FFPAC Application Design Document

Team GVSU

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Languages

In order for Team GVSU to develop a proper solution for the Faculty Facilities Planning Advisory Committee (FFPAC) project, we are choosing to develop in PHP based off the starting framework we chose for the project. Since this project involves an easily accessible front end application, our group will use HTML5, CSS, PHP, JavaScript and JQuery. We will also need a database to store and structure all of this information, so MySql (via MariaDB) is our choice for this aspect.

Frameworks/Libraries/APIs

Team GVSU has decided to use PHP, MySQL, and Perl to build and run the FFPAC web application. We are using the wordpress framework to get the application up and running. Included with the framework, we are using Bootstrap v3.0 and JQuery. Bootstrap is a cascading stylesheet library with extensive documentation and plugins that will allow us to quickly and effective design the front end of the web application. JQuery is a useful javascript library to assist with manipulating data and DOM elements on the client side of the application. We are using Wordpress's ability to quickly create pages from template files to manipulate the data. Each template file performs the logic required to make the application functional.

Version Control System

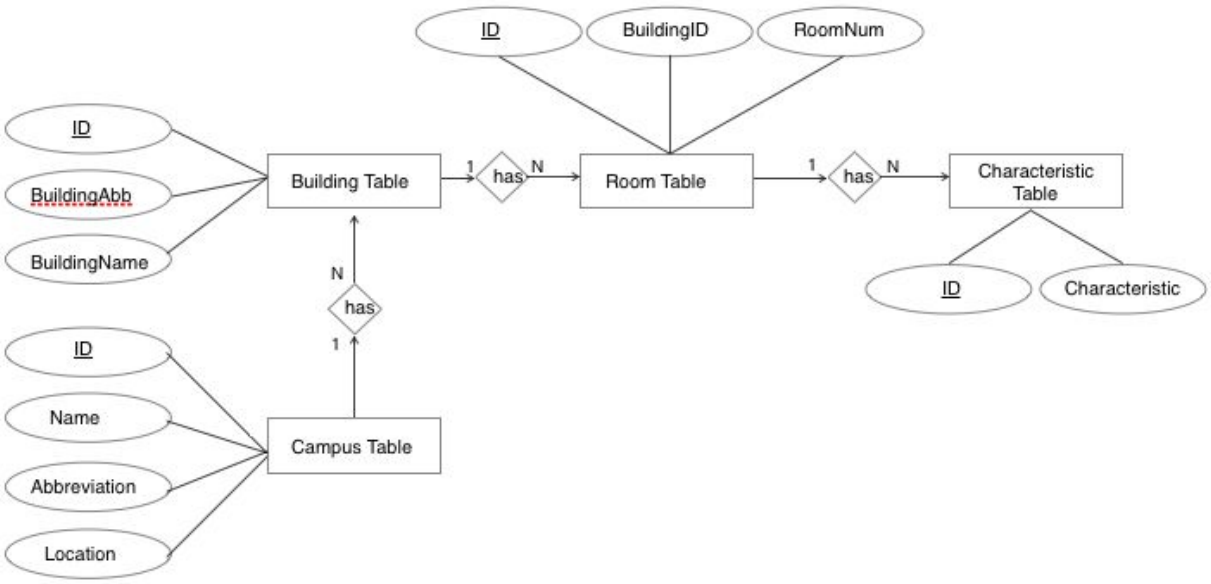
To maintain our code, Team GVSU is using a public GitHub account. The repository has multiple branches. The master branch that contains on most recent deployable version, one branch for each developer on the team, as well as individual branches for features that are in progress.

Each branch of the repository contains the Wordpress framework, a documents folder which has all relevant documents that pertain to the course. As mentioned in the Frameworks section of this document, all of the real work is done in the Templates folder inside our main theme for the application. This folder is located at FFPACgvsu / wp-content / themes / bootstrap-basic / page-templates.

Database System and Schema

In order to keep track of the rooms, a MySQL database will be created and used to track all files, documents, and changes.

An overview of the schema is given below:



Basic System Organization

The basic organization of the application is a client-server-database configuration. The solution will be accessed by users on desktop computers and mobile devices who will connect to the web application client. The application will run off of a server hosted by GVSU. The application will query the database for information requested by the client and return responses back to the users.

User Interface

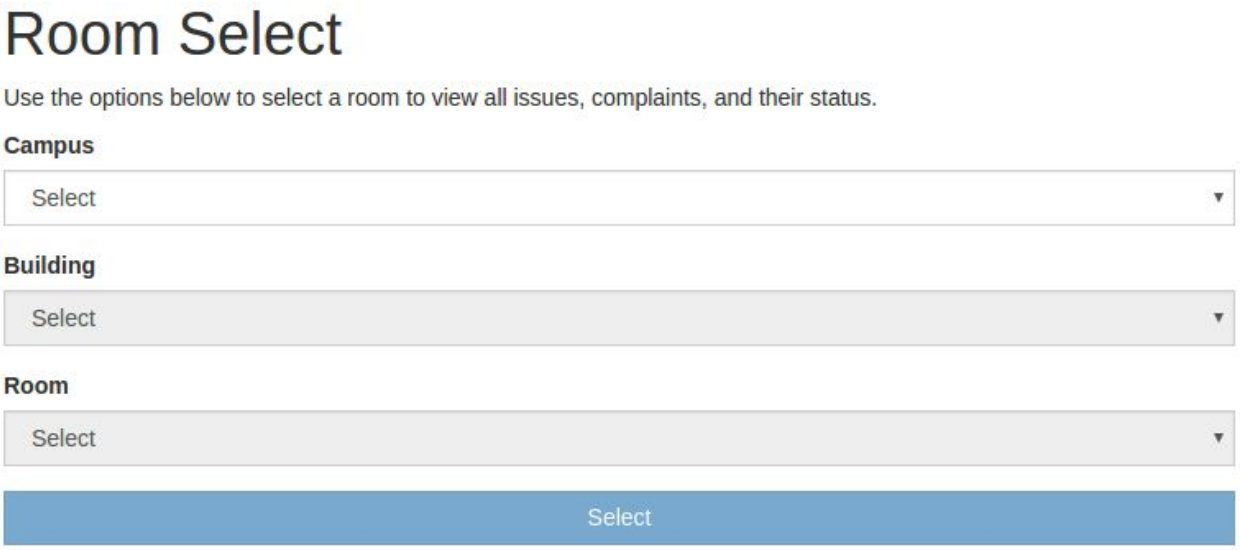
For our mockup, we decided that going straight to HTML would be both more effective to get our ideas across and easier to work off of because they are already in a format that we will use and can modify directly. The user interface for our solution is laid out in two main

containers. One for the header which contains our menu and one for the main content of the application which serves the page templates. Our design consists of five pages. Room Select, Room View, Walkthrough, Survey, and New Complaint. Each page has a specific purpose even though it contains the same information as other pages. The details of each are described below:

Application Menu

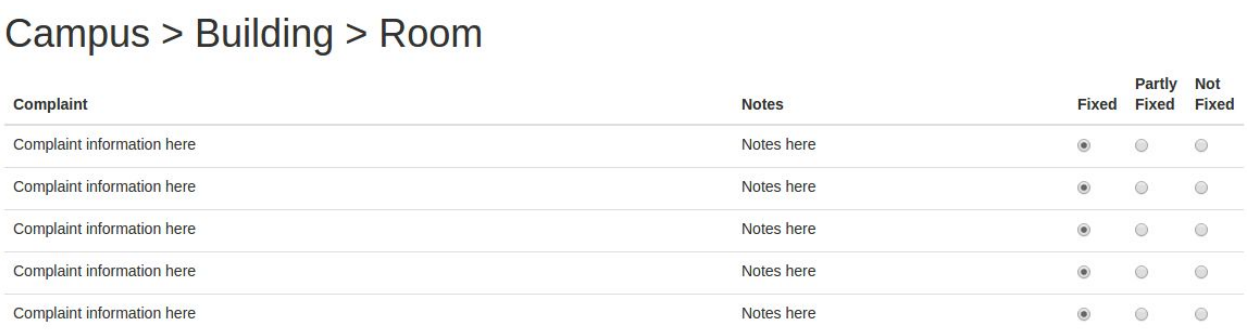
The application menu was designed to be easy to understand. We chose page names that users would be able to easily picture and navigate with.

Room Select Page



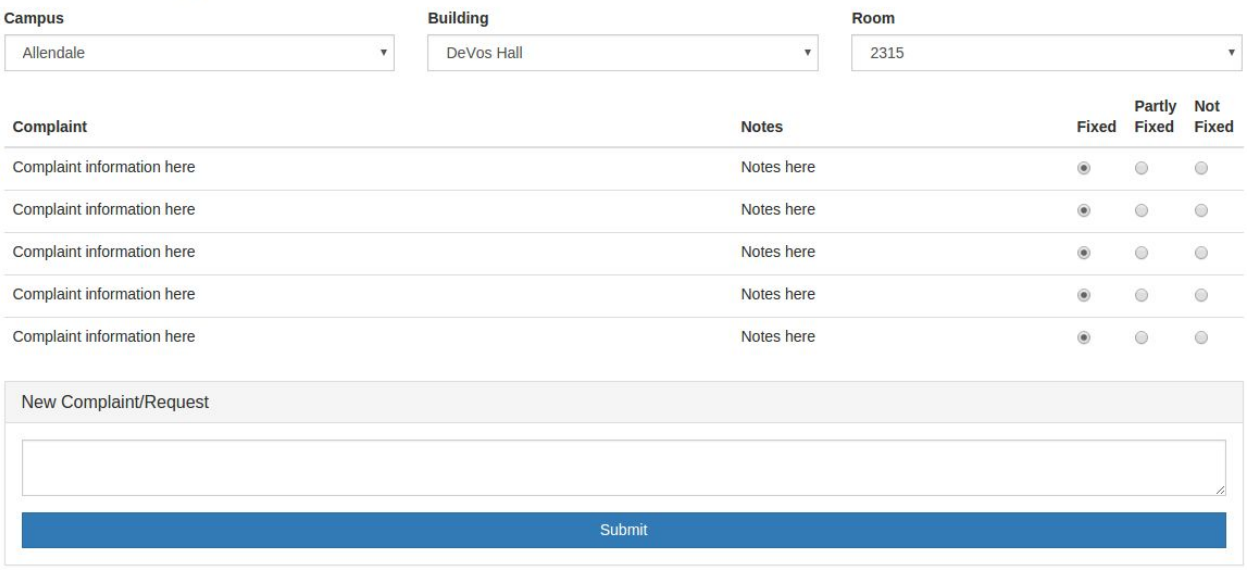
The Room Select page is the entry point of the application. In order to perform any tasks such as view or modify complaint data/notes the user must first select which room they wish to view.

Room View Page



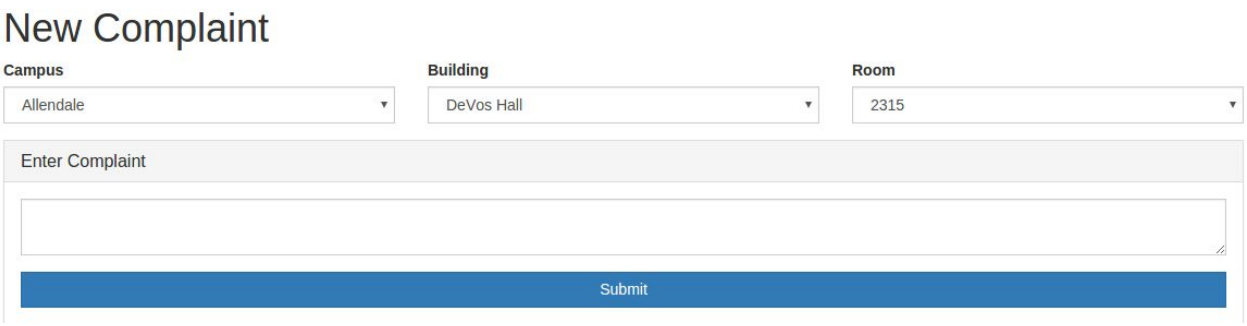
The Room View page is a basic data display page. This page will list all complaints for the selected room with the option to search or sort by date or importance.

Walkthrough Page



The Walkthrough page is a combination of the Room Select, Room View, and Complaint pages. FFPAC has to perform annual walkthroughs of all of the rooms on all of the campuses. This page provides the users with the ability to quickly change rooms, buildings, or campuses without having to switch pages. All of the displayed data is loaded with ajax requests back to the server querying with the user's selected room.

New Complaint Page



The New Complaint page is very self explanatory. The user will select a room and enter a complaint for that room.

Testing

Testing of Team GVSU's solution will be performed in a few separate stages. The first stage of testing will be performed manually by the team. In this stage, we will be ensuring that data entry and review is accurate. This stage will also include testing of the AJAX calls to the database that will be used to load client side data. The second stage of testing will be performed by actual FFPAC users. We will spin up a remove server that they will have access to.

Due to the nature of application, more advanced testing options were determined to be out of scope. Because the application does not perform any logic with expected results, we decided that manual brute force testing by actual users would be the best. The hours of time required to just write PHPUnitTest's was too far out of scope compared to manually testing the expected data.

Development Environments

For the back-end of the application, we are running an AMP stack that runs Apache for PHP, MySQL for our databases, and Perl. Due to the lightweight and relative each of configuration we were able to get each team member up and running in a short period of time.

The PHP will be edited using an IDE named PHPStorm. This is a powerful IDE with debugging tools, deployment tools, and GIT tools. From previous experience with this IDE we setup each developer on the team and connected them to the GitHub repository to make version control seamless.

In addition to just the application, we installed PhpMyAdmin on everybody's Apache servers to make viewing or modifying raw database information easier. This web application

based database tool allows us to quickly export and import the databases to keep everybody in sync. This tool also allows us the ability to run SQL queries with ease.

For the client side code, JavaScript, we are developing the code using the powerful PhpStorm IDE. For testing and debugging the code however we are going straight to Developer Tools in our browsers. Safari, Chrome, Firefox, and Internet Explorer, the most popular browsers, all have powerful developer tools that will assist us with debugging and testing our JavaScript.

Division of Labor

The way we divided up the labor is based off of who has the most experience and efficiency with the tools and languages being used. There was much learning done by Chad and Laura since Chris was the one who suggested the framework and the pieces needed for everything to function properly. Chris was able to get the project started while the rest of the group made contributions along the way. Once there was a better sense of understanding for the whole group, people called out what needed to be finished next and would assume that roll. Each task that is being worked on is given a new branch off of the most current deployable version of the application. If the task is worked on by more than one person then it is pushed to the GitHub repository so that the members can be kept in sync.

Design Methodologies

Team GVSU's sponsors are faculty at the university who serve on the FFPAC board as a side investment in addition to teaching. We keep updated with our sponsors ensuring the direction we are going in is what they would want and in their best interests. Our group design process is an Agile design where we are welcome to changes the customer wants and if we are able to build something that contributes to forward progress, we will do so. Since we keep things simple, this allows for a predictable schedule for development and is easily revisable if changes are needed. We have anticipated many iterations for development and an agile approach gives us the most flexibility to keep moving forward and make changes.

Due Date Outline

Jan 11- Jan 18

Became acquainted with group and met sponsors as well. Discussed possible directions to take project and became aware of entire situation.

Jan 19- Jan 26
Developed main front end for website and planned out attributes for the database in a logical format.

Jan 27 - Feb 5
Began setting up the database and planning on how to connect the database statements into the website front end

Feb 6 - Feb 19
Connect database fully and styling features to resemble a page from GVSU's website.

Feb 20 - Apr 6
Enact as many features as possible and ensure quality of code is industry standard. Code must be well documented along with being efficient. This is also where testing will be done through the development process so we can save time bug fixing later on.

Apr 7 - Apr 23
Make changes based off sponsor input and remain in constant revision mode to perfect the application that is specific for the client.