

Team DEC1612
ISU Department of Sustainability
Dr. Samik Basu
Bri Gerads - Project Lead
Daniel Cain - Webmaster
Guan Keng Lim - Communication Leader
<http://dec1612.sd.ece.iastate.edu>

4/4/2016

ISU Green Your Residence

Project Plan: Version II

Contents

1 Introduction

1.1 Project statement

1.2 purpose

1.3 Goals

2 Deliverables

3 Design

3.1 Previous work/literature

3.2 Proposed System Block diagram

3.3 Assessment of Proposed methods

3.4 Validation

4 Project Requirements/Specifications

4.1 functional

4.2 Non-functional

5 Challenges

6 Timeline

6.1 First Semester

6.2 Second Semester

7 Conclusions

8 References

1 Introduction

1.1 PROJECT STATEMENT

The project is a web development application for the ISU Department of Sustainability's website, specifically for the 'Green Your Residence' Project. This is an online, interactive website focused on assisting the students to "green" their dorm room/apartment/home.

The site's main attraction will be a build your virtual room. Additionally, there will be interactive quizzes for the users to participate in to help read their behaviour (and allow the Department of Sustainability use any gathered information to analyze Iowa State's level of awareness to better target their advertising) and provide them with facts that will help them green their room. There will also be a 'Savings Cart' which will show the user what kind of money they would save if they were to make certain changes to their behavior.

1.2 Purpose

This project aids the community in learning how to "live green", which means to understand their responsibility in creating a better global environment. It will help Iowa State students create and encourage a more sustainable campus and community by assisting us all in saving energy, saving water, reducing gas emissions, etc. By purchasing sustainable items and adopting green living habits, it will help individuals save money and save the environment. Ideally, the site should reinforce or raise awareness on green information and encourage students to share the information with their family and friends.

1.3 GOALS

The goals of the project are to create fun and engaging activities for the Department of Sustainability's website, to create ways to give users up-to-date information on Green Living, and develop the project in such a way that users will be inclined to return to the website for more information. The following are features the site will present:

- Interactive virtual dorm room builder which allows students to construct living spaces similar to their own
- Allow students to drag-and-drop appliances and electronics into their room
- Interactive surveys/quizzes
- Mouse over the items will show tips on "greening" it
- Saving carts page which shows the impact the changes will have on the environment

2 Deliverables

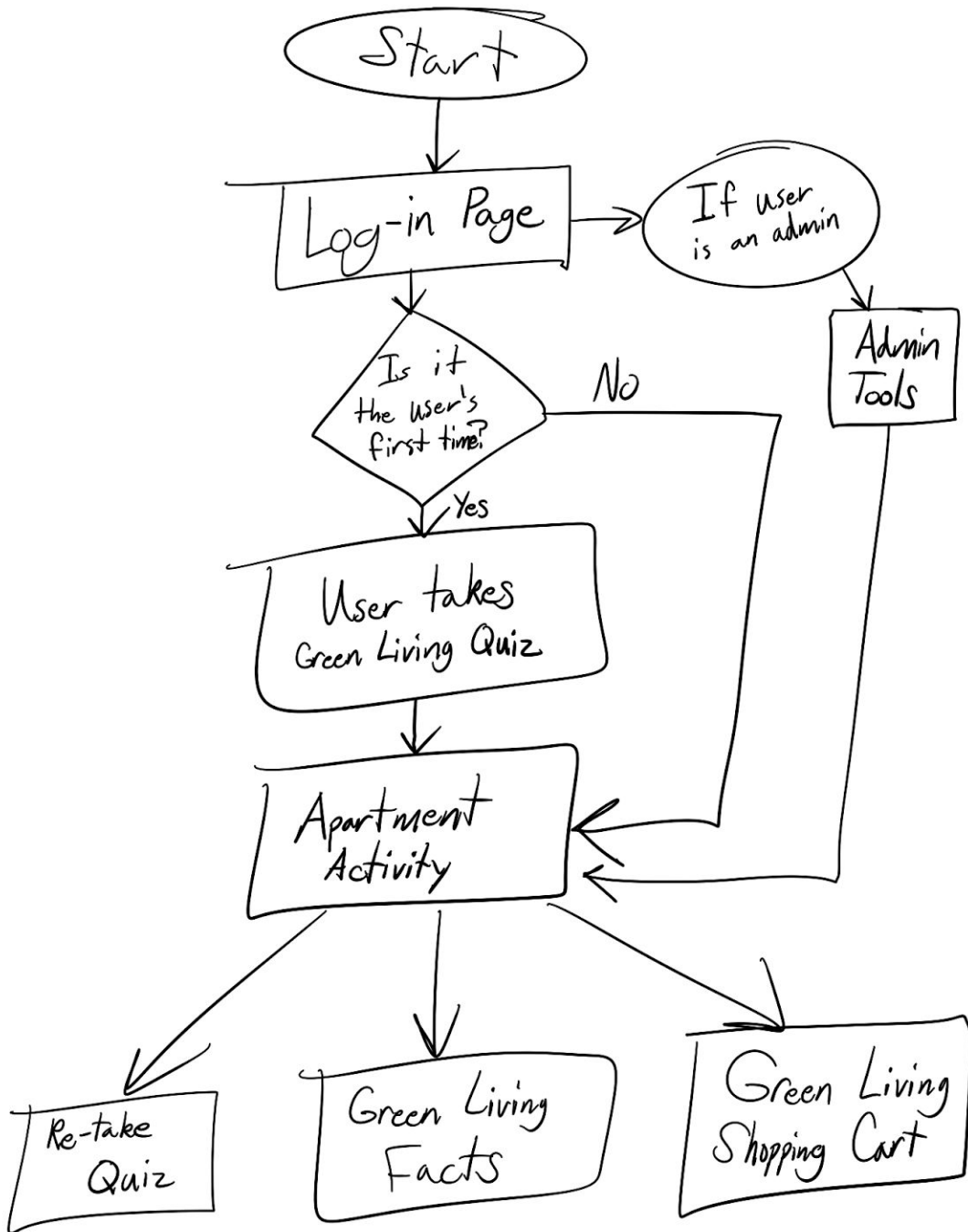
The deliverables of this website is: An interactive room builder where the user can design a room after their room or a floor plan much like their own. Additionally, there must be an interactive quiz that welcomes the user to the website asking the user about their household items and their usage with these items (such as “Do you unplug your phone/laptop chargers when you aren’t using them?”). Random facts should be present throughout the website (in the sidebar, possibly a popup over a specific appliance in their room, etc.) Once the user finishes creating their room, there will be another interactive quiz asking for the user to provide the answer to different green your environment facts posed as questions. Once this quiz is complete, it will direct the user to a page of more facts if they are interested. Lastly, the user can then “make changes” to their habits/appliances and it will show the user the possible savings in a “Savings Cart”. Once these deliverables are completed, there is potential for the addition of more or enhanced features based on remaining time. The goal is to have the functional site working with the Iowa State authentication allowing students to save progress on their room or save their ‘Savings Cart.’ There will also eventually need to be an admin page for our client to add/remove facts and view user data, however this will come after the main functionality of the site has been created.

3 Design

3.1 PREVIOUS WORK/LITERATURE

This project is based on the client's feedback from the prototypes from last semester's SE 409/CS 509 course where the students presented different approaches to the site. All of the above mentioned features of the project are based on those suggested by these prototypes, alongside original prototypes proposed by the Senior Design team. There are similar websites already in existence that were created by other universities, such as Notre Dame ([link](#)), Bentley ([link](#)), and Brown ([link](#)). However, our project has a much heavier emphasis on interaction with the users. The goal is to provide just as much useful information as the competing websites, but all the while doing so in a much more appealing/interesting manner.

3.2 PROPOSED SYSTEM BLOCK DIAGRAM



3.3 ASSESSMENT OF PROPOSED METHODS

This project can be made in several different ways. For instance, all of the features can run in the Unity Video Game Engine for HTML, and could even allow to have real-time rendered 3D graphics. However, this would require all members to learn how to use the Unity engine, which can be very challenging. Additionally, the rendering time may not be very appealing and could potentially discourage users from returning to/using the website. Our plan is make the site using HTML and assisting libraries (drag and drop libraries with a HTML canvas). This will be much easier to learn, and will also make load time *significantly* shorter than if it were to use a video game engine. The appeal may not be as significant as the game engine however it will be essentially the same product (just a different approach).

3.4 VALIDATION

To ensure that the project is fully functional, the project team plans on dedicating several weeks at the end of our project timeline for Quality Assurance. There are also plans on testing features for bugs as they are implemented into the full project. This will be accomplished by going through all front-end features and deliberately try to break the product, and fix the issues from these test cases. Eventually, there will also be groups of test users to try the product, so that information may be gathered on how brand new users react to the project and its features. The feedback will help with designing the second/final version release.

4 Project Requirements/Specifications

4.1 FUNCTIONAL

- The project shall allow users to customize a virtual living space to the point where features and amenities are similar to their own.
- The website shall let users take a quiz that both tests the user's knowledge on Green Living, as well as gathers information on the user's current conservation and consumption habits.
- There shall be prominently placed facts and tips about Green Living throughout the website.
- The website shall allow administration users edit the website's content.
- The website shall let users login with their Iowa State authentication information.

4.2 NON-FUNCTIONAL

- The website's administrative tools shall be easily useable for an average user.
- The design of the visual shall match the design standards of the iastate.edu domain.
- The website shall have minimal loading times.
- The website shall have a simple, yet intuitive user interface (likely using Google Materials Standards).

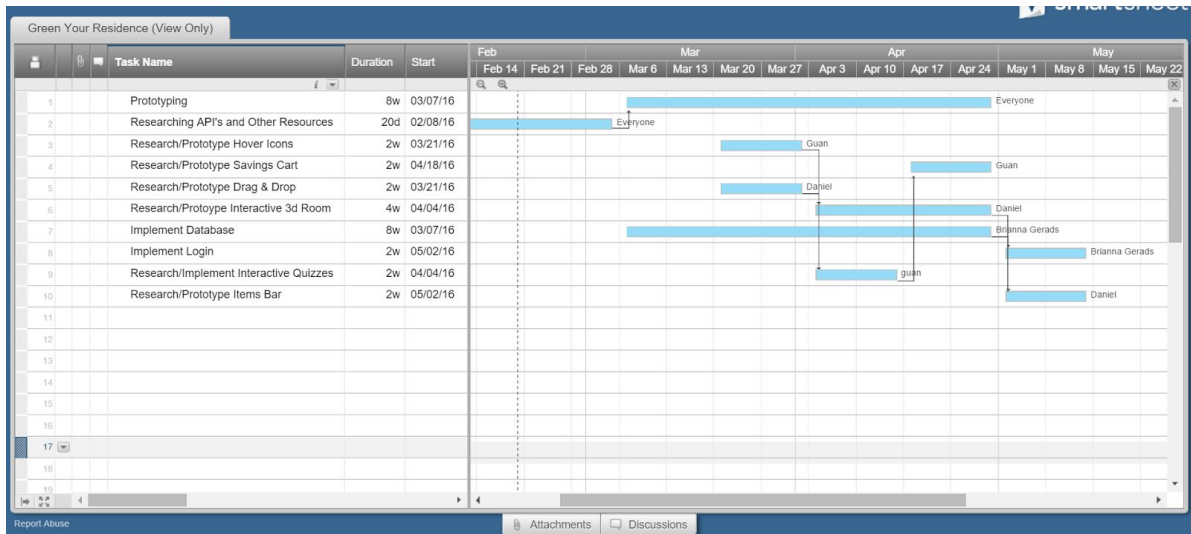
5 Challenges

As “greening your dorm room” is not necessarily an attractive topic for everybody, a suitable way to design and implement this project must be collaborated on between the client and the project team that will enhance the desire to be education on sustainability and return to the site to view the information. If the project designed/presented is not interesting enough, students will not be willing to use it or spend enough time using it to gain knowledge to better the environment. The ideal result would be to get initial users to share it with their friends and/or family members and get them interacting with the information too. Additionally, as the developers have little knowledge on how to “green” the environment such as reducing gas emission, saving energy, etc, which could lead them to designing the wrong tool or providing the wrong information to the users. Therefore, it is vital that there is a solid form of communication with the client(whom is an expert in sustainability) and conduct surveys of the student population at Iowa State before implementing the project.

6 Timeline

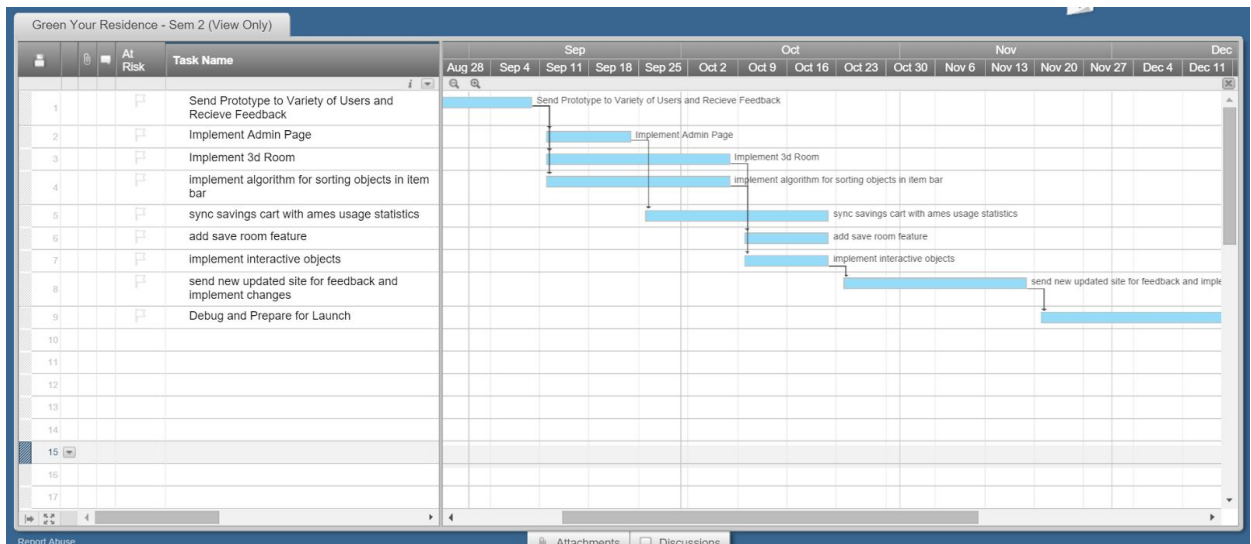
6.1 FIRST SEMESTER

<https://app.smartsheet.com/b/publish?EQBCT=414d26df2bfa459fb6110fe96752b674>



6.2 SECOND SEMESTER

<https://app.smartsheet.com/b/publish?EQBCT=ea16b1ae3d09451585d76cd2bf944dbd>



7 Conclusions

Our goal is to provide our client, Merry Rankin, with all of the deliverables she has asked for: Savings Cart, interactive room builder, and interactive quizzes. We intend to complete a prototype of the website with these features by the end of Spring semester. Once the prototype is done, we intend to spend the fall semester adding and changing features to make the website more modern and easily maneuverable. The website is meant to be fun and engaging to encourage use so there will be some user testing once the prototype is complete.

8 References

Hovering:

<https://www.google.com/url?q=http://www.scientificpsychic.com/etc/css-mouseover.html&sa=D&ust=1455918655416000&usg=AFQjCNFa8PBKY0CE5f7RqHI2h2omOS8fMw>

<http://www.menucool.com/tooltip/css-tooltip>

Hovering Icons:

<http://ianlunn.github.io/Hover/>

Drag and Drop HTML5 + KineticJS:

<https://mobiforge.com/design-development/touch-friendly-drag-and-drop>

Notre Dame Green Your Dorm Room:

<http://green.nd.edu/news/13924-green-your-dorm-room/>

Bentley University Green Your Dorm Room:

<http://www.bentley.edu/offices/sustainability/green-your-dorm-room>

Brown University Green Room:

<https://www.brown.edu/initiatives/brown-is-green/greenroom>

AngularJS:

<https://docs.angularjs.org/guide>