# Jasper Green Project Report

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# Abstract

Build a functional web application that supports Jasper Green, a mowing and lawn care service based in College Station, Texas. With rapid expansion of the business, Jasper Jones, the owner, found it necessary to build an information system to manage customers, track services, and streamline payments. Using the knowledge we built from ISTM 250, 310, 320, 315, 410, and 415, we built a full-stack web application that will carry out the needs of the information system.

# Introduction

Founded by Jasper Jones and owned by him and his four brothers, Jasper Green is a fast growing moving and lawn care service based in College Station, Texas. Jones launched the business as a teenager, saving up money in order to pay for an iPhone. However, after reaching his saving goals, he scaled up his business and took on more clients outside of just his neighborhood. Currently Jasper Green has around 250 regular customers of both residential and commercial clientele and a team of 21 employees. Offering three essential services, Jasper Green offers mowing, sidewalk and driveway edging, and grass clipping blowing. In the fall season, additional services are offered like raking and bagging leaves. The company has been growing rapidly and requires an upscaling of technological output. Jasper Jones has employed us to help improve upon their information system management. After some meetings to adjust and refine the project's scope, we came to the conclusion to create a web application for Jasper Green.

# Requirements

To support the rapid development of Jasper Greens growing business, this web application needs to address the following requirements:

- Customer Management
    - Allow creation,  viewing, editing, and deletion of customer information.
- Property Management
    - Associate multiple properties with each customer and record service frequency and service fees
- Crew Management
    - Organize employees into three person crews and assign foreman and members
- Service Tracking
    - Track and document completed services recording the date, the property, the assigned crew, and the service fee charged
- Payments Recording
    - Track customers payments by date and amount
- Validation Requirements

    - Enforce data validation of specific data-type formats (ZIP codes, phone numbers, states)
    - Enforce data validation rules to make sure each crew member is unique
- A User Interface
    - Using Bootstrap, make a UI that is easy to navigate and is consistent from page to page

# System Design

Built using ASP.NET Core MVC, Entity Framework Core, and a SQL Server database, this full-stack application serves as an administrative system that provides functionality for managing customers, properties, employee crews, service events, and payment tracking. The application was made with entities being connected. Some of these main entities include

- Customer
- Property
- Employee
- Crew
- ProvideService
- Payment

Our relational database links all of these entities together. After seeding the data of Jasper Greens existing customer base, navigation between pages and entities followed a standard MVC structure. Using Bootstrap for the user interface, the web-application is built to have future CSS customization in mind for future upgrades.

This web-application was developed with expansion in mind from the entities to the UI to the customization.

# Implementation

This project was phased into three major deliverables over the course of a month. Each phase contributed to the creation of a full-stack web application for internal usage within Jasper Green. This project was made using a Code First approach.

Phase I - Configure the database and home views.

- Configure database utilizing Entity Framework (EF) Cores
- Implement seed data of:
    - 5 Customers
    - 10 Properties
    - 15 Employees
    - 5 Crews

    - 10 ProvideService records
    - 5 Payment records
- Create Layout and Home Views
    - Stylize header, footer, and navigation
    - Create Index, Contact Us, and About views

Phase II - Build controllers and views to manage data.

- Support full CRUD (Create, Read, Update, Delete) operations for:
    - View list of customers, properties, employees, and crews
    - Adding new records
    - Editing existing records while maintaining data integrity
    - Deleting records
- Drop down lists for related data
    - When editing/adding property to select a customer
    - When editing/adding crew to select a crew foreman, and 2 crew members
- Special crew relationship setup
    - Crew table has three foreign keys to Employee table (foreman, member1, member2)
    - Use Fluent API to prevent cascading deletes
    - Validate when deleting Customers, Properties, etc.

Phase III - Manage mowing services, validation, and view models

- Manage Provide Service Events
    - CRUD operations for Service Events
    - Server side validation
    - Filtering option for service events by Customer, Property, or by Crew
- Manage Payments
    - CRUD operations for Payments
    - Validation on payments
- Enhance data validation
    - Zip codes, phone numbers, states
    - CrewForeman, Member1, Member2 must be different employees
- Viewmodel for Crew Management

# Conclusion

This administration management system was built for Jasper Green as a result of their rapid growth and expansion. This web-application transformed Jasper Green's previously manual processes into a fully digital one. It provides the company with a scalable and efficient way to manage customers, properties, crews, services, and payments. Overall, the web-application works to better streamline the business processes of Jasper Green.