

Final Report

Online Survey System

**MUSEUM OF THE
AMERICAN G.I.**



Team: The Dining Philosophers

Texas A&M University

CSCE 606 – Software Engineering

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I. Abstract

This project was developed in the CSCE 606 - Software Engineering class. The main idea was to make us experience and explore, even deeply, the software engineering world by using agile development principles and real client-developer interaction. The main objective of our project was to provide an online survey system that allows not only users to register themselves in the system, but also allows the system administrator to manage and view the statistics generated based on the information provided by users. To achieve this objective we used tool such as, Ruby on Rails, Heroku, Github, RSpec, Cucumber, Pivotal Tracker, and others. The final product was demonstrated and approved by the client.

II. Introduction

Our client, Emily Mullins, represents the Museum of American G.I. in College Station, Texas. They would like to have an online survey filled out by the visitors/members of the museum, which would help them determine their grants and funding in the future. They have to be able to demonstrate to their grant providers how many people come from out-of-town and in-town in order to have an idea of how much tourism they are generating. The application will provide the online survey and will be able to generate customized statistical summaries in order to ease the work of Emily and her team. Therefore, it will be easy to quickly generate valuable information when their grant providers request it. The application will be installed in their server (as requested), so they have full control.

III. Motivation

The main motivation of our project was to be able to help the staff of the Museum of American G.I. with a platform able to ease their work when applying for grants and funding. Before launching our application, the Museum administration was using a Google spreadsheet to save the user's information making the job to generate valuable statistics very hard and also making the visitors concerned about security. Therefore, there was a need for an online survey system that would provide the necessary tool to alleviate the staff work whenever they needed statistical information about their clients.

IV. Stakeholders

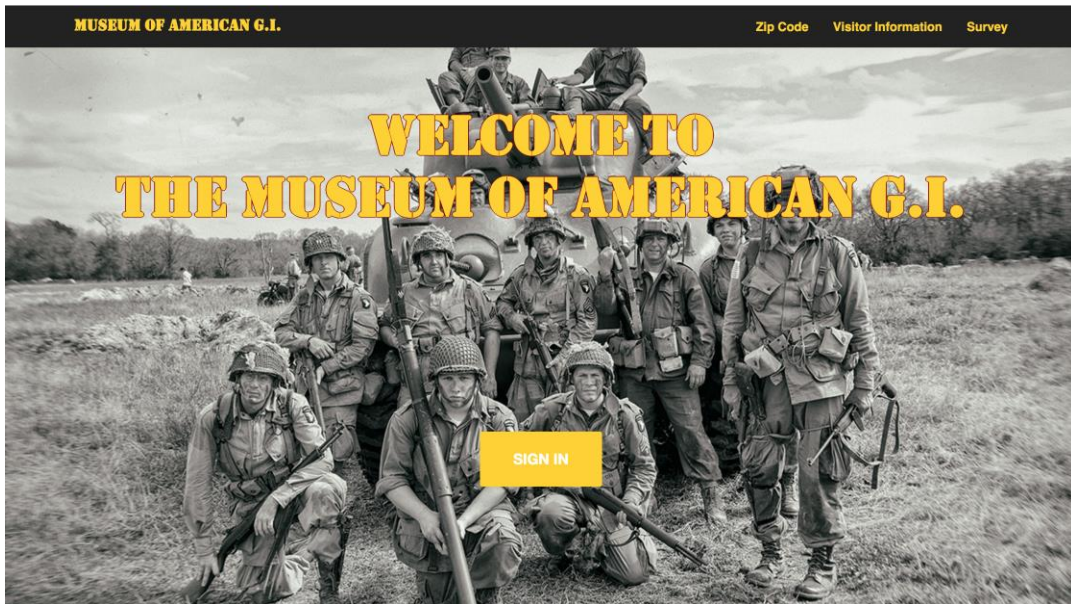
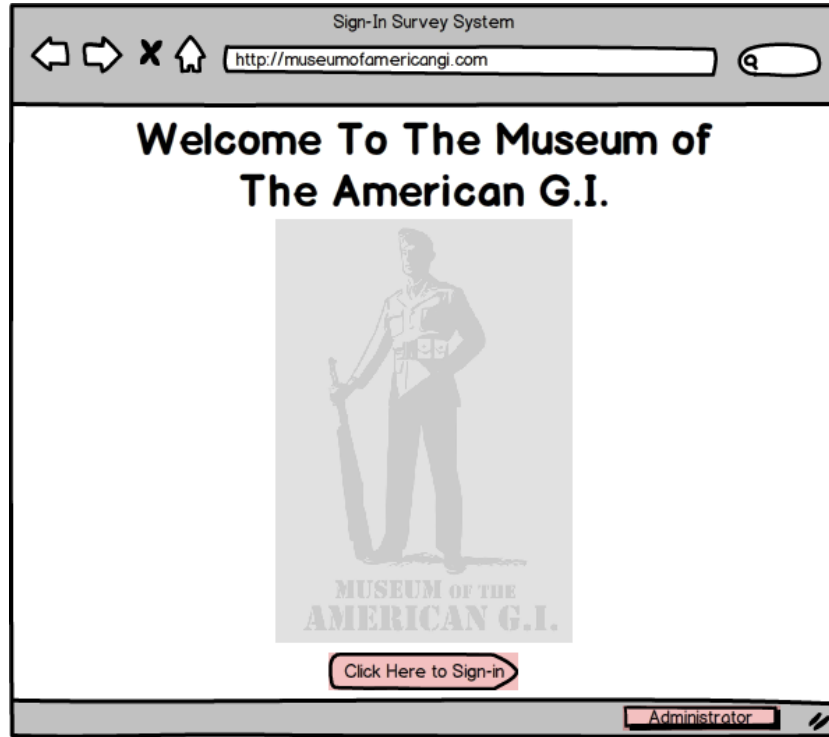
Client: Emily Mullins, representative of the Museum of American G.I.

Advising Faculty: Dr. Jeff Huang

Team Members: Odair Fernandes, Jan Dufek, Khuong Nguyen, Ko-Ching Wu, Chih-Yen Chang, Ashraf Ibrahim, and Taylor Dowlen.

V. Lo-Fi Mockup and Original Screenshot

Welcome Page:



Visitor's Sign In Page:

Sign-In Survey System
http://www.museumofamericang.i

Museum of The American G.I.

Visitor Sign In

Who Are You?
Name

Can we contact you?
By Email
Email Address

MUSEUM OF AMERICAN G.I. Zip Code Visitor Information Survey

Visitor Information

First name

Last name

May we contact you?

Email

How many people are in your group?

Sign-In Survey System
http://www.museumofamericang.i

Museum of The American G.I.

Visitor Sign In

Where are you from?
Zip Code
OR
City

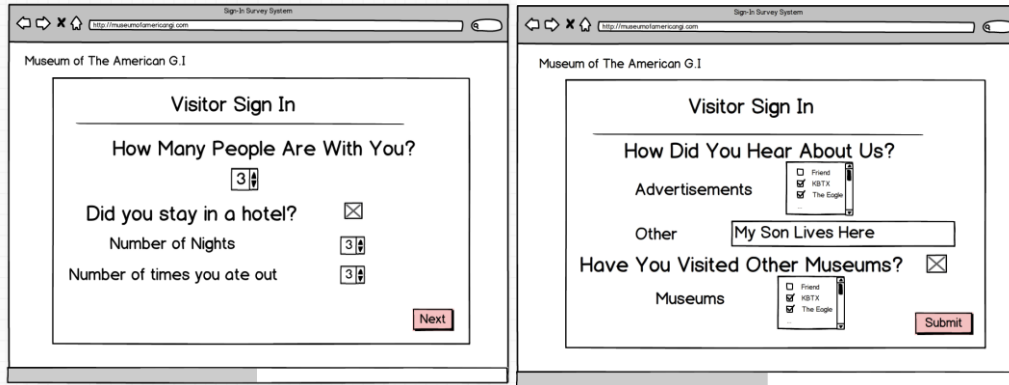
MUSEUM OF AMERICAN G.I. Zip Code Visitor Information Survey

Zip Code/Country Information
*Required

Are you an international visitor?

Zip code

United States



MUSEUM OF AMERICAN G.I. Zip Code Visitor Information Survey

Survey Question

Did you stay in a hotel?
Yes

How many nights did you stay in a hotel?
0

How many times did you eat out?
0

How did you hear about us?
Internet

What other museums have you visited?
None

SUBMIT

Administrator Login Page:



Please Sign In

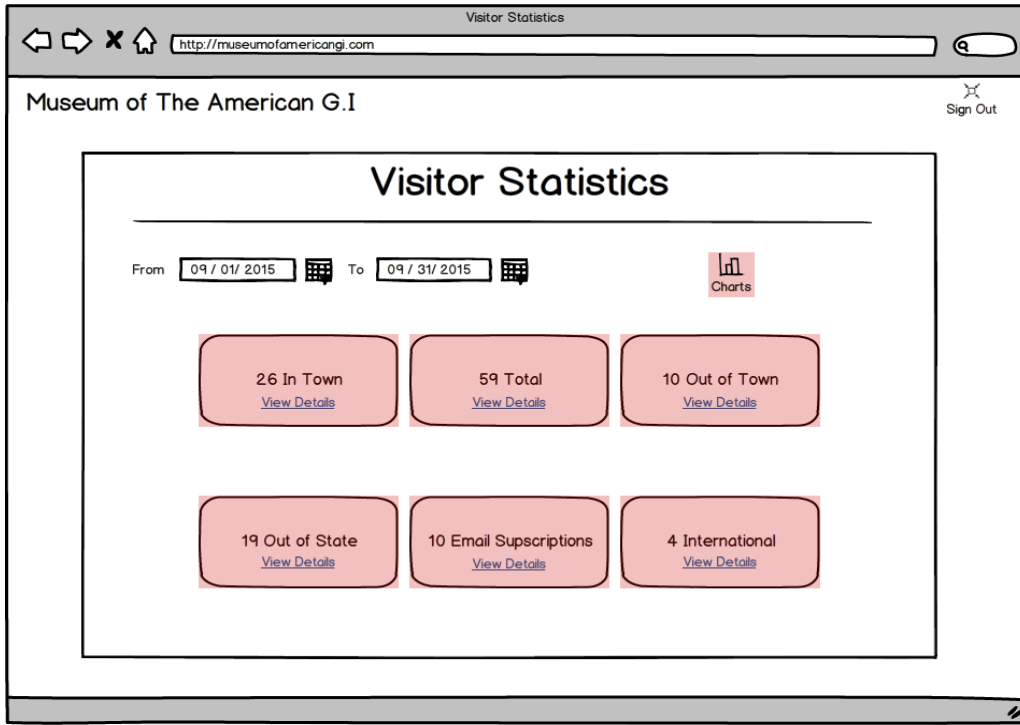
Password

Remember Me

Log in

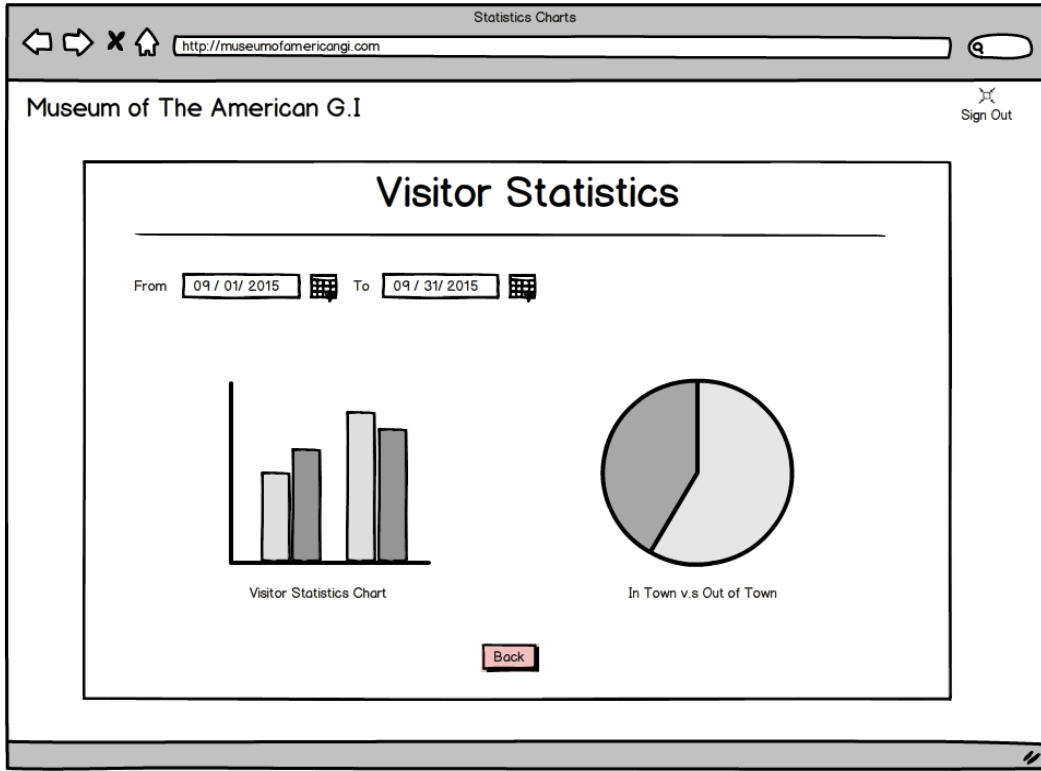
[Forgot password?](#)

Visitor Statistics:

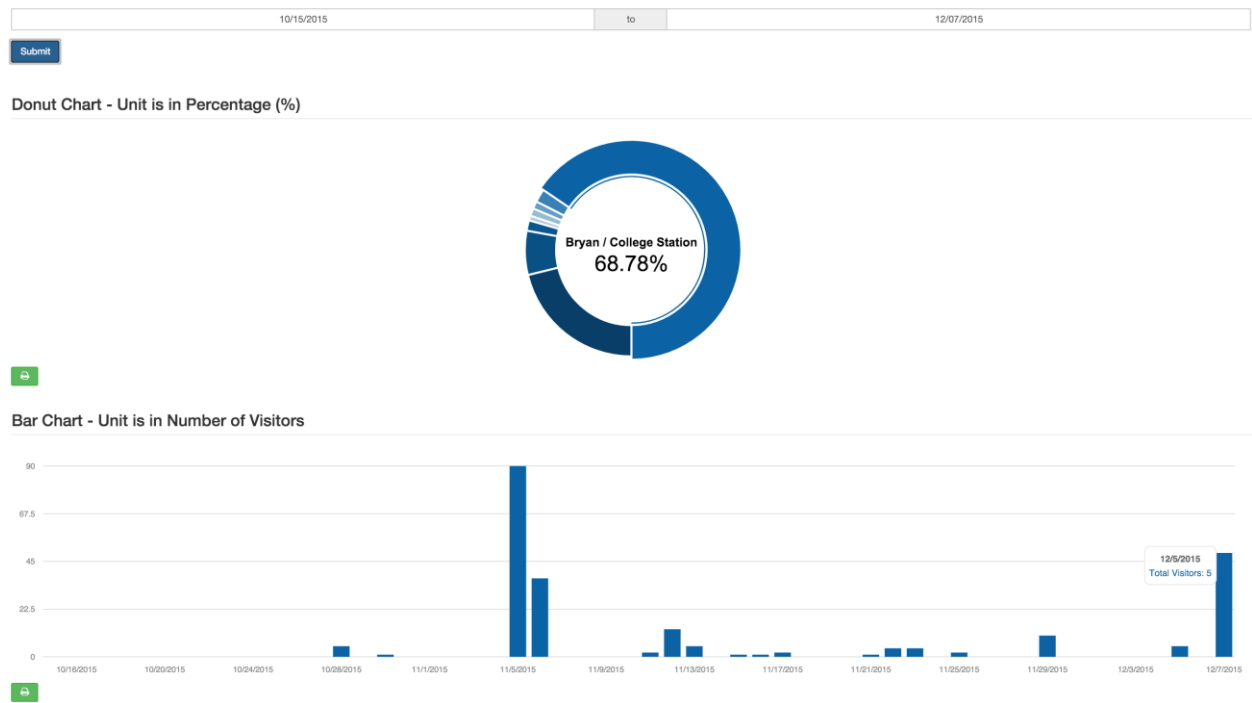


Visitors Statistics





Statistics Charts



Browser: All Data, http://museumofamericangl.com

Home > All Data Sign Out

All Data

Print Export Search Back

Filter OFF

First Name	Last Name	E-mail	Contact	ZIP Code	City	Country	Date	Group Size	Hotel Nights	Eat Outs
Joe	Doe	joe@doe.com	<input checked="" type="checkbox"/>	76757	Houston	United States	9/27/15	3	0	3
Anita	Anderson	anit@google.com	<input type="checkbox"/>	78396	New York	Brasil	8/2/13	1		
Karel	Novak	karel.novak@seznam.cz	<input checked="" type="checkbox"/>			United States	4/28/14	1	2	0
James	Bond	jmsbnd@yahoo.com	<input checked="" type="checkbox"/>	67889	San Francisco	Czech Republic	6/7/03	5	10	5
				78968	Washington DC	United States	7/18/12	1	0	8
Constant	Boulard		<input type="checkbox"/>			United States	1/8/11	1		
						France	8/3/10	3		

Visitors Information

11/10/2015 to 12/07/2015 Contactable? Submit

Choose Area: None selected

Visitors Table

Show 10 entries Search: Copy CSV PDF Excel Print

Last name	First name	Visit Date	Email	Contactable	City	Zip code	State	Country			
vaswani	vishal	2015-11-17 18:32:40 UTC	vishaljmd03@gmail.com	Yes	College Station	77840	TX	United States			
Suarez	Luis	2015-11-17 17:18:46 UTC	suarez@fcbarcelona.com	Yes	Coraopolis	15108	PA	United States			
Snow	John	2015-11-12 23:58:22 UTC	snow@wall.org	Yes	College Station	77840	TX	United States			
Ramos	Sergio	2015-12-05 03:59:51 UTC	sergio.r4@hotmail.com	Yes	Houston	77038	TX	United States			
Messi	Lionel	2015-12-05 04:02:42 UTC	messi10@gmail.com	Yes	Houston	77041	TX	Argentina			
mach eight	mach	2015-11-23 07:21:33 UTC	mach7@speedracer.net	Yes	La Grange	78945	TX	United States			
mach	mach	2015-11-23 07:20:37 UTC	mach5@gmail.com	Yes	Schenectady	12345	NY	United States			
Luna	Dominique	2015-11-25 01:14:23 UTC		No	Navasota	77868	TX	United States			
Lannister	Tyrion	2015-11-16 21:13:37 UTC	tyrion@kingslanding.com	Yes	College Station	77840	TX	United States			
Jr	Neymar	2015-11-13 19:04:46 UTC	Njr@gmail.com	Yes	Houston	77004	TX	United States			

Showing 1 to 10 of 38 entries

Previous **1** 2 3 4 Next

In Town

http://museumofamericangl.com

Home > In Town Sign Out

In Town 9/1/2010 - 9/27/15

Print Export Search Back

Filter OFF

First Name	Last Name	E-mail	Contact	ZIP Code	City	Country	Date	Group Size	Hotel Nights	Eat Outs
Joe	Doe	joe@doe.com	<input checked="" type="checkbox"/>	77898	College Station	United States	9/27/15	3	0	3
Anita	Anderson	anit@google.com	<input type="checkbox"/>	77878	Bryan	United States	4/28/14	1	2	0
Karel	Novak	karel.novak@seznam.cz	<input checked="" type="checkbox"/>	77850	College Station	Czech Republic	6/7/03	5	10	5
James	Bond	jmsbnd@yahoo.com	<input checked="" type="checkbox"/>	77830	College Station	United States	7/18/12	1	0	8
				77841	College Station	United States	1/8/11	1		

Visitors Information

11/10/2015 to 12/07/2015 Contactable? Submit

Choose Area: Bryan/College Station

Visitors Tables

Show 10 entries Search: Copy CSV PDF Excel Print

Last name	First name	Visit Date	Email	Contactable	City	Zip code	State	Country			
vaswani	vishal	2015-11-17 18:32:40 UTC	vishaljmd03@gmail.com	Yes	College Station	77840	TX	United States			
Snow	John	2015-11-12 23:58:22 UTC	snow@wall.org	Yes	College Station	77840	TX	United States			
Ramos	Sergio	2015-12-05 03:59:51 UTC	sergio.r4@hotmail.com	Yes	Houston	77038	TX	United States			
Messi	Lionel	2015-12-05 04:02:42 UTC	messi10@gmail.com	Yes	Houston	77041	TX	Argentina			
mach eight	mach	2015-11-23 07:21:33 UTC	mach7@speedracer.net	Yes	La Grange	78945	TX	United States			
Luna	Dominique	2015-11-25 01:14:23 UTC		No	Navasota	77868	TX	United States			
Lannister	Tyrion	2015-11-16 21:13:37 UTC	tyrion@kingslanding.com	Yes	College Station	77840	TX	United States			
F	Oda	2015-11-25 01:13:30 UTC		Yes	College Station	77840	TX	United States			
Dufek	Jan	2015-12-07 01:46:00 UTC	dufek@tamu.edu	No	College Station	77840	TX	United States			
Dowlen	Taylor	2015-11-11 21:12:57 UTC	dowl222@tamu.edu	No	College Station	77840	TX	United States			

Showing 1 to 10 of 18 entries

Previous 1 2 Next

Bucky Bane

Group Size: 1
Email: bucky.bane@gmail.com
Contact: true
City: Brooklyn
State: NY
Zip code: 11201
Country: United States
Did you stay in a hotel? Yes
How many nights did you stay in a hotel? 1
How many times did you eat out? 1
How did you hear about us? Friend's Recommendation
What other museums have you visited? Children's Museum of the Brazos Valley

Close

VI. Team Roles

Scrum Master	Business Owner	Members
Khuong Nguyen	Taylor Dowlan	Ashraf Ibrahim
Odair Fernandes	Odair Fernandes	Jan Dufek
Ashraf Ibrahim	Ko-Ching Wu	Odair Fernandes
Jan Dufek		Ko-Ching Wu
		Chih-Yen Chang
		Khuong Nguyen
		Taylor Dowlan

Everyone contributed to the code either individually or through pair programming. We rotated some of the members for the scrum master and business positions just for the experience perspective.

VII. Scrum Iterations & Users Stories

Iteration 0:

- We set up meeting times with our customer and extracted their user stories
- Sketched low-fi user interfaces and story boards
- Set development priorities
- We elected a Scrum Master and a Product Owner
- We set up Pivotal Tracker and the Github repository
- We successfully submitted the Iteration 1 report PDF

Iteration 1:

- We implemented the following 3 user stories:

User Story 1

<i>Feature</i>	Add visitor information to the database.
<i>As a visitor</i>	<ul style="list-style-type: none">• So that I can share my information with the museum.• I want to enter my info to add to the system.

User Story 2

<i>Feature</i>	View Visitors By Date
<i>As administrator of the system</i>	<ul style="list-style-type: none">• So that I can see who registered within given dates• I want to be able to see a list of all visitors that were registered within a given period.

User Story 3

<i>Feature</i>	Get Raw Data.
<i>As an administrator</i>	<ul style="list-style-type: none">• So that I can verify summary statistics.• I want to be able to see the raw data entered by visitors.

We have changed user story 2 because we feel it not application specific, i.e. it is not considered as a feature of the application. Therefore, we decided to implement “View Visitors By Date” user story, instead of “Run software on local server as an administrator” user story we had before.

- We set up code climate to rate our code
- We successfully submitted the Iteration 1 report PDF

Note: For user story 1, we were able to add the main information of the visitors, but we did not have the additional question part for this iteration.

Iteration 2:

- We implemented the following 4 user stories:

User Story 6

<i>Feature</i>	List visitors by location (zip codes).
<i>As administrator of the system</i>	<ul style="list-style-type: none">• So that I can know who comes from out of town or in town.• I want to be able to view the list of visitors by locations.

User Story 9

<i>Feature</i>	Single Administrator Login
<i>As an administrator</i>	<ul style="list-style-type: none">• So that I have access to all information that the users entered.• I want to be able to login as administrator.

User Story 10

<i>Feature</i>	Generate summary statistics.
<i>As administrator of the system</i>	<ul style="list-style-type: none">• So that I can print reports to share with the administration.• I want to generate summary statistics.

User Story 12

<i>Feature</i>	Password Reset.
<i>As administrator of the system</i>	<ul style="list-style-type: none">• So that if I forget the password, I can reset it• I want to be able to reset the administrator password by emailing a link to a predetermined email address.

We have reworded user story 6, but it stills do the same thing. In addition, we have changed user story 9 because we it was very similar to user story 10. Therefore, we decided to implement “Single Administrator Login” user story, instead of “Get Summary Statistics” user story we had before.

- We successfully submitted the Iteration 2 report PDF.

Iteration 3:

- We implemented the following 3 user stories:

User Story 3

<i>Feature</i>	View Email List.
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can reach more people• I want to be able to generate a list of emails from visitor information

User Story 5

<i>Feature</i>	View Graphical Summary Statistics (Percentages)
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can fill out the forms for grants.• I want to get summary statistics as percentages based on zip code.

User Story 11

<i>Feature</i>	Tablet Compatibility.
<i>As administrator of the system</i>	<ul style="list-style-type: none">• So that I can use a tablet for logins in the museum in the future.• I want to be able to use the application on a tablet.

We have changed user story 5 because we decided with the client that the visitor would only input the zip code and not both the city and the zip code. Therefore, we do not have to implement the zip code suggestion based on whichever city is entered. So, we decided to implement “View Graphical Summary Statistics” user story, instead of “Suggest Zip Code From City” user story we had before.

- We successfully submitted the Iteration 3 report PDF.

Iteration 4:

- We implemented the following 4 user stories:

User Story 4

<i>Feature</i>	Predict City From Zip Code.
<i>As a visitor filling in my information</i>	<ul style="list-style-type: none">• So that filling out the form is easier for me• I want to enter a zip code and have the system predict the city

User Story 7

<i>Feature</i>	Export Summary Statistics to CSV Files
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can fill out the forms for grants.• I want to get summary statistics in the form of CSV files.

User Story 13

<i>Feature</i>	Export Summary Graphical Statistics to PDF Files
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can fill out the forms for grants.• I want to get summary graphical statistics in the form of PDF files.

User Story 14

<i>Feature</i>	Form Validation
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• I do not want the visitor to be able to input erroneous information.• I want the system to do form validation.

User Story 15

<i>Feature</i>	Copy Summary Statistics to Clipboard
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can paste it on a document to fill out the forms for grants.• I want to be able to paste summary statistics on any document form.

User Story 16

<i>Feature</i>	Add Additional Options to Survey Questions
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can add additional selection options to the existing survey questions.• I want add more options to the survey questions.

User Story 17

<i>Feature</i>	Add Additional Survey Questions
<i>As a person in charge of the system</i>	<ul style="list-style-type: none">• So that I can add additional survey questions to the survey system.• I want add additional survey questions.

We changed user story 7 because our application does not request grants or has a specific form for it, but it provides statistics that will help our client request it when necessary. Therefore, for user story 7 we implemented the generation of CSV files with summary statistics. In addition, we also added user stories 13 and 14. We also added user stories 13, 14, 15, 16 and 17 as additional functionality to the system.

VIII. Customer Meetings

Iteration 0:

9/17/15

- We set up future meeting times with our customer and extracted her user stories.

9/24/15

- We discussed and approved/amended the low-fi mockups. We agreed on a few changes to the mockups that better reflected what the customer wanted.

Iteration 1:

10/8/15

- We discussed the possibility of working with the other group and determined that was not an immediate priority, but a nice to have feature.
- We did a sketch of the homepage.
- The customer approved a final set of mockups and user stories with the changes previously discussed.
- We discussed running the application on Windows 8. We (the group) still thought it would be possible.

10/15/15

- We discussed user stories 1, 2, and 8 from iteration 1. The customer was pleased with our progress because the functionality we had implemented could already replace what she had.

Iteration 2:

10/22/15

- We discussed the Heroku app where she could view our progress without having to meet in person.
- We discussed user story 9, admin sign-in. She liked the progress, but didn't want to worry about multiple administrators; she just wanted a password field.

10/29/15

- We discussed user stories 6, 10, and 12 from iteration 2. The customer liked these features because the zip code/area filter was the main functionality she wanted to save her valuable time.
- We discussed user story 9 as now we had corrected the login to have password only.

Iteration 3:

11/11/15

- We discussed the user stories 3, 5, and 11 from iteration 3.
- Overall she liked a lot of the aesthetic improvements that we had made, but felt there was still some styling she didn't like.
- She felt the feature set was progressing nicely.

11/13/15

- We demonstrated the application works on a mobile phone and tablet.
- We showed the graph generation feature and how the date range applied to it.
- Emily liked all the features presented and only suggested one modification, which was to show the percentage sign on the number instead of in the title.

Iteration 4:

12/2/15

- We were able to install the software at the museum, with adjustments to be made in the next meeting, since Emily had to leave for another meeting

12/6/15

- We finished the install complete with bug fixes and font additions.
- We demonstrated the applications functionality to other museum administrators besides Emily.

12/7/15

- We installed minor bug fixes and added start up script to run rails at machine startup.

12/11/15

- We edited the startup script to fix a small bug.

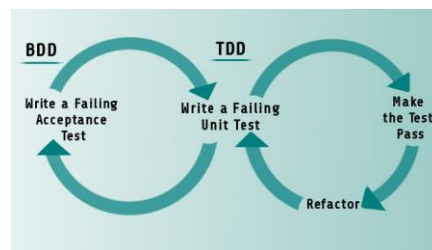
IX. Testing (BDD/TDD)

Behavior-Driven Design (BDD):

- A software development methodology in which an application is specified and designed by describing how its behavior should appear to an outside observer
- Asks questions about behavior of app *before and during development* to reduce miscommunication.
- Requirements written down as *user stories, which are descriptions of how app is used*
- The user stories are common language for all stakeholders, including nontechnical
- Writing tests before coding (validation by testing)

Test-Driven Development (TDD):

- A software development process that relies on the repetition of a very short development cycle:
 - 1) The developer writes an (initially failing) automated test case that defines a desired improvement or new function;
 - 2) He/she produces the minimum amount of code to pass that test;
 - 3) Refactors the new code to acceptable standards.
- TDD is a unit test implementation



X. Configuration Management

In software engineer it is necessary, especially in big projects, to track and control the source code developed. Therefore, in order to maintain and track our code, we decided to use Github. This popular distributed control system offers functionalities, such as integrated issue tracking, collaborative code review, manage teams, and syntax highlighted code. It allowed us to work on separate features of the application, bug tracking, and task management.

We decided to have our separate branches (7 branches with our names), apart from master on Github. Each of us would work on specific features to avoid too many conflicts. Then, by implementing pair programming, we decided to have 3 other feature branches (login, survey, and development) where we did most of our implementation. We would only merge to the master branch and deploy on Heroku after we tested the code. In addition, we had 3 different databases in use: one for Heroku, one for testing, and another for development.

XI. Issues in the Production Release Process to Heroku

Fortunately, we were able to deploy our application on Heroku without any problems. However, we initially we had a few problems with the database in Heroku because it was too small for our purposes. The problem was due to the amount of zip codes we had to store in the database, causing the deletion of some of our data. In order to solve this problem, we used local databases since we would have to install a local database for our client as well.

XII. Implementation Environment

The implementation environment of our application is UNIX. In addition, releases of our product include the test release, the demo to client, and the final release. To the production release process to Heroku, the initial release of our app (warm-refuge-8672) was on 10/05/2015. The final demo was done on 12/07/2015. All features are completed and tested.

We have established development, test and production databases and used MySQL to manage the database. Besides the connection to database dropped once in a while when using the MySQLWorkbench tool, no significant issue was found in these environments.

XIII. Tools and GEMs

The following packages and tools are used in the project:

- Ruby 2.2.3
- Rails 4.2.4
- Bootstrap 3.3.5
- Mysql2 0.3.18
- Cucumber 0.0.9
- jquery-rails 4.0.4
- rspec-rails
- Heroku
- Git Hub

Furthermore, in order to monitor the quality of the code, we used CodeClimate. CodeClimate is an online platform, which used for measuring software quality and it helps in fixing bugs and other critical development issues. For agile methodology, we used Pivotal Tracker to distribute the tasks among the team members and keeping track of the progress in the development. To overcome the issues of merging different branches in GitHub, every team member creates a local branch based on the assigned task. Then after successful testing the member merge the local branch with what is called the development branch. Before every iteration, the development branch is merged with the master branch. Morris chart library was used to generate the statistics charts.

The following gems are also used:

- haml
- turbolinks
- sdoc
- pdfkit
- font-awesome-rails
- aphael-rails
- test-unit
- jquery-datatables-rails
- spring
- pg
- autotestS
- database_cleaner
- rails_12factor

XIV. GitHub Repository

Our GitHub Repository can be found [here](#).

XV. Other Important Links

Our Pivotal Tracker project can be found [here](#).

Our application can be found in Heroku [here](#).

Our application demo can be found [here](#).

The first iteration video interviewing with the customer can be found [here](#).

The final iteration video interviewing with the customer can be found [here](#).

Our team's webpage can be found [here](#).

XVI. References:

- <https://codeclimate.com/>
- <https://en.wikipedia.org/wiki/GitHub>
- <https://www.unleashed-technologies.com/blog/2014/08/01/what-github-and-how-can-it-benefit-your-development-team>