Geography 485L/585L - Internet Mapping

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Week 4 - Module 2a - Web-based Mapping Clients. Google Maps API (pt. 2)

Overview

- Additional Google Maps API Capabilities to be Aware of
  - Styling of the base maps with custom preferences
  - Fusion Tables
- Bringing it all together in a "real" web page

Getting Started with Styled Maps **- Video**

[Styled Maps Documentation](#) | [Create Map Style wizard](#)

Map Example: Simple - Styled

gmap_styled.html

```
1  <!DOCTYPE html>
2  <html>
3      <head>
4          <link rel="stylesheet" type="text/css" href="css/mapPage.css">
5      </head>
6
7      <body>
8          <h1>Sample Map - Styled (POIs Highlighted)</h1>
9          <div id="map_canvas"></div>
10
11         <!-- Let's put our JavaScript down here --------------------------------------------------->
12         <!-- Load the external JavaScript file with the map definition code -->
13         <script src="js/mapPage_styled.js"></script>
14
15         <!-- Load the API in asynchronous mode and execute the initialize function when done -->
16
17         <script async defer
18             src="https://maps.googleapis.com/maps/api/js?callback=initialize&key=<YourKey>">
19         </script>
```

```
20      </body>
21  </html>
```

mapPage_styled.js

```js
 1  function initialize() {
 2      var classroom = new google.maps.LatLng(35.084280,-106.624073)
 3      var myOptions = {
 4          zoom: 8,
 5          center: classroom,
 6          mapTypeId: google.maps.MapTypeId.ROADMAP,
 7          styles: [
 8            {
 9              featureType: "water",
10              stylers: [
11                { visibility: "on" },
12                { hue: "#0008ff" }
13              ]
14            },{
15              featureType: "road.highway",
16              stylers: [
17                { hue: "#ff1a00" }
18              ]
19            },{
20              featureType: "road.arterial",
21              stylers: [
22                { hue: "#ffa200" },
23                { visibility: "simplified" }
24              ]
25            },{
26              featureType: "road.local",
27              stylers: [
28                { visibility: "off" }
29              ]
30            },{
31              featureType: "administrative",
32              stylers: [
33                { visibility: "simplified" }
34              ]
35            },{
36              featureType: "poi",
37              stylers: [
38                { visibility: "on" },
39                { hue: "#00ffff" }
40              ]
41            },{
42              featureType: "poi",
43              stylers: [
44                { visibility: "on" }
45              ]
46            }
47          ]
48
49          };
```

```
50      var map = new google.maps.Map(
51          document.getElementById("map_canvas"),
52          myOptions);
53  }
```

Google Fusion Tables

Fusion Tables Introduction

Sample Fusion Table from the previous NAWRS Mapper example: https://www.google.com/fusiontables/DataSource?docid=1v2IlIFJqat2tTSBA8e4guqlzMGRe8iW4yXP25Kg

NAWRS Mapper Javascript File: https://github.com/nawrs/nawrs-web/blob/master/js/core.js

Bringing It All Together - link

###

gmaps_events.html

```
1   <!DOCTYPE html>
2   <html>
3       <head>
4           <link rel="stylesheet" type="text/css" href="css/event_mapPage.css">
5           <title>Karl's Event Diary</title>
6       </head>
7
8       <body>
9           <h1>My diary of endurance events that I've participated in since joining
10          Team in Training
11          </h1>
12
13          <p>In 2008 Cynthia and I joined the Leukemia and Lymphoma Society's
14          (<a href="http://www.lls.org/">LLS</a>) Team in Training
15          (<a href="http://www.teamintraining.org/">TNT</a>,
16          <a href="http://youtu.be/GMSKG8L6K78">info video</a>) program as
17          participants to train for the Animas Valley/Steamworks Half Marathon and
18           raise money for blood cancer research and patient services. In spite of
19            our not having any direct connection to blood cancer (at that time),
20            we found the goals of LLS admirable, the combined training and
21            fund-raising program of TNT a great idea, and made many new friends
22            over the many seasons that we have been involved with TNT.</p>
23
24          <p>From 2008 through early 2015 we  continued to volunteer with TNT, as
25          participants, mentors, and since 2010 I was a coach  (check out my
26          <a href="http://youtu.be/GMSKG8L6K78">half-second</a> of fame in the
27          info video at 2:13) for TNT with an emphasis on training walkers for
28          full- or half-marathons. This page provides a summary of the events that
29           I've participated in in some capacity since 2008. </p>
30
31          <!-- based on the example provided by Google -
32          https://developers.google.com/maps/documentation/javascript/examples/
33          style-selector -->
34          <div id="style-selector-control"  class="map-control">
```

```html
        <select id="style-selector" class="selector-control">
          <option value="default">Default</option>
          <option value="silver">Silver</option>
          <option value="night">Night mode</option>
          <option value="retro" selected="selected">Retro</option>
          <option value="hiding">Hide features</option>
        </select>
      </div>

      <div id="event-map" name="event-map"></div>

      <table>

      <thead>
      <th>Date</th>
      <th>Event Name</th>
      <th>Event Time</th>
      <th>Location on Map</th>
      </thead>

      <tbody>
      <tr>
          <td>1/8/2017</td>
          <td>Disney World  Marathon</td>
          <td>7:14</td>
          <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
          10)">approx. map</a></td>
      </tr>

      <tr>
          <td>10/16/2016</td>
          <td>Duke City Half Marathon </td>
          <td>~2:55</td>
          <td><a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
           11)">map</a></td>
      </tr>

      <tr>
          <td>11/13/2015</td>
          <td>Avengers Half Marathon </td>
          <td>3:17:55</td>
          <td><a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
           12)">approx. map</a></td>
      </tr>

      <tr>
          <td>1/11/2015</td>
          <td>Disney World  Marathon (Goofy - Day 2)</td>
          <td>6:21:01</td>
          <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
           10)">approx. map</a></td>
      </tr>

```

```
89          <tr>
90              <td>1/10/2015</td>
91              <td>Disney World Half Marathon (Goofy - Day 1)</td>
92              <td>2:45:55</td>
93              <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
94               10)">approx. map</a></td>
95          </tr>
96
97          <tr>
98              <td>10/19/2014</td>
99              <td>Duke City Half Marathon</td>
100             <td>2:45:17</td>
101             <td><a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
102              11)">map</a></td>
103         </tr>
104
105         <tr>
106             <td>2/23/2014</td>
107             <td>Princess Half Marathon</td>
108             <td>3:07:11</td>
109             <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
110              10)">approx. map</a></td>
111         </tr>
112
113         <tr>
114             <td>2/22/2014</td>
115             <td>Princess Enchanted 10k</td>
116             <td>1:42:43</td>
117             <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
118              10)">approx. map</a></td>
119         </tr>
120
121         <tr>
122             <td>9/1/2013</td>
123             <td>Disneyland Half Marathon</td>
124             <td>2:56:57</td>
125             <td><a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
126              12)">approx. map</a></td>
127         </tr>
128
129
130         <tr>
131             <td>1/13/2013</td>
132             <td>Disney World  Marathon (Goofy - Day 2)</td>
133             <td>6:46:57</td>
134             <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
135              10)">approx. map</a></td>
136         </tr>
137
138
139         <tr>
140             <td>1/12/2013</td>
141             <td>Disney World Half Marathon (Goofy - Day 1)</td>
142             <td>3:22:48</td>
```

```
143        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
144          10)">approx. map</a></td>
145      </tr>
146
147
148      <tr>
149        <td>9/29/2012</td>
150        <td>Hot Chocolate 15k </td>
151        <td>1:56:46</td>
152        <td><a href="#event-map" onclick="recenter(map, eventPlaces[6].point,
153          10)">map</a></td>
154      </tr>
155
156
157      <tr>
158        <td>6/9/2012</td>
159        <td>Animas Valley/Steamworks Half Marathon</td>
160        <td>no time: coached</td>
161        <td><a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
162          10)">map</a></td>
163      </tr>
164
165
166      <tr>
167        <td>1/9/2012</td>
168        <td>Disney World  Marathon (Goofy - Day 2)</td>
169        <td>6:56:28</td>
170        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
171          10)">map</a></td>
172      </tr>
173
174
175      <tr>
176        <td>1/8/2011</td>
177        <td>Disney World Half Marathon (Goofy - Day 1)</td>
178        <td>3:29:00</td>
179        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
180          10)">map</a></td>
181      </tr>
182
183
184      <tr>
185        <td>6/19/2010</td>
186        <td>Animas Valley/Steamworks Half Marathon</td>
187        <td>no time: coached</td>
188        <td><a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
189          10)">map</a></td>
190      </tr>
191
192
193      <tr>
194        <td>6/6/2010</td>
195        <td>San Diego Rock 'n' Roll Marathon</td>
196        <td>no time: coached</td>
```

```
197        <td><a href="#event-map" onclick="recenter(map, eventPlaces[2].point,
198         11)">map</a></td>
199     </tr>
200
201
202     <tr>
203        <td>10/18/09</td>
204        <td>Nike Women's Marathon</td>
205        <td>7:13:05</td>
206        <td><a href="#event-map" onclick="recenter(map, eventPlaces[3].point,
207         12)">map</a></td>
208     </tr>
209
210
211     <tr>
212        <td>9/6/2009</td>
213        <td>Disneyland Half Marathon</td>
214        <td>3:43:05</td>
215        <td><a href="#event-map" onclick="recenter(map, eventPlaces[5].point,
216         12)">map</a></td>
217     </tr>
218
219
220     <tr>
221        <td>1/11/2009</td>
222        <td>Disney World Marathon</td>
223        <td>6:57:42</td>
224        <td><a href="#event-map" onclick="recenter(map, eventPlaces[4].point,
225         10)">map</a></td>
226     </tr>
227
228
229     <tr>
230        <td>10/19/2008</td>
231        <td>Duke City Half Marathon</td>
232        <td>3:09:42</td>
233        <td><a href="#event-map" onclick="recenter(map, eventPlaces[0].point,
234         11)">map</a></td>
235     </tr>
236
237
238     <tr>
239        <td>6/21/2008</td>
240        <td>Animas Valley/Steamworks Half Marathon</td>
241        <td>3:14:52</td>
242        <td><a href="#event-map" onclick="recenter(map, eventPlaces[1].point,
243         10)">map</a></td>
244     </tr>
245     </tbody>
246     </table>
247
248
249  </body>
250
```

```
251    <!-- Let's put our JavaScript down here ---------------------------------------------->
252        <!-- Load the external JavaScript file with the map definition code -->
253        <script src="js/mapPage_events.js"></script>
254
255        <!-- Load the API in asynchronous mode and execute the initialize
256        function when done -->
257
258        <script async defer
259            src="https://maps.googleapis.com/maps/api/js?callback=initialize&
260            key=<YourKey>">
261        </script>
262    </body>
263 </html>
```

gmaps_events.js

```
1  var map;
2  var eventPlaces;
3
4  function initialize() {
5      // Define a set of global coordinates for use throughout the web site
6      // Place coordinates derived from GNIS database: http://geonames.usgs.gov/
7      // pls/gnispublic
8      // from https://tools.wmflabs.org/geohack/geohack.php?
9      // pagename=Geographic_center_of_the_contiguous_United_States&
10     // params=39.828175_N_98.579500_W_region:US_type:landmark
11     geoCenter = new google.maps.LatLng(39.828175,-98.5795)
12     eventPlaces = [
13         {
14             name: "Albuquerque",
15             point: new google.maps.LatLng(35.0889356,-106.5747462),
16             label: "Albuquerque: Duke City Half Marathon"
17         },
18         {
19             name: "Durango",
20             point: new google.maps.LatLng(37.2752800,-107.8800667),
21             label: "Durango: Animas Valley/Steamworks Half Marathon"
22         },
23         {
24             name: "San Diego",
25             point: new google.maps.LatLng(32.7153292,-117.1572551),
26             label: "San Diego: San Diego Rock 'n' Roll Marathon"
27         },
28         {
29             name: "San Francisco",
30             point: new google.maps.LatLng(37.7749295,-122.4194155),
31             label: "San Francisco: Nike Women's Marathon"
32         },
33         {
34             name: "Orlando",
35             point: new google.maps.LatLng(28.5383355,-81.3792365),
36             label: "Orlando: Walt Disney World half- and full-marathon"
37         },
38         {
```

```
39          name: "Anaheim",
40          point: new google.maps.LatLng(33.8352932,-117.9145036),
41          label: "Anaheim: Disneyland Half Marathon"
42        },
43        {
44          name: "Albuquerque",
45          point: new google.maps.LatLng(35.0889356,-106.5747462),
46          label: "Hot Chocolate 15k"
47        }
48
49    ];
50
51    var myOptions = {
52        zoom: 4,
53        center: geoCenter,
54        mapTypeId: google.maps.MapTypeId.ROADMAP,
55        mapTypeControl: false};
56
57    map = new google.maps.Map(
58        document.getElementById("event-map"),
59        myOptions);
60
61    addMarkers(map,eventPlaces)
62
63    // Add a style-selector control to the map.
64    var styleControl = document.getElementById('style-selector-control');
65    map.controls[google.maps.ControlPosition.TOP_LEFT].push(styleControl);
66
67    // Set the map's style to the initial value of the selector.
68    var styleSelector = document.getElementById('style-selector');
69    map.setOptions({styles: styles[styleSelector.value]});
70
71    // Apply new JSON when the user selects a different style.
72    styleSelector.addEventListener('change', function() {
73        map.setOptions({styles: styles[styleSelector.value]});
74    });
75  }
76
77  function recenter(mapName, latlon, zoomLevel) {
78      mapName.setCenter(latlon);
79      mapName.setZoom(zoomLevel)
80  }
81
82  function addMarkers(mapName, markerArray) {
83      for (index = 0; index < markerArray.length; index++) {
84          myMarker = new google.maps.Marker({
85              position: markerArray[index].point,
86              title: markerArray[index].label
87          });
88          myMarker.setMap(mapName)
89      }
90  }
91
92  // styles generated by https://mapstyle.withgoogle.com
```

```
 93  var styles = {
 94  default: null,
 95  silver: [
 96    {
 97      elementType: 'geometry',
 98      stylers: [{color: '#f5f5f5'}]
 99    },
100    {
101      elementType: 'labels.icon',
102      stylers: [{visibility: 'off'}]
103    },
104    {
105      elementType: 'labels.text.fill',
106      stylers: [{color: '#616161'}]
107    },
108    {
109      elementType: 'labels.text.stroke',
110      stylers: [{color: '#f5f5f5'}]
111    },
112    {
113      featureType: 'administrative.land_parcel',
114      elementType: 'labels.text.fill',
115      stylers: [{color: '#bdbdbd'}]
116    },
117    {
118      featureType: 'poi',
119      elementType: 'geometry',
120      stylers: [{color: '#eeeeee'}]
121    },
122    {
123      featureType: 'poi',
124      elementType: 'labels.text.fill',
125      stylers: [{color: '#757575'}]
126    },
127    {
128      featureType: 'poi.park',
129      elementType: 'geometry',
130      stylers: [{color: '#e5e5e5'}]
131    },
132    {
133      featureType: 'poi.park',
134      elementType: 'labels.text.fill',
135      stylers: [{color: '#9e9e9e'}]
136    },
137    {
138      featureType: 'road',
139      elementType: 'geometry',
140      stylers: [{color: '#ffffff'}]
141    },
142    {
143      featureType: 'road.arterial',
144      elementType: 'labels.text.fill',
145      stylers: [{color: '#757575'}]
146    },
```

```
147    {
148      featureType: 'road.highway',
149      elementType: 'geometry',
150      stylers: [{color: '#dadada'}]
151    },
152    {
153      featureType: 'road.highway',
154      elementType: 'labels.text.fill',
155      stylers: [{color: '#616161'}]
156    },
157    {
158      featureType: 'road.local',
159      elementType: 'labels.text.fill',
160      stylers: [{color: '#9e9e9e'}]
161    },
162    {
163      featureType: 'transit.line',
164      elementType: 'geometry',
165      stylers: [{color: '#e5e5e5'}]
166    },
167    {
168      featureType: 'transit.station',
169      elementType: 'geometry',
170      stylers: [{color: '#eeeeee'}]
171    },
172    {
173      featureType: 'water',
174      elementType: 'geometry',
175      stylers: [{color: '#c9c9c9'}]
176    },
177    {
178      featureType: 'water',
179      elementType: 'labels.text.fill',
180      stylers: [{color: '#9e9e9e'}]
181    }
182  ],
183
184  night: [
185    {elementType: 'geometry', stylers: [{color: '#242f3e'}]},
186    {elementType: 'labels.text.stroke', stylers: [{color: '#242f3e'}]},
187    {elementType: 'labels.text.fill', stylers: [{color: '#746855'}]},
188    {
189      featureType: 'administrative.locality',
190      elementType: 'labels.text.fill',
191      stylers: [{color: '#d59563'}]
192    },
193    {
194      featureType: 'poi',
195      elementType: 'labels.text.fill',
196      stylers: [{color: '#d59563'}]
197    },
198    {
199      featureType: 'poi.park',
200      elementType: 'geometry',
```

```
201        stylers: [{color: '#263c3f'}]
202      },
203      {
204        featureType: 'poi.park',
205        elementType: 'labels.text.fill',
206        stylers: [{color: '#6b9a76'}]
207      },
208      {
209        featureType: 'road',
210        elementType: 'geometry',
211        stylers: [{color: '#38414e'}]
212      },
213      {
214        featureType: 'road',
215        elementType: 'geometry.stroke',
216        stylers: [{color: '#212a37'}]
217      },
218      {
219        featureType: 'road',
220        elementType: 'labels.text.fill',
221        stylers: [{color: '#9ca5b3'}]
222      },
223      {
224        featureType: 'road.highway',
225        elementType: 'geometry',
226        stylers: [{color: '#746855'}]
227      },
228      {
229        featureType: 'road.highway',
230        elementType: 'geometry.stroke',
231        stylers: [{color: '#1f2835'}]
232      },
233      {
234        featureType: 'road.highway',
235        elementType: 'labels.text.fill',
236        stylers: [{color: '#f3d19c'}]
237      },
238      {
239        featureType: 'transit',
240        elementType: 'geometry',
241        stylers: [{color: '#2f3948'}]
242      },
243      {
244        featureType: 'transit.station',
245        elementType: 'labels.text.fill',
246        stylers: [{color: '#d59563'}]
247      },
248      {
249        featureType: 'water',
250        elementType: 'geometry',
251        stylers: [{color: '#17263c'}]
252      },
253      {
254        featureType: 'water',
```

```
255        elementType: 'labels.text.fill',
256        stylers: [{color: '#515c6d'}]
257      },
258      {
259        featureType: 'water',
260        elementType: 'labels.text.stroke',
261        stylers: [{color: '#17263c'}]
262      }
263    ],
264
265    retro: [
266      {elementType: 'geometry', stylers: [{color: '#ebe3cd'}]},
267      {elementType: 'labels.text.fill', stylers: [{color: '#523735'}]},
268      {elementType: 'labels.text.stroke', stylers: [{color: '#f5f1e6'}]},
269      {
270        featureType: 'administrative',
271        elementType: 'geometry.stroke',
272        stylers: [{color: '#c9b2a6'}]
273      },
274      {
275        featureType: 'administrative.land_parcel',
276        elementType: 'geometry.stroke',
277        stylers: [{color: '#dcd2be'}]
278      },
279      {
280        featureType: 'administrative.land_parcel',
281        elementType: 'labels.text.fill',
282        stylers: [{color: '#ae9e90'}]
283      },
284      {
285        featureType: 'landscape.natural',
286        elementType: 'geometry',
287        stylers: [{color: '#dfd2ae'}]
288      },
289      {
290        featureType: 'poi',
291        elementType: 'geometry',
292        stylers: [{color: '#dfd2ae'}]
293      },
294      {
295        featureType: 'poi',
296        elementType: 'labels.text.fill',
297        stylers: [{color: '#93817c'}]
298      },
299      {
300        featureType: 'poi.park',
301        elementType: 'geometry.fill',
302        stylers: [{color: '#a5b076'}]
303      },
304      {
305        featureType: 'poi.park',
306        elementType: 'labels.text.fill',
307        stylers: [{color: '#447530'}]
308      },
```

```
309     {
310       featureType: 'road',
311       elementType: 'geometry',
312       stylers: [{color: '#f5f1e6'}]
313     },
314     {
315       featureType: 'road.arterial',
316       elementType: 'geometry',
317       stylers: [{color: '#fdfcf8'}]
318     },
319     {
320       featureType: 'road.highway',
321       elementType: 'geometry',
322       stylers: [{color: '#f8c967'}]
323     },
324     {
325       featureType: 'road.highway',
326       elementType: 'geometry.stroke',
327       stylers: [{color: '#e9bc62'}]
328     },
329     {
330       featureType: 'road.highway.controlled_access',
331       elementType: 'geometry',
332       stylers: [{color: '#e98d58'}]
333     },
334     {
335       featureType: 'road.highway.controlled_access',
336       elementType: 'geometry.stroke',
337       stylers: [{color: '#db8555'}]
338     },
339     {
340       featureType: 'road.local',
341       elementType: 'labels.text.fill',
342       stylers: [{color: '#806b63'}]
343     },
344     {
345       featureType: 'transit.line',
346       elementType: 'geometry',
347       stylers: [{color: '#dfd2ae'}]
348     },
349     {
350       featureType: 'transit.line',
351       elementType: 'labels.text.fill',
352       stylers: [{color: '#8f7d77'}]
353     },
354     {
355       featureType: 'transit.line',
356       elementType: 'labels.text.stroke',
357       stylers: [{color: '#ebe3cd'}]
358     },
359     {
360       featureType: 'transit.station',
361       elementType: 'geometry',
362       stylers: [{color: '#dfd2ae'}]
```

```
363    },
364    {
365      featureType: 'water',
366      elementType: 'geometry.fill',
367      stylers: [{color: '#b9d3c2'}]
368    },
369    {
370      featureType: 'water',
371      elementType: 'labels.text.fill',
372      stylers: [{color: '#92998d'}]
373    }
374  ],
375
376  hiding: [
377    {
378      featureType: 'poi.business',
379      stylers: [{visibility: 'off'}]
380    },
381    {
382      featureType: 'transit',
383      elementType: 'labels.icon',
384      stylers: [{visibility: 'off'}]
385    }
386  ]
387  };
```