State University of New York at New Paltz

Team ID: 1

Noah Franklin (c-s21-08)

Yitzhak Alvarez (c-s21-03)

Alexandra Maceda (c-s21-14)

Project Type: On-Campus Project

"Smart Library"

PROJECT PROPOSAL

"Computer Science Projects"

Spring 2021

(Prof. Hanh Pham)

TABLE OF CONTENTS

1. Problem Description

1.1 Business Context and Goals

- General Description:

    If a student or library worker wanted a book they would need to look up the call number and go through the shelves manually and find the book. However, this can be an inconvenience because if the book is misplaced it can be hard to find. Returning the book can also become an issue if the blue isn't put in the correct location.

    These inconveniences can be solved when creating a virtual library for SUNY New Paltz which accurately reflects book locations without adding new tags. Users can also browse library floors (Main and Concourse), and bookshelves. Goal is to closely mimic a virtual experience while keeping the application simple and easy to use.

- Users of the software: Sojourner Truth Library

- When & Where can the users use this: Users can use this software via their preferred web browser. Web applications can be accessed via Desktop or Mobile.

- Software Capabilities:

        - Locate Book

        - See if Book is Available

        - Updating Current Book Locations

+ Analyze the obtained information and define the "BUSINESS" PROBLEM (in the context of the given business situations):

Sojourner Truth Library wants an easier way to find exact book locations, even if the book is not in its designated location.

- Summarize things the software can do (transactions, operations, interactions … (be aware of Input, Processing, Output)

    o User can login

        Input = User credential
        Output = Access Granted (if credentials match) or Access Denied (if credentials don't match

- o User can locate book

    Input = Book Call Number
    Output = Book Location (Floor>>
    Shelf>>Side>>Section>>Row>>Book)
- o User can Browse Shelfs

    Input = Click Floors/Shelves/Sides/Sections/Rows/Books
    Output = Brings up next layer until arriving at books

1.2 Technical Requirements

- ENVIRONMENT: Web App can run a desktop or mobile browser:

    o CONNECTIONS: Centralized but connects to the A server => must have Internet access

    o MEAN OF INTERACTION with user (keyboard, touch screen, …):

    Mouse to click around the screen and explore library

- SYSTEM COMPONENTS:

    o User Interface:

    · Basic computer-window display

    o Processing:

    · Login mechanism:

        Ø Input = Enter Credentials (User name & Password)

        Ø Process = compare imputed credentials with the original in the DATABASE

        Ø Output =

        (i) fail when it's not matched => back to LOGIN

        (ii) Access Granted when it's matched

    · Browse Shelves:

        Ø Input = Mouse input

Ø Process = Note what level user is at and also note location of click

Ø Output =

(i) Enter that next layer in the library

(ii) if It is a book layer, then info about book will pop up

- o Data:
  - · Format of Data

  Photos are saved as JPG images

  - · Location of Data
  - · "A" Server

- o Hardware:
  - · No additional hardware needed

1.3 Your Responsibilities

- *Restructuring Folders:*

  Before the start of the semester, each team member did not follow a consistent folder structure. Our goal is to make sure that each book shelf follows the same structure which is:

  Shelf>> Side >> Section>> Row>> Book Images

  By creating a consistent structure, it will be easier to design and implement the "Browsing Shelves" functionality in the website. We need to make sure that each image is in the correct folder so that we can use a

python script to create static web pages with those images and link it to the website when the user clicks on it.

- *Updating Website:*

In this new website, we want to have successfully implemented the login feature and the ability to click through images to browse floors and shelves. In doing so, we allow limited access and we also create a virtual experience that mimics the user browsing through the library in person.

2. Technologies

2.1 Related Technologies

Frontend/UI

- HTML - Used to structure the web pages
- CSS - Used to style
- Bootstrap - CSS framework for responsiveness and styling
- JavaScript - Used to make the webpages interactive
- jQuery - Much easier use of JavaScript on our website

Backend

- PHP - Interact with the database to display on the front end
- MySQL - Create tables and queries for the database

2.2 Newly Learned Skills/Technologies

- Figma - Great design software tool for us to prototype our website

- FileZilla - Great for file transferring and renaming folders

- PHP - Good for backend development

- jQuery - Simple but advanced JavaScript

3. Plan

3.1 Ideas for Solution (Architecture + Protocols)

Restructure folders

Solution: Create a consistent folder structure to store the photos of the library and organize the current photos into them. Filezilla lets us do this by giving us the ability to view, rename, and move folders/files on the remote 'a' server manually.

Design:

Folder Structure

/vlib

    /idata

        /<number-name> (1-amit, 2-job, 3-tahir, 4-josh, 5-nick, 6-andrew, 6-cameron, 7-ed-full, 8-angel)

            /c<casenumber> (01-168)

                /<side> (a, b)

                    /section<sectionnumber> (1-7)

                    /row<rownumber> (1-7)

/<imagefiles>

Example Structure

/vlib/idata/3-tahir/c46/a/section1/row1/<imagefiles>

Update website design

Solution: **Update the home page with a triple image stack that links to each floor. Update the bookcase page to show an image of the bookcase with clickable sections. General design improvements, mobile responsive, and possibly add clickable links for each book.**
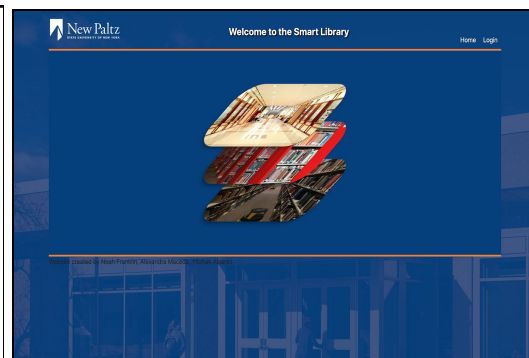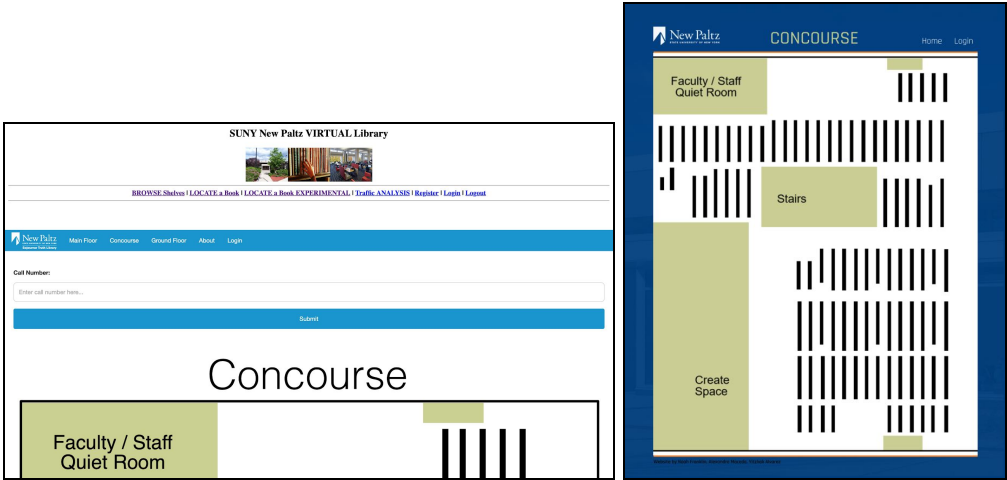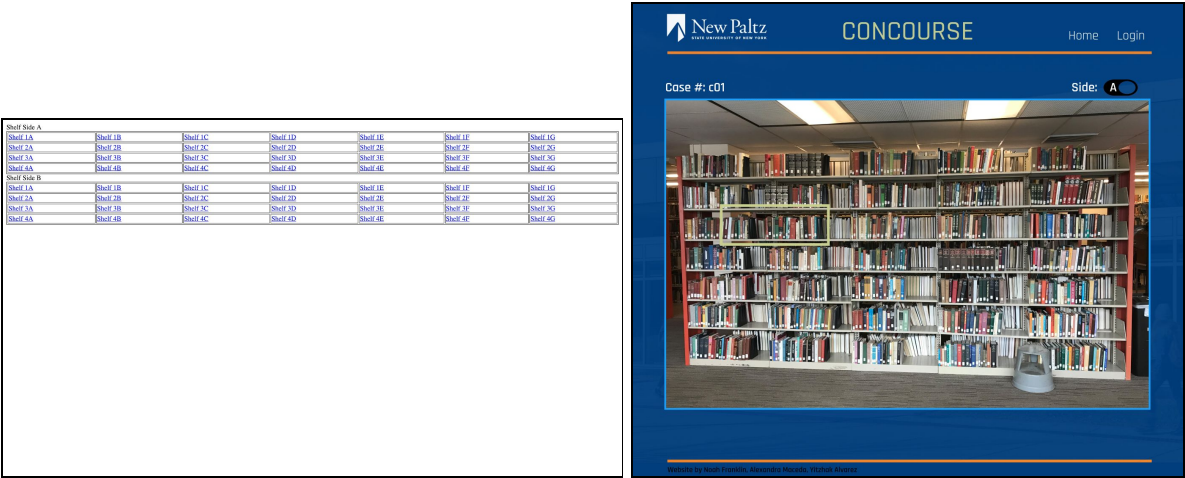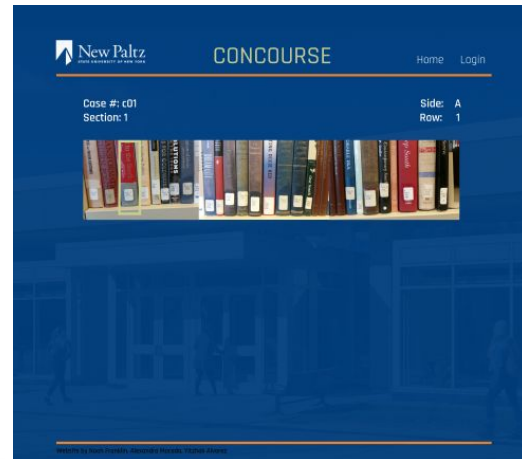
Design:

Home page

Current   Mockup

Floor page

Case page

Shelf page

3.2 Programming/Coding Components

Programming languages

Front End

- **HTML**

- **CSS**

- **Javascript**

Back End

- **PHP**

- **MySQL**

Frameworks

- **Bootstrap**

- **jQuery**

3.3 Schedule

DATE	TODO	BY WHOM
3/6/2021-4/24/2021	Restructure folders	Everyone
3/13/2021	Create home page	Everyone
3/20/2021	Update floor page	Everyone
3/27/2021	Update case page	Everyone
4/3/2021	Update shelf page	Everyone
4/10/2021	Get login/book search working	Everyone
4/17/2021	Finishing touches, possibly get clickable books,	Everyone
4/24/2021	Make slides, report, documentation	Everyone