Lecture 20

Special Topics: Google Maps, 3.js, chart.js, D3.js

Acknowledgement:

mapsplatform.google.com, chartjs.org, threejs.org, d3js.org

Google Maps Platform

- Maps
  - Build customized, agile experiences that bring the real world to your users with Static and Dynamic maps, Street View imagery, and 360° views
- Routes
  - Help your users find the ideal way to get from A to Z with comprehensive data and real-time traffic
- Places
  - Help users discover the world with rich place data for over 200 million points of interest
  - Enable them to find specific places using phone numbers, addresses, and more

Maps

Dynamic Maps

Customize and style interactive maps using Cloud-based maps styling for real time updates across all devices and platforms.

JS Android iOS

Dynamic Street View

Embed real-world imagery with 360° panoramas.

JS Android iOS

Elevation

Provide a simple interface to query locations on the earth for elevation data.

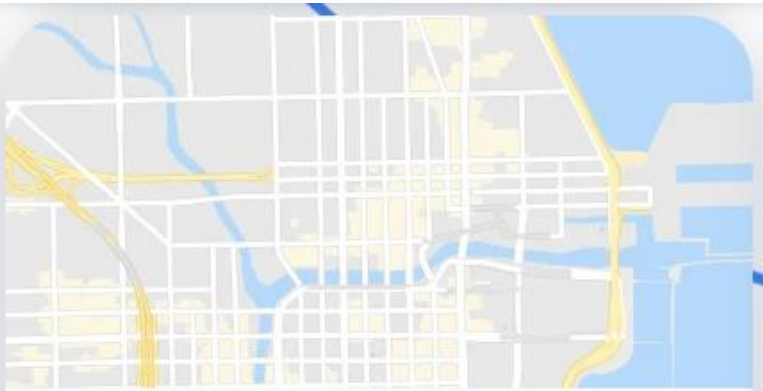
API

Maps

Maps Embed

Add an interactive map or Street View panorama to your site, using a simple HTTP request.

API



Static Maps

Embed simple map images on your website with minimal code.

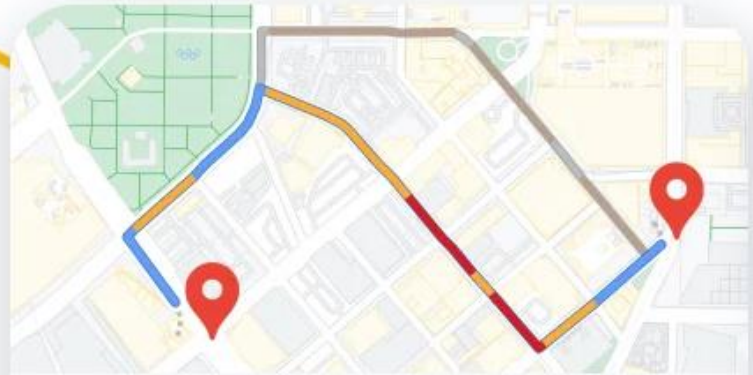
API

Static Street View

Embed a static (non-interactive) Street View panorama or thumbnail into your web page, without the use of JavaScript.

API

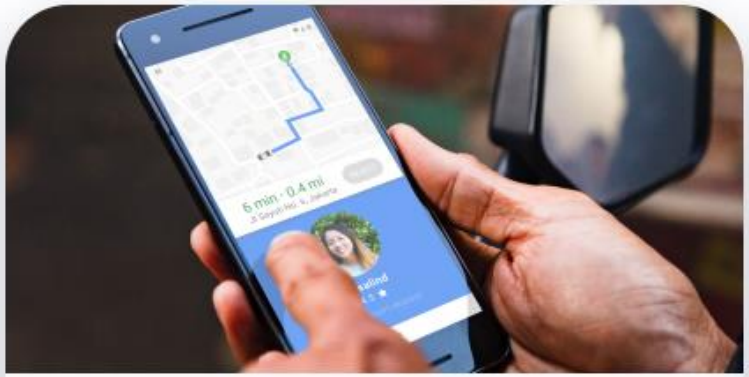
Routes



Directions

Provide directions for transit, biking, driving, or walking between multiple locations.

JS API



Distance Matrix

Calculate travel times and distances for multiple destinations.

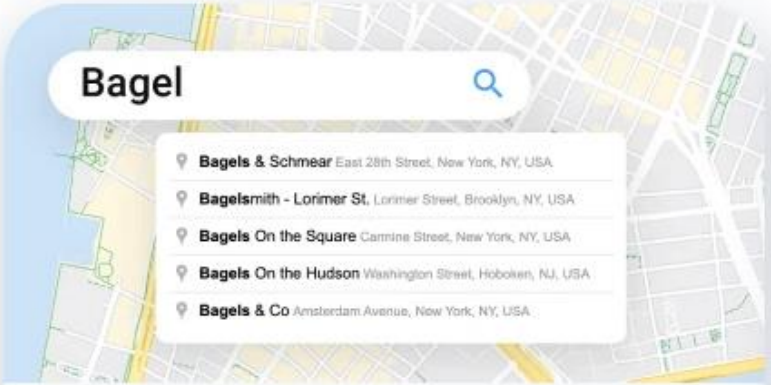
JS API

Roads

Determine the route a vehicle travels.

API

Places



Autocomplete

Help users quickly find the exact place they're looking for by automatically suggesting businesses and points of interest as they type.

API

Geocoding

Convert addresses to geographic coordinates or the reverse.

JS API

Geolocation

Return the location of a device without relying on GPS, using geospatial data from cell towers and WiFi nodes.

API

Places

Place Details

Add rich details for millions of places to your website or app.

Android iOS API

Place Photos

Access millions of place-related photos stored in Google's Places database.

Android iOS API

Place Search

Return a list of places like local businesses and points of interest based on user's location, text query, phone number, or search string. Includes Find Place.

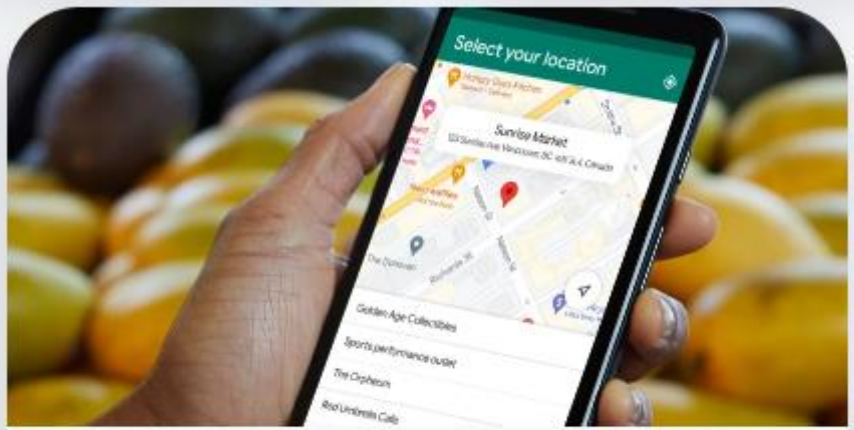
JS API

Places

Time Zone

Get the time zone for a specific latitude and longitude coordinate.

API



Current Place

Discover the place at the device's currently-reported location, like a local business, point of interest, or geographic location.

Android iOS API

Pricing

- First $200 per month is no charge

Product	Usage		Monthly cost
Static Maps+			
Maps Static API	Requests	1,000	$2
Dynamic Maps+			
Maps Embed API	Unlimited		Unlimited
Maps SDK for Android	Requests	1,000	$7
Maps SDK for iOS	Requests	1,000	$7
Maps JavaScript API	Requests	1,000	$7

Getting started

- Requires
  - A Gmail email account
  - A credit card, but you won’t be billed unless you turn on automatic billing
- Once you sign up, you get an API key
  - A unique alphanumeric string
  - The key is needed when you make API calls
  - Associates your Google billing account with your project and specific API or SDK

Getting started

- Google Maps Hello World
  - https://developers.google.com/maps/documentation/javascript/examples/map-simple?hl=en_US
- Explore examples
  - Basics
  - Drawing on the Map
  - Vector Map Features
  - Services
  - Fun

Three.js

- Library for creating 3D objects in the web
- Learn more and explore projects: https://threejs.org

Chart.js

- Most popular charting library in Javascript
- Includes frequently used charts with customization
  - Bar charts
  - Line charts
  - Pie charts
  - Bubble charts
  - More
- Learn more and explore projects:
  - https://www.chartjs.org/docs/latest/samples/information.html

D3

- Low level JavaScript library for visualizing data
- Learn more and explore projects:
  - https://observablehq.com/@d3/gallery?utm_source=d3js-org&utm_medium=hero&utm_campaign=try-observable