System Development Plan:  
Great Oaks Cleaning Solutions

Team 5: Vanilla Systems

IT493-DL1

George Mason University

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**1a)** Our Client is 'Great Oak Cleaning Solutions' and is located at 6263 Alforth avenue, Alexandria, VA 22315. Our point of contact is Addis Kassie. Great Oak Cleaning Solutions is a cleaning company that specializes in janitorial services, commercial cleaning, disinfecting services and more. Great Oak's mission is to provide not only the best of service but a service at an affordable price. Great Oak’s is also a growing business but one that requires a more efficient way of processing orders and minimizing wait-time for their clients to receive quotes.

As of 2020-2021, since it is a relatively new company it has continued to operate without experiencing a sizable loss or profit. The company has struggled with gaining new business, being competitive in the market, marketing its brand, and other issues. As a result, the company has a low employment rate. The company currently employs three people and has no plan on bringing on additional employees or letting any go. Competition for Great Oaks in the commercial cleaning sector in the DMV comes from local, regional, and national sources. The industry has continued to grow, in terms of operators and revenue, steadily since 2011.

Great Oaks, as previously discussed, faces a large amount of competition in the commercial cleaning industry. The major challenges Great Oaks faces client acquisition and onboarding, time spent on routine processes, and a lack of web presence that leads to a lack of discoverability and marketing options. These issues are rooted fundamentally in the current business process and the lack of technological integration to-date. With the changes we propose Vanilla Systems strongly believes that Great Oaks will be able to outcompete similarly sized local companies and can possibly achieve parity with larger regional and national competitors.

**1b)** It’s integral that the functional systems requirement is met for our client. For starters, we’ll be aiming to satisfy the basic needs of establishing a business online. This goes from your basic website template to more comprehensive aspects such as account registration, payment gateways, email-services and more. We’re laying the groundwork for what we can implement later on to the website if our client requests us to do so, the following items are what we’re aiming to achieve before the end of the semester. A fully functional web application, the ability to register/sign into an account under Great Oaks, a self-service portal that includes all the basic needs a customer requires to request a service and a web hosting service that can accommodate a small business owner like our client.

**1c\_i)** We’ll be adopting the prince2 structure for our development process, we’ll be managing this project on two fronts. The front-end which will focus on the website appearance, nav-bar, ensuring that every link will have its purpose in servicing the customers. We’ll be heavily focused on ease-of-use as well. The other aspect of this project is the back end, which is primarily those that are designated to the database structure of the project, finding a reputable hosts to host the website, most likely AWS and since the company is still in a small state, it’s likely that the hosting services will fall under the free-use bucket for AWS.

**1c\_ii****)**  We believe that Prince2 fits our process the best because of the clear project governance that our team established at the beginning of the semester, our team is divided into two groups that work on different components of the project, the front-end team design the website which works on the web application’s design, navigation menu, landing page and ensuring all the links send the customer to the correct page. The back-end team will be tasked with the server-side of the website, this includes but not limited to developing the server-side functionality, which means implementing business logic, data storage and application security. Other things such as, integrating external systems and API, this means payment methods and email services. They’re also tasked with maintain and updating the web application, this means adding new features, installing the updates necessary to be compliant with security patches and upgrades.

**1d)** We meet with our client on a weekly basis to showcase what we have to offer that week and the progress every member is making towards the completion of this project. We have an approval process where, at the beginning of each meeting, we do a brief stand up with the client between the team leads and we go over what our client talked about last week and what we worked on over the course of the week. And then, if we have made any changes, on any updated prototype our client must give us a verbal recognition that he approves those changes if he sees anything he wants changed or anything he approves. If our client doesn’t like it, we make the appropriate changes and move on. Nothing is finalized with execution until this is signed off from our client.

**2a)** The major features that will spring off of this project includes the following: Online Presence, this web application allows our client to establish a strong online presence, which can help attract new customers and increase brand awareness. Improved Customer Engagement, this allows our client to engage with customers and respond to their queries in real-time, which can have the potential to have customer retention. Accessibility, the web application we plan to implement will be accessible 24/7, making it easy for customer to access the services they need anytime, anywhere. Improved business operations, We wholeheartedly believe that with this system implementation, our client can drop his old business models and can now streamline business operations, allowing it to be easier to manage inventory, track sales sand generate reports. Finally, Increased Revenue, The web application can provide small business owners with new revenue streams, this includes e-commerce functionality or online bookings which again can boost sales and revenue.

Diagram

Description automatically generated

As seen on the flow chart, we believe that the client-onboarding process will be a lot like the following:

1. The user visits the website and clicks on the "Sign Up" or "Register" button.
2. The user is directed to a registration page that asks for basic information, such as name, email address, and password.
3. The user fills out the registration form and submits it.
4. The web application checks the entered information to ensure it meets the requirements, such as password strength and unique email address.
5. If the information is valid, the web application creates a new user account and stores the information in a database.
6. The web application sends a confirmation email to the user's email address to verify the account.
7. The user receives the email and clicks on the confirmation link to complete the registration process.
8. The user is redirected to the login page and can now log in to the web application using the registered email and password.

**2b)** Under hardware platform, we’ll be viewing options of what the web application can hold depending on the expected traffic and load. It’s clear to us that with a small business like this that’s only been out for a couple of years we can see that the website hosting aspect of it will fall under the free use bucket under AWS. Overall, we believe that it’ll be able to hold its own using a dedicated server or cloud hosting to ensure reliability and scalability.

With operating systems, this web application can be run in either Windows or Linux, this is dependent on our client’s preference and the application’s requirements. Since most of our coding will be under Visual Studio and since it’s a window-based integrated development environment we plan to execute most PHP applications for most window servers, Linux isn’t on the top priority.

**2c\_i)** One of the biggest things about this project ran under a semester is the variables of constraints we all have. Our team have had multiple meetings discussing about the amount of work that’s placed in front of them whether it’s from school or outside of school before this project, we’ve worked with what we have and time we have to face these constraints but it’s in the way of the project, nonetheless. Below are the several amount of constraints we’ve faced as a team from when we started this project to now.

* **Budget:** We’re always looking at ways to revamp the web application we have with services that are free to provide the best profile for our client, unfortunately the amount of funding available for this project is zero and this touches in important components such as hardware, software and other services to amplify the current prototype.
* **Timeframe:** We’re students and we also have jobs outside of this project, we don’t want to put this project on hold or 2nd to what we have to do in our day-to-day but if we have to, we will. The amount of time available for this project is limited to a 5-month period, along with priorities for other projects, classes, and jobs.
* **Technical Expertise:** This is a cumulating experience of all the classes we took to get to where we are, most of us are experts in different fields of this project but at the end of the day there are limiting factors that affects the project timeline. Those factors are learning or re-learning the back-end side of the project that includes creating databases, PHP scripting and learning to webhost in conjunction with AWS requirements.

Although the things we’re limited to does weaken us as developers it doesn’t mean we’re not going to go out of our way to put our best effort in finishing this project with the timeline given and all the things that limits us as a team. We’ll adapt and work with what we’re given, learn the things required to create a fully functional web application that can be hosted using AWS and ensure our client has the necessary tools he needs to operate and manage the website.

**2c\_ii)** When discussing this internally, we fleshed out the most important components that this project must be in the boundaries of, those components are the following: Security, our web application must be maintained to ensure that they’re secured and protect user data. This is a learning obstacle for our team because it’s integral to maintain security; the failures of not maintaining security puts our client and their customers at risk. Performance, we’re working with the front-end team to ensure that the web application is responsive and user-friendly, avoiding any unnecessary pop-ups, rate-us prompts or additional pages. Functionality, we’ll be working with our client in ensuring that the web application we’re handing off will be up-to-date, fully functional and industry standard.

**2d)** Regulatory requirements, another obstacle our team views as something we must learn to understand the regulatory compliance of having a web application collecting personal data, these requirements must comply with the industry standard of data protection and regulations. Another assumed factor is the budget and resources, although it was covered under constraints, we know that the web application will never be as competitive as other web applications because we’re utilizing services that are free.

**2d\_ii)** Our team will be extrapolating resources that’s taught to us from previous classes, for example in IT-214 we were taught Database Fundamentals, it covers relational database management systems and their use in business environments, the specific topics covered there which we plan to adapt in our project are database classification, data models with extensive coverage of relational models and SQL programming. In IT-366 we were taught Network Security, a class most of us took which briefed us on examining information security services and mechanisms in network context, intrusion detection and securing network enabled applications including web browsing/applications. Other classes surrounding web applications, data and application security, cloud services can be listed here as well since we’re adapting most of our knowledge from previous classes and their project to assist us in our capstone project.

**3a)**

Chart

Description automatically generated with medium confidence

This flowchart depicts the major services that will be provided to our client once the web application gets hosted and is fully functional.

**Feature: Account Management**

Description: Set of features and functionalities that enable users to create, modify, and manage their accounts.

Priority level: High

Stimulus/Response Sequence: The user will be provided with the ability to manage their account by click ‘Account’. The system will display the page that shows the user all the account information, this ranges from address/username/payment information and more.

Functional Requirements: Internet Connection, any web browser, connecting to the Great Oaks Website.

**Feature: Profile Settings**

Description: A personalized interface that displays information relevant to the user, allows user to personalize and configure their profile.

Priority level: Medium

Stimulus/Response Sequence: User will click on ‘Profile’ to access their personalized settings, the system will then display to the user all the necessary links that a user will require to view/modify about their profile.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: User Settings**  
Description: Options & features that allow user to customize their preference and settings.

Priority Level: Medium

Stimulus/Response Sequence: User will typically click on ‘Settings’ or ‘Preference’ in a drop-down menu, system will respond by displaying a page that allows the user to modify various settings or preference. User can then change anything that’s specific to them, customizable functionality and then will be asked to save their settings once done. Changes can be as simple as the background color palette to font size.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Password Change**

Description: Process of allowing users to update their password

Priority Level: High

Stimulus/Response Sequence: User clicks on ‘Change Password’ button that will be displayed in their account settings page, the system will then respond to a new web page allowing users to enter their old previous password for confirmation and then prompting them to a new password page where they can then change their password.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: E-mail Change**

Description: Allowing users to update their email addresses

Priority Level: Low

Stimulus/Response Sequence: User will click on their account settings, similar to the change password their will be a button near it called change email. Once the user clicks on that change email button the system will prompt them a new webpage where they can enter in their new email address, along with an email confirmation sent to that email address to verify that it’s the correct address.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: User Preference**

Description: Generic setting that allows user to customize their experience through Great Oaks website, some basic settings can be layout, personalization features that fit to their needs.

Priority Level: Medium

Stimulus/Response Sequence: The user will navigate to the Preference drop down menu from their account name, the system will then respond by displaying the user their default profile with defaulted preferences and settings which the user can freely change or reset back to.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Notification Option**

Description: Options that ranges from SMS notifications, email and other types of notification that alerts the user information about their services, approximate time before service, etc.

Priority Level: Medium

Stimulus/Response Sequence: Under Preference, the user can select notification preferences and settings. The system will then allow the user to modify the changes necessary to fit their requirements, this ranges from enabling/disabling SMS push notifications, emails, calls, etc.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Privacy Controls**

Description: The settings and configuration that allow users to mange their privacy preferences through the Great Oak web page. Some of the things we’re talking about are basic functionality such as account visibility, data sharing and access control.

Priority Level: High

Stimulus/Response Sequence: User will navigate to the preference menu; we’ll have an option that displays ‘privacy controls. Here the user can modify what they want Great Oaks have access to or not, they’ll then be asked to save their settings through a Yes or No prompt.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Orders**

Description: Often referred to as the user’s purchase history, it’s integral to keep the services the user purchased to be recorded and organized in a page that holds all that information. It allows the user to view current/past orders, track their services, manage payment or modify dates that best suites them.

Priority Level: High

Stimulus/Response Sequence: User will navigate to their account and click on ‘Orders’ link. The system will respond by displaying the user all the information that’s relevant, this ranges from previous orders, current orders, the dates, along with order details.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Product Detail**

Description: General summary of the order the user has purchased or is in the process of purchasing, it includes basic information such as the service ordered, the price, shipping address, payment, and status.

Priority Level: High

Stimulus/Response Sequence: User will navigate to their account and click ‘Orders’ link. The system will show the current order that’s being processed in-front of them first along with all the prevalent details that comes with that service.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Refund**

Description: The process where the customer modifies their purchasing decision by cancelling the service before or after payment goes through.

Priority Level: High

Stimulus/Respond Sequence: User will navigate to their account and click ‘Orders’ link. The system will show them the order that’s being serviced to them, a button below the order will allow the user to cancel the service. This will prompt the system to open up another page which confirms their service cancellation along with the refund processing receipt.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Order Confirmation**

Description: This is a page the user can revisit after making a purchase for a service selected under Great Oak’s catalogue. Upon payment completion or choice of payment is established, an invoice that’s generated from the system will be provided to the user with all the necessary details of their order.

Stimulus/Respond Sequence: User will navigate to their account and click ‘Orders’ link. Their will be a ‘View Current Order Receipt’ that will display all the details that the user will inquire about for their service they’re expecting.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Appointment**

Description: This is a scheduled meeting between customers and Great Oak, there’ll be an option to schedule an appointment via Great Oak’s website or through a phone number that will be shown throughout the web page.

Stimulus/Respond Sequence: User will navigate to their account, click on ‘Orders’ select the service that suites their needs, after the system will land them in an ‘Appointment’ page where they can select the best time and date that they’re available for the service they require.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Rescheduling**

Description: Process of modifying the date and time that surrounds their order.

Priority level: High

Stimulus/Respond Sequence: User will navigate to their account, click on ‘Appointments’ select the modify button which allows them to change their scheduled service date and push it to a later date. A confirmation screen which requires password verification will be prompted before verifying the changed date.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**Feature: Payment Processing**

Description: Users can pay for their appointments online through the web application, or the service provider can collect payment in person.

Priority level: High

Stimulus/Respond Sequence: User will navigate to their account, click on ‘Orders’ 🡪 ‘Appointment’ and in appointments can they not only change the date they want their service rescheduled but also the payment dates for their services. This can be done via online or through Great Oak’s office.

Functional Requirements: An account from Great Oaks, Internet Connection, any web browser connecting to the Great Oaks Website.

**4a)** Some of the nonfunctional requirements for our web applications will surround how the application performs on a day-to-day basis, not your usual specific feature or functionality. The following are what we declare to be nonfunctional:

Performance Requirements: We’re insistent on the web application being capable of handling multiple user request for services without having the website being affected whatsoever. User traffic falls into this bucket as well.

Security Requirements: We’re working with our client to ensure that all information that’s collected from the user is protected and only those with proper authorization, i.e. Great Oaks Management team will have immediate access to client’s data.

Maintainability: The web application should be easily maintained by our client and updated throughout time for software and security.

Reliability: The web application should always be up and running and reliable for use whenever customers inquire it, there should be no downtime when the web application is hosted and running.