1.125 – Software Engineering and Architecting

Lecture 11

APIs

Application Programming Interfaces

Application Programming Interfaces

Using other people's code to **program** our own **applications** on top of these pre-made pieces

A way to **interface**/interact with the code that others have built so you don't need to reinvent the wheel

We've already seen some:

```
const express = require('express')
const app = express()

app.get('/', function (req, res) {
  res.send('Hello World')
})

app.listen(3000)
```
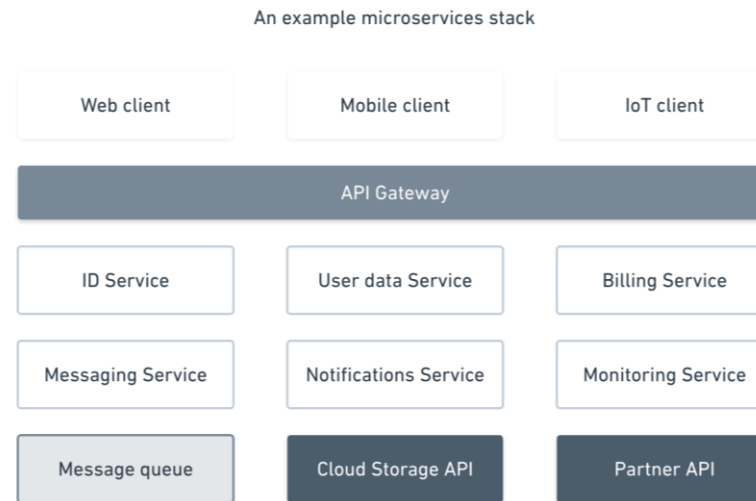
Here we're using the express API to simplify HTTP calls

Using APIs

APIs let us use all kinds of different software solutions without needing to write things ourselves.

An example microservices stack

Web client	Mobile client	IoT client
API Gateway		
ID Service	User data Service	Billing Service
Messaging Service	Notifications Service	Monitoring Service
Message queue	Cloud Storage API	Partner API

Sometimes, though, we might want to take an open-source API and tailor it to our specific needs

Google Maps API

The google maps API is one of the most used APIs in web development

https://developers.google.com/maps/documentation/javascript/tutorial

You will need an API key: https://developers.google.com/maps/documentation/javascript/get-api-key

```html
<!DOCTYPE html>
<html>
  <head>
    <title>Simple Map</title>
    <meta name="viewport" content="initial-scale=1.0">
    <meta charset="utf-8">
    <style>
      /* Always set the map height explicitly to define the size of the div
       * element that contains the map. */
      #map {
        height: 100%;
      }
      /* Optional: Makes the sample page fill the window. */
      html, body {
        height: 100%;
        margin: 0;
        padding: 0;
      }
    </style>
  </head>
  <body>
    <div id="map"></div>
    <script>
      var map;
      function initMap() {
        map = new google.maps.Map(document.getElementById('map'), {
          center: {lat: -34.397, lng: 150.644},
          zoom: 8
        });
      }
    </script>
    <script src="https://maps.googleapis.com/maps/api/js?key=YOUR_API_KEY&callback=initMap"
    async defer></script>
  </body>
</html>
```
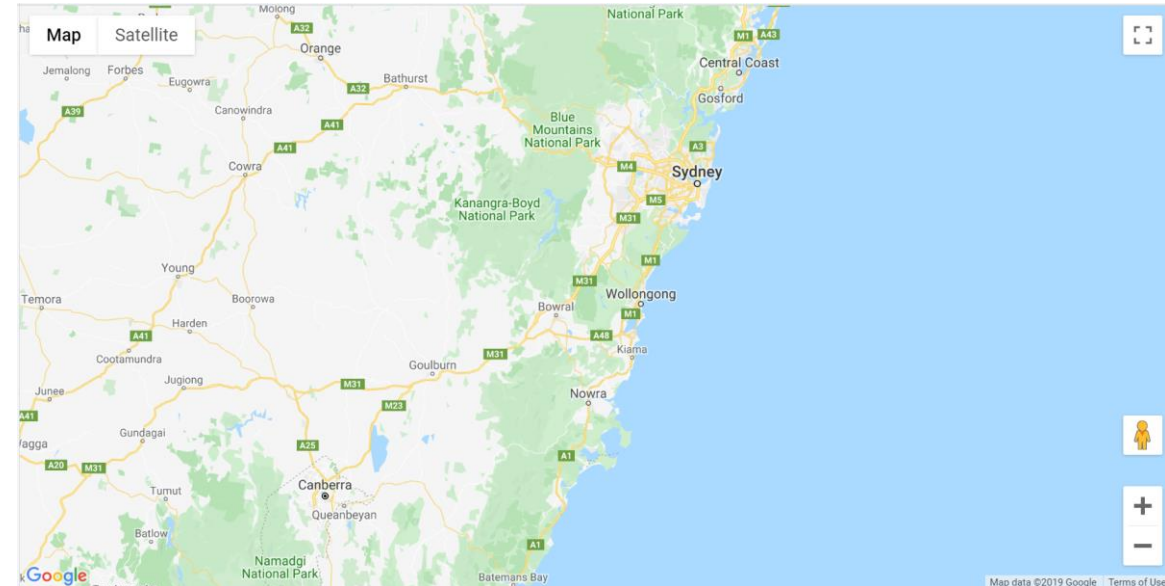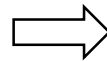
Bus Tracking with Google Maps

Using the document on the class website:

- Sign up for an API key for the MBTA

- Gather the right data to track the number 1 bus

- Using this data and google maps, create a site to animate the motion of the bus using JavaScript