

# **Reiman Garden Butterfly Interpretation Application**

Design Document

## **DEC1608**

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# 1 Introduction

## 1.1 Project statement

The goal of this project is to create a web based application for the Reiman Gardens Butterfly wing. This app will be able to search for any butterfly in the database, show a gallery of butterfly pictures, have a homepage with information on the butterfly wing, and show facts and statistics on butterflies. The app also needs to be dynamic and be able to cater to back-end user input so the pages can be changed based on new butterfly shipments and butterfly releases into the wing. This app will be web based but also needs to be useable on most mobile platforms so visitors can go on our website and use the app from their phones if they want to. The app will also be displayed on the kiosks at the wing and on the tablets that the volunteers use at Reiman Gardens.

## 1.2 Purpose

The purpose of this project is to replace the current application that Reiman Gardens has with a more user friendly version. There are several functional problems with the old app, many pertaining to the inability to changing information in the current database. Many people in the past have wanted to be able to look up information on the butterflies within the wing when they visit, and this app will improve the visitors' experience.

## 1.3 Goals

The goal of this project is to complete a working web based application using our coding experience. One major goal is to design the app in such a way that the client is easily able to add and change the data the app operates on and to allow a degree of customization in regards to what information is shown to the visitor. This is why database information is important and being able to use this data in cohesion with our application so it updates with the data being stored.

## 2 Deliverables

The main deliverable that is required to meet the goals of our client is having an application with the ability to be changed whenever the client wants. This means the ability to change pictures, statistics, butterfly information, search tools, and potentially how each web page looks. The point of being able to do this is so the client can adapt to the visitors wants and needs when it comes to the butterfly wing. The past app was functional but had statistics and pictures that were hard coded in and could not be changed. Another problem with the past app is the mobile website for it did not work well with touch screen navigation. This problem also arose with the touch screen kiosks at Reiman Gardens. Having a database that our client can add and delete information on past release is also a requirement since he is not able to change anything in the current database. The main page needs to be appealing to a visitor while also giving good information on the butterfly wing and butterflies within the wing. Having a good search tool catered to butterfly attributes is also something that the group is working towards since the last search tool didn't work properly.

# 3 Design

## 3.1 System specifications

### 3.1.1 Non-functional

1. The web app must be aesthetically pleasing for the viewer and render well on all screen sizes and browsers
2. The web app should be intuitive to use by visitors of all ages and by volunteers in the butterfly wing.

### 3.1.2 Functional

#### Visitor Requirements

1. Visitor must be able to look up a butterfly based on physical traits
2. Visitor must be able to look up a butterfly by name
3. Visitor must be able to view statistics about the current state of the butterfly wing
4. Visitors must have access to a photo gallery

#### Potential Additional Visitor Requirements

1. Social Media check in
2. Submit photos to Remain Gardens

#### Administrative Requirements

1. Admin must be able to quickly and easily log a butterfly release
2. Must be able to add/edit/remove butterflies to/in/from the system
3. Must be able to add photos of butterflies to the system
4. Must be able to set a butterfly of the day

## 3.2 PROPOSED DESIGN/METHOD

Our project group has decided to implement a completely new website application that fixes the past design and functionality shortcomings from the last website. These changes include an aesthetically pleasing main web page that gets the user's attention, a search page that is easy to use and fun to play around, and a couple pages that show facts and information on the butterflies in the wing.

The current design process consists of each team member taking a desired web page and developing a template for it. Each template should have great functionality, good looking design, and nice garden or plant feel so the users feel like they are in the garden while on the website. The final web app, which will be developed next, will populate these templates with the relevant information. These web pages need to have a dynamic layout so that they display well on all

devices such as tablets, the kiosks at the gardens, and phones, allowing visitors to use the app on their personal devices while in the gardens.

### **3.3 DESIGN ANALYSIS**

So far, each group member has worked on one of the various web pages. At a later meeting, we will share our designs with the group, and get feedback from the other team members. We will also at that point work to establish a standard style and color scheme that is shared across all of the pages.

After this, we will meet with our client and have him review our designs. If there are no major problems with the design, we will progress to working on the server side of the project with the goal of implementing some core functionality.

The layouts for the web pages we are currently working on came from sketches we came up with earlier. We have already shared these with our client, and got his approval.

## **4 Testing/Development**

### **4.1 INTERFACE specifications**

This project consists of two software interfaces, the interface between the user's browser and the server, and the interface to database interface.

The interface between the user's browser and the server will be accomplished by using Asynchronous JavaScript and XML (AJAX). This is the standard way to implement communication between a web page and a server without constantly reloading the page. AJAX in particular will be used for dynamic loading of search results on the butterfly search page.

We will be using a relational database for our project. The exact database management system has not been settled on yet. This could be MySQL, Postgresql, or Microsoft SQL. Regardless we will be communicating with the database via SQL. The web server side of this interface depends on the choice of environment for the webserver. If a Java-based platform is used, JDBC is a common option that works well. If we use the Java with the spring framework, spring provides its own database interface that could be used. If Node.js is used, there are several modules that handle Database Requests.

### **4.2 Hardware/software**

Automated tests will be written using the Selenium WebDriver API in conjunction with Java and JUnit. The Selenium API allows interaction of tests written in another language with websites displayed in the browser. JUnit is a common testing framework provided by Java. These tests will allow for interface testing and indirectly test the backend as it will verify content loads correctly from the backend.

### **4.3 Process**

The non-functional requirements will be tested by volunteers at Reiman Gardens. These volunteers will validate for us that the site is aesthetically pleasing and intuitive by using the site in a manner they might use it when giving a tour or looking to simply learn about the wing.

The functional requirements will be tested manually as well as by automated tests. The tests will validate that data loads correctly where it should and responds in a timely manner. The tests will conduct simple operations specific to each page, such as conducting a search for a butterfly or uploading new data to the site.

## **5 Results**

So far in the semester there have not been too many results in the overall software of the project because the sprints just recently started, but in terms of moving forward and communicating with what the client wants the project has moved smoothly. This is because the client has had past work on the application and knows the problems and successes that occurred for it. Also the meetings with both the client and advisor have pushed this project forward to the point of the group being able to start this project on time and with some room for improvements in the future because there is a lot of time for testing the design and functionality of the project. One problem that is still being worked out is the database information the group is still waiting to receive in order to give us a better idea on what the current database is and how it is being used compared to what we will be using for the new web application in order to let the client upload and change information on the website instead of hard coding it all in. The client has expressed interest in being able to show facts about the butterfly wing on the website and also having the ability to add in information on new butterflies coming into the wing. This functionality is something to be worked on in future sprints but is something the group is looking at right now in order to have a good idea of what we will be doing during those sprints.

## 6 Conclusions

The main goals for this project are first to create and field a user-friendly application to replace the one currently in use by the Reiman Gardens butterfly wing, and second to improve the mechanisms used by our client at Reiman Gardens to update the information displayed by the application. To that end, we are beginning by analyzing material provided by our client about his intentions for the application, and putting together our own prototypes, which will be shown to the volunteers at Reiman Gardens. Based on their feedback, we will move forward with the full application with the goal of having a working version of the visitor/volunteer side complete by the end of the first semester, so that we can release it to be beta tested by the visitors and volunteers over the summer.

In order to accomplish that, we have put together a series of two- and three-week sprints for the remainder of this semester, with specific goals to achieve during each sprint. Then when we return in the fall, we will begin by analyzing the feedback provided over the summer to see where we can improve the visitor side of the application. Our other goal for the second semester will be to create a practical and user-friendly administrative side for the application, which will allow the Reiman Gardens personnel to insert and edit information. By the end of the fall semester we intend to have a fully functioning application that will replace the current Reiman Gardens butterfly application.