

GeoLocation Project

Uses the GeoCoordinatePortable API to compare the location data from a CSV file containing all the locations and store names of all the Taco Bell's in Alabama.

The program selects the 2 Taco Bells furthest apart and returns their name and the distance between the 2 stores in miles.

Input: A CVS file of stores in the form of Latitude,Longitude,Name

Output: The name of the 2 stores that were the furthest away and the distance in miles.

```
//create file variable
const string cvsPath = "TacoBell-US-AL.csv";

static void Main(string[] args)
{
    // use File.ReadAllLines(path) to grab all the lines from your csv
    var lines = File.ReadAllLines(cvsPath);

    // Create a new instance of your TacoParser class
    var parser = new TacoParser();

    // Grabs an IEnumerable of locations using the Select command.
    var locations = lines.Select(parser.Parse).ToArray();

    //Variables to track 2 stores and a distance
    ITrackable one = null;
    ITrackable two = null;
    double distance = 0.0;
```

First, I created an interface (ITrackable) that would handle the details of how the information on each line of the CSV files was stored – I then made a class (TacoBell), that would handle the an instance of each store. Another class (TacoParser) was created to handle how the data was extracted from the CSV file to create the instance of the store. The locations reference is an array of ITrackable's that represent each store in the CSV file.

```
namespace GeoLocationProject
{
    public interface ITrackable
    {
        public string Name { get; set; }
        public Point Location { get; set; }
    }
}
```

```

namespace GeoLocationProject
{
    class TacoBell : ITrackable
    {
        public string Name { get; set; }
        public Point Location { get; set; }

        public TacoBell(string name, double lat, double longitude)
        {
            Name = name;
            Location = new Point(lat, longitude);
        }
    }
}

```

```

public struct Point
{
    public double Longitude { get; set; }
    public double Latitude { get; set; }

    public Point(double latitude, double longitude)
    {
        Longitude = longitude;
        Latitude = latitude;
    }
}

```

```

public class TacoParser
{
    public ITrackable Parse(string line)
    {
        var cells = line.Split(',');

        //makes sure there are enough locations to compare
        if (cells.Length < 3)
        {
            return null;
        }

        //Extract out the data from the array
        var latitude = double.Parse(cells[0]);
        var longitude = double.Parse(cells[1]);
        var name = cells[2];
        //Create the individual store from the above data extracted
        var store = new TacoBell(name, latitude, longitude);

        return store;
    }
}

```

Two references that would temporarily hold the stores with the furthest distance and a variable to store that distance.

```

for (int i = 0; i < locations.Length; i++)
{
    //Outer Location
    Point corA = new Point(locations[i].Location.Latitude, locations[i].Location.Longitude);
    for (int j = i + 1; j < locations.Length; j++)
    {
        //Inner Location
        Point corB = new Point(locations[j].Location.Latitude, locations[j].Location.Longitude);
        var s1 = new GeoCoordinate(corA.Latitude, corA.Longitude);
        var s2 = new GeoCoordinate(corB.Latitude, corB.Longitude);
        //Updates the distance and stores if next stores have greater distance
        if (s1.GetDistanceTo(s2) > distance)
        {
            distance = s1.GetDistanceTo(s2);
            one = locations[i];
            two = locations[j];
        }
    }
}

```

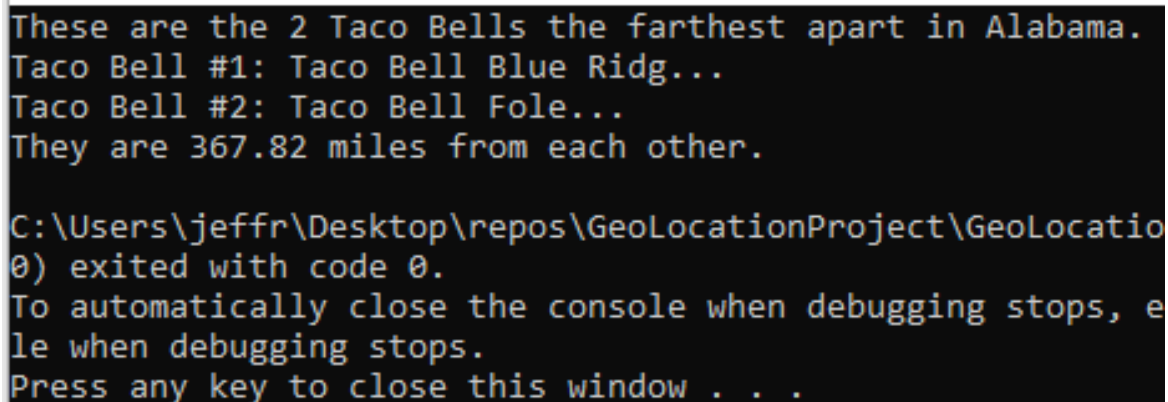
A nested for loop was used to keep compute the distances using the API mentioned earlier and the two furthest stores we tracked as the loops iterated.

```

Console.WriteLine("These are the 2 Taco Bells the farthest apart in Alabama.");
Console.WriteLine($"Taco Bell #1: {one.Name}");
Console.WriteLine($"Taco Bell #2: {two.Name}");
distance = Math.Round(distance * 0.000621371, 2); // Converts Distance to miles (round 2 places)
Console.WriteLine($"They are {distance} miles from each other.");

```

The data was then formatted for output.



```

These are the 2 Taco Bells the farthest apart in Alabama.
Taco Bell #1: Taco Bell Blue Ridg...
Taco Bell #2: Taco Bell Fole...
They are 367.82 miles from each other.

C:\Users\jeffr\Desktop\repos\GeoLocationProject\GeoLocatio
0) exited with code 0.
To automatically close the console when debugging stops, e
le when debugging stops.
Press any key to close this window . . .

```

I used xUnit to test and make sure I was getting expected data from each parsed line of data.