IOWA STATE UNIVERSITY
Extension and Outreach

GIS
Training and Services

**Geospatial Technology
Training Program**

Mapping API's: Google Maps API v3 - Getting Started

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.

Mapping API's allow developers to integrate their web development with a vendor's services to provide rich, interactive web applications. These web applications can be customized to fit the specific dimensions of the website or display a certain location, developed with local content, provide customized tool capability, interchangeable basemap display and with some services the map cartography can be changed. This task sheet will take you through the first steps of creating a web map using Google Maps API v3.

1. Introduction

a. There are several Mapping API's available, including Google Maps, Leaflet, Mapbox, Bing, ModestMaps, OpenLayers 3, ESRI ArcGIS, Polymaps and a few others. Each of these services have their own pros and cons. Some have a steep learning curve but provide an extensive set of features while others are easy to learn and can produce a simple slippy maps for a website with minimal effort.

b. In all cases, the API, or Application Programming Interface is a specification that is used by the services software components to communicate with each other and describes how a task is to be done. In the case of the Mapping API's listed above, all of them utilize JavaScript.

2. What you need to complete this tutorial

a. To share the Web map you create you will need to host the files on a web server, however for the purpose of this task sheet, you can just create the file on your local hard drive and open it up with your web browser.

b. The Google Maps API requires that you have a Google Account and that you request a free API Key. To create a key, visit https://console.developers.google.com. Click the button to **CREATE PROJECT** and fill out the form. Organizing your account into projects allows you to have unique API keys for each project.

c. Once the project is created select the project then select **APIs & auth** from the left menu and click **APIs**, a list of the API's enabled and those that you can enable will be displayed. Scroll down to the **Google Maps JavaScript API v3** and click on the button that says **OFF**, it will be added to the top of the list and show **ON** in the status field. Note that you are allowed 1,000,000 requests/day with this key.

d. Once enabled, select **Credentials** from under the **APIs & auth** menu item on the left.

e. Click the button **Create new Key**. A popup window will be displayed, click **Browser Key**. Leave the referrers field blank, this will allow you to use this key on any server and click **Create**. If you wanted to limit its use to a certain domain you would have done so here.

f. The key will be displayed on the screen. Copy this key to a safe place, as you will need it in the next step.
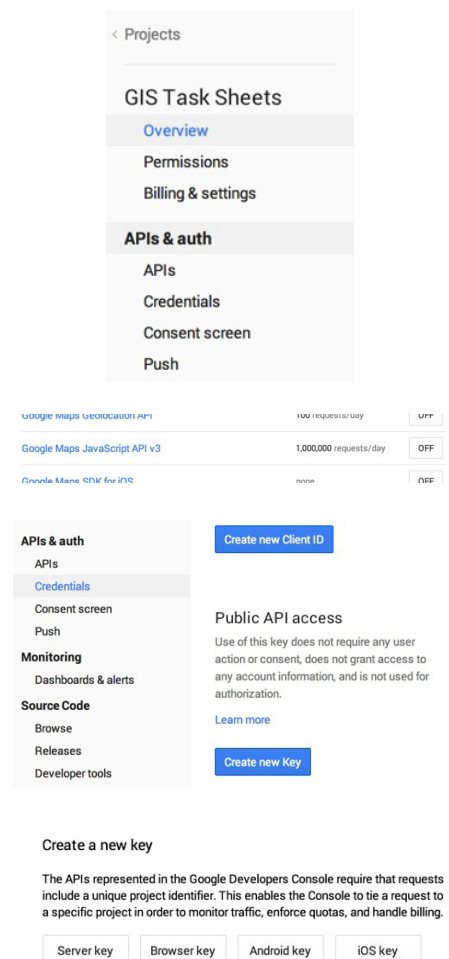
3. Creating your first map

a. Head over to https://developers.google.com/maps/web/ and click the button **Get Started with the JavaScript API v3**.

b. On the getting started page, click the link to **Hello World**.

c. Copy the text and place it in either a code editor or open a text editor. Edit the file and replace **API_KEY** with your new key.

d. Save the file as **helloWorld.htm** and open the map in a web browser. Your web map should display!

e. Edit the HTML and JavaScript code:

1. Page is declared as a HTML5 by including **<!DOCTYPE html>**.

2. Style describes that the map-canvas will fill the screen.

3. The first **<script type** tells the browser JavaScript is bing used and to connect to the Google Maps API with your key.

4. The second **<script type** includes a function that initializes the map when the page loads.

5. When initializing the function, the first **var** (variable) is **mapOptions** and is where the map options are defined. Change the **lat** and **lng** values to be **42** and **-93** to have the map be located in Iowa, the default is in Australia. The map **zoom** is set to **8**. This can be any integer **1** to **23**, however some areas do not provide imagery at level 23 so the maximum available might be 18 or 19.

6. The next variable is **map**, it is established and the target of **'map-canvas'** and is identified as the location on the page where the map will be displayed.

7. The last part of the script is a listener that calls the initialize function when the page loads.

8. Only one line of actual HTML is included in this sample **<div id="map-canvas"></div>** which has the same name as targeted in **step 6**.

```
<div id="map-canvas"></div>
```

Getting Started

Audience
Obtaining an API Key
Hello, World
Declaring Your Application as HTML5
Loading the Google Maps API
Map DOM Elements
Map Options
The Map Object
Loading the Map
Troubleshooting

```
<!DOCTYPE html>
```

```
<style type="text/css">
  html,body,#map-canvas{height:100%;
margin:0;padding:0;}
</style>
```

```
<script type="text/javascript"
```

```
function initialize(){
    var mapOptions = {
      center: {lat: -34.397, lng: 150.644},
      zoom: 8
    };
    var map = new google.maps.Map(document.
getElementById('map-canvas'),mapOptions);
}
google.maps.event.addDomListener(window,
'load' ,initialize);
```

4. Additional Resources

a. W3Schools Google Maps Tutorials: http://www.w3schools.com/googleAPI/default.asp

b. Google Maps official developer page for Hello World: https://developers.google.com/maps/documentation/javascript/tutorial#HelloWorld

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