The depository of the PhoneGap app:

https://github.com/guangzhili/epidViz

Config.xml is the configuration file of PhoneGap. The folder platforms contains the compiled packages for iOS and android platforms. The folder plugins includes PhoneGap plugins for iOS and android. The libraries we used and the source code index.html are in the folder www.

Implementation

Structure

PhoneGap is just a wrapper of javascript code, it will not convert the javascript code to native code like titanium. So the user interface does not look like quite native, and runs slower, But the good thing is that you can just write the code in one file index.html like the traditional mobile website, and it is so convenient to debug in browser.

Datasets

Currently we have two diseases: Ebola and influenza.

Ebola and Ebola Trend: WHO API

http://www.who.int/en/

Influenza: WHO website: http://gamapserver.who.int/gareports/Default.aspx?ReportNo=2

Approaches we parse the HTML: jQuery DOMParser

User Interface

The user interface is written using jQuery mobile. We also use PhoneGap plugins to support different platforms. The commend-line for adding plugins see Add Features section below.

Geomap

We created the geomap using Google Maps API.

Address search

We use Autocomplete that is a library of Google Maps API.

Projecting data to the geomap

Convert cases locations to longitude and latitude:

We use Google geocoding to convert disease outbreak locations to longitude and latitude first. There is an OVER_QUERY_LIMIT problem which means Google geocoding can

only handle 10 requests per second. If there are more than 10 requests a second, we have to catch exceptions and retry later. The retry delay seconds are randomized to reduce the possibility of OVER_QUERY_LIMIT.

Parse data:

Then we use d3.csv to parse csv file to array of objects. . However, we need to do a preprocessing to filter the array of objects to the format and information we want. Then we use d3.linear to linearly scale the opacity and radius of circles. The number of cases is converted to range of opacity and radius representation. The opacity and radius are scaled among the maximum and minimum number of cases.

Draw circles on the locations and add information window:

Finally we use google.maps.Polygon to add circles to geomap and google.maps.InfoWindow to implement the information window.

Ebola Trend

We only implement Ebola trend for three countries that have the largest number of Ebola cases. A line chart is implemented by using D3 to show the trend of Ebola. The x-axis is time and the y-axis is how many new cases were diagnosed in that week. We connect the points smoothly and draw a line to show the number of new cases changed over time.

Comparison

We choose top 3 countries that have the largest number of cases for each disease and compared two diseases in same country in a bar chart. The comparison is implemented using D3. This feature is not fully completed. We did not put the source code in compiled package. The Github depository of this feature: https://github.com/shirleyluo/cs690-spring2015-Epidemic-disease-visualization

The Command-line we used:

Create the App:

```
$ cordova create epidViz com.dviz.epidViz epidViz
```

Add Platforms:

```
$ cd epidViz
$ cordova platform add ios
$ cordova platform add android
```

Build the App:

```
$ cordova build ios
$ cordova build android
```

Test the App (iOS) on Simulator on Xcode:
Open Xcode -> Open platforms/ios

Test the App on an Emulator or Device:
$ cordova emulate ios
$ cordova emulate android

Add Features
Basic device information:
$ cordova plugin add https://git-wip-us.apache.org/repos/asf/cordova-plugin-device.git

Besides the basic device information, we add status bar and Geolocation:
$ cordova plugin add https://git-wip-us.apache.org/repos/asf/cordova-plugin-geolocation.git
$ cordova plugin add org.apache.cordova.statusbar

PhoneGap vs Titanium:

The future work could be implemented:

1. Add more epidemic disease.
2. Implement some interactive ChartJS or D3 visualizations such as http://coenraets.org/blog/2014/02/interactive-mobile-dashboard-d3-charts/

The references we used:

https://cordova.apache.org/docs/en/3.0.0/guide_cli_index.md.html
https://developers.google.com/maps/documentation/javascript/places-autocomplete
http://d3js.org/