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Software Development Proposal

Capstone / Employee & Account Management System



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# Executive Summary

This proposal serves as both the reply for a request of software development by [NW](#_Glossary_of_Terms) Lawn Maintenance and the Senior Capstone project for Eastern Oregon University.

NW Lawn Maintenance requested an application be built for their company that would bring them into the modern era of technology using mobile devices to streamline their daily operations. Owner of NW Lawn Maintenance has spent numerous hours searching for software that meets the needs of the company which has led to the request for this application.

The capstone portion of this is to show the combination of skills learned while attending Eastern Oregon University in writing proper documentation, creating clean concise code, and producing a working application.

# Problem

Currently NW Lawn Maintenance is using an out-of-date Microsoft [SQL](#_Glossary_of_Terms) database and web interface for the management of all employee schedules and customer accounts. This means all business transactions, employee scheduling and account updating takes place at [COB](#_Glossary_of_Terms). With modern advancements in technology and software, their current systems are no longer viable to maintain and manage the company this way. NW Lawn Maintenance wishes to improve operations through mobility and accessibility while bringing their company into the modern digital age.

# Solution

With the development of this application, NW Lawn Maintenance will be able to manage customer accounts, modify employee schedules, and conduct daily operations in real-time from any location utilizing a mobile-friendly application that can be accessed on smart phones and tablets. Major system backups and overhauls will still need to be completed using workstations as this application is only to improve daily operations.

## Objectives

Development of this application will take place over 5 phases:

* **Evaluation**: evaluate the company’s need for the application and primary usage.
* **Development**: create application documentation, database structure and application source code through [TDD](#_Glossary_of_Terms).
* **Integration / Deployment**: integrate application into the company’s mobile devices and databases into the web server.
* **Training**: conduct training for management and employees in the usage of the application.
* **Maintain**: provide application maintenance throughout its lifetime with periodic system updates as needed and timely fixes to problems encountered during operation.

# Intended Audience

This application is currently intended for the management and employees at NW Lawn Maintenance. Since copyright of application will remain with the developer, future public release is possible if successful in field testing and operation.

# Ethical Concerns

When developing software there are many ethical concerns that must be taken into consideration. The main ethical concerns for this application and its development are the following:

* **Protection of Customer Data**: The number one priority is to protect all customer data. First each set of data should be always considered sensitive regardless of the amount of information stored on each customer. Careful measures must be taken to ensure the application is secured.
* **Intellectual Property**: Usage of Third-Party software and/or applications are concerns when developing. Proper adherence to the guidelines set for utilization of Third-Party software must be maintain as not to violate copyright and/or trademark laws.
* **Copyright Ownership**: Copyright of the application developed remains with the developer. This allows the developer to distribute, show off, or make any changes to the application as seen fit. However, when developing in conjunction with Third-Party software, the developer must still adhere to the appropriate guidelines associated with their utilization thus not violating their copyright and/or trademark laws.

# Development Tools

**Intended Platform(s)**: Currently this application will be developed for devices that utilize the Android [OS](#_Glossary_of_Terms). In the future this application can be expanded for usage on Apple [iOS](#_Glossary_of_Terms). With the use of a Firebase NoSQL database, expansion into Apple iOS should be seamless.

**Software Tool(s)**: Application will be developed in Android Studio with its database built in Firebase. Android Studio is an [IDE](#_Glossary_of_Terms) platform used for developing Android OS applications. Firebase Realtime Database is an [API](#_Glossary_of_Terms) designed to allow real time synchronization of data across multiple devices.

**Programming Language(s)**: Application will be built in the Kotlin language with using Firebase Realtime Database APIs to access the database. Kotlin is a general-purpose cross platform language that operates well on the Android OS platform and will allow for this application to be easily expanded to the Apple iOS platform.

# Key Features

What makes this application special and stand out is the fact there is a lack of applications or software on the market today that has its sole purpose tailored to landscaping companies. Special key features include the following:

* Real-time modification and updates to employee schedules. As management adjusts schedule, employees will receive an alert notifying of changes.
* Drag and drop system for customer scheduling that updates in real-time. Management will have the ability to move customer jobs around as needed and employees assigned to a specific job will receive an alert notifying of changes.
* Employees will have the ability to click on a customer’s address on the schedule to link Google Maps for directions to job sites.
* Location Data access provided to the application will allow an employee to start/stop time on a specific job. If an employee is outside a certain range, he/she will not be permitted to start time on job site. This will allow the company to properly pay employee salaries based on actual work versus hypothetical work hours.
* Ability for employees to enter referrals while out on job sites or within community areas covered by the company’s customer map. Sends an email to management with name, address, and phone number of potential clients for work estimate follow-ups.

# Project Costs

Currently there are no costs associated with this project and the application product. Usage of Android Studio for development is free and based on the amount of traffic that the database will see using Firebase, the current pricing plan will be free. In the future as NW Lawn Maintenance expands its operations, they may have to proceed to a Tier 1 pricing package with Firebase that will run the company approximately $50 per month. However, to hit this mark, the company would have to expand their daily operations by 1000% per month.

# Glossary of Terms

NW - Northwest

SQL – Structured Query Language

COB – Close of business

TDD – Test-Driven Development

OS – Operating System

iOS – iPhone Operating System

IDE – Interactive Development Environment

API – Application Programming Interface