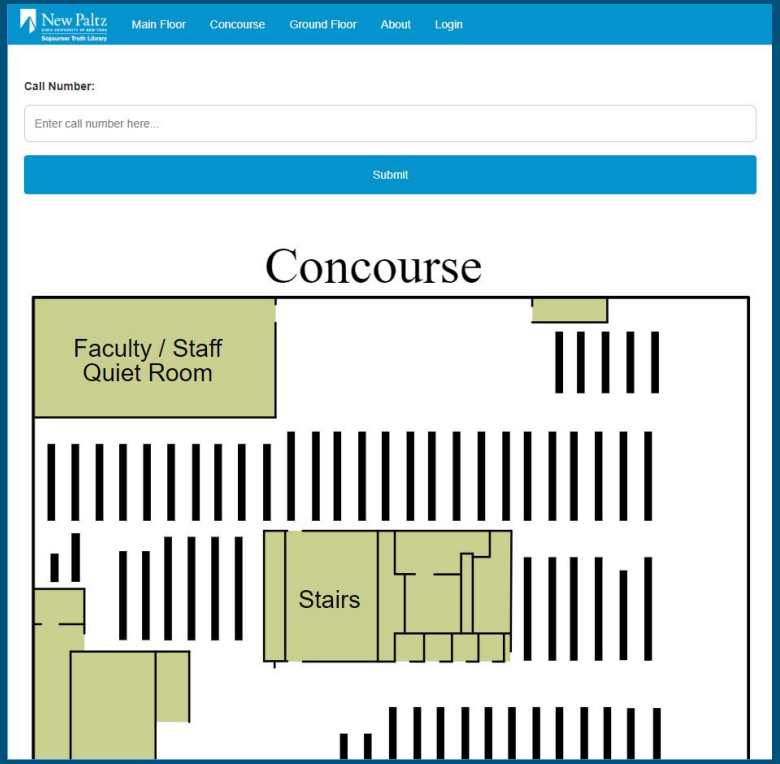
Dynamic Library Map

By Anthony DiNardi
Computer Science Projects (Spring 2018)
On-campus
Professor Hanh Pham

Summary

- The user can go to the website and enter the call number of a book in our library and the shelf that the book is supposed to be located on will be highlighted
- The website displays each floor of the library with dynamically drawn bookshelves
- An administrator can login to add, edit, or delete an entry. Any changes will be automatically applied to the map



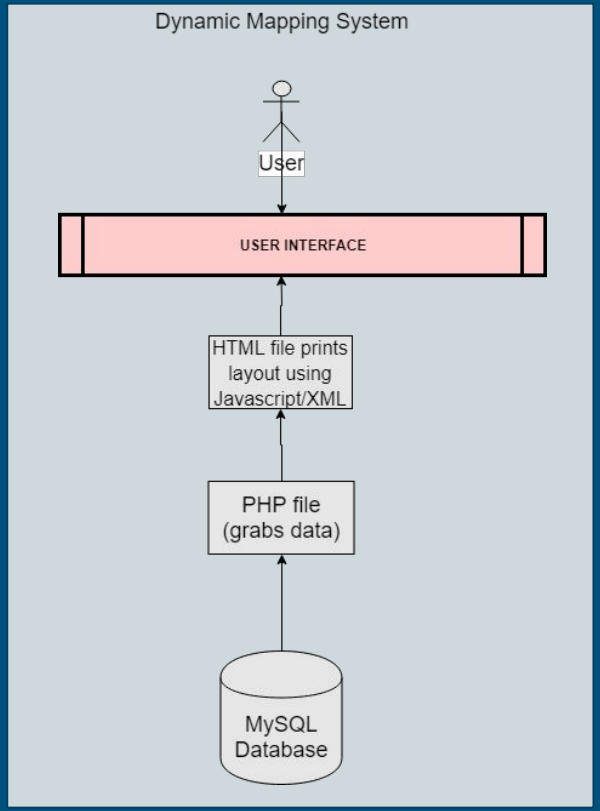
Problem Description

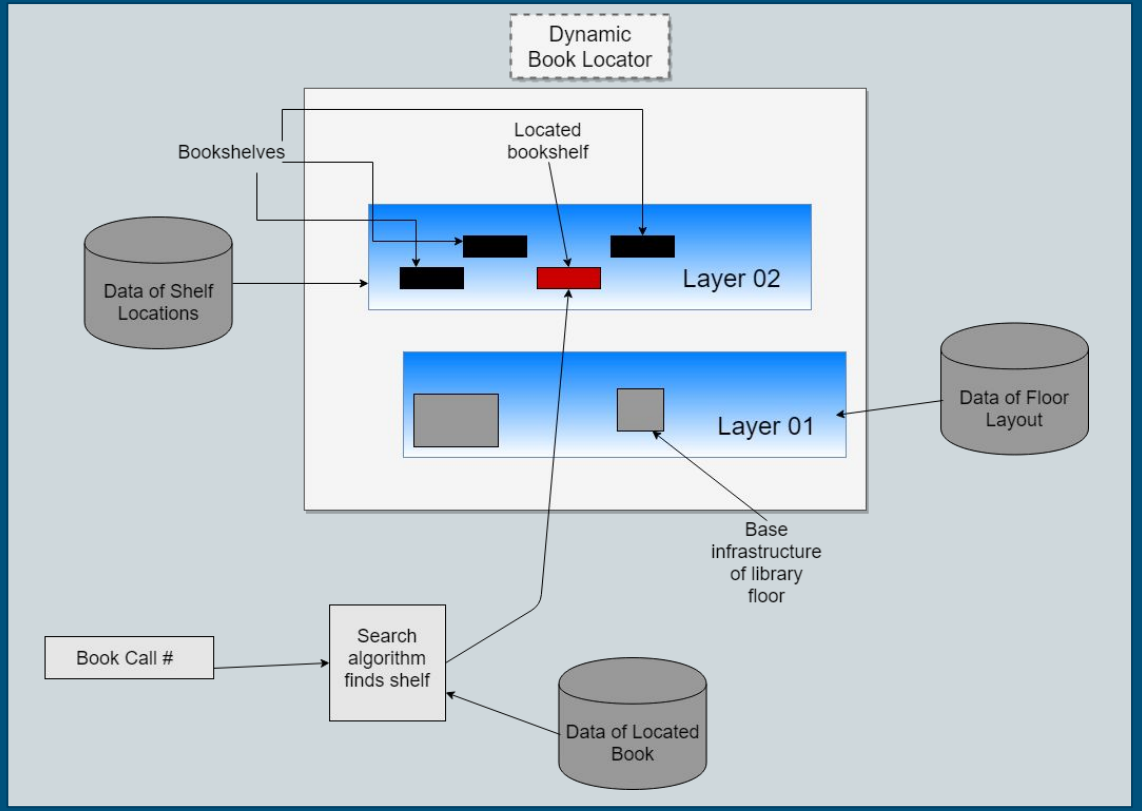
- This software is an improvement on the ongoing project being developed for use at Sojourner Truth Library at SUNY New Paltz
- My responsibility was to further develop the software to be more dynamic so that it will display the layout of the library floors and bookshelves based on already existing data that can be added to, edited, or deleted (i.e. moving of bookshelves). The layout of the shelves used to be hard-coded into the HTML

Some Things the Software Can Do

- User can input a book call number to see the location of that book
  - Input = Book call number
  - Output = Location of book
- Admin can login to administrator page to add, edit, or remove data
  - Input = Username & Password
  - Output = Admin page
- Admin can add, edit, or delete, bookshelf locations to the database through the admin page
  - Input = Shelf information
  - Output = New shelf is displayed on the map

System Architecture

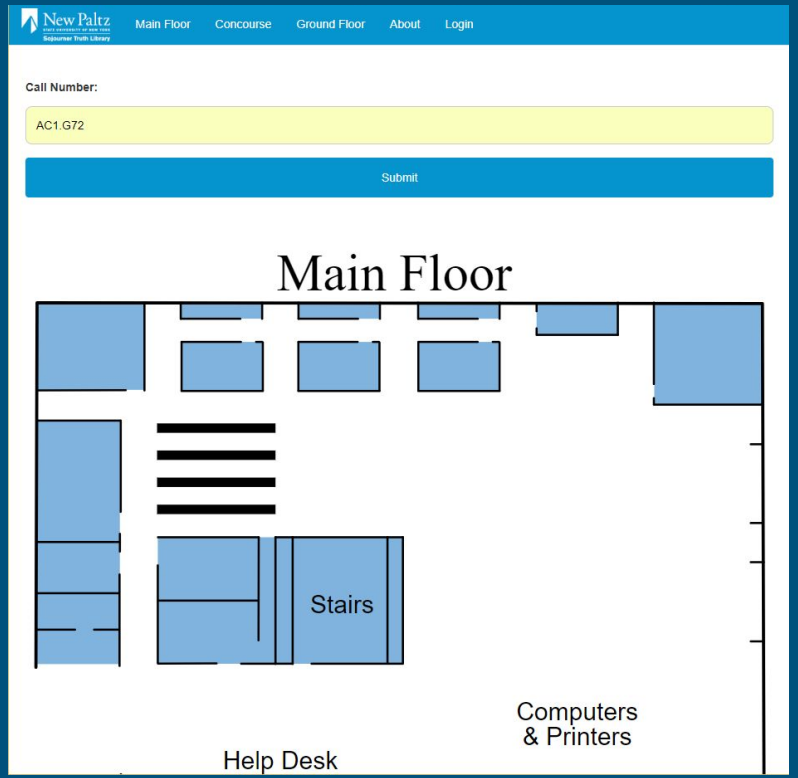


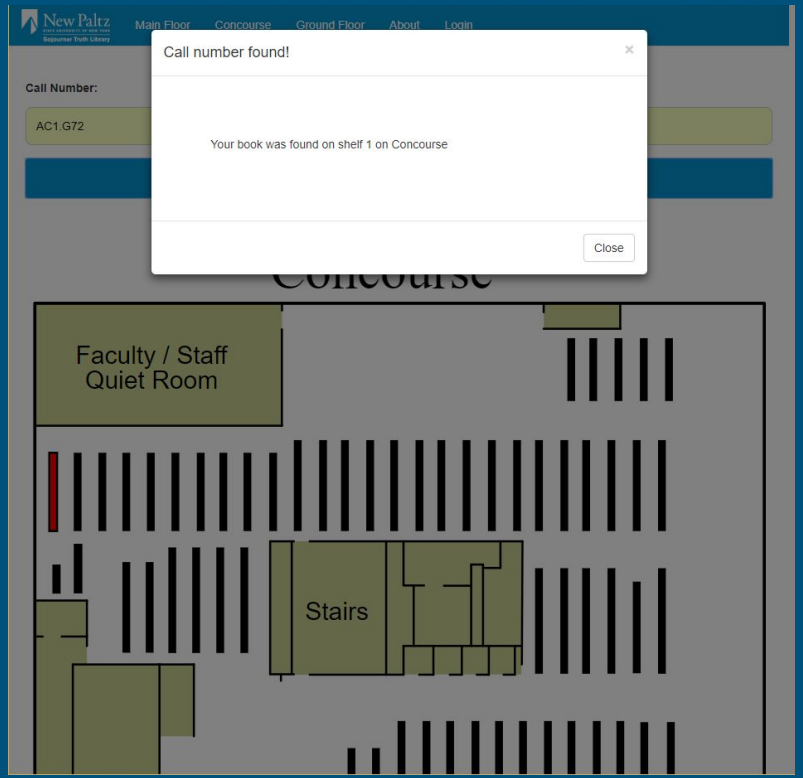


Components

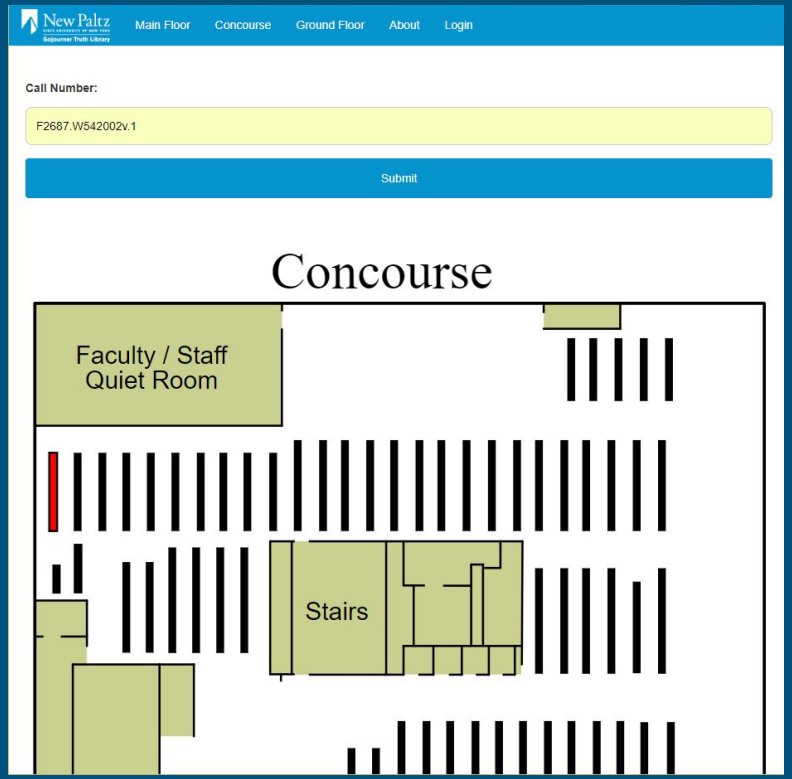
- index.html - main webpage, Javascript that searches for the book location and calls the PHP scripts
- PHP floor displayer - pulls shelf locations from MySQL database and echos each row of data as a string containing a rectangle SVG element with x, y, width, length attributes
- bookLocations.php - pulls the book location data from the database and echos the data as a long string so the search algorithm can parse it
- Admin - contains all code necessary to run the administrator page including its main HTML file, PHP files for fetching and altering data
- MySQL database - stores data on book locations, shelf locations, permanent structures, and logins

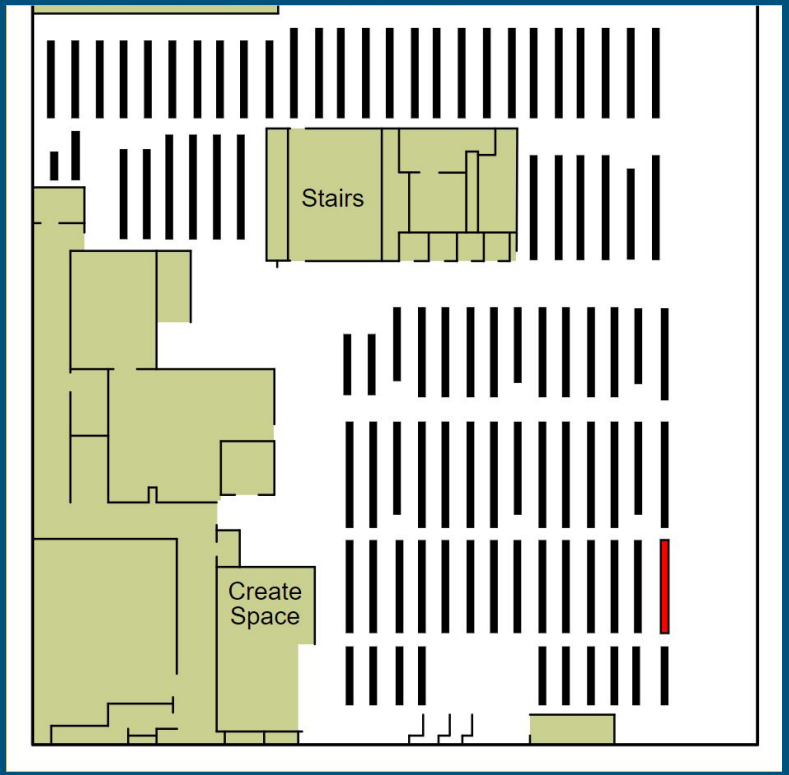
Testing (Book Search Ex.1)



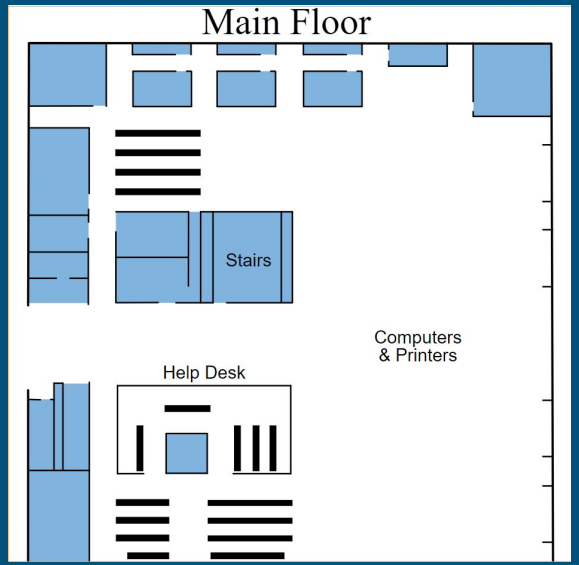


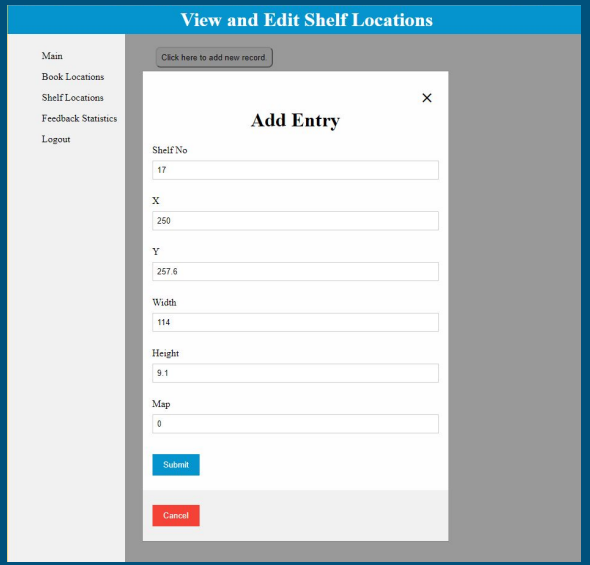
Testing (Book Search Ex.2)

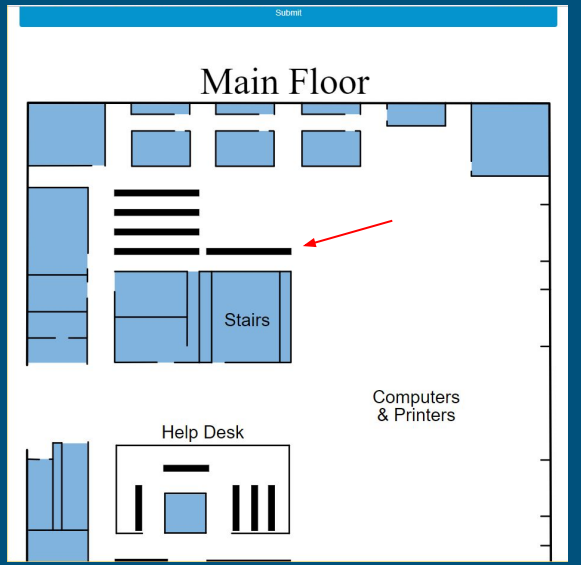




Testing (Adding New Shelf)







Technologies

- HTML/CSS/Javascript - front-end of the website
- MySQL - used to store any necessary and important data
- XML - runs the PHP scripts and places shelves on their respective maps
- PHP - connects to the database, fetches necessary data and echos it to the XML script
- SVG - HTML elements that makes up the layout of each map (i.e. bookshelves)

Challenges

- Learning how PHP works in general
  - It just took a lot of practice and working with the language to understand it and what it is capable of
- Having the PHP script interact with the HTML page to display the bookshelves
- Trying to use AJAX to show the bookshelves
  - I ended up using XML instead and it worked
- Finding the correct x-y values for the bookshelves and putting them in the database
  - this was not necessarily a “challenge” but more of a tedious process

Conclusion

- I’m very proud of the progress I have made on this project
- It provided a huge learning experience for me in terms of using new technologies, how a full-scale project works, and how to improve on pre-existing work
- Having this project on my resume will definitely help me begin my professional career
- I’m so happy that I got to work on something that a lot of people will be using in the future