providing an intuitive and interactive user interface for querying stock levels, generating reports, and accessing actionable insights.

## Flask

Serves as the **back-end framework**, enabling seamless communication between the user interface, AI engine, and database.

## LangChain

Orchestrates workflows, connecting Gemma2 with other system components, ensuring smooth integration and task automation.

## MySQL (Hosted on Google Cloud)

A reliable relational **database** for storing inventory details, batch expirations, and orders, providing secure and scalable storage.



# Future Directions & Improvements

- **Predictive Insights & Analytics**

Enhance forecasting for demand and seasonal trends using advanced data models.

- **Visualizations**

Introduce more intuitive dashboards and charts for actionable insights.

- **Gemma 2 Fine-Tuning**

Adapt decision-making to specific scenarios, such as urgent stock replenishment or specialized inventory needs.

- **Integration with Supplier Systems**

Automate procurement with supplier APIs and enable real-time tracking of order status.

- **Broader Sector Adaptation**

Expand the app's functionality to retail, manufacturing, and other industries requiring inventory optimization.

# SHELF CARE



INNOVATE



ORGANISE



SIMPLIFY

# Built for Gemma 2 AI-Hackathon 2024

by

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