**G-map**

Function

Using the Haversine or Great Circle distance formula, we determine the approximate distance between two given points based on their longitude and latitude. Subsequently, considering the mode of transportation and an estimated average speed, we calculate the time required to travel from the starting point to the destination. This approach allows us to provide an estimate of the expected travel duration.

Cosine takes an angle as input, and returns a value ranging from -1 to 1. Arc Cosine (acos) takes a value from -1 to 1 as input, and returns an angle.

**Code**

//for user input

// lon1 = prompt("Enter the Start longitude");

// lat1 = prompt("Enter the Start latitude");

// lon2 = prompt("Enter the end longitude");

// lat2 = prompt("Enter the end latitude");

const walk = 3; //average 3km/h

const bike = 60;//average 60 km/h

const car = 80;//average 80km/h

var lat1 = 18.943889; //start point

var lon1 = 72.835991; //start point

var lat2 = 19.218330;//end point

var lon2 = 72.978088;// end point

function distance(){

// Convert degrees to radians

var lat1Rad = lat1 \* Math.PI / 180;

var lon1Rad = lon1 \* Math.PI / 180;

var lat2Rad = lat2 \* Math.PI / 180;

var lon2Rad = lon2 \* Math.PI / 180;

// haversine or great-circle distance

formula to calculate

// distance = Math.acos(Math.sin(lat1Rad) \* Math.sin(lat2Rad) + Math.cos(lat1Rad) \* Math.cos(lat2Rad) \* Math.cos(lon2Rad - lon1Rad)) \* 6371;

//6371 is Earth radius in km.

//breakdown haversine formula

term1 = Math.sin(lat1Rad) \* Math.sin(lat2Rad);

term2 = Math.cos(lat1Rad) \* Math.cos(lat2Rad) \* Math.cos(lon2Rad - lon1Rad);

dist=Math.acos(term1+term2)\*6371;

console.log(dist);

console.log(dist.toFixed(2)+"KM");

return dist;

}

distance();

var mode = prompt("select the mode: \n1.walk \n2.bike \n3.car \n");

switch(mode){

case '1':

time = dist/walk;

break;

case '2':

time = dist/bike;

case '3':

time = dist/car;

}

//ternary operator

// if the time is less than 1 hour its display in min. else its display in hrs

let result = time<1?"time:"+time.toFixed(2)+"Min":"time:"+time.toFixed(2)+"Hrs";

console.log(result);