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3/6/2016

ISU Green Your Residence

Design Document

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1 Introduction

1.1 PROJECT STATEMENT

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

1.2 purpose

This project helps us all to learn how to “live green”, which means to understand our responsibility in creating a better global environment . It will help us to create a more sustainable campus and community by assisting us in saving energy, saving water, reducing gas emissions, etc. By purchasing sustainable items and adopting green living habits, it will help us to save money .

1.3 GOALS

The goals of the project are to create fun and engaging activities for the DoS’s website, 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.

- 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
- Interactive surveys/quizzes
- Mouse over the items will show tips on “greening” it
- Saving carts page which shows the impact on changes

2 Deliverables

The deliverables is having 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. Once the user finishes creating their room, there will be another interactive quiz asking about the usage of their items (such as “Do you unplug your phone charger when you aren’t using it?”). Once this quiz is complete, it will notify the user of ways they can make their habits more green. The user can then “make the changes” to their habits and it will show the user their savings in a “Savings Cart”.

3 Design

This project is based on the prototypes from last semester's SE 409/CS 509 course. Features of the project are both based on those suggested by these prototypes and with 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 interactivity with the users. So far, we have researched how these other schools have accomplished this project, and we've also planned out how we want to differentiate ourselves from them. We have also planned out our main features for the project, as well as what languages, libraries, and techniques we will need to develop them.

3.1 SYSTEM SPECIFICATIONS

- The project will be a web-based application
- The application will be hosted as a part of the Office of Sustainability's official website
- The project needs to be designed for the young adult demographic

3.1.1 Non-functional

- The website's admin 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.

3.1.2 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 admin users edit the website's content.
- The website shall let users log in with their Iowa State ID.

3.2 PROPOSED DESIGN/METHOD

We have decided that the application will be two main pages, and the user will rarely have to access other parts of the project by leaving the main page. The interactive living

space will be accomplished by using a drag-and-drop HTML canvas, and will be the main focus of the application, so it will be the default screen once users log in. The quiz can be accessed by a link in the page's header, and will drop down from the header on top of the living space page. The only major feature that is on a separate page will be the "Green Living Saving Cart", where the user can assemble a collection of environmentally friendly products to buy, and a calculator will show them how much money can be saved on a monthly basis with them.

There will be a login feature with ISU credentials and an admin page but these will be developed later into the project and somewhat separate from this beginning processes.

3.3 DESIGN ANALYSIS

So far, we've implemented a few smaller aspects of the interface, and are currently developing the drag-and-drop interface. We have yet to run into any major development conflicts, and both the client and advisor are satisfied with our work so far. The most important aspect to the development of our design as time goes on is that we work very closely with our client, so that the features of the application are always approved by them.

4 Testing/Development

4.1 INTERFACE SPECIFICATIONS

- Interface shall work with all major web browsers
- Interface shall be easily navigable for users
- All features of the application shall be clearly and easily accessible

4.2 HARDWARE/SOFTWARE

- Google Chrome, Mozilla Firefox, Apple Safari, and Microsoft Edge/Internet Explorer
 - Websites can occasionally run into errors when run on certain web browsers, so it's vital for us to test on all major browsers.
- Web Browser development tools
 - While they differ from browser to browser, the dev tools built into the software will become very useful for the team during testing, especially the tools for Mozilla Firefox, which include advanced debugging tools and specialized HTML canvas tools.

4.2 PROCESS

UI design will be tested for clarity and ease of use: this will be tested by users outside of the project scope. Each programming milestone will be tested and examined by the client. Every member from the project team will dedicate time to make sure that all code is going to be tested through the timeline of the project. We will double check each other's work and spot problems early on. We will have various reviews, checks and testings of the code so that we can find and document problems early on. We are using Github for version control and reporting issues.

5 Results

Part of the testing phase has been creating individual prototypes for each component of the website. The Drag and Drop had some really great examples online, but when we tried to do the implementation ourselves, we found that KineticJS is no longer maintained. This would be considered a failure as this had been researched and decided upon language, however it is not going to prevent us from completing this component. There are other means of completing it (using Javascript). Our successes have been getting hover icons to work, popup pages to work, an items bar with a search feature, and a quiz template! We have learned a lot about how the barebones of the project needs to be done. All of the items we have prototyped have been vital for the main page. What we need to complete next is the "Savings Cart" page. We also need to compile our prototypes together and design it to look appealing. Once we have completed this and the Savings Cart, we can begin basic user testing to see how they appeal to the design. Additionally, we will soon need to work with ISU IT to get ISU authentication working so ISU students can log on and save any work they may have done while creating a room. The most influential part of our testing phase will be getting a compiled prototype of the entirety of the site and testing that with an audience. That will be towards the end of this semester or beginning of next semester.

6 Conclusions

Our goal is to provide our client, Merry, with all of the deliverables she 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 we will do some user testing once the prototype is complete. The work we have done so far to work toward achieving these goals is started breaking the project up into minor prototypes - we have started work on the drag-and-drop zone, the interactive quiz template, the items bar and the item hover feature. Our plan of action is to break up the features and then combine them once we have found the best and least complicated approach to completing the features. This is the best plan of action because it will prevent merge conflicts within our code and ensure that everyone is on the same page.

7 References

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

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

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

8 Appendices

If you have any large graphs, tables, or similar that does not directly pertain to the problem but helps support it, include that here. This would also be a good area to include hardware/software manuals used. May include CAD files, circuit schematics, layout etc. PCB testing issues etc. Software bugs etc.