Infosys Springboard Virtual Internship 6.0
Completion Report

Team Details

Batch Number : 10

Team Number: Team 3

Internship Duration: 8 Weeks

Start date : 26-NOV-25

Names : KEERTHAN KARTHIKEYA VAGGALA

1. Project Title

Inventra – Intelligent Inventory Management System

2. Project Objective

- Prevent stock shortages and excess inventory across organizations
- Enable batch-wise and expiry-aware inventory tracking for all products
- Improve operational reliability by ensuring only valid and usable items are managed
- Automate stock alerts, approvals, and inter-location inventory transfers
- Provide data-driven insights for administrators and supply-chain teams
- Maintain secure, auditable, and compliant inventory operations
- Ensure real-time tracking of products across multiple locations, warehouses, and units

3. Project Description in Detail

Inventra – Intelligent Inventory Management System is designed to address key challenges in modern inventory management, where delays, manual processes, and lack of real-time visibility can lead to inefficiencies and operational risks. The system provides an integrated digital platform to manage products, materials, kits, and assets across multiple branches, warehouses, and mobile or distributed units.

The system continuously monitors stock levels, batch details, and expiry information using automated rules and validation checks. A First-Expiry-First-Out (FEFO) logic ensures that older and near-expiry batches are prioritized during usage or dispatch, while expired or invalid items are automatically restricted from further processing. Real-time synchronization across all locations ensures that inventory updates are instantly reflected, reducing data mismatches and manual reconciliation errors.

An intelligent alert engine generates notifications for low stock levels, expiry risks, damaged items, and delayed transfers. Secure inter-location stock transfer workflows include approval checkpoints, transit tracking, and reconciliation mechanisms to prevent losses and ensure accountability. A centralized dashboard provides administrators with complete visibility into inventory health, usage patterns, compliance status, and operational readiness. Overall, the system transforms traditional inventory handling into a smart, secure, and data-driven inventory management ecosystem.

4. Timeline Overview

Week	Activities Planned	Activities Completed
Week 1	Project kickoff, understanding inventory management challenges, requirement analysis	Conducted project initiation meeting, finalized project scope, studied existing inventory management systems
Week 2	Design data models for products, batches, expiry, and locations	Created product, batch, expiry, and stock location schemas
Week 3	Define inventory workflows and expiry handling rules	Implemented FEFO logic, expiry validation, and stock blocking rules
Week 4	Develop core inventory and alert modules	Built stock update, low-stock alerts, and expiry notification features
Week 5	Design inter-branch stock transfer process	Implemented transfer requests, approval flow, and transit tracking
Week 6	Testing and synchronization validation	Tested real-time stock sync, alert accuracy, and reconciliation logic
Week 7	Dashboard and reporting module development	Developed inventory dashboards and compliance reports
Week 8	Documentation, presentation, and final submission	Completed documentation, prepared presentation, and delivered demo

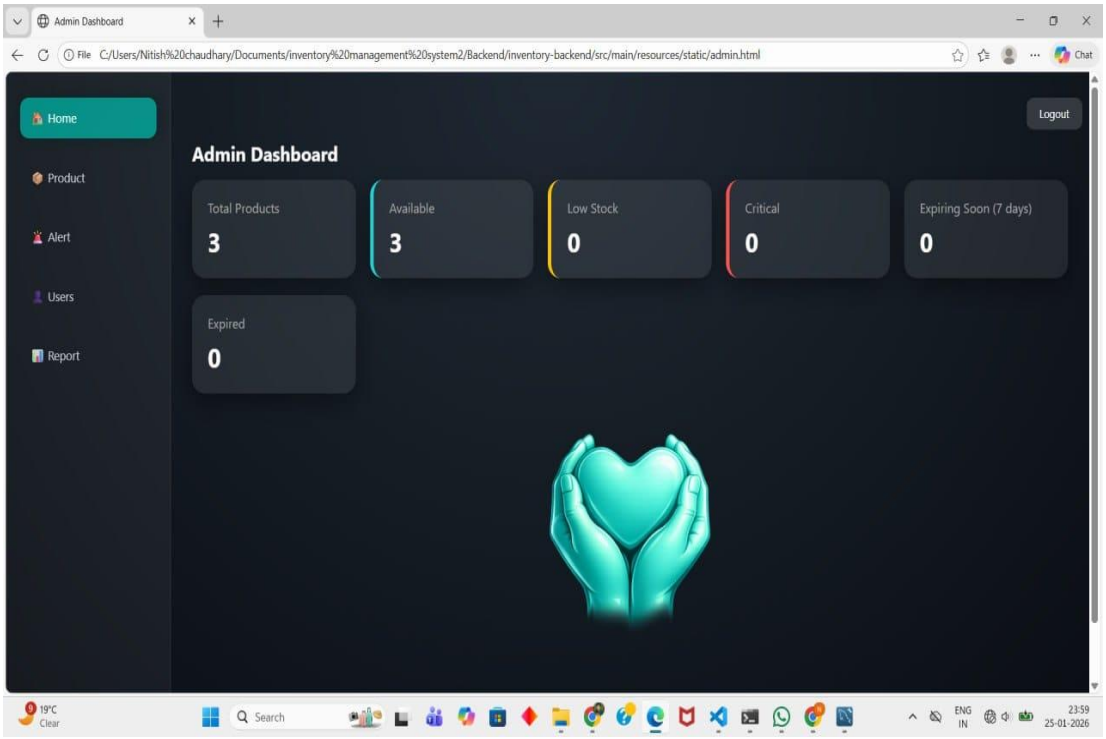
5a. Key Milestones

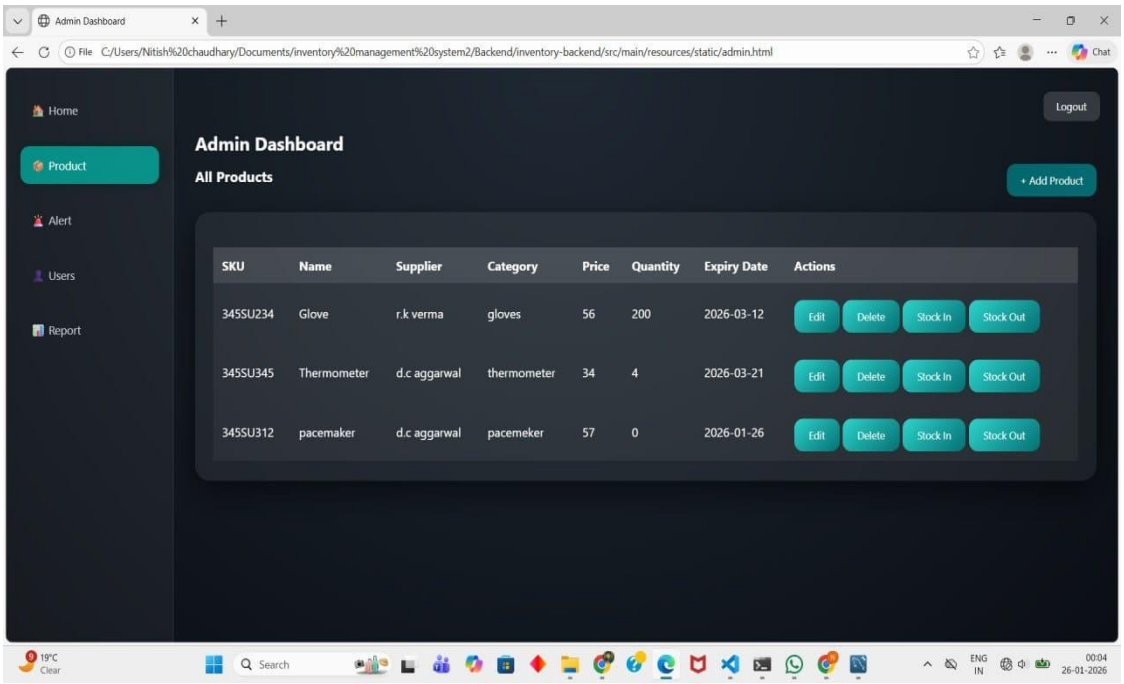
Milestone	Description	Date Achieved
Project Kickoff	Initial project briefing, problem identification, scope finalization, and system architecture planning	Week 1
Prototype / First Draft	Completion of basic inventory module, batch-wise tracking, and expiry handling logic	Week 3
Mid-Term Review	Review of workflows, alert mechanisms, inter-branch transfer logic, and performance validation	Week 5
Final Submission	Completion of full system integration, dashboard, testing, and documentation	Week 7
Presentation	Final demonstration of smart inventory workflows and system features	Week 8

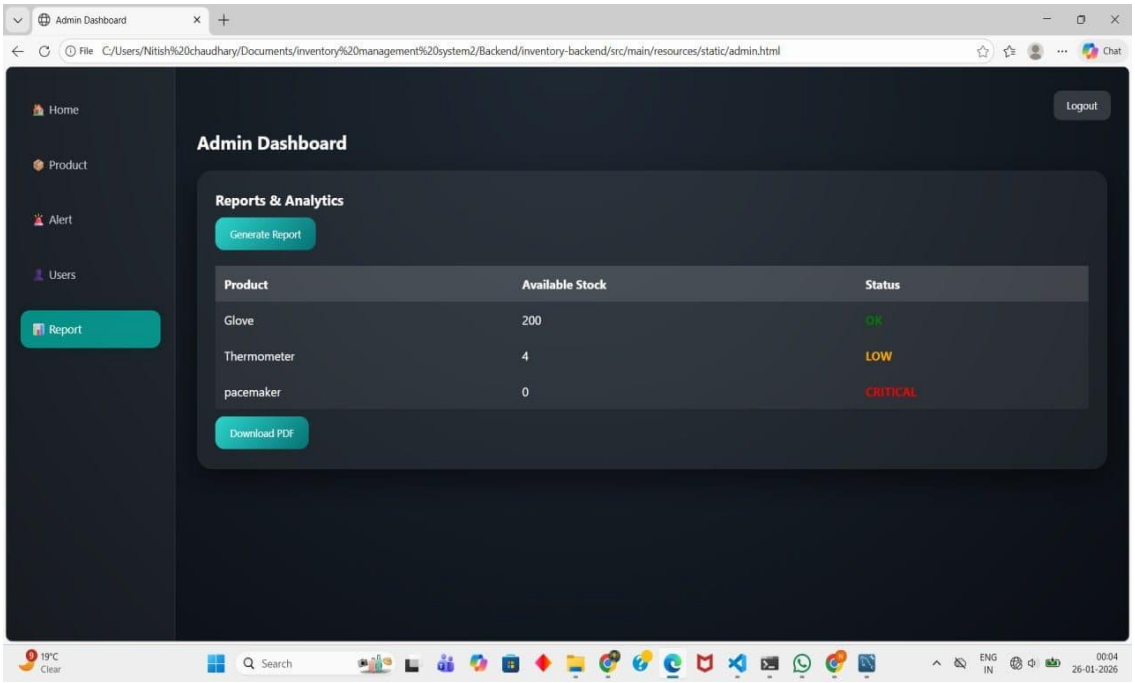
5b. Project Execution Details

- The project followed a structured development approach starting with requirement analysis and system design standards. Core technologies used include **Java, Spring Boot, MySQL, REST APIs**, and dashboard visualization tools.
- Products were modeled with batch numbers, expiry dates, storage attributes, and location mapping. Automated **FEFO logic** ensured efficient and reliable inventory utilization.
- Real-time stock updates were enabled using transactional operations and synchronization mechanisms across multiple locations.
- Role-based access control ensured secure operations for employees, managers, and system administrators.
- An alert engine generated notifications for low stock levels, near-expiry items, and transfer delays.
- Comprehensive testing was performed to validate data accuracy, system reliability, and overall operational efficiency.

6.Snashots / Screenshots



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Chat
Home
Product
Alert
Users
Report
Logout
Admin Dashboard
Reports & Analytics
Generate Report
Product
Available Stock
Status
Glove
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OK
Thermometer
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LOW
pacemaker
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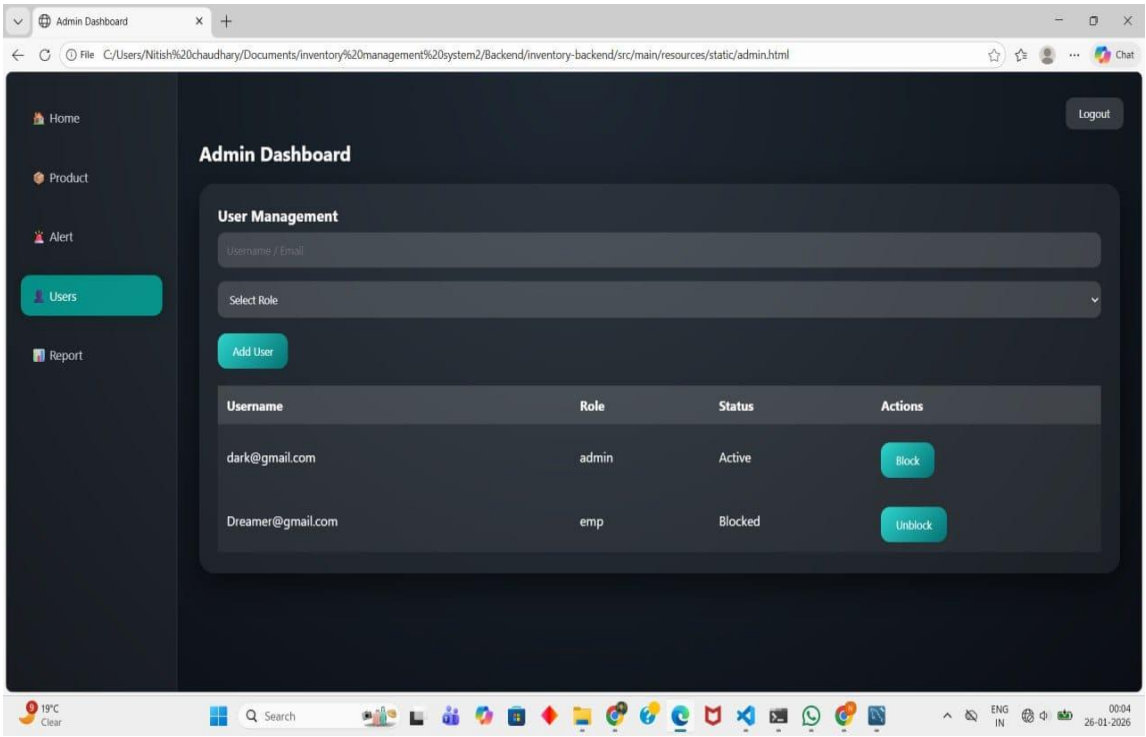
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Chat
Home
Product
Alert
Users
Report
Logout
Admin Dashboard
User Management
Username / Email
Select Role
Add User
Username
Role
Status
Actions
dark@gmail.com
admin
Active
Block
Dreamer@gmail.com
emp
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Unblock
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Clear
Search
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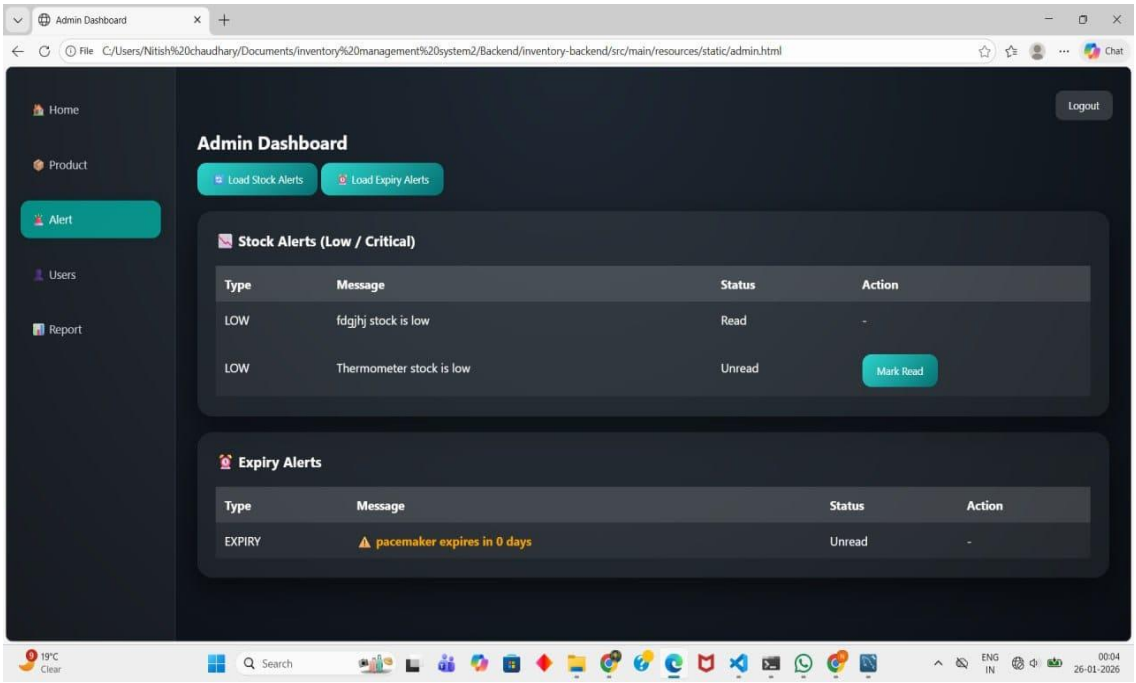
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Chat
Home
Product
Alert
Users
Report
Logout
Admin Dashboard
Load Stock Alerts
Load Expiry Alerts
Stock Alerts (Low / Critical)
Type
Message
Status
Action
LOW
fdgjhj stock is low
Read
-
LOW
Thermometer stock is low
Unread
Mark Read
Expiry Alerts
Type
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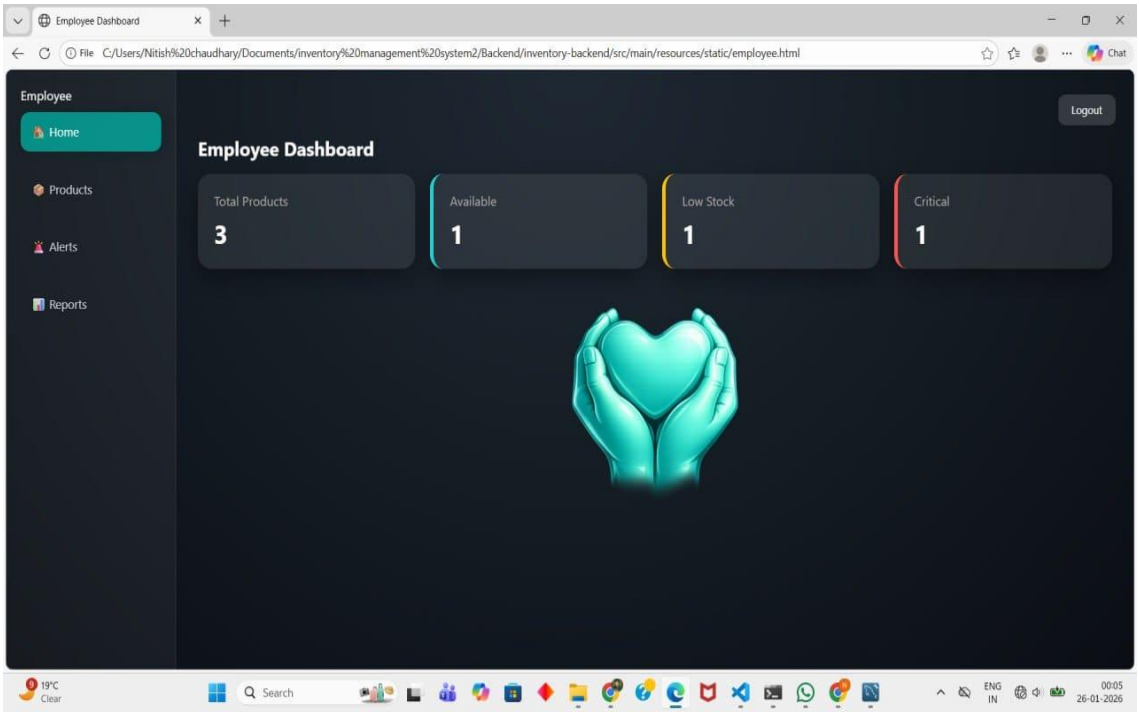
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Employee
Home
Products
Alerts
Reports
Logout
Employee Dashboard
Total Products
3
Available
1
Low Stock
1
Critical
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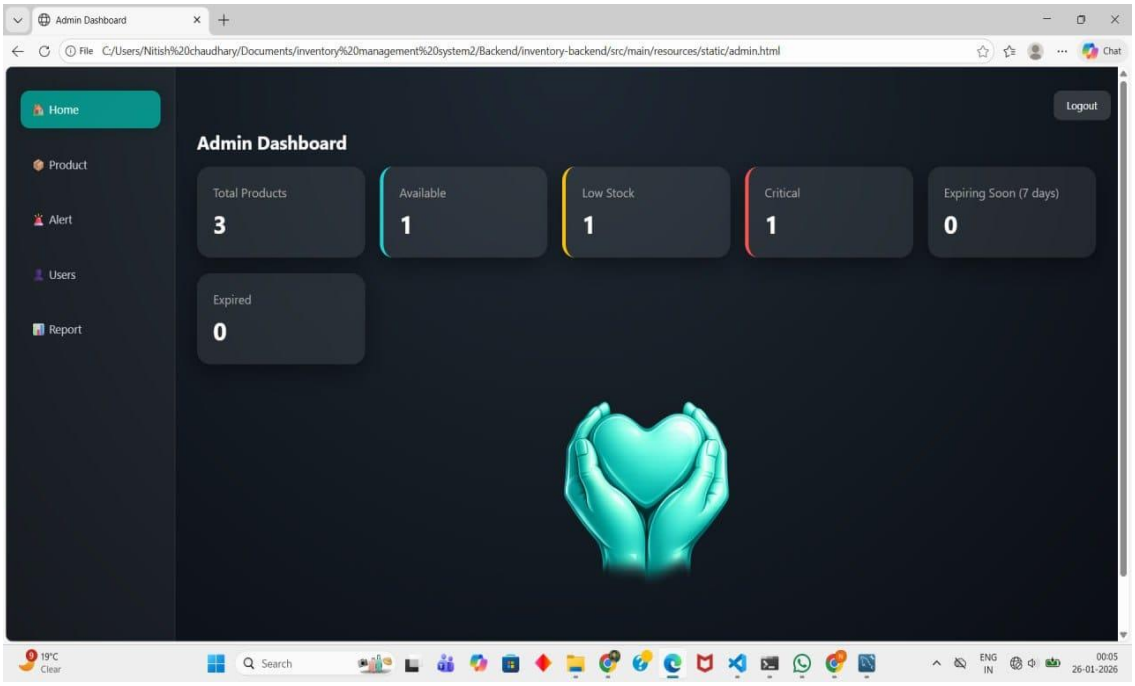
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Chat
Home
Product
Alert
Users
Report
Logout
Admin Dashboard
Total Products
3
Available
1
Low Stock
1
Critical
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Expiring Soon (7 days)
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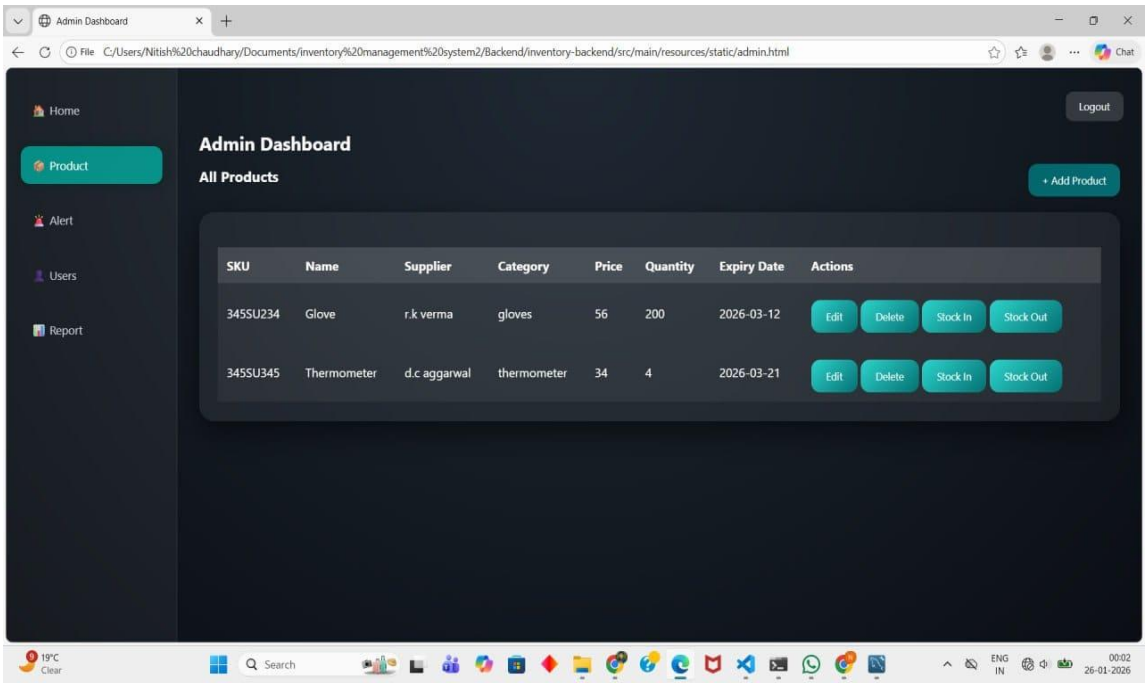
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Chat
Home
Product
Alert
Users
Report
Logout
Admin Dashboard
All Products
+ Add Product
SKU
Name
Supplier
Category
Price
Quantity
Expiry Date
Actions
345SU234
Glove
r.k verma
gloves
56
200
2026-03-12
Edit
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7. Learnings & Skills Acquired

The **Inventra – Intelligent Inventory Management System** project provided significant technical and practical learning related to enterprise inventory systems, reliable software design, and operational optimization. Throughout the internship, the team gained hands-on exposure to designing secure, scalable, and efficient solutions for real-world, multi-location inventory environments.

Key Learnings and Skills Acquired

- **Inventory Management Systems:** Gained a strong understanding of inventory workflows, including product storage, asset tracking, and multi-location stock handling.
- **Batch-wise & Expiry Management:** Learned to design and implement **FEFO (First-Expiry-First-Out)** logic to ensure efficient stock utilization and operational compliance.
- **System Design & Architecture:** Developed skills in designing scalable, modular, and fault-tolerant systems suitable for multi-branch and distributed environments.
- **Backend Development:** Strengthened backend development skills using secure REST APIs, transaction handling, and robust validation mechanisms.
- **Database Design:** Learned to design relational database schemas for products, batches, stock locations, alerts, and audit logs.
- **Alert & Notification Systems:** Acquired experience in implementing automated alerts for low stock levels, near-expiry items, and transfer delays.
- **Dashboard & Reporting:** Gained skills in visualizing inventory data, operational metrics, and usage trends through interactive dashboards and reports.
- **Testing & Quality Assurance:** Learned systematic testing approaches to validate data accuracy, real-time synchronization, and business rules.
- **Risk Management & Compliance Awareness:** Understood the importance of data accuracy, accountability, and auditability in enterprise software systems.
- **Team Collaboration & Communication:** Improved teamwork, documentation, and presentation skills through structured milestones, reviews, and project demonstrations.

8. Challenges Faced

Challenge 1: Expiry Risk Management
Problem: Expired items appearing as usable stock.
Solution: Automated expiry rules and FEFO logic.

Challenge 2: Stock Synchronization
Problem: Mismatch across multiple branches.
Solution: Real-time update and reconciliation mechanisms.

Challenge 3: Emergency Stock Handling
Problem: Critical shortages during emergencies.
Solution: Priority alerts and reserved emergency stock rules.

Challenge 4: Manual Dependency
Problem: Human errors in approvals and tracking.
Solution: Automated workflows with audit logs.

9. Testimonials from Team

Working on the **Inventra – Intelligent Inventory Management System** provided valuable hands-on exposure to real-world inventory and enterprise system challenges. The project enhanced our understanding of reliable system design, teamwork, and structured problem-solving while closely simulating industry-level software development practices.

10. Conclusion

The **Inventra – Intelligent Inventory Management System** successfully demonstrates how modern technology can improve operational efficiency, transparency, and decision-making in inventory management. The project strengthened our technical, analytical, and collaborative skills while highlighting the importance of accuracy, accountability, and real-time visibility in enterprise systems.

11. Acknowledgements

We sincerely thank our mentor and the **Infosys Springboard** team for their continuous guidance, support, and encouragement throughout this internship. Their insights, reviews, and feedback were instrumental in shaping this project into a meaningful and valuable learning experience.