TEAM 5 CASE STUDY 1

BSCPE22S3

PLANNING

PROBLEM:

As someone who enjoys riding bikes, we often face issues like figuring out the quickest way to get where we want to go. We also deal with tricky weather situations. For instance, let's say we start in Cubao where it's hot and dry, but when we reach San Mateo, it's raining, and we didn't expect that, so we get stuck.

We considered this scenario as a real world problem.

- How can we know the nearest route or shortest path?
- How can we know the weather of a certain route?

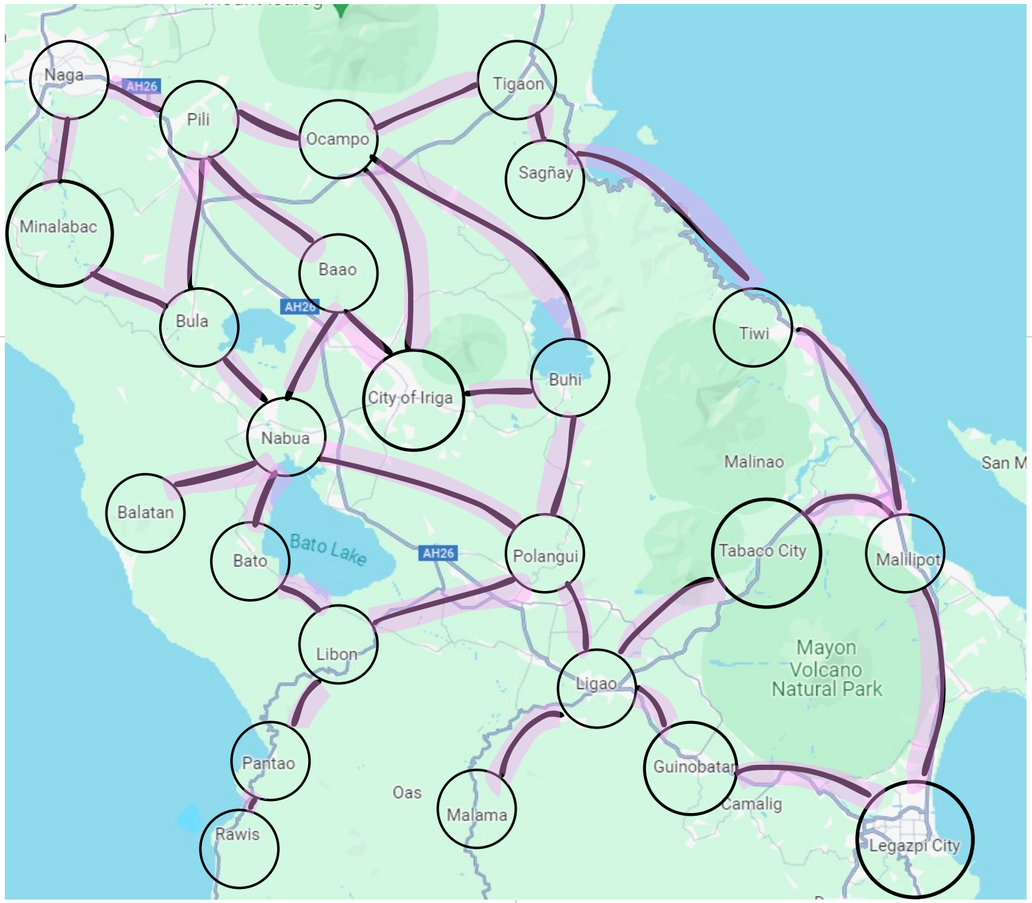
PLANNING

To fix this issue, we create a program that finds the closest/shortest route of the places inputted for you. It also lets you know the weather at the places you'll be passing through.

- Graph: a set of nodes
- Weather information API key
- Shortest path finder: from starting point to endpoint
- Result: path integrated with weather data
- Use cases: graphing and dynamic

GRAPH

The paths that are connected to each to determine the nearest or shortest route possible by using algorithms



ITERATION 1

How can we consistently provide cyclists with shortest paths from place to place

Sub-problems:

- Measuring the distance between point-to-point
- Tracking weather condition

Pattern Recognition

During long cycling journeys, the average distance of the cycling voyage is around 100km. Making the fluctuating weather more reasonable

Abstraction

- Relevant information: distance between city-to-city.

ITERATION 2

We want to determine the shortest paths from place-to-place

Sub-problems:

- Gathering the data of the distance
- Getting the shortest routes

Pattern Recognition

To measure the distance between two points. We can simply get their distance from each other.

Abstraction

- Implementing the graph algorithm to accurately measure distances from place-to-place

ITERATION 3

How can we consistently provide cyclists with weather updates for specific locations, routes, or destinations during their long rides to alert them about weather conditions?

Sub-problems:

- Tracking variable weather conditions
- Tracking temperature in the current location, route, and destination
- Tracking wind speed

Pattern Recognition

During long cycling journeys, cyclists often encounter rapid changes in weather conditions as they move swiftly between different locations.

Abstraction

- Relevant information: weather, temperature, and wind speed.

OUTPUT

Naga	Pili	Ocampo	Tigaon	Sagnay	Minalabac	Bula	Baao
Tiwi	Buhi	City of iriga	Nabua	Balatan	Bato	Libon	Pantao
Rawis	Polangui	Ligao	Malama	Tabaco city	Guinobatan	Legazpi city	Malilipot

A : City weather report B : Route Weather report
Choice: *b*
Starting point: *naga*
Destination: *legazpi city*
Shortest path from Naga to Legazpi city is Naga->Minalabac->Bula->Nabua->Polangui->Ligao->Guinobatan->Legazpi city

	Location	Weather	Temperature	Wind Speed
0	Naga, Bicol	clear sky	81°F	12.19kph
1	Minalabac, Bicol	clear sky	81°F	11.36kph
2	Bula, Bicol	clear sky	81°F	10.36kph
3	Nabua, Bicol	clear sky	80°F	8.95kph
4	Polangui, Bicol	clear sky	80°F	6.64kph
5	Ligao, Bicol	clear sky	80°F	7.07kph
6	Guinobatan, Bicol	clear sky	80°F	10.22kph
7	Legazpi city, Bicol	few clouds	81°F	12.35kph

Majority of the route is Clear sky with 87.5% out of 8

Naga	Pili	Ocampo	Tigaon	Sagnay	Minalabac	Bula	Baao
Tiwi	Buhi	City of iriga	Nabua	Balatan	Bato	Libon	Pantao
Rawis	Polangui	Ligao	Malama	Tabaco city	Guinobatan	Legazpi city	Malilipot

A : City weather report B : Route Weather report

Choice: *a*

Enter the City name: *naga*

	Location	Weather	Temperature	Wind Speed
0	Naga, Bicol	clear sky	81°F	12.19kph