**1. Briefly explain the logic for generating the base map.**

To generate the base map, 3 separate layers were defined:

* graymap
* satellitemap
* outdoors

These are selectable tile layers for the background of the map. A map layer was then created with each of the tile layers in an array to be used as an option. The base map was then defined as an object that contains all our different map choices where only one of the layers is be visible at a time.

var baseMaps = {

  Satellite: satellitemap,

  Grayscale: graymap,

  Outdoors: outdoors

};

**2. Describe how the JSON was loaded and how was the data traversed. Explain how was the information from the JSON used to render data on the map.**

Two separate AJAX calls were used to retrieve the earthquake data from earthquake.usgs.gov and the tectonic plate data from a github repository. For the earthquake data, two functions were used to categorize the magnitude of the earthquake. The first function categorized by color and the second by radius. Earthquakes with a magnitude of zero were being plotted with the wrong radius so another function was written to handle that.

A GeoJSON layer was then added to the map once the earthquake data was loaded and each feature was turned into a circleMarker on the map. Each circleMarker was then set to use the previously defined styleInfo function. This data was then added to the previously created earthquake layer and the earthquake layer was then added to the map.

The same process was repeated for the tectonic plate layer; the geoJSON data, along with style information was added to the tectonicplates layer and that layer was then added to the map.

**3. Explain the logic for generating the circles and amending the size of them. What does this communicate?**

Each circle represents the magnitude of each earthquake occurrence. It is colored by magnitude which is represented by the legend. The size was amended because magnitudes of zero were not plotting accurately so they were given a minimum circle radius of 1 so they can correctly show on the map. The other points were given a circle radius of their magnitude times four. The color helps to easily differentiate overlapping circles as well.

**4. Describe how the layer for the Tectonic plates was generated.**

A new layer was created to store the tectonic plate data. The geoJSON data, along with style information was applied to this tectonic plate layer. It was styled orange and the line was given a thickness of 2. This layer then added the map.

**5. What are the components in the layer control? How were they generated?**

The components of the layer control are the baseMaps variable and the overlays variable. The baseMaps variable is an object that contains all our base layers (only one of these can be visible at a time):

* graymap
* satellitemap
* outdoors

and the overlays variable is an object that contains both the *earthquake* and *tectonic plates* data, both of which can be visible on the map simultaneously.

**6. Explain the difference between the base map (tile layer) and the data layer(s).**

Our base tile layers are pulled from mapbox and only contain basic geographic information that can be seen in different styles such as satellite or outdoors but does not give us anything more. It can be considered more as a backdrop or background image.

The data layer however, contains the actual information that is pulled from our AJAX calls and placed over the base map so a user can identify where the data points occur geographically.

**7. Walk through the logic of how the legend was generated and rendered on the page.**

A legend object was created and details of the legend were added. A div was then created called “info legend” to hold the legend. An array of grades was then created to represent our earthquake magnitudes. An array of colors was also created.

A for loop was then used to loop through the intervals and generate a label with a colored square for each interval. The legend was then added to the map.