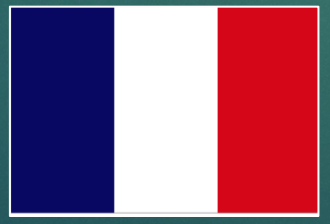
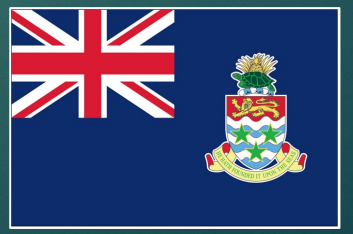




The Ultimate
Travel Route Visualization Dashboard

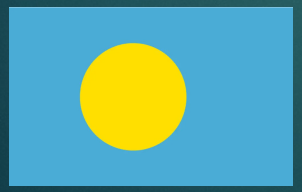



MARUTI BISWAS SARAH DEMMON PAOLA ROMAN CHANTAL THOMAS

PROJECT CONCEPT

Our aim was to build a **travel route search engine with helpful visualizations** to guide the trip selection process.

With so many flights departing from each airport, this tool has the potential to really help travelers find **the most direct route** of travel.





PURPOSE

We believe that…

- Travelers that hate layovers wish to see only NON-STOP flights
- It's useful to model travel in an easy to consume way without pricing information to distract their goal





DATA SOURCES

DATA SOURCES

- OpenFlights
  - OpenFlights Airports Database contains **over 10,000** airports spanning the globe
  - Developed to store free airport, airline, and route data
  - This is where we sourced the .dat file which we converted to CSV and then JSON format
- StackOverflow Discussion Forums
- Free Code Camp
- W3Schools
- JavaScriptTutorial.net
- IATA Airline and Airport Code Search
- The Modern Wed: Multi-device Web Development with HTML5, CSS3, and JavaScript by Peter Gaston





VISUALIZATIONS WE BUILT

1. **IATA** (International Airport Transportation Association) **Code Search** w/ Map

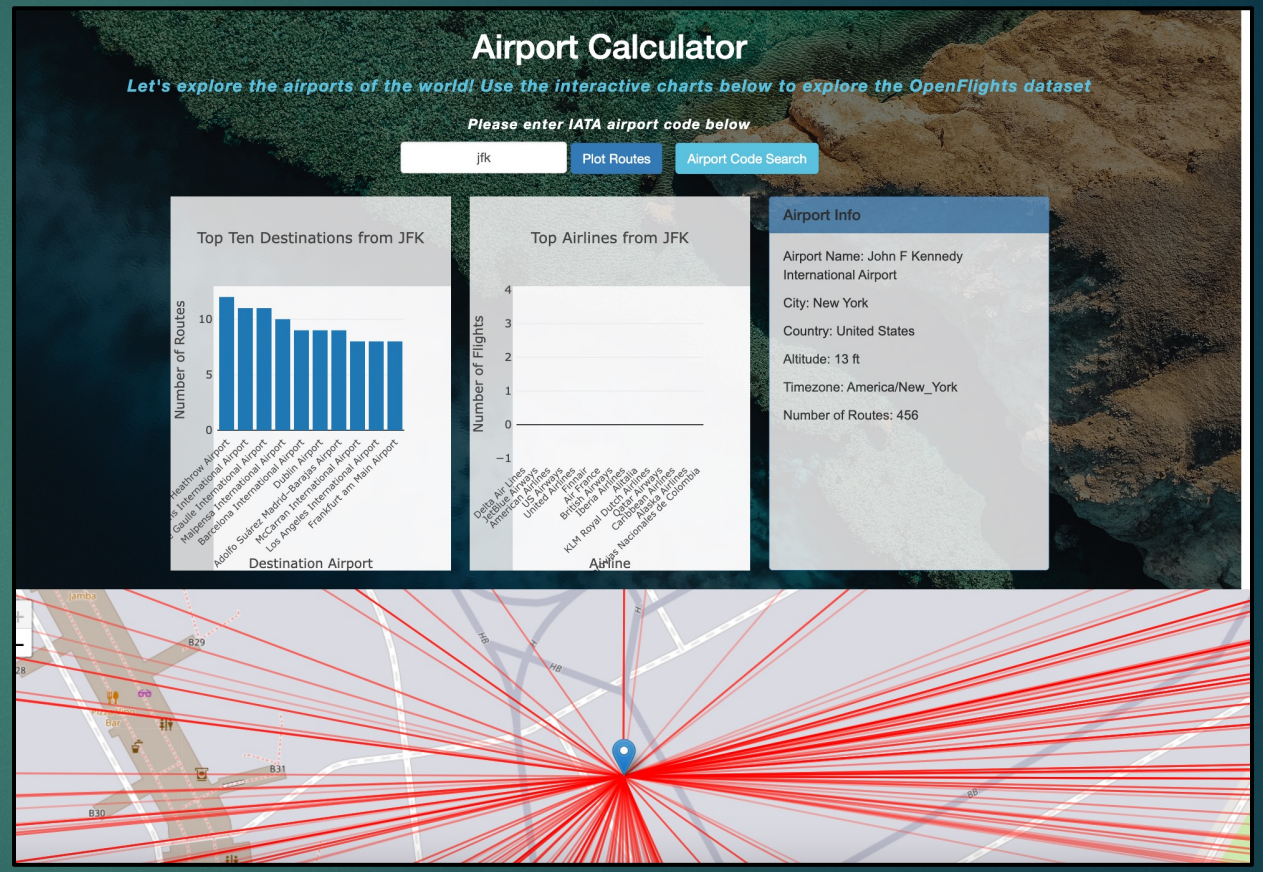
2. **Airport Info At-A-Glance** (airport name, altitude, city, country, altitude, time zone)

3. **Top Destinations** Graph

4. **Top Airlines** Graph

5. **IATA Code Cheat Sheet**

LIVE DEMO (2-3mins)



A PEEK AT OUR CODE

APP.JS

```
document.addEventListener("DOMContentLoaded", function() {
// initializing map
var map = L.map('map').setView([0, 0], 2);

// adding tile layer to map
L.tileLayer('https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png', {
attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/">OpenStreetMap</a> contribut
}).addTo(map);

// creating a marker to point to input airport
var sourceMarker;

// create a function to plot marker, add polylines ro map and erase all previous markers and lines
function plotRoutes(routesData, airportsData, airlinesData) {
// clear any markers and polylines that were there when the button is clicked
if (sourceMarker) {
map.removeLayer(sourceMarker);
}
map.eachLayer(function(layer) {
if (layer instanceof L.Polyline) {
map.removeLayer(layer);
}
});

// getting the iata code from user and converting it to uppercase
var airportCode = document.getElementById('airportCode').value.toUpperCase();
//finding the input airport in the openflights airport data as it appears as airport code
var sourceAirport = airportsData.find(function(airport) {
return airport.iata === airportCode;
});
// creating a number of routes counter by input airport
var numRoutes = routesData.filter(function(route) {
return route.source_airport === airportCode;
}).length;

// plotting the marker for the input airport on the map with a popup that displays the airport name and
airport code
sourceMarker = L.marker([sourceAirport.lat,
sourceAirport.lon]).addTo(map).bindPopup(sourceAirport.airport_id + ' (' + airportCode + ')');

displayAirportInfo(sourceAirport, numRoutes);
```

```
//getting all flights with the same source airport
routesData.forEach(function(route) {
// if the source aiport is the same as the airport code get the
destination airport
if (route.source_airport === airportCode) {
var destinationAirport = airportsData.find(function(airport) {
return airport.iata === route.destination_airport;
});
// get the lat and lon values for source airport and the destination
airport from opneflights airports json
if (destinationAirport) {
var latlngs = [
[sourceAirport.lat, sourceAirport.lon],
[destinationAirport.lat, destinationAirport.lon]
];


// plotting the polylines from source airport to destination lat and lon
L.polyline(latlngs, { color: 'red', opacity: 0.3, weight: 2
}).addTo(map);
}
}
});

// running the charts functions for display
buildDestinationsChart(airportCode, routesData, airportsData);
buildAirlinesChart(airportCode, routesData, airlinesData);
}
```

INDEX.HTML

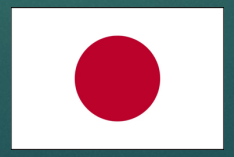
```
<div class="container">
<div class="row">
<div style="background : #8ea3d8be" class="col-md-12 jumbotron text-center">
<h1 font face="Arial">Airport Calculator</h1>
<p font face="Arial">Let's explore the airports of the world! Use the interactive charts below to explore the OpenFlights dataset</p>
</div>
</div>
<div class="row">
<div class="col-md-2">
<div class="well">
<h5>Please enter IATA airport code below</h5>
<input type="text" style="font-family: Arial" id="airportCode" placeholder="E.g., JFK" />
<button id="plotButton" style="font-family: Arial">Plot Routes</button><a href="airportcodes.html" target="_blank">Airport Code Search</a>
</div>
<div class="panel panel-primary">
<div class="panel-heading">
<h3 class="panel-title" font face="Arial">Airport Info</h3>
</div>
<div id="sample-metadata" class="panel-body"></div>
</div>
</div>
<div id="charts-container" class="col-md-10">
<div id="bar1"></div>
<div id="bar2"></div>
</div>
</div>

<div id="map-container">
<div id="map"></div>
</div>
</div>

<script src="https://d3js.org/d3.v7.min.js"></script>
<script src="https://cdn.plot.ly/plotly-latest.min.js"></script>
<script src="https://cdnjs.cloudflare.com/ajax/libs/leaflet/1.7.1/leaflet.js"></script>
<script src = "app.js"></script>
</body>

</html>
```

FUTURE IMPROVEMENTS

FUTURE IMPROVEMENTS

- Make the tool more useful by, eventually, adding pricing information
- Find a source to update the dataset with information after 2014
- Be able to create a price forecasting calculator
- Amenities at the airport (hotels, restaurants, shopping)





THANK YOU!


ARCTIC OCEAN
Greenland
(Denmark)
Svalbard
(Norway)
ARCTIC OCEAN
United States
Canada
United States
Iceland
Russia
Norway
Sweden
Finland
Estonia
Latvia
Lithuania
U.K.
Ireland
Den.
Neth.
Belg.
Germany
Poland
Belar.
Ukraine
Mol.
Kazakhstan
Mongolia
ATLANTIC OCEAN
Portugal
Spain
France
Italy
Rom.
Bul.
Georg.
Az.
Armenia
Turkey
Cyprus
Uzbek.
Turkm.
Kyrgyzstan
Tajikistan
China
Japan
N.Korea
S.Korea
Morocco
Tunisia
Greece
Syr.
Iraq
Iran
Afghan.
Pakistan
Nepal
Bhutan
India
Lebanon
Israel
Kuwait
Qatar
Jordan
Saudi Arabia
U.A.E.
Oman
Yemen
Western Sahara
Algeria
Libya
Egypt
Laos
Vietnam
Taiwan
PACIFIC OCEAN
Mexico
Caribbean
Senegal
Maurit.
Mali
Niger
Chad
Eritrea
Sudan
Djibouti
Bur.
Bangl.
Thai.
Cambodia
Philippines
The Gambia
B.Faso
Guinea-Bissau
Guinea
Sierra Leone
Liberia
Cote d'Ivoire
Nigeria
C.A.R.
South Sudan
Ethiopia
Somalia
Ken.
Sri Lanka
Malaysia
PACIFIC OCEAN
Central America
Venez.
Guyana
Suriname
French Guiana (France)
Colombia
Ecuador
Peru
Brazil
Ghana
Benin
Togo
Equatorial Guinea
Gabon
Cam.
Cong.
Dem. Rep. of Congo
Uganda
Rwanda
Burundi
Tanz.
Papua New Guinea
Solomon Islands
Indonesia
Timor-Leste
Bolivia
Paraguay
Chile
Argentina
Uruguay
Angola
Zambia
Zim.
Bots.
Namibia
South Africa
Lesotho
eSwatini
Mozambique
Malawi
Madagascar
ATLANTIC OCEAN
INDIAN OCEAN
Australia
New Caledonia
Fiji
New Zealand