Haskell Earthquake Mapper

To compile from terminal:

1. cd into HaskellEarthquakeMapper file
2. run *stack build*
3. install any dependencies you don’t have already
4. run *stack exec HaskellEarthquakeMapper-exe*

Our program takes an earthquake API and lets you query it to produce a map in browser with points at each earthquake. If you hover over a pin in the map, you can see the magnitude, place and date of that earthquake. We used two months of data from the API since otherwise the dataset was too big and the URL wouldn’t be called.

It works by first downloading the API URL then parsing the relevant information and putting this into two separate databases. The first database contains the year, month, day, place, magnitude, latitude, longitude, depth and URL for each earthquake. The URL takes you to a webpage with more information on the specific earthquake. The other database sorts the earthquakes by regions which we have predefined. “Database initialised!” will come up if the first database has downloaded successfully, and then “Regions database initialised!” indicates the regions database has also downloaded. If either of these messages do not come up then there has been an error in the downloading of the json.

The parser works by taking the json as a string and splitting it at appropriate points to retrieve relevant information. This information is found within an object called properties. All the rest of the information is ignored. These are then made into Haskell data types, taking into account that some of the properties are not there for all of our data by using maybe. The time is given as Epoch time in the json so that is transformed into UTC using the Data.UnixTime module.

The user is then asked if they would like to query by date, magnitude or region. Once the user has selected, they are then asked to narrow their search. If date was chosen, they will be asked for a day and then a month. The main database will then be queried for all earthquakes in the database after that date. If they picked magnitude, they will be asked to select a minimum magnitude based on the Richter scale, and the main database will be queried for all earthquakes with a magnitude greater than or equal to the chosen minimum. If region was picked, the user is asked to select one of our predefined regions. The regions database is then queried for all earthquakes within the selected region.

Quinn: Add more here

After the database of your choice has been queried, this information is then used to create a map using google maps. This is done by creating a new json file with all of your chosen data and passing this to an html file linked to google maps.