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LDS Church History Web Mapping Project

Technical Specifications and Software Design

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BYU CEEN 594R – GIS PROGRAMMING

LDS Church History – Europe Web Mapping Project

Technical and Design Documentation

TECHNICAL SPECIFICATIONS

SOFTWARE DETAILS

This software was built for the purpose of creating an interactive map to show events from LDS Church History over in Europe. The website used to view the map is designed in HTML, CSS, and JavaScript. Bootstrap, a front-end web framework, was also used for a little styling. It was created by Justin Relitz and Samantha Ruggles. The website URL is map.ldschurcheuropegis.info.

COMPATIBILITY AND LIMITATIONS

The features of this website function in Google Chrome, Mozilla Firefox, Internet Explorer 11, and Safari. The site is not guaranteed to work in other browsers or older versions of the browsers just listed. Make sure to update your browser to the latest version to ensure better compatibility.

For other issues or troubleshooting assistance, please contact Justin (justin.relitz@gmail.com) or Sam (Samantha.ruggles@gmail.com).

LICENSE

WEBSITE DESIGN

PURPOSE OF DESIGN

The purpose of this website is to show locations in Europe of LDS Church sites. First we needed a map on our website that would display all of the features easily. Next, we needed to have HTML form controls that manipulated the map to zoom to certain features and made it easy for users to view the data. These form controls created buttons for users to use and interact with the map. Finally, there needed to be a base template created to make the website look uniform across all pages. This was done by creating a uniform layout through Bootstrap, a front-end framework, our own custom CSS file and the same navigation bar on all pages. We also attempted to make the website responsive so it could be accessed on tablets and mobile phones as well. It is not guaranteed to work on all devices.

MENU AND INTERFACE ELEMENTS

This website is built for consistency and ease of use for anybody wanting to access the controls. The picture below (Figure 1) shows the critical parts of the home web page. The buttons shown on the left hand side of the page are simple HTML forms, and are used to allow interaction between the map and users. The different parts of the webpage comprise of: (1) navigation menu, (2) interactive buttons, (3) map that shows the data, and (4) the common creative license.

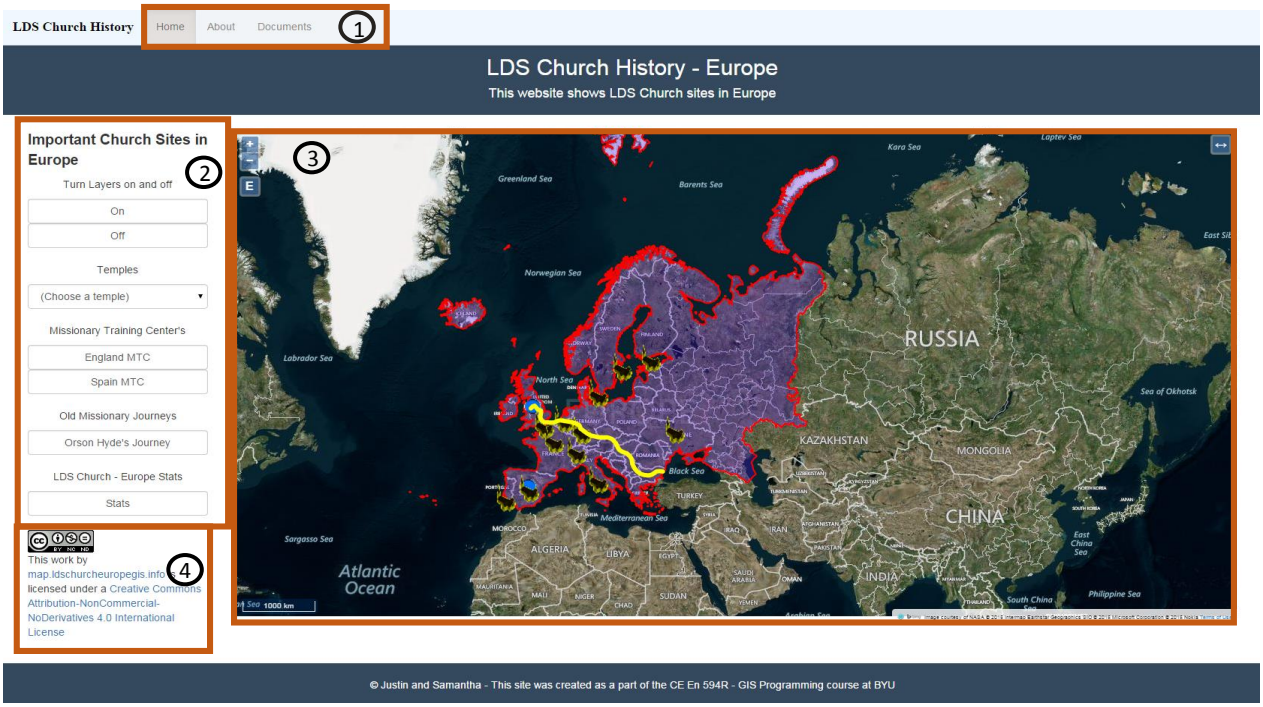

Figure 1. User interface on Website

There are explanations on what the buttons do right above the buttons themselves. The website tries to make it easy for users to interact with the map elements.

MAIN FILES

For this website there is one primary *.html file (called index.html), and 2 secondary *.html files (a help page and links to the technical specifications and end user documentation). In addition to these HTML files, there are KML files in a kml folder, pictures (*.png formats) for the popups, CSS files for styling, and JavaScript files for interaction with the map.

The picture below (Figure 2) shows the file structure of the website. All of the files are stored on GitHub under a repository called GIS_Web_Mapping_Project which is publicly accessible so anyone can download our code. GitHub was used as the place to store our files and they also host our website for free through their service, GitHub Pages.

All of the pictures for the popups are stored in the pictures folder. The PDF documents with this technical specification and end user documentation are stored in the document folder. The KML has a couple of subdirectories shown in the picture below.

All of the temples are stored in the temples folder, the polygon in the Polygon folder, the two MTC's in the mtc folder, and the polyline with Orson's Path in the Journey folder. The three *.png files are the icons used in the map to showcase the different points.

The scripts folder includes the OpenLayers 3 package downloaded from www.openlayers.org. It also includes the jQuery and Bootstrap JavaScript files so that I don't have to use a CDN service to host those files, but rather, I can load those files on our own web server. Then we have a file called openlayers_script.js that is our custom JavaScript file to initialize the map and create all of the layers and functions associated with the map.

The styles folder includes CSS files for Bootstrap and OpenLayers. Then it also includes a CSS file called style.css which is where we include some of our styling for the website.

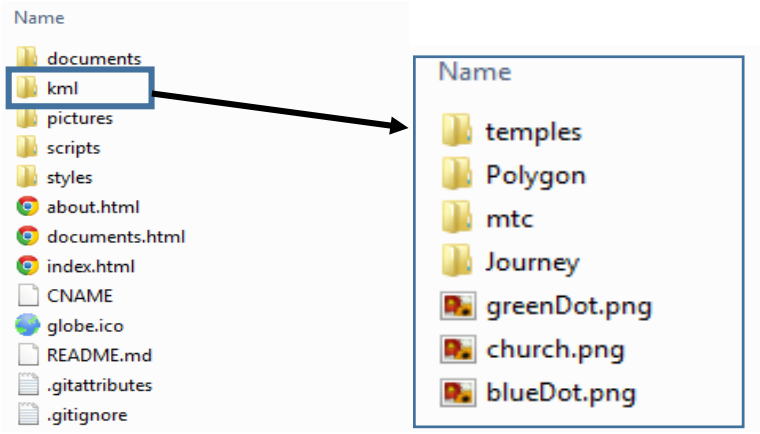

Figure 2. File structure of Website

CODE STRUCTURE

The basic structure of the code is shown in the flowchart below. The top line represents actions the user can take in the website. Each action leads to one of more functions being run on the map.

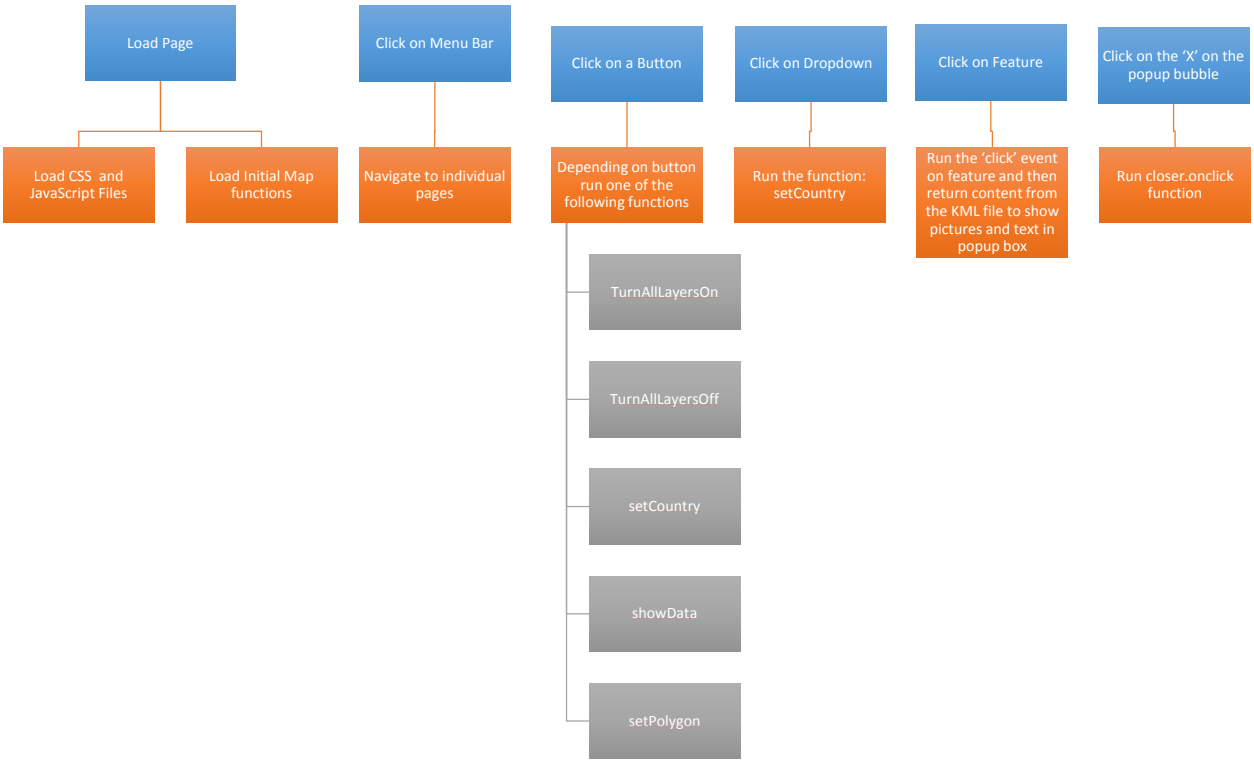

Figure 3. Code Structure

KEY FUNCTIONS

The following table contains all of the key functions in the custom JavaScript file that I created. The functions are shown in the order that they appear in the code.

Table 1. Key Functions used in Website

Function Name	Comments
closer.onclick	Enables uses to close the popup and makes it disappear
ZoomToMaxExtent()	This zooms the map to a certain zoom level, center and projection that is initially loaded when the page is loaded. It also turns on all of the layers. It is used on the dropdown menu when someone selects "Select a temple"
map.on('click', function(evt)…	This is used to enable popups when someone clicks on a point, polyline, or polygon. It shows the HTML inside of the popup that is grabbed from the KML and Pictures folders.
setCountry(building)	This is used to zoom to a point on the map with a certain zoom level and turns off all other layers besides the one selected.
setPolygon(line)	This is used to zoom to a polygon on the map with a certain zoom level and turns off all other layers besides the one selected.
showData()	This is used to zoom to a polyline on the map with a certain zoom level, zooms to the middle centroid of the polyline, and turns off all other layers besides the one selected.
TurnAllLayersOn()	Turns all layers on in the map.
TurnAllLayersOff()	Turns all layers off in the map.

If there are any more questions regarding the structure of the code or about the code itself, right click on the web page and click "view page source". This will show the HTML, JavaScript, and CSS code for the website. It is also freely available at GitHub under the name GIS_Web_Mapping_Project. Again, the URL for the website is map.ldschurchhistorygis.info.