

# Lecture Notes, Module 11

**The following are responses to some questions that you might have about the slides and programs:**

## **Why use Leaflet?**

Leaflet is a free, open-source JavaScript library for interactive mapping. It's lightweight at only 33Kb so it isn't memory intensive. Leaflet produces simple maps that can be easily customized and works on most platforms, desktop and mobile. See more info and download Leaflet at: <http://leafletjs.com/>

## **Why use MySQL?**

MySQL is also free, if not exactly open source (Oracle acquired MySQL some time ago but still distributes it at no cost). The choices here at KU from central IT are MySQL or Oracle and IT policy prohibits running individual or departmental servers on campus. While I don't see the university dropping Oracle anytime soon, there are significant costs involved and therefore the university could choose to drop it at some point in the future. MySQL is easy to use since it is a database platform built on the Structured Query Language (SQL).

## **How does SQL relate to MySQL?**

MySQL, like Microsoft SQL, Microsoft Access, SAS, and other database software applications, utilize SQL. SQL is the language in which a user can add, query, or delete data from a database; MySQL is a database.

## **How do MySQL and PHP relate to Leaflet?**

Leaflet is merely a JavaScript mapping library. To create data-driven maps, you need to employ the power of a database and some way to communicate this data to Leaflet. The examples shown in the presentation illustrate how to use PHP to query the data stored in a MySQL database and produce JavaScript for Leaflet to render an interactive, online map.

## **When is JavaScript used as opposed to say MySQL and PHP?**

Ultimately the browser is only seeing JavaScript. The server compiles the PHP code which queries the MySQL database and returns JavaScript to the browser. This JavaScript calls Leaflet and renders a map.

## **What determines the order in which things are done?**

Every developer has their own style of coding, but to implement a Leaflet map you have to include the Leaflet CSS and JavaScript files before setting up the map. At the time the webpage is displayed, the PHP code is executed which produces JavaScript which in turn calls Leaflet and renders a map in the browser.

## **Earthquakes.php**

<http://ipsr.ku.edu/ksdata/apps/earthquakes.php>

This program is an example of using PHP to read a GeoJSON feed and output it directly to a Leaflet map. The GeoJSON feed is from USGS so no local database is queried in this example.

## **KCMOtracts.php**

<http://ipsr.ku.edu/ASHTI/kansascitymap.html>

This example pulls it all together showing how a large set of data can be incorporated into an interactive, choropleth mapping application. The data are stored in a series of MySQL tables which are queried with PHP. PHP writes out JavaScript with the data requested by the user. This JavaScript is rendered into a map with Leaflet.