WEB SERVICE RADIO STATION

Dennis McMeekan & Brandon Ahrens

CS 425: Final Project – Report

Tech Tycoons - #9

Problem Statement

Provide an in-depth, but entertaining, project using a lamp server to build a web radio application that holds a great basis to learn and further develop versatile LAMP technologies.

Importance

Our Web Service Radio Station allows for the use of all LAMP technologies

- Linux
- Apache
- MySQL
- PHP

With the creation of this project, we both will be able to continue development and implementation outside of our time at Western Illinois University. This provides as a fantastic resume builder and is a project that can be listed in future career aspirations. Along with that, this provides a great way to understand how it is to develop with another partner, and specifically using source control to co-develop and keep track of prior coding advancements.

Challenges

There are quite a few challenges that existed throughout the creation of this project. To begin, partner development is always difficult, even more so with the current times that are going on throughout the world due to COVID-19. This was combated through using Discord and GitHub to reach our development goals. Time also was an issue, because this is a large final project with other schoolwork and personal work to take care of. The final issue which we dealt with was combining the technologies we intended to use. Using

AngularJS with HTML had a steep learning curve because of no prior use. While using PHP w/ JavaScript also expanded upon our prior learning in this class, but it was still a steep task to conquer.

Implementation

An angular template was used, provided by StartBootStrap, a free open source website intended to allow individuals to learn AngularJS and Bootstrap. This aided in using other technologies, but there still was a learning curve in using this type of development. With AngularJS and Bootstrap, HTML5 and JavaScript were used to fully develop our web application. This includes formatting the webpage along with pulling data and information. MySQL was used in creating a database to hold song information and data. Furthermore, a basic radio player had to be implemented through HTML5 and JavaScript to fully allow a proper user experience. Then, this was deployed using Linux and Apache to allow for the webpage to be accessed using our LAMP servers.

Architecture

At a base level, AngularJS is used to allow incredible formatting and implementation of a web application. Above this, LAMP Technologies (Apache, Linux, MySQL, and PHP) provided all aspects needed to store, pull, and deploy our radio station technology. And at the highest level, HTML5 is used in partner with AngularJS to combine all LAMP technologies and put them into a web application format with client and server capabilities.

Technologies

HTML5

HTML5 is used to format the appearance of each webpage artifact, along with combining certain technologies such as SVG, PHP, and JavaScript/AngularJS.

SVG

SVG is used to make web graphics for the webpage that can display and format properly on the client and server side. Specifically, we used this to make a logo to represent this project.

Apache

Apache is used to assist in the process of securely and smoothly taking the user's request from their web browser and getting the appropriate results from the server. This plays a vital role in the creation of our Web Service Radio Station, because we can deploy and test how the page would look after each crucial change in code.

MySQL

MySQL is used to hold information about songs such as: song name, song artist, and filename. This can further be used with the help of PHP, JavaScript, and HTML5.

PHP

PHP is used to get information from the database and handle any data processing of our MySQL database.

AngularJS/JavaScript

AngularJS/JavaScript is used to display and allow the user to listen to the audio being played along with pertinent information.

GitHub

GitHub is an incredible technology, and although it didn't play a role in the actual Web Service Radio Station development, it provided us the opportunity to co-develop along with source control to ensure that no code is lost.

Future Work

Web Service Radio Station provides a great opportunity, due to the development of different useful technologies, that we can continue to learn and advance throughout our personal lives outside of our time spent at Western Illinois University. Some advancements that could possibly be made include a larger database of songs, better user accessibility, and global deployment. With a larger database of songs, this could be non-copyrighted music that we provide to anyone who pleases, and the webpage can be improved by using different styling and adding pertinent resources as needed. In terms of global deployment, this can possibly be done with GitHub pages, which is commonly used to host personal portfolios.

What We Learned

There were quite a few learning opportunities that presented themselves throughout this project. To begin, this held a very similar experience to how it is to develop in a workplace. For example, on multiple occasions each of us stayed on a call to partner develop, and when this wasn't possible, we used source control to ensure the code stayed up to date. Next, we were able to learn skills related to transferring data from server to client side. LAMP technologies provide a great basis on an educational and personal level for Server-Side Web Development. This will definitely provide as a useful experience in our careers. Finally, this is a project that is similar to what has been seen at an enterprise level, as similar tools and technologies are used but at a much larger scale.

Notes

Resources

W3 Schools - https://www.w3schools.com/html/

GeekforGeeks - https://www.geeksforgeeks.org/how-to-run-javascript-from-php/?ref=lbp

CS 425 Server-Side Web Development – Dr. Binto George

Angular Template - https://startbootstrap.com/template/modern-business

GitHub - https://github.com/

LAMP Stack - https://www.turnkeylinux.org/lamp

Misc.

- MySQL must be sourced into a database.
- In order to have Dr. George use our php script, a proper LAMP server password is needed in connectToDB.php based upon where the MySQL databased was created.