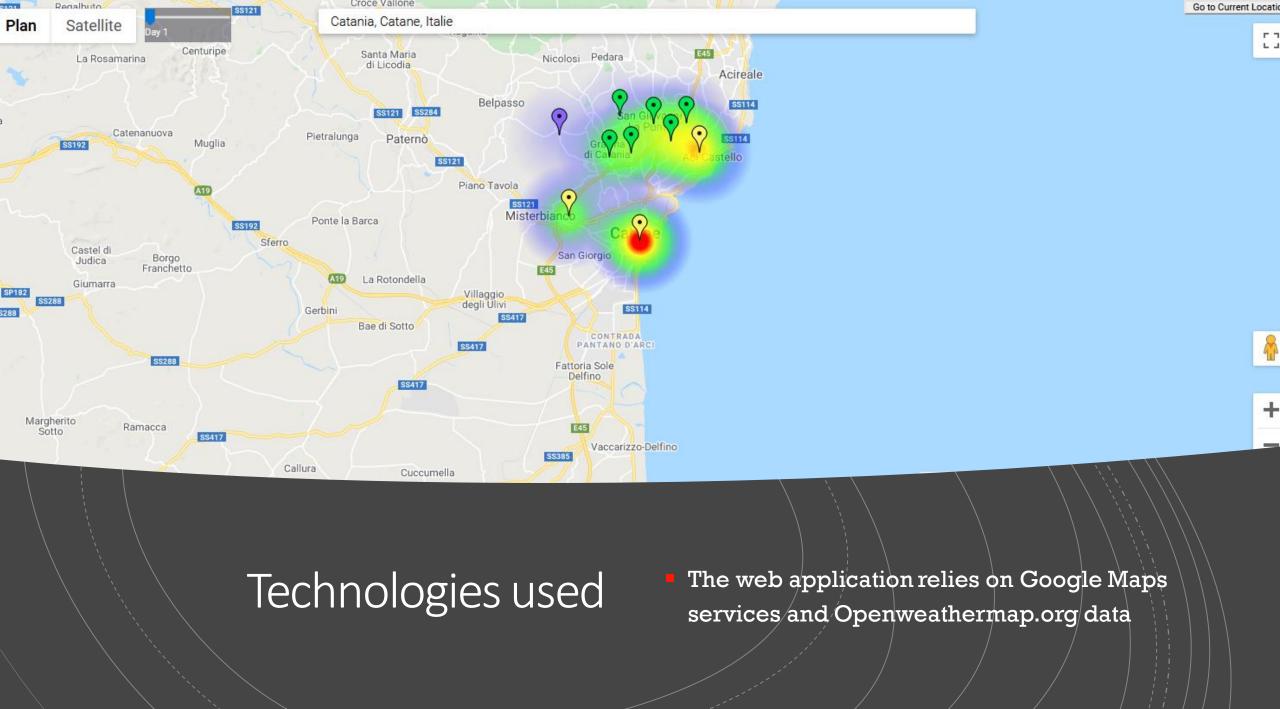
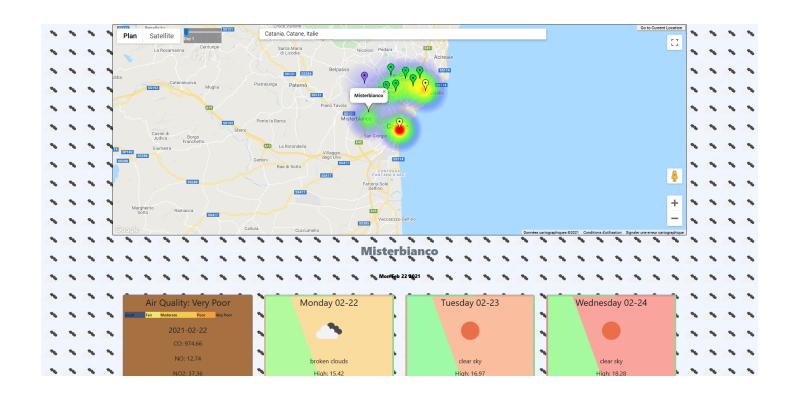
A Node.js web application

# WeatherVenue code revue





User experience usging GMap and weather cards

An interactive map that illustrates "surrounding cities" weather forecast. Cities weather can be discovered seperatly or even side by side (multiple weather cards)

### Hello there,

- I would like to share with you my journey making a simple website during lock-down.
- This is a code overview of a complete solution which is far from being perfect; If you are a beginner in web development, then I think you will learn few things just reviewing my code and approach in general.
- Because I am not ready and confortable for speeking while live coding, I prefered to prepare this transcript, and rather use a text to speech service. The video presentation will continue like so. Note that you can choose a different language from Youtube live translation service but I don't garanty the accuracy for languages other than English.
- I am not a web developer nor a keen Node.js developer. I know the way I coded it is not the best from software design perspective, far from that, we can say it is pasta code. Even so, it works as expected!

### Product and technologies

- "WeatherVenue" is a weather website using Google Maps and Openweathermap APIs. It lets people find best places to visit in their entourage; Easily finding warmer winter vacation or cool summer escapes.
- Technologies used in server side:
  - HTML, CSS and JavaScript
  - Node.js: a modern back-end JavaScript runtime environment
  - Express: a back end web application framework for Node.js
  - EJS: Embedded JavaScript templates
  - Redis: An in-memory data structure store
  - Sentry and Google Analytics: Error monitoring and web analytics
  - Other Node.js dependencies like: helmet, express-rate-limit, axios

#### Other libraries

- Technologies used in client side:
  - 1. HTML, CSS and JavaScript
  - 2. Bootstrap
  - 3. Google Maps
- Other libraries like
  - 1. cookies-eu-banner.js,
  - 2. screenfull.js,
  - 3. heatmap.js,
  - 4. dark-mode-switch.js

#### Plan

- Open accounts for Google Maps API and Openweathermap keys
- Build a one page web application
- Understand then pick canonical example from service providers whenever possible
- Test using browser developer console; Either Chrome or Firefox or others
- Open accounts for Sentry and Google Analytics and setup keys
- Open an account in Heroku then deploy the app

### Setup

- Remember this is a code review, so code is already present and we will not be coding.
- First open Visual Studio Code, then install this plugin: vscode-icons. You will then see icons change from this && to this &&
- Also, I installed EJS language support plugin, you will see support of EJS files from this && to this &&.

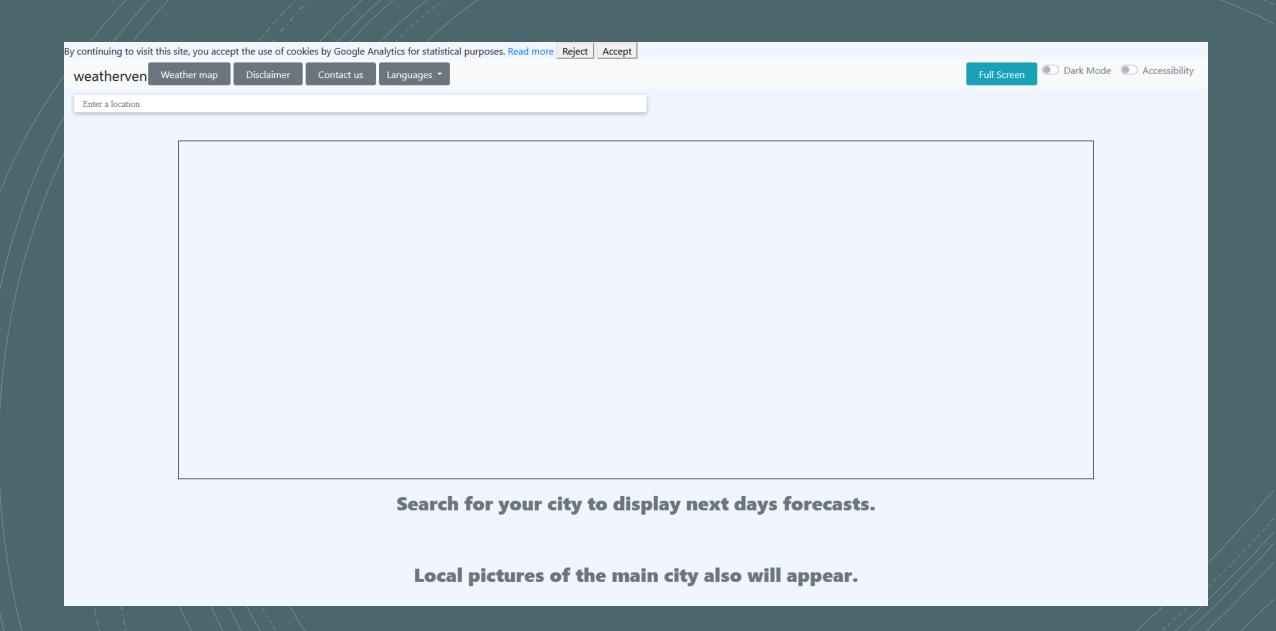


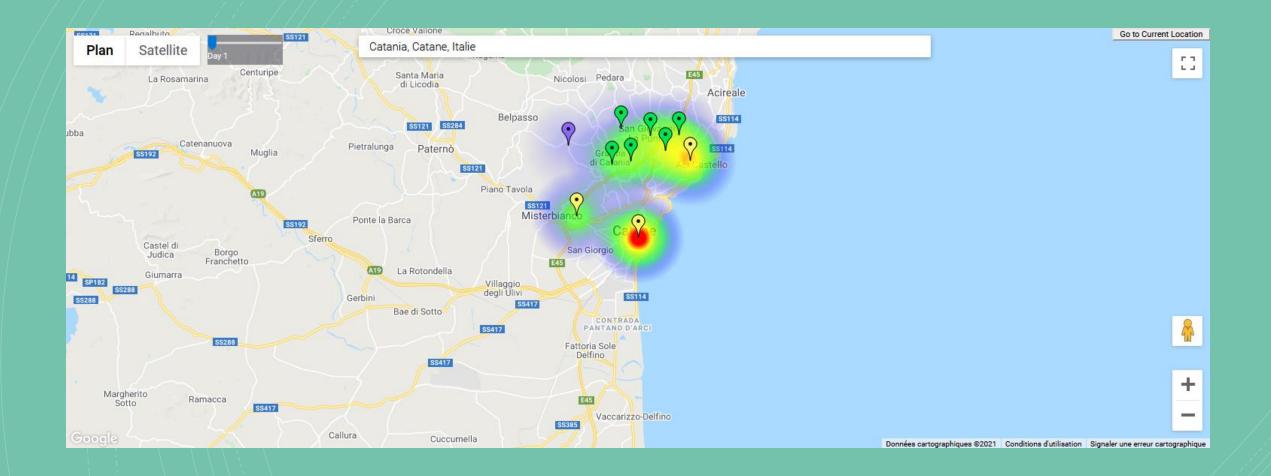
```
1 <meta charset="UTF-8">
    "width=device-width, initial-scale=1">
   <meta name="Description" content="<%= description %>">
   <title><%= title %></title>
   "https://polyfill.io/v3/polyfill.min.js?features=default"
   <% if(version=='bootstrap'){ %>
       <%- include('html_dependencies/bootstrap'); %>
     <% } else if(version=='bootstrap-rtl'){ %>
       <%- include('html_dependencies/bootstrap-rtl'); %>
10 <% } %>
   "https://maps.googleapis.com/maps/api/js?key=AIzaSyBcL91cr-kioveam
   PxcvnQTT40A9asC1TE&callback=initMap&libraries=places&v=weekly"
    centerLocation="<%= centerLocation %>" lang="<%= lang %>"
14 <script src="../js/heatmap.min.js" defer></script>
15 <script src="../js/gmaps-heatmap.js" defer></script>
17 <script src="../js/cookies-eu-banner.js"></script>
   "https://cdnjs.cloudflare.com/ajax/libs/screenfull.js/5.1.0/screen
   full.min.js"
   "sha512-SGPHIoS+NsP1NUL5RohNpDs44JlF36tXLN6H3Cw+EUyenEc5zPXWqfw9D+
   xmvR00QYUYewQIJQ6P5yH82Vw6Fg=="
                ="anonymous">
  <!-- Global site tag (gtag.js) - Google Analytics -->
   "https://www.googletagmanager.com/gtag/js?id=G-59D6066VJ6"
21 <script data-ad-client="ca-pub-4987312092359418" async src=
   "https://pagead2.googlesyndication.com/pagead/js/adsbygoogle.js"
```

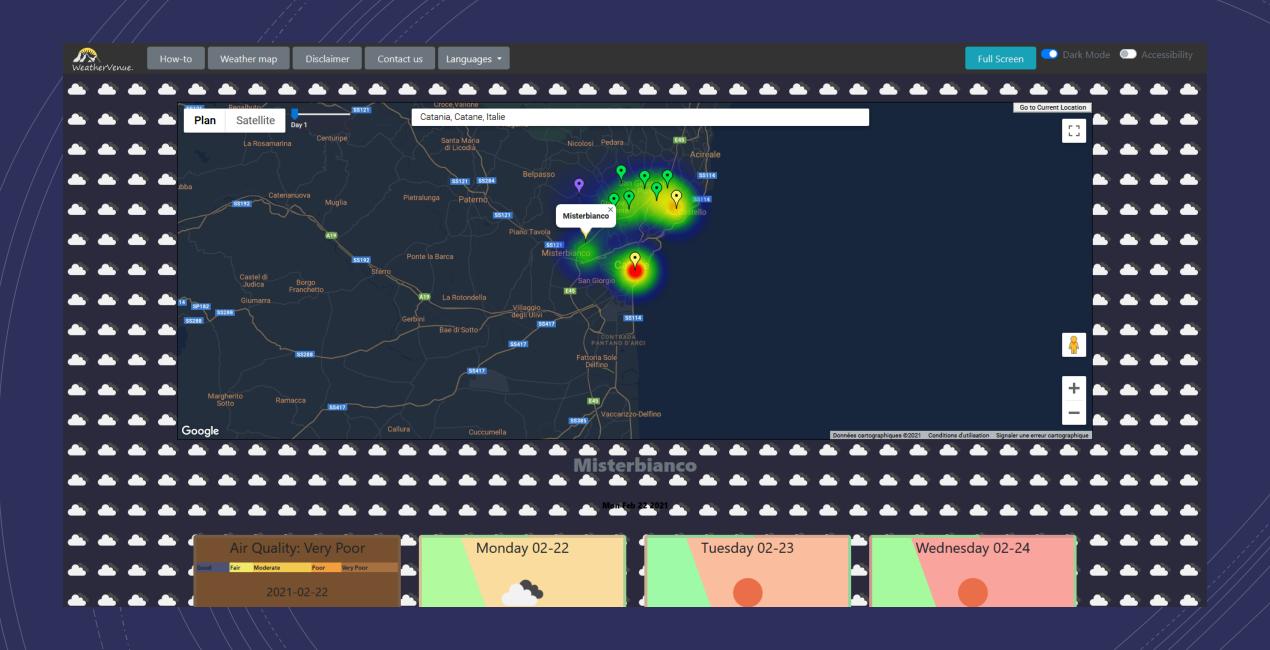
```
1 <meta charset="UTF-8">
2 <meta name="viewport"</pre>
   "width=device-width, initial-scale=1">
3 <meta name="Description" content="<%= description %>">
4 <title><%= title %></title>
   "https://polyfill.io/v3/polyfill.min.js?features=default"
6 <% if(version=='bootstrap'){ %>
8 <% } else if(version=='bootstrap-rtl'){ %</pre>
9 <%- include('html_dependencies/bootstrap-rtl'); %>
10 <% } %>
   "https://maps.googleapis.com/maps/api/js?key=AIzaSyBcL91cr-kioveam
   PxcvnQTT40A9asC1TE&callback=initMap&libraries=places&v=weekly"
    centerLocation="<%= centerLocation %>" lang="<%= Lang %>"
14 <script src="../js/heatmap.min.js" defer></script>
15 <script src="../js/gmaps-heatmap.js" defer></script>
17 <script src="../js/cookies-eu-banner.js"></script>
   "https://cdnjs.cloudflare.com/ajax/libs/screenfull.js/5.1.0/screen
   full.min.js"
   "sha512-SGPHIoS+NsP1NUL5RohNpDs44JlF36tXLN6H3Cw+EUyenEc5zPXWqfw9D+
   xmvR00QYUYewQIJQ6P5yH82Vw6Fg=="
    crossorigin="anonymous">
 9 <!-- Global site tag (gtag.js) - Google Analytics -->
   "https://www.googletagmanager.com/gtag/js?id=G-59D6066VJ6"
21 <script data-ad-client="ca-pub-4987312092359418" async src=
   "https://pagead2.googlesyndication.com/pagead/js/adsbygoogle.js"
```

### ... Setup

- Install a new Node.js project by running: npm init
- install required dependencies by running:
- npm install @sentry/browser @sentry/node
   @sentry/tracing axios dotenv ejs express express-rate-limit
   helmet joi nearby-cities offline-geocoder redis request
   reverse-geocode serve-favicon umbress
- Then you will need to install Redis database server locally.







```
EXPLORER
                               index.html ×
                   <u>무</u> 🗗 🗗
                                public > static > 5 index.html > ♦ html
OPEN EDITORS
 X 5 index.html public\static M
                                       <html lang="en">
WEATHERVENUE
 > if css
                                          <meta charset="UTF-8"</pre>
  > 🖷 img
                                                    ="viewport" content="width=device-width, initial-scale=1">
  🗸 🚅 js
                                                     ="Description"
      JS accessibility.js
                                                    ="WeatherVenue lets you find best places to visit in your entourage; Easily finding warmer winter vacation or cool summer escapes.">
                                                >Welcome to WeatherVenue<
      JS cookies-eu-banner.js
                                          <script src="https://polyfill.io/v3/polyfill.min.js?features=default" defer></script>
      JS dark-mode-switch.js
      JS GMap.js
                                          <script src="https://code.jquery.com/jquery-3.5.1.min.js"</pre>
      JS gmaps-heatmap.js
                                           integrity="sha256-9/aliU8dGd2tb60SsuzixeV4y/faTqgFtohetphbbj0=" crossorigin="anonymous" defer>//script>
      JS heatmap.min.js
                                          <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"</pre>
      JS html_holders.js
                                           integrity="sha384-JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z" c
                                           script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"
      index.html
                                            integrity="sha384-B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV" crossorigin="anonymous"
      JS js_variables.js
      JS lang_mappings.js
  5 index.html
                                                "https://maps.googleapis.com/maps/api/js?key=AIzaSyBcL91cr-kioveamPxcvnQTT40A9asC1TE&callback=initMap&libraries=places&v=weekly"

✓ ell views

                                                           ="london"
                                          <link rel="stylesheet" 1</pre>
                                                                     e="text/css" href="../css/style.css" />
  <script src="../js/cookies-eu-banner.js"</pre>
     <% bootstrap-rtl.ejs</p>
                                                      ="https://cdnjs.cloudflare.com/ajax/libs/screenfull.js/5.1.0/screenfull.min.js"
     <% bootstrap.ejs</pre>
                                                      :"sha512-SGPHIoS+NsP1NUL5RohNpDs44J1F36tXLN6H3Cw+EUyenEc5zPXWqfw9D+xmvR00QYUYewQIJQ6P5yH82Vw6Fg=="
     <% weather-map-view.ejs</p>
                                                       ="anonymous"
  <!-- Global site tag (gtag.js) - Google Analytics -->
                                          <script async src="https://www.googletagmanager.com/gtag/js?id=G-59D6066VJ6"></script>
     <% after_body.ejs</pre>
     <% footer.ejs
     <% map.ejs
     <% nav_bar.ejs</pre>
                                          <div id="cookies-eu-banner" style="display: none;">
    <% 404.ejs
                                           By continuing to visit this site, you accept the use of cookies by Google Analytics for statistical purposes.
    <% head.ejs
                                           <a href="https://www.cookielaw.org/google-analytics-eu-cookie-law/" id="cookies-eu-more">Read more
    <% index_ar.ejs
                                           <button id="cookies-eu-reject">Reject/b
                                           <button id="cookies-eu-accept">Accept</button>
    <% index.ejs
    <% weather_map_view.ejs</p>
                                          <div id="spinner-back"></div>

✓ TODO TREE: TODOS

                                          <div id="spinner-front">
Scan mode: workspace and ope...
                                                    ="./img/loading.gif" /><br>
Nothing found
                                          <nav class="navbar navbar-expand-lg navbar-light bg-light py-0">
                                           <a class="navbar-brand" href="/">
                                 45
                                             <img id='logo' src="./img/weather_venue_856-8.png" alt="weathervenue.com" width="100" alt="weathervenue"</pre>
                                  46
                                               class="d-inline-block align-middle mr-2";
> OUTLINE
                                            <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNav"</pre>
```

```
<meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1">
      <meta name="Description"</pre>
       content="WeatherVenue lets you find best places to visit in your entourage; Easily finding warmer winter vacation or cool summer escapes.">
      <title>Welcome to WeatherVenue</title>
      <script src="https://polyfill.io/v3/polyfill.min.js?features=default" defer></script>
      <script src="https://code.jquery.com/jquery-3.5.1.min.js"</pre>
       integrity="sha256-9/aliU8dGd2tb60SsuzixeV4y/faTqgFtohetphbbj0=" crossorigin="anonymous" defer></script>
      <link rel="stylesheet" href="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/css/bootstrap.min.css"</pre>
       integrity="sha384-JcKb8q3iqJ61gNV9KGb8thSsNjpSL0n8PARn9HuZOnIxN0hoP+VmmDGMN5t9UJ0Z" crossorigin="anonymous">
12
      <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js"</pre>
       integrity="sha384-B4gt1jrGC7Jh4AgTPSdUt0Bvf08shuf57BaghqFfPlYxofvL8/KUEfYiJ0MMV+rV" crossorigin="anonymous"
       src="https://maps.googleapis.com/maps/api/js?key=AIzaSyBcL91cr-kioveamPxcvnQTT40A9asC1TE&callback=initMap&libraries=places&v=weekly"
       centerLocation="london" lang="en" defer></script>
      <link rel="stylesheet" type="text/css" href="../css/style.css" />
      <script src="../js/cookies-eu-banner.js"></script>
      <script src="https://cdnjs.cloudflare.com/ajax/libs/screenfull.js/5.1.0/screenfull.min.js"</pre>
       integrity="sha512-SGPHIoS+NsP1NUL5RohNpDs44J1F36tXLN6H3Cw+EUyenEc5zPXWqfw9D+xmvR00QYUYewQIJQ6P5yH82Vw6Fg=="
       crossorigin="anonymous"></script>
      <!-- Global site tag (qtag.js) - Google Analytics -->
     <script async src="https://www.googletagmanager.com/gtag/js?id=G-59D6066VJ6"></script>
```

```
By continuing to visit this site, you accept the use of cookies by Google Analytics for statistical purposes.
 <a href="https://www.cookielaw.org/google-analytics-eu-cookie-law/" id="cookies-eu-more">Read more</a>
 <button id="cookies-eu-reject">Reject</button>
 <button id="cookies-eu-accept">Accept</button>
<div id="spinner-back"></div>
<div id="spinner-front">
 <img src="./img/loading.gif" /><br>
<nav class="navbar navbar-expand-lg navbar-light bg-light py-0">
 <a class="navbar-brand" href="/">
   <img id='logo' src="./img/weather_venue_856-8.png" alt="weathervenue.com" width="100" alt="weathervenue"</pre>
    class="d-inline-block align-middle mr-2">
 <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarNav"</pre>
   aria-controls="navbarNav" aria-expanded="false" aria-label="Toggle navigation">
   <span class="navbar-toggler-icon"></span>
 <div class="collapse navbar-collapse" id="navbarNav">
   <a class="nav-link disabled" id="widget" href="#">City week forecast</a>
     <a class="nav-link" href="weather map view">Weather map</a>
     <!-- <li>class="nav-item btn btn-secondary">
      <a class="nav-link" href="#">Donate</a>
     <a class="nav-link disabled" href="#">Version 2</a>
     <a class="nav-link" href="#" data-toggle="modal" data-target="#exampleModal">Disclaimer</a>
     <a class="nav-link"</pre>
```

```
2 <script src="../../js/js_variables.js"></script>
3 <script src="../../js/lang_mappings.js"></script>
4 <script src="../../js/html_holders.js"></script>
5 <script src="../../js/accessibility.js"></script>
6 <script src="../../js/GMap.js"></script>
    new CookiesEuBanner(function () {
      // Your code to Launch when user accept cookies
      // Google analytics
      window.dataLayer = window.dataLayer || []
      function gtag() { dataLayer.push(arguments) }
      gtag('js', new Date())
      gtag('config', 'G-59D6066VJ6')
      console.log('accepted')
    });
    fullScreenBtn = id('fullscreen');
    fullScreenBtn.addEventListener('click', () => {
     if (screenfull.isEnabled) {
       screenfull.request();
      } else {
       // Ignore or do something else
    });
    screenfull.on('change', () => {
      screenfull.isFullscreen ? fullScreenBtn.style.visibility = "hidden" : fullScreenBtn.style.visibility = "visible";
    });
```

# Client-Server roundtrip

- In client side using Google Map, we capture user inputs.
- We then construct a valid Ajax call so that the one index page hits the API in server without refreshing the view.
- In server side, our API hits the openweathermap onecall API, retrieves weather data, and finally extract usefull data and send formatted JSON back as a response.

#### Client side

# Map initialization

```
\bullet \bullet \bullet
   function initMap () {
     let center = { Lat: -33.8688, Lng: 151.2195 }
     const scripts = document.getElementsByTagName('script')
     const mapScript = scripts[3]
Language = mapScript.getAttribute('lang')
     const centerLocation = mapScript.getAttribute('centerLocation')
      switch (centerLocation) {
         center = { Lat: 36.75, Lng: 3.05 }
         center = { Lat: 48.85, Lng: 2.35 }
        case 'london':
         center = { Lat: 51.50, Lng: 0.12 }
   // When initMap is called for a second time, choose the earlier center not to move the map center away i
   n the globe
     if (currentList && currentList.features && currentList.features.length > 0) {
       const coordinates = currentList.features[0].geometry.coordinates
         lat: coordinates[1],
         Lng: coordinates[0]
     // Instantiate the map or clean it if it already exists
       map = new google.maps.Map(__id('map'), {
    center: center,
       (function (m) {
         m.data.forEach(function (f) {
           m.data.remove(f)
       }(map))
       google.maps.event.trigger(map, 'resize')
```

#### Client side

# Construct the Ajax call

```
. .
1 function nearbyRequest (place) {
     _showLoading() // Block page while loading
     var cache = _getWithExpiry('response_' + place.name)
     if (cache && cache.length > 0) {
       currentList = cache
       id('location').innerHTML = currentList.features[0].properties.name
       renderForecastDays(currentList.weather[0].daily)
       initMap()
       _hideLoading() // Unblock page
     const request = new XMLHttpRequest()
     const requestObject = JSON.stringify({
       lat: place.geometry.location.lat(),
       lng: place.geometry.location.lng(),
       cityname: place.name,
       Language: Language
     request.open('GET', 'nearby/' + requestObject)
     request.responseType = 'json'
     request.onload = function () {
       currentList = request.response.data
       _setWithExpiry('response_' + place.name, currentList)
       __id('location').innerHTML = currentList.features[0].properties.name
       renderForecastDays(currentList.weather[0].daily)
       initMap()
       populateHeatMap(∅)
       _hideLoading() // Unblock page
       const googleTemplate = _adsHolder('Google')
       __id('forecast-items').insertAdjacentHTML('beforeend', googleTemplate)
     request.send()
```

#### Server side

validate request and respond if error

```
const reqSchema = Joi.object({
 Lat: Joi.number().min(-90).max(90).required(),
 lng: Joi.number().min(-180).max(180).required(),
 cityname: Joi.string().min(3).max(180).required(),
 language: Joi.string().min(2).max(2).required()
app.get('/nearby/:city', function rootHandler (req, res) {
 try {
   if (!req.params.city) {
     return res.status(400).send({
      error: true,
      message: 'Bad request',
      data: 'Bad request'
   const geometry = JSON.parse(req.params.city)
   const valid = reqSchema.validate(geometry)
   if (valid.error) {
     return res.status(400).send({
      error: true,
      message: 'Bad request',
      data: 'Bad request error ' + valid.error
```

#### Server side

# fetch Openweatherma p API and respond

```
// Check the redis store for the data first
       client.get(cityname, async (err, result) => {
         // redis unexpected errors
        if (err) {
           console.error(err)
           return res.status(500).send({
             error: true,
             message: 'Server error',
             data: 'Server error'
           })
         if (result) {
           return res.status(200).send({
             error: false,
             message: `Weather data for nearby cities for ${cityname} from the cache`,
             data: JSON.parse(result)
           })
         } else {
           const query = {
             latitude: geometry.lat,
             longitude: geometry.lng
           const cities = nearbyCities(query).slice(0, 10)
           const actions = cities.map(fetchWeather)
           Promise.all(actions).then(function (forecasts) {
             var weathers = forecasts.map(elem => { return elem.weather })
             var pollutions = forecasts.map(elem => { return elem.pollution })
             const result = formatCities(cities, weathers, pollutions)
             client.setex(cityname, 24 * 60 * 3, JSON.stringify(result))
             return res.status(200).send({
               error: false,
               message: 'Weather data for nearby cities from the server',
               data: result
             1)
       })
```

```
1 let Language = 'en'
   async function fetchWeather (city) {
     return new Promise(async (resolve, reject) => {
       const APIUrlWeather = `https://api.openweathermap.org/data/2.5/onecall?lat=${city.lat}&lon=${city.lon}
   &lang=${Language}&exclude=hourly,minutely,hourly&units=metric&appid=${OPENWEATHERMAP_API_KEY}`
       const body0 = await axios.get(APIUrlWeather)
       const data0 = await body0.data
       const APIUrlPollution = `http://api.openweathermap.org/data/2.5/air_pollution?lat=${city.lat}&lon=${city}
    .Lon}&appid=${OPENWEATHERMAP API KEY}`
       const body1 = await axios.get(APIUrlPollution)
       const data1 = await body1.data
       resolve({ weather: data0, pollution: data1 })
11
     })
12 }
```

# Other considerations

Next, I show server configuration.

It uses "Express" framework.

We set "helmet", It helps you secure your Express apps by setting various HTTP headers. We use "axios", It is
"Promise" based HTTP
client for the browser
and node.js.

"dotenv" to separate configuration keys and values from code.

"express-rate-limit"
to limit repeated
requests to public APIs
and/or endpoints such
as password reset.

# Back to configuration and server bootstrap

```
.
1 const dotenv = require('dotenv')
2 dotenv.config()
3 console.log(`Your port is ${process.env.PORT}`) // 8626
4 const express = require('express')
5 const helmet = require('helmet')
6 const Joi = require('joi')
7 const axios = require('axios')
8 const redis = require('redis')
9 const nearbyCities = require('nearby-cities')
10 const favicon = require('serve-favicon')
11 const path = require('path')
12 const app = express()
13 const Sentry = require('@sentry/node')
14 const Tracing = require('@sentry/tracing')
15 if (process.env.NODE_ENV !== 'dev') {
16 Sentry.init({
      dsn: https://${process.env.SENTRY_KEY}.ingest.sentry.io/1871185,
       integrations: [
       new Sentry.Integrations.Http({ tracing: true }),
        new Tracing.Integrations.Express({ app })
      tracesSampleRate: 1.0
25 app.use(Sentry.Handlers.requestHandler())
26 app.use(Sentry.Handlers.tracingHandler())
27 app.use(favicon(path.join(__dirname, '/public/img', 'icon.png')))
28 app.use(helmet({ contentSecurityPolicy: false }))
29 app.set('view engine', 'ejs')
30 const rateLimit = require('express-rate-limit')
31 const limiter = rateLimit({
32 windowMs: 15 * 60 * 1000, // 15 minutes
33 max: 30 // Limit each IP to 100 requests per windowMs
34 })
35 app.use(Limiter)
36 const nodePort = process.env.PORT
37 const redisPort = process.env.REDIS_PORT
38 const OPENWEATHERMAP_API_KEY = process.env.OPENWEATHERMAP_API_KEY
40 app.listen(nodePort, () => {
41 console.log(`Server running on port ${nodePort}`)
43 app.use(express.static(__dirname + '/'))
```

#### Server side

# Capture bad visitors and send them to "nil"

```
const dns = require('dns')

app.use(function (req, res, next) {
    let ip = req.headers['x-forwarded-for'] || req.connection.remoteAddress
    if (ip.substr(**, 7) === '::fffff:') {
        ip = ip.substr(7)
    }

if (process.env.NODE_ENV === 'dev' || ip.split('.')[**] === '127') { return next() }
    const reversedIp = ip.split('.').reverse().join('.')

dns.resolved([process.env.HONEYPOT_KEY, reversedIp, 'dnsbl.httpbl.org'].join('.'), function (err, addresses) {
    if (!addresses) { return next() }
    const _response = addresses.toString().split('.').map(Number)
    const test = (_response[*] === 127 && _response[*] > 0) // visitor_type[_response[*3]]
    if (test) { res.send({ msg: 'we hate spam to begin with!' }) }
    return next()

}

}
```

I did not forget, how I generated the static "Index.html" in an ugly manner x)

```
app.use(function(req, res, next) {
     res.status(404)
     if (req.accepts('html')) {
       res.render('404', { url: req.url })
   const ejs = require('ejs')
   const fs = require('fs')
   app.get('/render#############, function (req, res) {
     const data = {}
     ejs.renderFile(path.join(__dirname, '/views/index.ejs'), data, (
   err, result) => {
       if (err) {
         console.log('info', 'error encountered: ' + err)
       } else {
       try {
           fs.writeFileSync('./public/static/index.html', result,
    'utf8')
         } catch (err) {
           if (err) {
             throw err
     res.render('index')
25 })
```

Back to client, when the Ajax 'request.onload' is triggered

- Gmap.js dependency comes to practice again.
- It format data and manipulate dom elements.
- 'renderForecastDays()'renders card divs in HTML
- 'initMap()' is called each time to refresh the map with new markers (surrounding cities) and not to instantiate the map again.
- 'getPictures()' relies on google.maps.placesAPI



### What's next?

- Style, style, style!
- This project is on Github and is firstcomers friendly! Nothing particularly intensive as you have seen. It is a chance for beginners to learn these technologies through a real world example also to learn collaborating using Git and Github.
- I am not a web developer myself, so, you can contribute, and I would not be demanding too much (I most likely accept your contributions)

## See you there!

Github repository: <a href="https://github.com/bacloud14/Weat">https://github.com/bacloud14/Weat</a>
herVenue

Open issues:

https://github.com/bacloud14/WeatherVenue/is sues

Deployed version:

https://www.weathervenue.com/

Contact b@cloud14[(at)]gmail(dot)c0m