One Clean Dude Detailing

Dakoda Meade

CST-452 Capstone Project Proposal

Grand Canyon University

Instructor: Professor Michael Landreth

Revision: 2

Date: 8/31/2024

**ABSTRACT**

The mobile automotive detailing company web application project aims to create a comprehensive, user-friendly platform that streamlines various aspects of the business. The application will host an online appointment booking, service reviews(hardcoded for now), and administrative tasks. The primary objective for this project is to enhance the user experience by providing a convenient way to schedule appointments and access services while enabling the company to manage operations more efficiently. This project is being undertaken as a favor for a friend, adding a personal commitment to deliver a high-quality application in a short amount of time. However, there will be more features added after the deadline is met for this class to ensure all the features promised for this class are done on time.

The web application will be developed using ASP.NET for the backend and MySQL for the database, ensuring a robust and scalable system. Following the Model-View-Controller (MVC) architecture, separating application business logic from the front-end logic. The User entity, with attributes such as role to differentiate between admins and customers, ensures proper access control and functionality tailored to different user types. The database schema includes tables for Users, Roles, Services, Appointments, and Appointment Statuses, essential for capturing all necessary data. The project's success will be measured by its functionality, user-friendly UI, and meeting the deadline. By integrating a Christian worldview, the project emphasizes ethical practices and community service, aligning goals with a commitment to moral values.

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| History and Signoff Sheet |

**Change Record**

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| --- | --- | --- |
| **Date** | **Author** | **Revision Notes** |
| 7/17/2024 | Dakoda Meade | Initial draft for review/discussion |
| 8/31/2024 | Dakoda Meade | Final Review |
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| **Overall Instructor Feedback/Comments** |

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| **Overall Instructor Feedback/Comments** |

**Integrated Instructor Feedback into Project Documentation**

Yes  No

**Project Approval**

Professor Michael Landreth

**TABLE OF CONTENTS**

Project Overview and Project Objectives 4

Project Scope 5

Project Success Measures 6

Project High-Level Solution 7

Project Controls 8

Project Cost and Schedule 10

Appendix A – References 11

Appendix B – Copyright Compliance 12

Project Overview and Project Objectives

**State the Problem and Background**

Explain why the project is being undertaken.

Include pertinent background information for the project.

**Problem Statement**

A friend is in need of a scheduling application for a mobile detailing business he is in the process of starting. The current plan is to have customers call and schedule and however this could become cumbersome. Creating a web application would solve a several management challenges for him if it were able to be completed.

1. **Inefficient Appointment Scheduling:**
   * Customers would have to call book appointments, this cloud lead to potential scheduling conflicts and loss of business.
   * This process is time-consuming and prone to errors and can result in dissatisfied customers and inefficient use of his time.
2. **Manual Record-Keeping:**

* Customer information, service records, and appointment details would have to be managed manually, this would be cumbersome and prone to data loss or errors.
* Lack of a centralized system makes it difficult to track customer history, preferences, and service details.

1. **Administrative Burden:**

* Managing schedules, organizing customer data, and taking calls requires a significant amount of manual effort and time, diverting focus from core business activities.

**Background Information**

1. **Overview**

* A new company that is in the works of starting up.
* No set systems and customers but wanting to make a great impression for any new customers coming in.

1. **Business Goals**

* Streamline operations by automating administrative tasks, reducing manual errors, and improving data accessibility.
* Set business up for success by providing by providing a convenient online platform for booking appointments and managing service records and overall enhancing the customer experience.
* Allowing for increased efficiency and scalability to support the growth of the business.
* Access application anywhere with an internet connection.

**Christian Worldview**

As applicable to this project, discuss the Christian worldview perspective and what aspects of the CWV you are addressing/relating/incorporating – ethical, spiritual, legal, historical, social, etc. Provide references to relevant Christian sources. Explain how you approached this project differently as you are guided by a Christian worldview.

I am conducting this project as a favor for a friend. He is going through a tough time with work and has been wanting to start his own auto detailing company for a few years now. So, he is risking everything by quitting his job and starting his own business. Assisting him in creating this web application as a favor aligns with the Christian world principle of serving others and demonstrating love through actions.

* **Galatians 5:13–14:** "You, my brothers and sisters, were called to be free. But do not use your freedom to indulge the flesh; rather, serve one another humbly in love. For the entire law is fulfilled in keeping this one command: 'Love your neighbor as yourself'" (*English Standard Version Bible., 2001*).

This addresses and incorporates social aspects of the Christian World View into this project. Emphasizing the importance of contributing positively to relationships and society as a whole.

**Project Objectives**

List objectives that will be used to measure project success.

* **Customer Satisfaction:** Achieve a great impression by gaining a high level of customer satisfaction through a user-friendly booking system and efficient service management.
* **Operational Efficiency:** Streamline business operations by automating appointment scheduling, customer management, and appointment tracking.
* **Data Accuracy and Security:** Ensure accurate and secure handling of customer data, service records, and business analytics.
* **Overall Satisfaction:** Provide staff and owner with the tools and information needed to improve their productivity and overall job satisfaction.
* **Cloud Deployment:** Application works seamlessly on the cloud.

**Challenges**

List the known challenges that will be used to measure project success.

* **Technical Integration:** Ensuring seamless integration between the web application, MySQL database, and ASP.NET framework.
* **User Friendly Interface:** Developing a user-friendly interface that customers enjoy interacting with so they keep coming back.
* **Security Concerns:** Protecting sensitive customer information from potential cyber threats.
* **Scalability:** Designing the system to handle future growth and additional features.
* **Cloud Deployment:** Never deployed an ASP.NET application to the cloud.

**Benefits and Opportunities**

Describe the benefits or opportunities resulting from project implementation.

Provide references as necessary.

* **Enhanced Customer Experience:** Providing a convenient, user-friendly platform for customers to book service and view service history.
* **Increased Efficiency:** Automating administrative tasks to reduce manual workload, minimize errors, and improve overall efficiency.
* **Better Data Management:** Centralizing data for easier access, better organization, and improved decision-making by keeping the scheduling and paperwork out of people’s hands.
* **Business Growth:** Expanding the company’s reach through an online presence, attracting new customers, and allowing the business to appear professional and organized.

***NOTE: If necessary, you may add subsections to those listed in order to match the requirements in the assignment description. Do not remove any top-level sections (those that are listed in the Table of Contents).***

Project Scope

1. Give a clear, concise statement that states the scope of the project. This should also include items that are to be out of scope.

**In-Scope Items(Information displayed as “Out of Scope” is subject to change if there is time for it to be completed)**

1. **User Authentication and Authorization:**

* Implement user registration and login functionality.
* Role-based access control for Admin, Customer, and Staff (Out of Scope).

1. **User Profile Management:**

* Creation and management of customer profiles this includes address, name, password, contact, amd car information.
* Storage of contact information.

1. **Appointment Scheduling:**

* Real-time booking system with calendar integration.
* Services selection along with add ons(Currently in scope).
* Address, car, and contact information if user is not signed in, can create profile after booking is completed(Currently in scope).
* Appointment reminders and notifications via email/SMS(Out of Scope).
* Customers can only schedule in certain areas and must contact to schedule an appointment(since mobile detailing service). (Out of Scope)

1. **Appointment Management:**

* Tracking appointment history and current appointments.
* Appointment cancellations.

1. **Admin Dashboard:**

* Business schedule reporting history and upcoming appointments.
* Staff management (may be out of scope).
* Service and add on management (add/edit/delete services and add ons).

1. **Customer Reviews:**

* Collection and display of customer reviews.

1. **Contact:**

* Contact information displayed footer for displaying the owners contact information for any questions.

1. **Cloud Deployment:**
   * Application deployed on Microsoft Azure. Along with the database.

**Out Of Scope**

1. **Notifications:**

* Email and SMS notifications for appointment confirmations, reminders, and cancellations for both users and the owner.

1. **Payment Processing:**

* Owner does not want any customer payment information done online.

1. Use the template to list all known stakeholders and contacts, if applicable, including self (for some projects self may be the only name listed)

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| --- | --- | --- |
| Stakeholder Name | Role(s) | Responsibilities |
| Dakoda Meade | Developer | Develop web application |
| Aaron Faux | Business Owner | Provide details and what is wanted from application |

1. List the work breakdown required to satisfy the project objectives. Identify teams and other resources that may be required to successfully complete the project.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Work Breakdown Structure | | | | | | | | | | |
| ID | Task | Dependencies | Status | Effort Hours | Cost | Start Date | Planned Completion | Estimate to Completion | Actual Completion | Resource |
| 1 | Build Database |  | Planned | 8 | $0 | 7/20/2024 | 7/21/2024 | 8 |  | Dev(Dakoda) |
| 2 | Define and develop User Authentication | 1 | Planned | 12 | $0 | 7/22/2024 | 7/23/2024 | 12 |  | Dev(Dakoda) |
| 3 | Develop user management | 1 | Planned | 12 | $0 | 7/24/2024 | 7/25/2024 | 12 |  | Dev(Dakoda) |
| 4 | Develop appointment scheduling system | 1,2 | Planned | 26 | $0 | 7/26/2024 | 7/28/2024 | 26 |  | Dev(Dakoda) |
| 5 | Develop Order management | 1,2,4 | Planned | 10 | $0 | 7/29/2024 | 7/30/2024 | 10 |  | Dev(Dakoda) |
| 6 | Design and develop admin dashboard | 1,2 | Planned | 24 | $0 | 7/30/2024 | 8/2/2024 | 24 |  | Dev(Dakoda) |
| 7 | Implement customer reviews |  | Planned | 4 | $0 | 8/2/2024 | 8/3/2024 | 4 |  | Dev(Dakoda) |
| 8 | Implement contact page |  | Planned | 4 | $0 | 8/4/2024 | 8/5/2024 | 4 |  | Dev(Dakoda) |
| 10 | QA/Testing | 1-8 | Planned | 30 | $0 | 8/6/2024 | 8/10/2024 | 30 |  | Dev(Dakoda)/Aaron |
|  |  |  |  |  |  |  |  |  |  |  |

**Teams and Resources**

I am the only resource for this application, and I am part of the development team. My friend Aaron will assist with testing and QA.

Project Success Measures

1. Describe what measures will be used to calculate project success.

**Measures to Calculate Project Success**

* **On-Time Completion:** Project is completed before class end date.
* **Features and Functionality:** Features are implemented fully user authentication, appointment manager, appointment scheduling, admin dashboard, reviews and contact systems.
* **Quality:** All QA is completed and passing with little not no bugs or issues present.
* **User Friendly:** UI/UX is clean, user friendly, and easy to navigate with little to no direction.
* **Cloud Deployment:** Fully functioning on the cloud.

1. Use the template to list the project completion criteria.

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| --- |
| Project Completion Criteria |
| 1 – All key features and functionalities are implemented fully, this includes the user authentication, appointment manager, appointment scheduling, admin dashboard, reviews and contact systems. |
| 2 – No critical bugs or issues |
| 3 – QA tests passed |
|  |
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1. Use the template to list the project assumptions and constraints, if applicable. An assumption is an educated guess that a likely condition or circumstance is presumed to be true. A constraint is a limiting condition or circumstance that defines the project boundaries. Assumptions allow the project to succeed. Constraints restrict or limit the project execution.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Assumptions and Constraints | | | | | |
| ID | Description | Comments | Type | Status | Date Entered |
| 1 | No customer payment information | Owner does not want the customer to be able to pay online. | Assumption | Open | 2024-07-17 |
| 2 | Limited Time | The project must be completed within a specific timeframe. | Constraint | Open | 2024-07-17 |
| 3 | Digital Literacy | Users have basic knowledge of how to use a web application with little instructions. | Assumption | Open | 2024-07-17 |
| 4 | Reliable internet access | Users have reliable access to internet in order to use the application. | Assumption | Open | 2024-07-17 |
| 5 | Compliance with relevant data protection laws | The application must comply with data protection and privacy regulations. Want to protect user information at all costs. | Constraint | Open | 2024-07-17 |
| 6 | Budget Limitations | Project must be completed with a limited budget. | Constraint | Open | 2024-07-17 |
| 7 | No Email/SMS integration services | This is assumed to be out of scope for now. This is due to time constraint. | Assumption | Open | 2024-07-17 |

Project High-Level Solution

**Introduction**

Describe in detail the nature of the topic or challenge addressed. Adjust the title of this section accordingly. Be very clear when you describe what is given/known, what is the objective, and what are the characteristics of the solution/answer sought. Include diagrams and illustrations to clarify your narrative. Include a detailed description and examples of the data/input to this project. State any assumptions you made and explain why.

**Nature of the Project Topic**

The goal of this project is to develop a scheduling assistant web application for a mobile auto detailing company. This is so that the scheduling process and customer information can be kept in a centralized location streamlining the process.

**Assumptions**

1. **No payment information or notifications:** These are considered out of scope. The owner does not want payment information to be done through the web application, but notifications could be added to the scope if there is time.
2. **Limited Budget:** The is a limited budget available.
3. **Resources:** I (Dakoda) will be the only resource available for this project.

**Project Objectives**

1. **Implement Key Features:** Implement all the features mentioned in the scope. This includes the appointment system, user authentication, and profile management.
2. **Friendly UI:** Create a UI that is easy to navigate for customers and admins.
3. **Meet Due Date:** Complete the project within the time frame.

**Characteristics of the Solution.**

1. **Technology**
   1. **Frontend:** ASP.NET
   2. **Backend:** MySQL
   3. **Database:** HTML, CSS, JavaScript, Bootstrap
2. **Roles Based Access**
   1. **Admin:** Has complete access to all features and admin dashboard.
   2. **Customer:** Only has access to what is needed, very limited access.

**Data/Input to the Project**

* **User Data:** Information collected during user registration and login, such as name, contact details, and password.
* **Service Data:** Details of the services offered, including service name, description, price, and duration.
* **Appointment Data:** Information related to booked appointments for customers and admins, such as customer ID, service ID, date, and time.

**Diagrams**

A diagram of a person

Description automatically generated

Use case diagram.

A diagram of a service

Description automatically generated

Sequence Diagram of customer booking an appointment.

A diagram of a service

Description automatically generated

Sequence Diagram for an admin updating services.

**Solution**

Describe in detail the nature of your solution, both in theoretical terms (principles, concepts) as well technical terms (UML, flowcharts, pseudocode, code snippets). If the project is entirely theoretical/mathematical, prove every point you make and anchor in external references. If the solution is code or another type of software, provide an architecture of the solution (diagram), clearly labeling and explaining the function and operation of each component. Detail the type of input, output, and the nature of data/information processing. Provide screenshots of correct execution of your code. Include key code snippets and comment on their role and approach to implementation. Detail and reference any external resources used. Summarize this section with a reminder of how your answer/approach/solution addresses the objectives.

**Theoretical Terms**

1. **MVC Architecture:** The application follows the Model-View-Controller architecture to separate concerns and ensure organized code.

* **Model:** Manages data and business logic.
* **View:** Handles the user interface and presentation.
* **Controller:** Manages input and updates the model and view accordingly.

1. **Principles and Concepts:**

* **Modularity:** Using module to break down the application so it is easily manageable.
* **Scalable:** Designing the system to handle future growth.
* **Security:** Implementing best practices for data protection and user authentication.

**Technical Terms**

A person pointing at a computer screen

Description automatically generated

UML class diagrams for the models. This includes the user, service, and appointment models.

A screenshot of a computer screen

Description automatically generated

UML class diagram for the views and the controllers.

A screenshot of a computer screen

Description automatically generated

UML for service classes and DAO classes.

A screenshot of a computer

Description automatically generated

Entity Relationship Diagram for the MySQL database.

A diagram of a company

Description automatically generated

A diagram of a flowchart

Description automatically generated

Screenshot of flowchart.

A diagram of a computer

Description automatically generated

Screenshot of the Architecture Diagram.

Project Controls

1. Use the template to define the risk and list the steps to prevent the risk from occurring or the steps to minimize the chances of it happening. The contingency plan describes alternative solutions to reduce the impact of the risk. An example of a contingency plan is to provide the customer a temporary web server if there are delays in delivery/completion. If the risk has already happened then provide an entry in the issue log.

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| --- | --- | --- | --- | --- |
| Risk Management | | | | |
|  | **Risk Probability** | **Risk Impact** |  |  |
| **Event Risk** | **(high, medium, low)** | **Risk Mitigation** | **Contingency Plan** |
| What is the risk? | What is the probability? | What is the impact if the risk occurs? | What can be done to minimize the risk? | What can be done to minimize the impact of the risk? |
| Data breach | Low | High | Code with security in mind first by implementing a robust authentication and authorization and using encryption. | Incident response plan, notify affected customers, temporary security measures, review and enhance security protocols |
| Project Incomplete by Deadline | Medium | Medium | Create a detailed project plan prioritizing main tasks and monitoring progress. | Deliver what is done add more post deadline |
| Technical Issues | Medium | High | Have plenty of time for testing choose stable frameworks and technologies | Seek assistance, track and prioritize issues |

No Issues found during testing

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| Issues Log | | | | | | | | |
| **ID** | **Description** | **Project Impact** | **Action Plan/Resolution** | **Owner** | **Importance** | **Date Entered** | **Date to Review** | **Date Resolved** |
| 1 | What is the issue? | How will this impact scope, schedule & cost? | How do you intend to deal with this issue? | Who manages this issue? |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |

1. All projects have either anticipated and planned or unexpected changes. Describe any issues in management or change management due to the anticipated and planned or unexpected changes. Use the template to list anticipated and planned or unexpected changes.

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| Change Control Log | | | | | | | | | |
| **ID** | **Change Description** | **Priority** | **Originator** | **Date Entered** | **Date Assigned** | **Evaluator** | **Status** | **Date of Decision** | **Included in Rev. #** |
| 1 | Cloud Deployment (Found time to deploy to the cloud) | 1 | Dakoda Meade | 8/25/24 | 8/27/24 | Dakoda Meade | Green | 8/24/24 |  |
| 2 |  |  |  |  |  |  |  |  |  |

1. Use the template to describe how the end user is involved in the software development, if applicable. Include relevant information about meetings, reviews, presentations, etc.

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| --- | --- | --- | --- |
| Roles and Responsibilities | | | |
| Name | Team | Project Role | Responsibility |
| Dakoda Meade | Dev | Developer | Front end, back end, database, planning, QA,and overall project management |
| Aaron Faux | Owner | End User | Meetings, feedback, issues |

|  |  |  |  |
| --- | --- | --- | --- |
| User Involvement, Meetings, Reviews, and Presentations | | | |
| Activity | Participants | Purpose | Occurrence |
| Initial Requirements Meeting | Dakoda, Aaron | Gather requirements and define project scope | First week/project start |
| Mid-Project Review | Dakoda, Aaron | Demo completed features, gather feedback | Halfway of project completion |
| Final Review | Dakoda, Aaron | Final demo, gather final feedback, | End of Project |
| Initial Design Presentation | Dakoda, Aaron | Create initial design and UML, ER Diagram, Wireframes. And Flowchart | Before development starts |
| Demo of Features | Dakoda, Aaron | Demonstrate key features, gather feedback | As each feature is completed |
| Final Demo | Dakoda, Aaron | Demonstration of complete application that was to be complete for this class | Project completion |
|  |  |  |  |
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Project Cost and Schedule

1. Create a spreadsheet of costs related to the scope of the project, with all necessary material and elements required to accomplish it effectively, and the allocated resources. Note: If the project being designed will not require any cost calculations, please state that here.

As of the beginning of this project there are no cost calculations required.

1. Create a project schedule after all project tasks have been defined and prioritized.

**Week 1 (7/15/24 – 7/21/24)**

* Project Proposal
* Database Build

**Week 2 (7/22/24 – 7/28/24)**

* Requirements Document
* Define User Authentication
* Develop User Profile Management Module
* Create Appointment Scheduling System

**Week 3 (7/29/24 – 8/5/24)**

* Final Design Document
* Develop Order Management Module
* Design and Develop Admin Dashboard

**Week 4 (8/5/24 – 8/11/24)**

* Unit and Integration Test Plans
* Contact/Review Modules
* QA/Testing

1. Set a programming schedule by implementing work breakdown and task time estimates. Create a timeline with dates for completion of key components of the project.

Copy of the Work Break Down Schedule this can be found above.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Work Breakdown Structure | | | | | | | | | | |
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|  |  |  |  |  |  |  |  |  |  |  |

Appendix A – References

*English Standard Version Bible. (2001). ESV Online. https://esv.literalword.com/*

Appendix B – Copyright Compliance

For each external technical tool or code used, provide a reference to its copyright policy, clearly showing your right to use it. For each external technical tool or code used, detail how you used it, how you adapted it, how you modified it (if permitted), and why did you use it as opposed to write your own. Only a small portion of your project may rely on external code. When code libraries/packages are used, explain why this was necessary/required/recommended. Seek instructor approval for using external resources prior to beginning to work on the project.