



# CLEAN & GREEN

**Online Web Application**

**• Creators •**

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# CLEAN & GREEN

Creators • Naz Islam, Sam Tursunov, Vasu Asharma

• <http://www.clean-and-green.herokuapp.com> •

## Introduction

This is a web-based application which will help people to recycle waste ranging from cans, glass, plastic and paper. Our web application will allow users to register as clients or as people who will be picking up the recycling. Once the users successfully register on our application, they will have access to a clean user interface. Users that are registered as clients will be able to make recycling pick-up requests while users that are registered as people who pick-up recycling will have access to all the recycling pick-up requests made by other clients. Our application will provide the location of pick-up requests through our user interface, displaying them on the map.

## Project Management

To successfully develop and manage our web-application, our team will follow agile software development process through Scrum. Our team will manage and develop the functionalities of our web-application by series of fixed-length iterations – Sprints. For each sprint our team will set up Milestones that we will need to achieve. Our team decided to follow this software development process because we are a small team and it is crucial for all team-members to communicate and help each other in developing successful and working functionalities of our web-application.

Our team will use JIRA to track the progress and development of our web-application. We will also use JIRA to track issues and bugs that might arise during the development of our application. Using JIRA will also enable our team to demonstrate the achievements of our tasks on through the course of our web-application development.

## Revision Control

Our team will use GitHub as version control system to manage and track changes to the source code of our web-application. GitHub will allow the members of our team to safely develop new features and functionalities of our application without making drastic changes to our source code. Each new functionality that our team will develop will have their own branch, only after checking the code and making sure it works well, we will add the new code to our source code. The structure of our project will follow the GitHub Branches. The GitHub branches for our web-application are described below:

Branch #	Branch Name	Description of the Branch
1	master	Fully functioning main version of the application
2	user_authentication	User registration and authentication functionality
3	form_submission	Function to send form data from client to server
4	association	Association between pickup requests and users
5	front_end	Code for Design of User Interface
6	handleDuplicateEmailRegistration	Functionality to handle registration with same email
7	ShowingPickupLocationUsingMarker	Functionality to display client pick-up requests on the map interface using Google Maps API
8	AddingTimeForMarkers	Functionality to remove processed pick-up requests after 5 minutes from the map interface
9	StopMultipleRequest	Functionality to prevent clients to request multiple requests without fulfillment of their pending pick-up request
10	PreMaster	PreMaster Branch is the copy of our master branch. This branch is used to test new functionalities and code compatibility before pushing the new code into our master branch

GitHub Repository Link: <https://github.com/nazislam/CSC-Project-Clean-Green.git>

## **Deliverable Planning – Project Milestones**

### **Milestone #1 || March 1<sup>st</sup>**

Our first milestone for our web-application will be creating an initial design of our home page and user interface.

**Challenge #1:** Learning Bootstrap and PugJS that we will use to design our application

**Challenge #2:** Learning how to add and display Google Map API on a PugJS template

### **Milestone #2 || March 22<sup>nd</sup>**

Our second milestone for our web-application will be to create functioning registration, sign-in, pick-up/drop-off forms and user-profile.

**Challenge #1:** Sending data from registration to the Google Data Store and routing our temple pages using NodeJS.

**Challenge #2:** Retrieving user information from the Google Data Store and correctly displaying as user profile in our web user interface.

### **Milestone #3 || April 12<sup>th</sup>**

Our third milestone for our web-application will be redesigning our web-application and creating drop-off functionalities.

**Challenge #1:** It will be hard to redesign our functioning application without making changes that will affect the back-end of our application

**Challenge #2:** Creating drop-down and pop-up functionality will make it hard to change the routes in the back-end of our application.

### **Milestone #4 || April 26<sup>th</sup>**

Our forth milestone for our web-application will be to add user authentication, form validation and deploying our web-application.

**Challenge #1:** No one in our team has worked with user authentication so it will be hard to implement this functionality

**Challenge #2:** Selecting a cloud platform to deploy our application successfully.

### **Milestone #5 || May 13<sup>th</sup>**

Our fifth milestone will adding marker dropping functionality and finishing the application

**Challenge #1:** Passing address data from google store to the Google Map API will hard to accomplish, considering our team has never worked with Google Map API

**Challenge #2:** We might not have time to finish last design touches for our user interface.

## **Sprint Planning & Information**

### **WEEK ONE || SPRINT #1**

#### **FEB 13, 2018 || FIRST ITERATION**

Created the home page for our web-application. Added NPM modules, JSON and PugJS engine templates for sign-in page.

#### **FEB 17, 2018 || SECOND ITERATION**

By the end of the first week we developed the initial home page design for our application. The home page contains the title of our web-application and a sign-in and register buttons.

### **WEEK TWO**

#### **FEB 19, 2018 || FIRST ITERATION**

Our team added forms for each of the home page buttons. When users click on the register or sign-in button, they will be redirected to different page that contains the form to register or sign-in. We created two separate templates for each of the pages using PugJS and routes to those pages using NodeJS.

#### **FEB 24, 2018 || SECOND ITERATION**

By the end of week two we applied uniform design such as text fonts and color scheme for all of our developed pages.

### **WEEK THREE**

#### **FEB 26, 2018 || FIRST ITERATION**

Created two more PugJS template pages for user pick-up and drop-off requests. Created a new template page for the main user interface. Added and successfully displayed Google Map API on the user interface.

#### **FEB 28, 2018 || SECOND ITERATION**

Added and successfully displayed Google Map API on the user interface. Resigned the navigation bar for better user experience.

## **WEEK FOUR**

### **MAR 5, 2018 || FIRST ITERATION, GITHUB**

Created a User Authentication branch of GitHub. Developed back-end code to successfully register the user and send the user data to the data store server on the Google Cloud.

### **MAR 8, 2018 || SECOND ITERATION, GITHUB**

At the end of the forth week our team worked on some of the bugs with user registration and the database. We added some new attributes in the google data store that we will use later on to associate clients with their requests. We also created a new PugJS temple page for displaying user profile information. Designed and styled the new user profile page. Created a Front End branch to safely develop new design and styling for future functionalities.

## **WEEK FIVE**

### **MAR 21, 2018 || FIRST ITERATION**

Redesigned the home page of our application, added information about our web-application and how to use it. Refactored and cleaned up old code from the Front-End branch.

### **MAR 22, 2018 || SECOND ITERATION ||**

### **CLASS DEMO || END OF SPRINT #1**

At the end of the fifth week we had class demo. Before the demo we tested our application to ensure that it runs properly. Displayed the features of our application to our class and discussed future functionalities.

## POST-MORTEM - SPRINT #1

**Name:** Sam Tursunov

### **What worked well?**

I liked how every week my team had a discussion about what we were working on and what each one of us has to complete by next time we meet. I also like that we created tasks on JIRA, and were able to see what every team members were working on.

### **What did not work well? How will you improve it for next iteration?**

I did not have any problems during the first sprint. However I will need to collaborate better with Naz Islam who is working on the back end of the application, in order to design some features of our application. Each team member needs to understand what our code is doing and how it's functioning. For next iteration I will need to better manage my time.

**Name:** Naz Islam

### **What worked well?**

I managed user authentication and sent the data from client to the google data store. I submitting the form data from the forms and worked on routing. I liked that our team had good communication and everyone had tasks that they needed to complete.

### **What did not work well? How will you improve it for next iteration?**

I did not fully understand how Google Data store worked, so for next iteration I will grasp better understanding of it by reading Google Data Store documentation. I also need to manage my time better and I will improve my time management by making a list of all tasks that I need to complete for the web-application.

**Name:** Vasu Asharma

### **What worked well?**

I liked that each team member was logging their hours and informing me to make sure that I know what was happening with the development of various features of our application.

### **What did not work well? How will you improve it for next iteration?**

One of my problems during this sprint was documentation. I did not fully understand what I need to document, so for next iteration I will talk to my professor and gain better understanding



## **WEEK SIX || SPRINT #2**

### **MAR 27, 2018 || FIRST ITERATION**

Redesigned the home page, added mobile responsive design. Started working on new pop-up functionality for registration and sign-in options for our web-application

### **MAR 29, 2018 || SECOND ITERATION**

Had a group meeting discuss a solution to fix issues and bugs with user registration. Our code allowed users to register and make duplicate profiles using the same information. Our code also had vulnerabilities that allowed users to access the graphical user interface without registration or sign up.

## **WEEK SEVEN**

### **APR 2, 2018 || FIRST ITERATION**

Redesigned and styled the web-application home page for better user experience. Fixed the routing issues in the back-end so that the users cannot access the user interface without registration or sign up.

### **APR 5, 2018 || SECOND ITERATION**

Fixed an issue that allowed users to register and create duplicate accounts using the same email address. Fixed the back-end code and added functionality that will check if the email already exists in the google data store.

## **WEEK EIGHT**

### **APR 10, 2018 || FIRST ITERATION**

This week we had a group meeting to discuss a creation of a better user experience on our application. We decided to completely redesign our registration, sign-in, request pick-up and drop off pages in our application. Our team decided to remove these pages and instead add a new functionality and design that will allow users to access registration and sign forms through a modal pop-up and drop-down boxes.

### **APR 12, 2018 || SECOND ITERATION**

### **CLASS DEMO || END OF SPRINT #2**

Test our existing code to make sure it is functioning for a class demo. Present our new features to the class. Showed the class that users can not register using the same email address twice.

## POST-MORTEM - SPRINT #2

**Name:** Sam Tursunov

### **What worked well?**

What worked really well for me this sprint was using Bootstrap to redesign our application. Using Bootstrap allowed me to quickly come up with clean design and styling for our application that also added cross browser and mobile responsiveness. I was also able to manage my time much better and complete my design tasks on timely manner.

### **What did not work well? How will you improve it for next iteration?**

This sprint I struggled with logging my hours on JIRA. I will improve this by setting reminders to log my hours on JIRA after I complete each task. My also team felt behind in updating the master branch so some of the tasks I completed were not pushed to the master branch. I will improve this next iteration by reminding my team to test and push their new code to master branch.

**Name:** Naz Islam

### **What worked well?**

I managed to store all entered user entered data properly in the google data store. I added new routes to our new drop down and pop-up functionalities of buttons in our application. Removed the old pages and routing.

### **What did not work well? How will you improve it for next iteration?**

Removing all the old template files messed with my back-end code and I had to spend a lot of time fixing the routes and adding new ones. For the next iteration I will work together with my team members so I know what pages are being removed and what new routes need to be added.

**Name:** Vasu Asharma

### **What worked well?**

I created Sprints in JIRA and that worked really well because all team members knew all the tasks we need to complete by the end of the sprint.

### **What did not work well? How will you improve it for next iteration?**

Some of my team mates were completing their tasks on time but were forgetting to log their hours on JIRA for their timesheet. For the next iteration I will remind them to complete their time sheets on time and log their hours so I can keep track of their progress for documentation.

## **WEEK NINE || SPRINT #3**

### **APR 16, 2018 || FIRST ITERATION**

Cleaned of old code in CSS and PugJS files that is no longer used and not functioning. Added new design styling for navigation bar and changed the color scheme for buttons. Started development of new modal drop-down request and pick up functions on our client interface.

### **APR 19, 2018 || SECOND ITERATION, GITHUB, HEROKU**

Started getting familiar with documentation for Google Maps API. Redesigned the pick-up request form and added new attributes for easier access in the google data store. Finished designing the new drop down functionality in the client interface.

## **WEEK TEN**

### **APR 24, 2018 || FIRST ITERATION**

New branch for form validation is added in GitHub. Started working of functionality that will validate user input before sending the data to the Google Cloud data store. Discovered an issue with modal box where the modal does not send information to the data store.

### **APR 26, 2018 || SECOND ITERATION**

Tested the code to ensure full functionality of the existing functions. Added small redesign and styling to the home page and modal boxes. Fixed the issue where the model box was not submitting and sending the data to the server. Had a team meeting to talk about the progress of our application and what new features we will work on after the class demo. Also each team member had a walkthrough of their code and how the code works.

We did a small private demo of our web-application with the professor. Showed the professor new design and discussed future redesign and development of functionalities. We also discussed our documentation and quality assurance testing.

Our team had a discussion after the demo and talked about what improvements we can make to our development process and team dynamics. We decided to meet up in person throughout week to develop features that need collaboration between the front-end and back-end.

## POST-MORTEM - SPRINT #3

**Name:** Sam Tursunov

### **What worked well?**

I liked how my team mate that was working on the back-end functionalities of our application communicated with me whenever he finished his tasks. This allowed me to start designing and styling the new functionalities to better our user interface.

### **What did not work well? How will you improve it for next iteration?**

I had trouble resizing and properly displaying the Google Map API in our user interface after redesign the interface. I managed to fix it but it is no longer responsive when you resize the browser window. For the next iteration I will improve this issue by looking at my old code and making the map responsive.

**Name:** Naz Islam

### **What worked well?**

I managed to render hard coded markers on the map in the user interface. I also managed to show the list of all pending requests that the clients make. What also worked really well was the fact that my team met up to fix our code outside of class and test the functionalities of our application.

### **What did not work well? How will you improve it for next iteration?**

Google Maps API was not working properly, it was not showing the data retrieved from the data store. For the next iteration I will create an object file that I will pass to the Google Map API so that it will be able to properly display a marker on the map.

**Name:** Vasu Asharma

### **What worked well?**

My team mates were logging their hours on the JIRA and completing their tasks on time

### **What did not work well? How will you improve it for next iteration?**

I need to better manage my time and follow deliverable deadlines. I also need to have more comprehensive documentation. I will improve this next iteration by meeting up with my team and discussing their progress.

## **ELEVENTH WEEK || SPRINT #3**

### **MAY 1, 2018 || FIRST ITERATION**

Created a new branch for adding a marker drop functionality in our application. Started working on designing custom Google Map API markers for the client view and the driver view of our application.

Front-end team member started working on redesign the user interface for users that pick up recycling requests. Our team decided to have a distinct user interface for this user type to better display our application on our final demo. Front-end also started to design a side bar for the driver user interface which will show unprocessed client requests. Redesigned drive view navigation and added new buttons instead of existing links.

### **MAY 3, 2018 || SECOND ITERATION**

Finished the drop marker functionality for our web-application. Now users can enter the address and our application will drop a marker on both the client view and the driver view of our application. Driver users will be able to see multiple markers on their user interface from different clients. The finished driver side bar will allow them to process requests made by clients. Also added a functionality that will change the marker icon that is displayed on the map when a request is processed. Added another new functionality that will remove the markers for processed requests from both client and driver view after 5 minutes.

Our team also decided to change the color of the Google Map API that is rendered on our main user interfaces. The clients will now see a map that styles differently than the driver's view. The drivers will see a map that has a dark color scheme that goes along with the color scheme of their navigation and sidebar for unprocessed requests. We also added new styling and design to user profile.

After testing our new functionalities, we pushed our code to the master branch and deployed our application on Heroku cloud platform. Our application was successfully deployed and accessible through the internet. We tested our deployed application in class in order to prepare for our final demo. All features and functionalities of our web-application worked smoothly. There were no errors or bugs that could cause the application to crash during the demo.

## Market Research

In the beginning of the course before committing to developing our web-application, our team decided to do some market research. We did some research to see if there were any similar applications that were based on our idea for Clean & Green. The online application that we came across was Cleancat, which had the same idea to make recycling easier for people. We downloaded the application to see how it functions and discovered that it was very static in terms of user experience. Not finding any better application our team decided to move forward with our application and make it super user friendly and intuitive.

## Public Survey of the Product

To get feedback of our finished web-application we asked some of our friends on campus to test our application and tell what they liked/disliked and what they would change or wish our application had.

User #	Like	Dislike	Comments
1	Mobile Friendly	Not a lot of info on the home page	More information about the app
2	User Friendly		
3	Good Graphics		
4	Nice User Interface		
5	Fast		
6	Simple	Can't change name	
7	Pop-up forms		Wish it had more color
8	Easy to navigate		
9	Functions as described		
10	Good Interface		

Overall feedback that we received from our friends about our application was really good. Most of them liked that the application was easy to navigate and they liked the user-interface. A lot of them also like that the drivers could see all the locations of recyclables on the map, and the map shows recyclables that are picked up or being picked up.