

CSCE-5430 Software Engineering

Project Proposal-1

Team Name: **Zero One**

Team Members:

1. **James Cruz** – james.cruz@my.unt.edu (Project Coordinator)
2. **Reddy Likhitha Narravula**- Reddylikhithanarravula@my.unt.edu (Lead&UI Developer)
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Project Title: Smart IT Inventory Management System with QR Code/Barcode Integration

Problem Statement

Identified Problem

Managing IT inventory requirements typically present time-consuming operations with significant potential for manual errors. Tracking IT hardware alongside software maintenance tasks remains a struggle for departments facing difficulties preserving assets from loss while managing inventory effectively. There is no open source and easy IT management software for small and medium scale businesses and current major inventory systems struggle with complexity together with usability and they make it complexity where they try to handle all other problems in one software making them difficult to use.

Target Audience

- IT departments in universities, offices, and small-to-medium-sized organizations.
- Users who need quick access to inventory data, including administrators and technicians.

Specific Needs

- Efficient check-in/check-out process.
- Maintenance and warranty tracking.
- Comprehensive reporting and analytics.

Existing Solutions and Limitations

- Many inventory systems, such as ServiceNow and similar tools, are expensive, overly complex, and not user-friendly for smaller teams or projects.
- These systems often cater to enterprise-level users, making them unsuitable for small-to-medium-sized businesses or garage projects.

Proposed Improvements

Our system focuses on developing a user-centric interface which suits small-to-medium-sized businesses and garage startups and gives a simple single-application experience. The application simplifies inventory control operations, so users won't face overwhelming interfaces which plague complicated management systems. The system exploits high scalability capabilities which allow it to scale with the organization's developing needs. Our platform uses multicast messaging and automates alerts in addition to barcode scanning to give advanced features separate from complexity and inefficient interfaces.

Team Communication

Communication Plan

- **Weekly Meetings:** In-Person on Saturday after class at 4 PM.
- **Daily Updates:** WhatsApp and Team Group Call for quick check-ins and issue resolution.
- **Document Sharing:** Google Drive for file storage.
- **Emergency Communication:** Group WhatsApp for urgent issues.

Collaboration Tools

- **MS Teams:** For team communication.
- **GitHub:** For code collaboration and version control.
- **Google Drive:** For storing documents and resources.

Development Environment

Technologies and Tools

- **Operating Systems:** Windows, macOS.
- **Programming Languages:** Python (backend), JavaScript (frontend).

Frameworks and Libraries

- **Backend:** Flask.
- **Frontend:** React.js.
- **QR Code Generation:** qrcode (Python).
- **Barcode Scanning:** html5-qrcode (JavaScript).

Database and Hosting

- **Database:** Firebase (Firestore - NoSQL cloud database).
- **Hosting:** Firebase Hosting (Frontend) and Google Cloud Run (Backend).

Development Tools

- **IDE:** VS Code and Google Co-Lab
- **Version Control:** GitHub.

Milestone Schedule – Dates are Tentative

Milestone	Description	Due Date	Deliverable
Requirements Gathering	Collect requirements and finalize system scope	February 8, 2025	Yes
System Design Document	Design database schema and system architecture document	February 15, 2025	Yes
Environment Setup	Set up Firebase, backend framework, and frontend	February 16, 2025	No
QR Code Integration	Implement QR code generation and scanning	February 28, 2025	No
Demo –Testing-1	Present system progress and test basic functionality	March 5, 2025	Yes
Development - Core Features	Develop inventory CRUD, check-in/out system	March 20, 2025	No
Development - Notifications Module	Implement alerts for maintenance and overdue assets	March 31, 2025	No
Final Testing-2	Conduct system testing and fix bugs	April 15, 2025	Yes
Final Documentation	Prepare user manual and final project report	April 29, 2025	Yes
Final Submission and Presentation	Submit and demonstrate the complete system	April 30, 2025	Yes

Note: All dates mentioned are tentative and subject to change based on project hurdles. Additionally, the tools and features listed may be adjusted as required to address unforeseen challenges during development.