Part 2: logic.js

Explanation:

The last code snippet added to the code for Part I effectively fetches, styles, and adds tectonic plate boundaries to the Leaflet map as an overlay, allowing users to toggle their visibility using a layer control. The key improvement compared to adding directly to the map is the use of a Layer Group and layer control for organized management of overlays. By placing the layer group definition and the layer control outside the d3.json fetch, the code ensures correct variable scoping and functionality.

I. Styling the Tectonic Plates:

- let myStyle = { ... };: Defines a style object for the tectonic plate lines.

    - color: "#ff7800": Sets the line color to orange.

    - weight: 2: Sets the line thickness to 2 pixels.

II. Creating the Tectonic Plates Layer:

- let tectonicPlates = new L.LayerGroup();: Creates a new Leaflet Layer Group. This will hold the tectonic plate boundary data. Crucially, this is done *outside* the d3.json call, ensuring the tectonicPlates variable is available in the scope where the layer control is added.

III. Fetching and Adding the Tectonic Plate Data:

- d3.json("...").then(function(plate_data) { ... });: Uses d3.json to fetch the GeoJSON data for tectonic plate boundaries from the specified URL. The .then() method ensures the code within the function executes only after the data is retrieved.

- Inside the .then() callback:

    - L.geoJson(plate_data, { style: myStyle }).addTo(tectonicPlates);: Creates a GeoJSON layer from the fetched plate_data and applies the myStyle styling. The crucial difference here is that this GeoJSON layer is added to the tectonicPlates Layer Group, not directly to the map.

IV. Creating and Adding Layer Control:

- Outside the d3.json but within the original one, after adding the earthquake data to the map, overlayMaps and the layer control are created and added.

- let overlayMaps = { "Tectonic Plates": tectonicPlates };: Creates an object that defines the overlay layers. Here, the "Tectonic Plates" key maps to the tectonicPlates Layer Group created earlier.

- L.control.layers(baseMaps, overlayMaps, { collapsed: false }).addTo(map);: Creates a Leaflet layer control that allows the user to toggle the display of the tectonic plates and earthquake layers.

   - baseMaps: This variable (defined earlier in your original code, but not included in this snippet) holds the basemap layers (like streets and satellite).

   - overlayMaps: Holds the overlay layers, in this case, just the tectonic plates.

   - { collapsed: false }: Configures the layer control to be displayed expanded by default.

   - .addTo(map): Adds the layer control to the map.

V. Closing the Earthquake d3.json Call

- }); //end of d3.json call: This closes the .then() method of the *original* d3.json call that loads the earthquake data. The tectonic plate data loading and layer control addition are all done within this original call.