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| **Proposal for Full Stack Solution**  **Moayad Hamdan** |
|  | **To: Dern-Support** |  |
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# Business Context and Problem Summary

## Business Context:

Dern-Support is a small but growing IT support company specializing in computer repairs for both businesses and individuals. They provide on-site support for business clients, while individual customers must drop off their computers at one of Dern-Support’s offices or arrange for courier delivery. As the company expands, there is a need for a more efficient system to manage operations and customer interactions effectively.

## **Summary of the Problem:**

Currently, Dern-Support lacks an integrated system for managing customer accounts, support requests, scheduling, inventory, and data analysis. This leads to inefficiencies, longer response times, and disjointed processes. There is also a lack of tools for management to analyze data trends and make informed decisions. To support growth and improve customer satisfaction, Dern-Support requires a comprehensive software solution.

# Description of the Proposed Solution

The proposed solution is a full-stack web application designed to address the identified challenges and meet Dern-Support’s operational requirements. The solution includes the following key features:

## ****Customer Account Management:****

1. **Business Accounts:** Allow business customers to create and manage accounts, with multiple users under each account.
2. **Individual Accounts:** Enable individual customers to create accounts to track repair requests and service history.

## **Support Request and Scheduling:**

1. **Support Request Submission:** Customers can submit support requests via a user-friendly web interface.
2. **Real-Time Status Updates:** Allow customers to book repair slots based on availability and urgency.

## **Knowledge Base:**

1. **Diagnostic Tools:** Provide diagnostic tools to help customers identify common issues through guided questions.
2. **Instructional Guides:** Offer step-by-step instructions for resolving minor issues.

## **Spare Parts Inventory Management:**

1. **Inventory Search:** Search functionality to find details about spare parts in stock.
2. **Inventory Tracking:** Real-time tracking of inventory levels, with alerts for low stock and automated reordering.
3. **Inventory Editing:** Include Save and Delete options for managing spare parts inventory to optimize resource utilization.
4. **Real-Time Tracking:** Track inventory levels in real-time with alerts for low stock and automated reorder suggestions.

## **Job Scheduling and Prioritization:**

1. **Job Scheduling:** A system to manage daily repair jobs, optimizing technician availability and workload.
2. **Job Prioritization:** A priority system to handle urgent repair requests efficiently, ensuring high-priority jobs are addressed first.

## **Data Analytics:**

1. **Trend Analysis:** Analyze data to identify common issues, track repair times, and monitor customer satisfaction.
2. **Management Dashboard:** A comprehensive dashboard with real-time analytics for better decision-making.
3. **Geographical Insights:** Map locations of business support jobs to identify service coverage and potential expansion areas.
4. **Predictive Analytics:** Use predictive analytics to forecast potential issues based on historical data.

## **Additional Features:**

1. **Notification System:** Alerts to keep customers and technicians informed about job statuses and updates via email and SMS.
2. **Customer Feedback:** A feedback and review system to gather insights on service quality.

# Functional and Non-Functional Requirements

## **Functional Requirements:**

1. **Account Management:** Registration and profile management for business and individual customers.
2. **Support Request Management:** Submission, tracking, and updating of support requests, scheduling, and rescheduling of repair appointments.
3. **Quote Generation:** Automated calculation of repair costs.
4. **Knowledge Base:** Diagnostic tools and instructional guides.
5. **Inventory Management:** Real-time inventory tracking, searching, and editing.
6. **Job Management:** Scheduling and prioritization of repair jobs.
7. **Real-time spare parts** inventory management.
8. **Data Analytics:** Real-time analytics and reporting dashboard.
9. **Real-time data analytics** and reporting dashboard.

## **Non-Functional Requirements:**

1. **Scalability:** Handle a growing number of users and data entries without performance issues.
2. **Performance:** Fast response times, targeting load times of under 2 seconds for key operations.
3. **Usability:** User-friendly interfaces designed for ease of use.
4. **Reliability:** High availability with a target uptime of 99.9%, and robust disaster recovery plans.

# Key Performance Indicators (KPIs)

## **Customer Satisfaction:**

1. **Average Rating:** Track customer feedback ratings on a scale of 1 to 5.
2. **Repeat Customers:** Monitor the number of repeat customers as an indicator of satisfaction and loyalty.

## **Operational Efficiency:**

1. **Resolution Time:** Measure the average time taken to resolve support requests.
2. **Daily Requests:** Track the number of support requests handled daily.

## **System Performance:**

1. **Response Time:** Monitor the average response time for key user interactions, aiming for under 2 seconds.
2. **Uptime:** Track system uptime with a target of 99.9% availability.

## **Inventory Management:**

1. **Accuracy:** Measure the accuracy of inventory records by comparing system data with physical counts.
2. **Restocking Time:** Track the time taken to reorder and restock parts.

# Risks and Implications of the Proposed Solution

## **Risks:**

1. **System Downtime:** Technical issues leading to service interruptions. Mitigation: Robust backup and disaster recovery plans.
2. **Data Integrity:** Potential for data loss or corruption.

Mitigation: Regular data backups and integrity checks.

1. **User Adoption:** Resistance to the new system.

Mitigation: Comprehensive training and user support.

1. **Budget Overruns:** Costs exceeding estimates.

Mitigation: Detailed project planning, regular progress reviews, and contingency budgeting.

## **Implications:**

1. **Positive Implications:**
2. **Improved Efficiency:** Streamlined operations leading to faster response times and higher productivity.
3. **Enhanced Customer Satisfaction:** Improved service delivery and customer support.
4. **Better Decision-Making:** Data-driven insights for better management decisions.
5. **Negative Implications:**
6. **Initial Costs:** Development and deployment costs, including potential training expenses.
7. **Maintenance Requirements:** Ongoing maintenance and support.
8. **Change Management:** Potential disruption during the transition to the new system, requiring careful change management.

# Proposal Review and Approval Process