Objective

Practice using Array methods including `map(…)` and `reduce(…)`

Description

Starting with the `hurricaneData.js` data file from Project 3, compute the length of all six hurricane tracks, in miles, without the use of any looping statement, and print results to the console. To solve the problem, use Array methods `map(…)` and `reduce(…)`. Start your computations from the `hurricaneData` object.

To compute distance between two points on the earth's surface use the following JavaScript function from movable-type.co.uk.

```
// https://www.movable-type.co.uk/scripts/latlong.html
// Extend Number object with methods to convert between degrees & radians
Number.prototype.toRadians = function() { return this * Math.PI / 180; };
Number.prototype.toDegrees = function() { return this * 180 / Math.PI; };

// Compute distance in meters using the spherical law of cosines formula.
function distance(lat1, lon1, lat2, lon2) {
    var φ1 = lat1.toRadians(), φ2 = lat2.toRadians();
    var Δλ = (lon2-lon1).toRadians(), R = 6371e3;
    return Math.acos( Math.sin(φ1)*Math.sin(φ2)
                      + Math.cos(φ1)*Math.cos(φ2) * Math.cos(Δλ) ) * R;
}
```

Hints

- You may start with the file Lab09_start.html.
- Recall that you may get all keys of an object "o" using the `Object.keys(o)` function.
- Divide meters by 1609.344 to compute miles.
- Start by writing a function that computes the length of one hurricane track before applying the function to all hurricane tracks.
- Break down your function for one hurricane track into steps: first extract all hurricane track points into an Array, and then reduce that Array of points to a single track length.
- Before reducing your point Array into a length, remove the first point from the Array, add an initial distance value of 0, and use it to seed your length calculation.

Requirements

- Your entire script must be enclosed in an IIFE.
- You may NOT use looping statements like `for` or `while`.
- You may NOT reference individual hurricane data sets using a hurricane name.
- You MUST use Array methods `map(…)` and `reduce(…)` each at least once in your program.
- You MUST enter comments in your file including your name and a description of the assignment.
- You MUST comment your code, explaining what you did in each major section.
- Submit JavaScript and/or HTML files on Canvas under the appropriate assignment.

Following are the results from my solution, in miles.

```
[
  {name: "KATRINA", length: 2105.5018244808107}
  {name: "DEAN",    length: 4725.89447293634}
  {name: "HARVEY",  length: 5005.838769715639}
  {name: "MARIA",   length: 5626.9237476426215}
  {name: "IRMA",    length: 4780.38466137764}
  {name: "SANDY",   length: 2681.8713039192817}
]
```