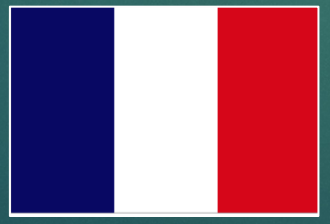
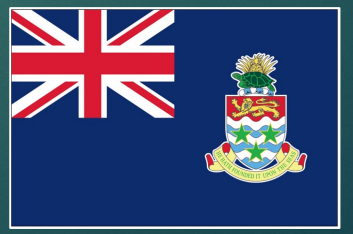




The Ultimate
Travel Route Visualization Dashboard

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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 CSV file which we converted to JSON files
- StackOverflow Discussion Forums
- Free Code Camp
- W3Schools
- JavaScriptTutorial.net
- IATA Airline and Airport Code Search





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> contributors'
}).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>
```

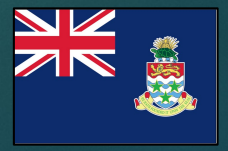




FUTURE IMPROVEMENTS

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