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IFT 598 Project Report

A Project Report presented to the instructors of IFT 598 Middleware Programming and Database Security

By

Hooman Mishaeil - Group 28

IFT 598 Session C, Summer 2021

hmishaei@asu.edu

Jeffrey Ashworth - Group 28

IFT 598 Session C, Summer 2021

jdashwo2@asu.edu

Introduction

The IFT 598 "Middleware Programming and Database Security" project team was charged with completing "Deliverable 1"; a user interface (UI) that must include a validated registration and login page as well as several other required design and technical elements detailed later in this report. The team chose to use the course provided wireframe and volunteer organization concept to build their deliverable submission. The team implemented a responsive UI using HTML5, JavaScript, JQuery 3.3.1, and Bootstrap 5.01. The JQuery and Bootstrap libraries are accessed via Content Delivery Networks (CDN) in lieu of a local copy. This provides a lightweight and robust implementation of those library elements to users, regardless of their geographic location. This deliverable is the first in a series of deliverables, building upon one another to complete the course project and was designed and constructed with that in mind.
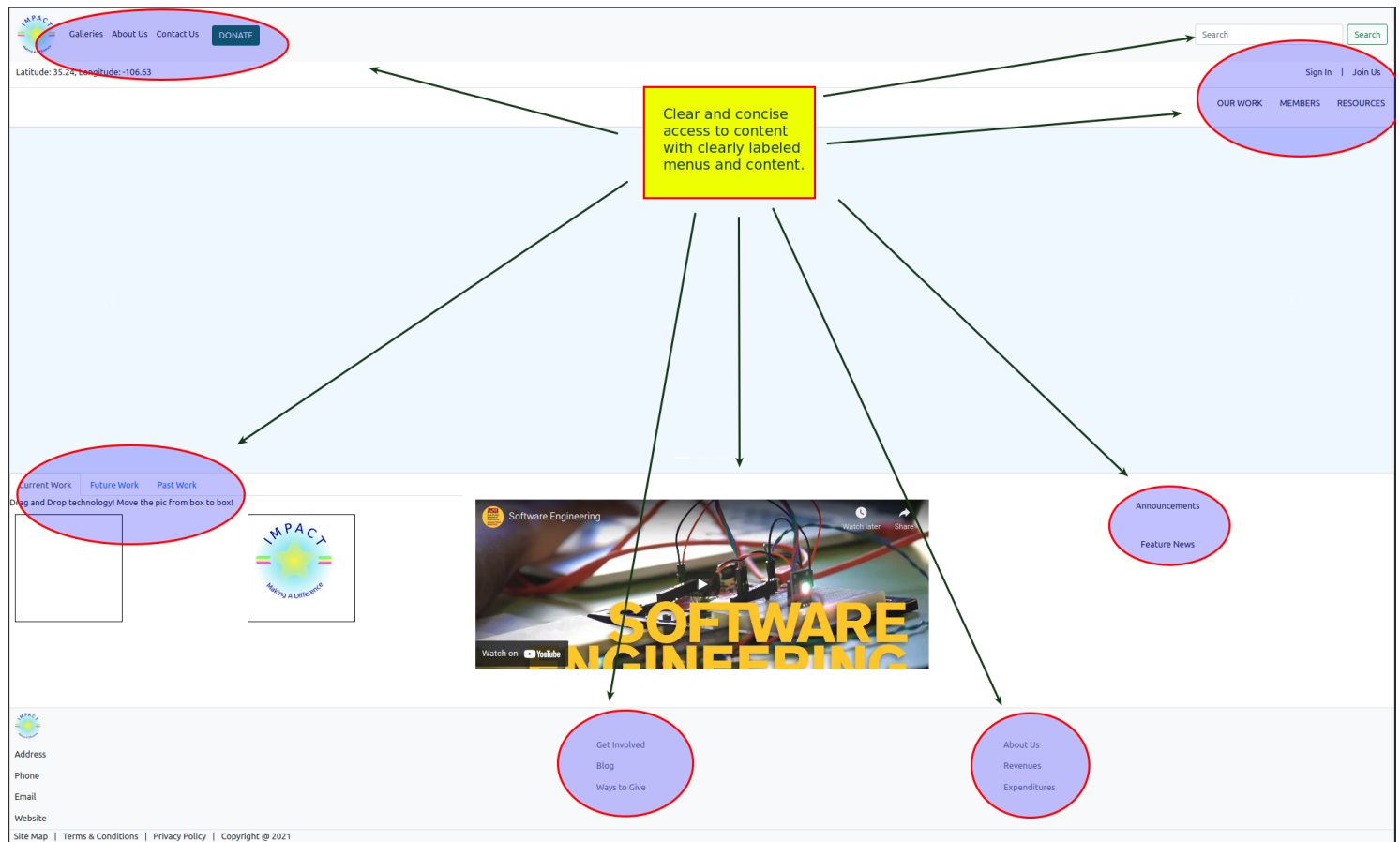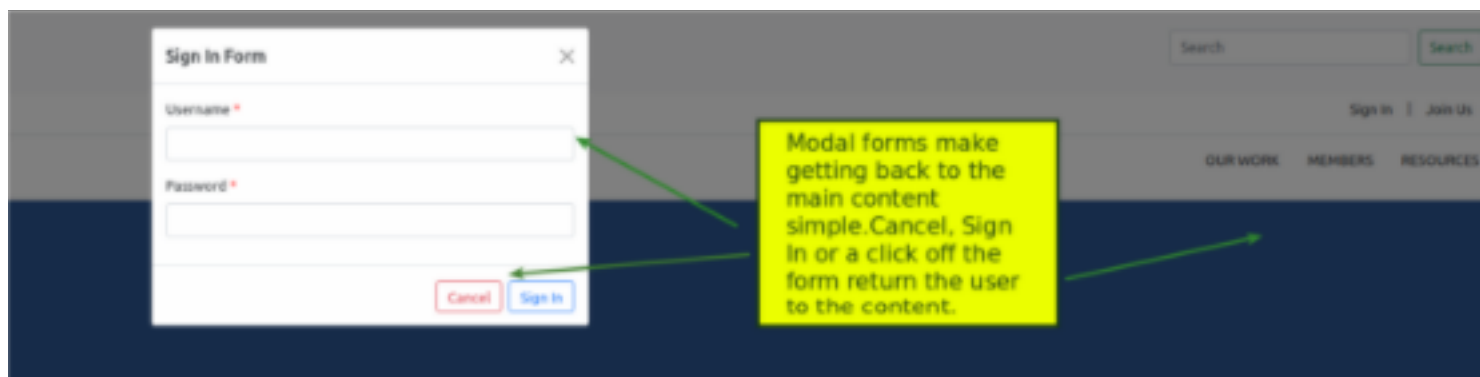
Description

Structure

Navigation Design

Prevent Mistakes:

The design and layout of the site lends itself to preventing mistakes with a clear and concise access to content. Menus are labeled clearly and minimize ambiguity.


The forms are modal to prevent a user from clicking away and getting lost.

Use Consistent Grammar Order

Consistent grammar The same words, buttons and colors are used throughout the page and forms to prevent confusion and create an easily learned environment for the user. For example, the Username field is used to describe all text entry fields where a username is expected.
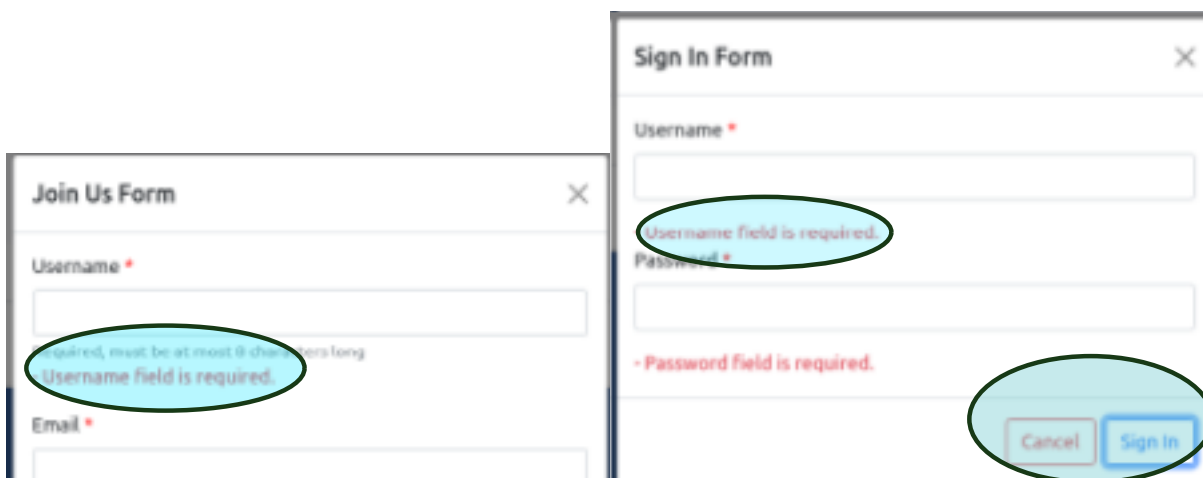
A red button color is consistent for all cancel actions and a blue color is used for all submit functions.

Menus are Broad and Shallow

The menu structure is designed to limit the "digging" required by the user and reduce the number of clicks and keystrokes to access the content on the page.
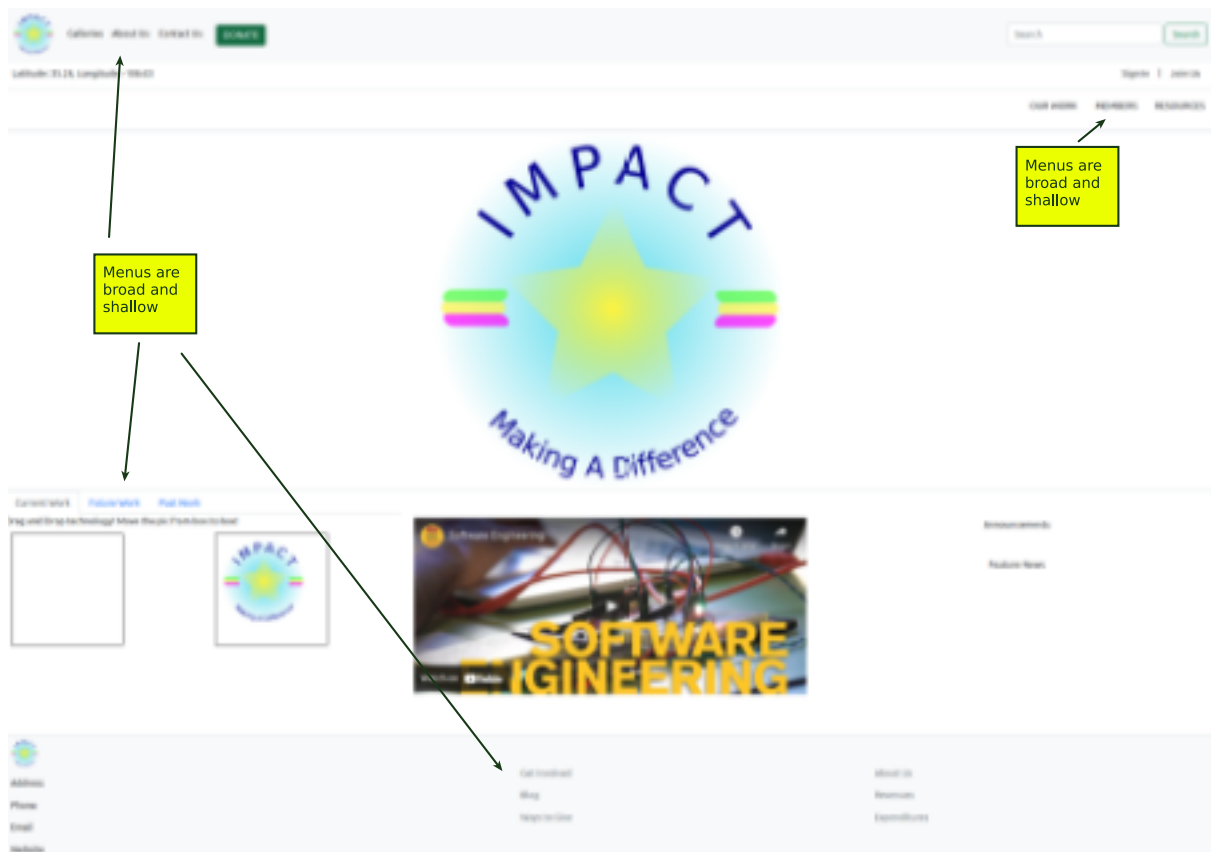
Input Design and Validation

Minimize Keystrokes

The team used Tab ordering in forms and on pages to eliminate the need for mouse clicks and additional keystrokes.

Input Validation

Additionally, date pickers and dropdowns are used where possible to eliminate mistakes by the user and ensure data consistency of format.

Login and Registration

In addition to the validation and required fields implementations in the forms, the team also utilized regular expressions to ensure formats are enforced for fields such as the email address. For example, an incorrect email format missing @ or a .'domain' yields and error

whereas a correct format is accepted by the form.

Creative Logo

Although the team used the course provided template, A unique logo was developed to convey the intent of the organization and the content of site. The logo makes it clear to the user what type of content they can expect on the site. Additional consideration was taken to use a color palette that adheres to the Web Content Accessibility Guidelines (WCAG) 2.0, that can then be safely carried throughout the site and all its content.

Aesthetic

As mentioned in the previous section, a validated color palette was used for contrast and accessibility. Use of color is minimal and tasteful preventing a busy appearance and leaving the content as the focus of the site.

Consistency

As demonstrated in previous sections, the team made deliberate design considerations to provide a comfortable and familiar user experience by using common language, button types, button colors, font types for specific elements and a standard header, content, footer layout.

Browser Compatibility

During development and testing, the team utilized the major browsers to determine cross browser functionality. Additionally, team deliberately used library and element versions known to have broad browser compatibility. A responsive web experience, including collapsible navigation bars and breakpoints on elements were intentionally integrated to accommodate various browsers, screen sizes and devices.

Use of 3 of 4 HTML5 Features

SVG For Respsonsive Web

The team decided to create the logo in a Scalable Vector Graphic format. As the design of the site is responsive, it is important to have a graphics that allow for lossless scalability and responsiveness and seamlessly implements with HTML5. As the SVG is markup, it is easily edited and when not overly complex, provides for a smaller asset than some other graphic formats. As demonstrated, the logo is as clear at 50px as it is at 1000px.

Audio & Video Embedded

Using an iframe nested in a column row, the team implemented an embedded video that allows for several flexible user options, including full screen and player controls.

iFrame with embedded video link and several options enabled.
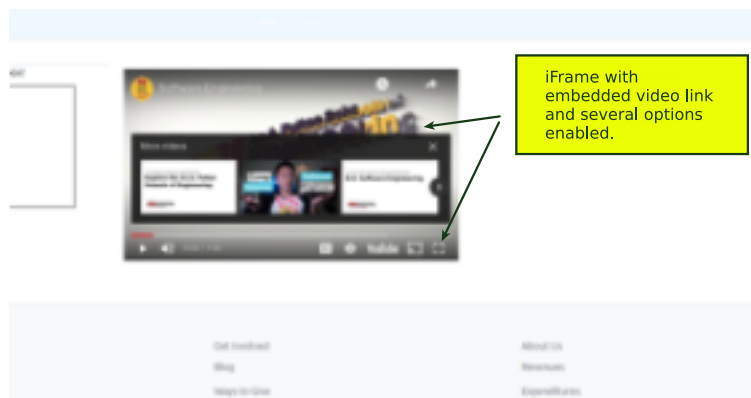
Geolocation

Calling the Web API function for the widely browser compatible, "Navigator.Geolocation.getCurrentPosition() method

```
var loc = document.getElementById("location");

if (navigator.geolocation) {
    navigator.geolocation.getCurrentPosition((position) => {
        loc.innerHTML = "Latitude: " + (position.coords.latitude).toFixed(2) + ", Longitude: " +
(position.coords.longitude).toFixed(2);
    });
} else {
    loc.innerHTML = "Geolocation is not supported by this browser.";
}
```

after the page is loaded allows the user to decide if a current location can be obtained by the browser.
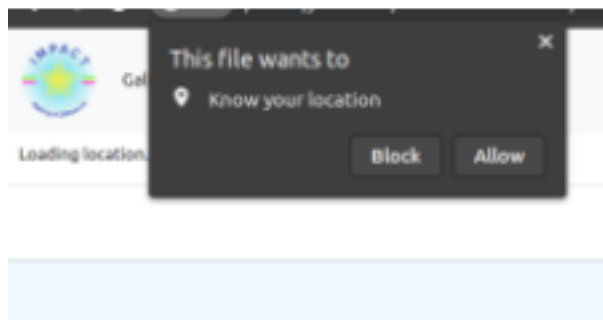
The team chose to implement this a display of longitude and latitude in a browser nav bar.
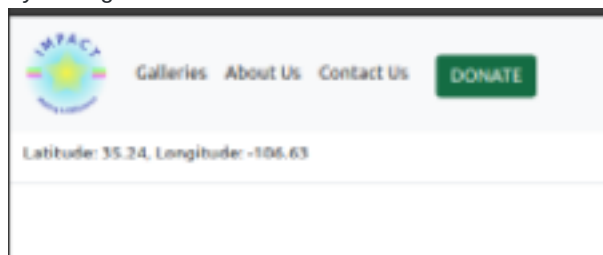
Drag and Drop

The team implemented the HTML5 drag and drop functionality by allowing a user to take the IMPACT logo and move it between two boxes as depicted below.

Use javascript for client-side validation of registration and logon pages

The team chose to create client side validation functions using JavaScript to ensure input fields such as an email address or password adhere to input rules. For example, the validation functions for password adherence :
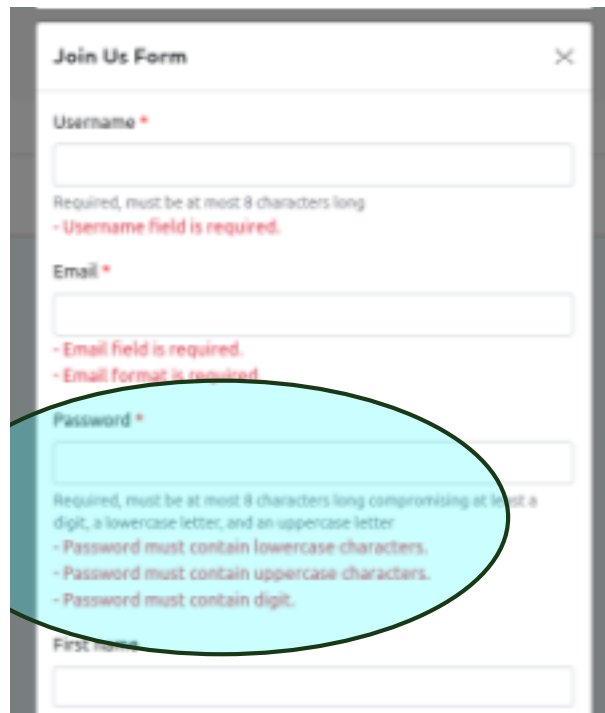
```
function lowercaseExistsInPassword(password) {
    return (/[a-z]/.test(password))
}

function uppercaseExistsInPassword(password) {
    return (/[A-Z]/.test(password))
}

function digitExistsInPassword(password) {
    return (/[0-9]/.test(password))
}

function passwordIsLongerThanEightCharacters(password) {
    return password.length > 8
}
```

appears to the user in the form as this:

In addition, a reset capability was implemented to remove the -d-none class of each text-danger class to reset the form of validation error notifications if the form is closed and reopened.

User Manual

After unzipping the zip file, you can import the folder into an IDE (such as VS Code), then you can right-click on the index.html file and choose "Open in Default Browser" option. The landing page shows up including all the details explained above. Also, in case of not having IDE, you can right-click on index.html file in File Explorer and then choose "Open With" option to select the favorite browser to open up the file.

Conclusion

The team successfully designed and developed a functional User Interface to serve as the front end and first deliverable in the larger course project. The team used client side web technologies that included HTML5, JavaScript, JQuery and Bootstrap 5. A primary learning outcome of the deliverable was team communication and workflow. Deciding on tools to use for communication and code repositories, allowed the team to develop an effective workflow and collaboration environment. Additionally, determining the technology to be used and ensuring team members were employing the same versions helped create an easy to iterate over product that features could be added to without conflict. The phrase "make it work, then make it pretty" was applicable in the development of this deliverable. Once adopted by all the team members, it allowed for a faster paced workflow. more efficient outcomes, a solid functioning product, and still left time to develop the required aesthetics. The team will continue to work on communicating and workflow to create the next complementary project deliverable.