Mapping API’s: Leaflet - Circles and Circle Markers

Welcome to the Essential ArcGIS Task Sheet Series. This series supplements the Iowa State University GIS Geospatial Technology Training Program short course series. The task sheets are designed to provide quick, easy instructions for performing mapping tasks.

This task sheet builds upon the previous task sheet: Mapping API’s: Leaflet - Getting Started PM2082-14r and Mapping API’s: Leaflet - Adding Markers PM2082-14s. Please refer to those documents for the initial Leaflet map setup. The code for this task sheet (circlesLeaflet.html) and the previous task sheets can be found on the ISU Geospatial Technology Program GitHub page at https://github.com/ISUEOGTP/GISTaskSheets. This task sheet will take you through the steps of creating two different types of circles (Circles and Circle Markers).

1. Introduction

   a. An alternative option to the default blue teardrop marker icon is to display circles at a specified geographical point location. Circles can be displayed using one of the following two types.

      1. **Circles**: Allow the circle radius (in meters) to be specified - thus as you zoom in or out the size of the marker will scale with the zoom level.
      2. **Circle Markers**: Allow the circle radius (in pixels) to be specified - thus as you zoom in or out the size of the marker will stay fixed at the specified pixel radius.

2. Create a Circle

   a. Add the following line of code to add the first circle to the leaflet map.

   ```javascript
   //regular circle
   var circle1 = L.circle([42.53, -93.50], 1000).addTo(map);
   ```

   b. This will add a blue circle that has a radius of 1,000 meters to the map. Note that the circle has a darker blue outline than the fill color. This and several other items can be changed by including the path options in the constructor.

   c. In the code example below, several options have been enabled. You don’t have to include all the options in order to display the circle, for demonstration all six options are provided here. Note: depending on your text editor, the comma on the last option may need to be removed.

   ```javascript
   var circle2 = L.circle([42.50, -93.50], 1000, {
   stroke: false, //true/false for stroke
   color: 'red', //the color if stroke enabled
   opacity: 1, //a value between 0 and 1
   weight: 30, //stroke weight
   fill: true, //true/false for fill
   fillColor: '#FF0000', //HEX or color name
   fillOpacity: 1, //opacity 0-1 of fill
   }).addTo(map);
   ```
d. Modifying the previous code by turning stroke to true. This enables the color and opacity options for the stroke. Setting fill to false would leave just a circle outline. Interestingly, if you drop out the opacity line in the code below, the circle drawn will step from yellow to orange and then a red fill try it out!

```javascript
var circle3 = L.circle([42.47, -93.50], 1000, {
    stroke: true, //true/false for stroke
    color: 'yellow', //stroke color
    opacity: 1, //a value between 0 and 1
    weight: 10, //stroke weight
    fill: true, //boolean for fill - true/false
    fillColor: 'red', //HEX or color name
    fillOpacity: 1, //opacity 0-1 of fill
}).addTo(map);
```

### 3. Create a Circle Marker

a. Circle markers are constructed much like a circle, however the radius in meters is omitted and an option with the radius is included. Note that this radius distance is provided in screen pixels.

```javascript
var cml = new L.circleMarker([42.53, -93.42],{
    radius: 20,
    stroke: true,
    color: 'black',
    opacity: 1,
    weight: 1,
    fill: true,
    fillColor: "green",
    fillOpacity: 0.3
}).addTo(map);
```

b. The following marker has no fill.

```javascript
var cm2 = new L.circleMarker([42.47, -93.42],{
    radius: 20,
    stroke: true,
    color: 'black',
    opacity: 1,
    weight: 1,
    fill: false,
    fillColor: "green",
    fillOpacity: 0.3
}).addTo(map);
```

### 4. Why Create a Circle Marker?

a. As shown in the two maps above, when a Circle Marker (green/hollow) is used and the map is zoomed out it stays the same size. However, the Circles (blue/red/yellow) change in size.

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