





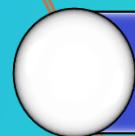
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MICROPROCESSOR Project *GPS Tracking System*

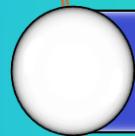
The Members



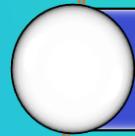
Abdelrahman Mahmoud Mohamed



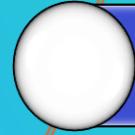
Amr Khaled Zenhom



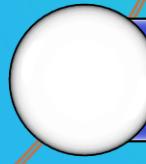
Omar Sallam Farouk



Karim Mohamed Amin

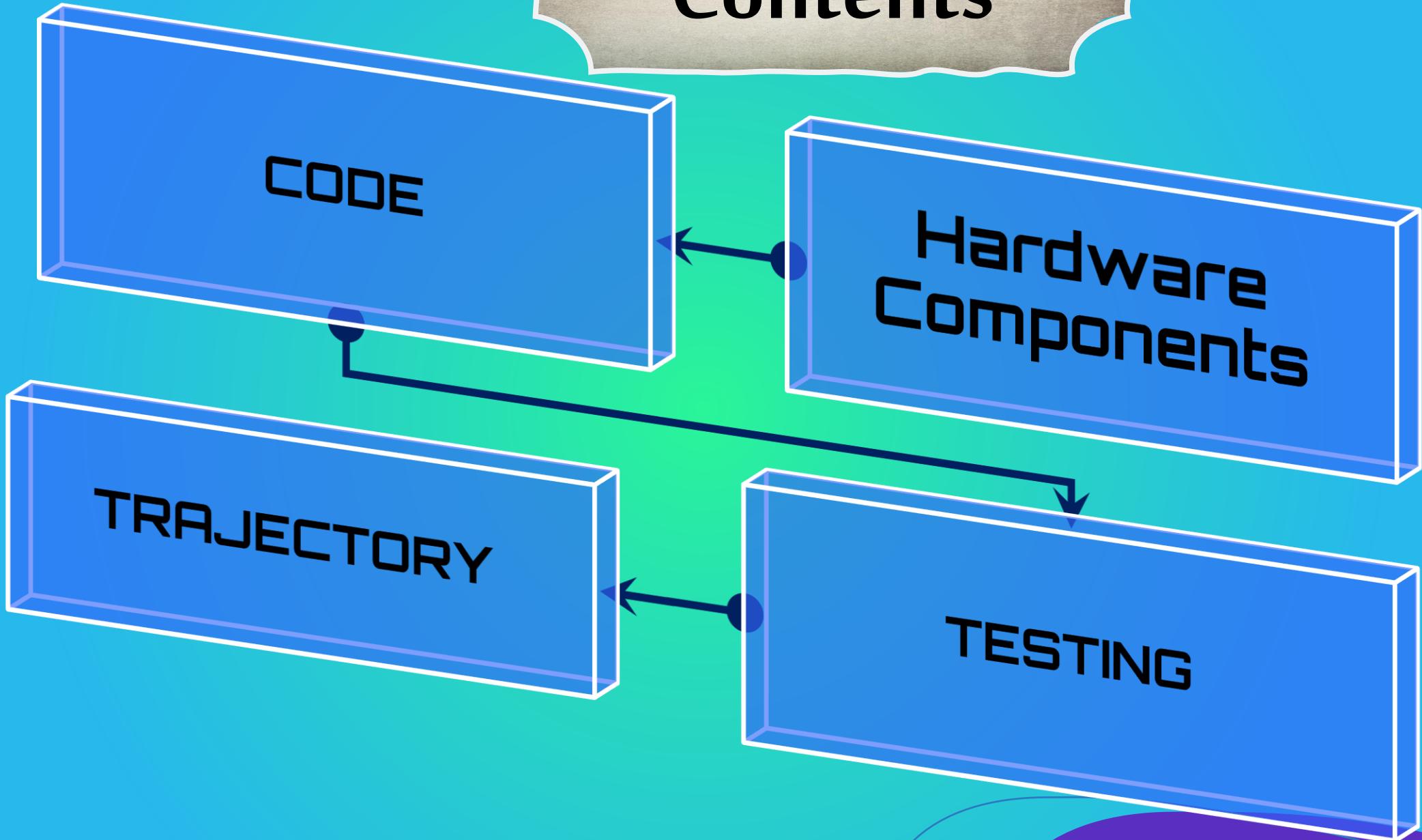


Kirolos yousri shohdy



Islam Mahmoud Hanafi

Contents





Hardware Components



Tiva C Series TM4C123G

GPS module neo 6m

LCD1602A

Potentiometer 10k

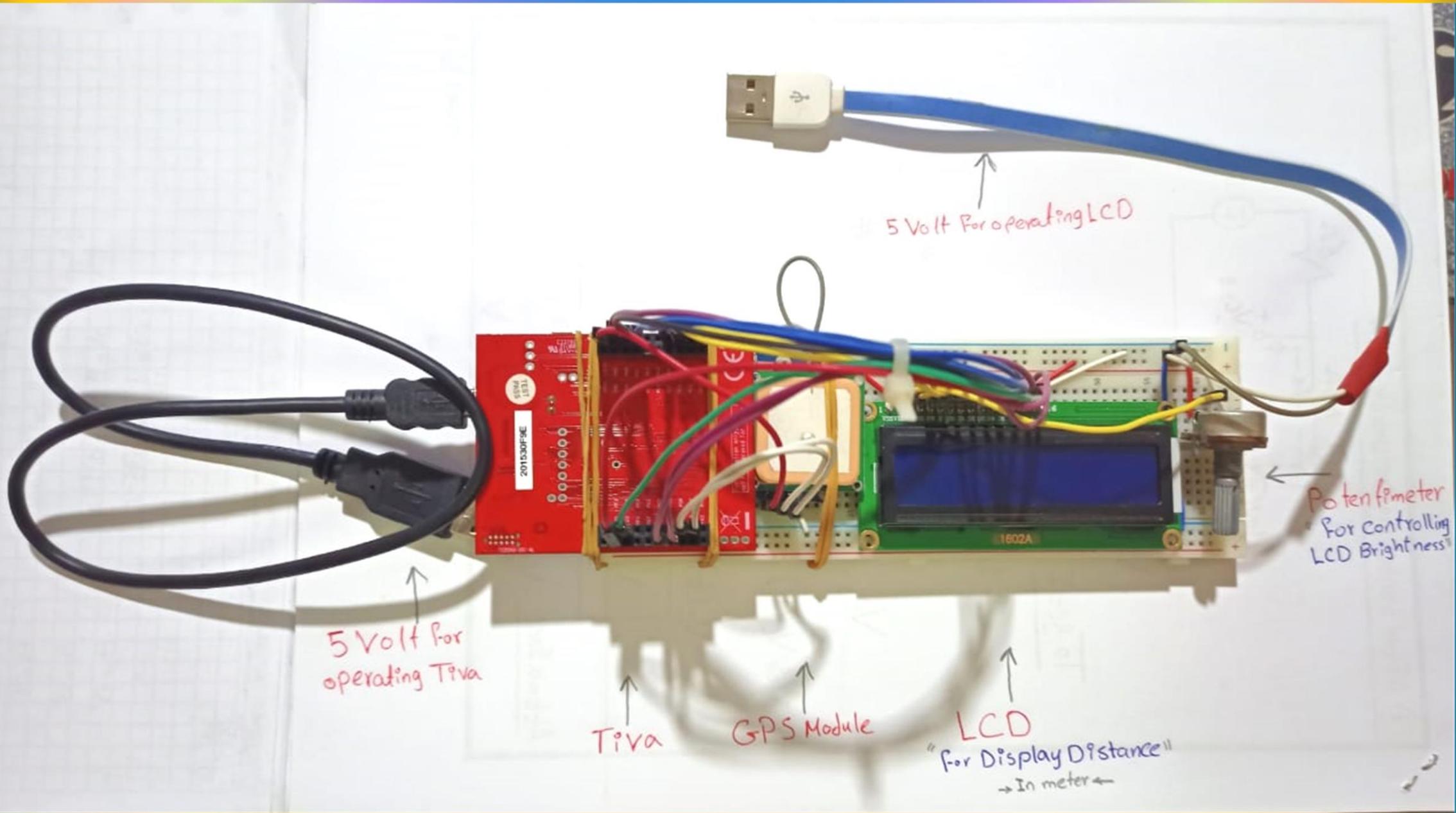
Male Male jumpers && Bridges

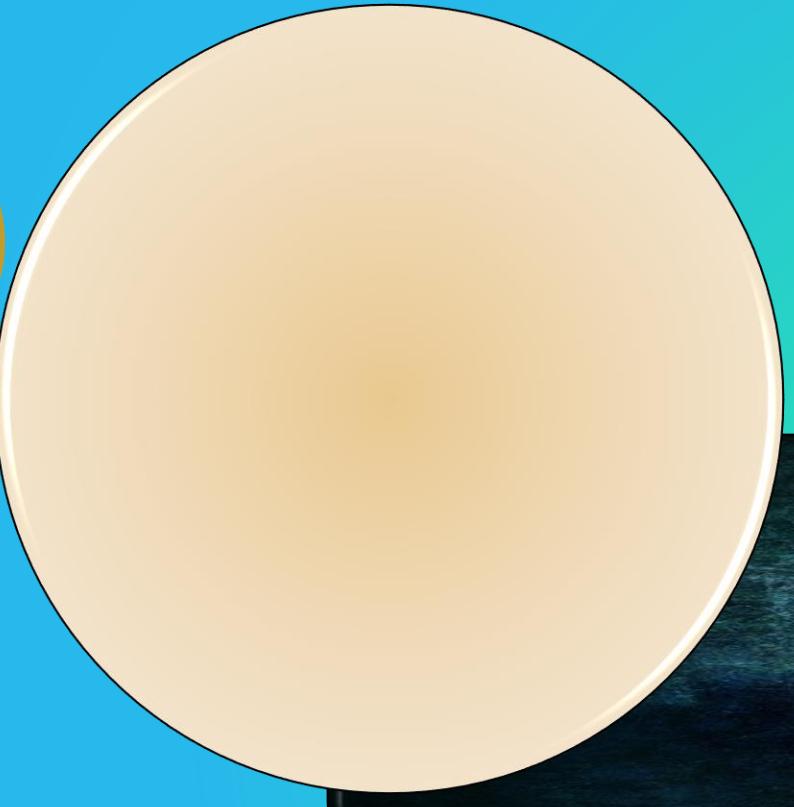
USB connector

Breadboard



Hardware Components





CODE



checks if the distance exceeded the 100 meter or not

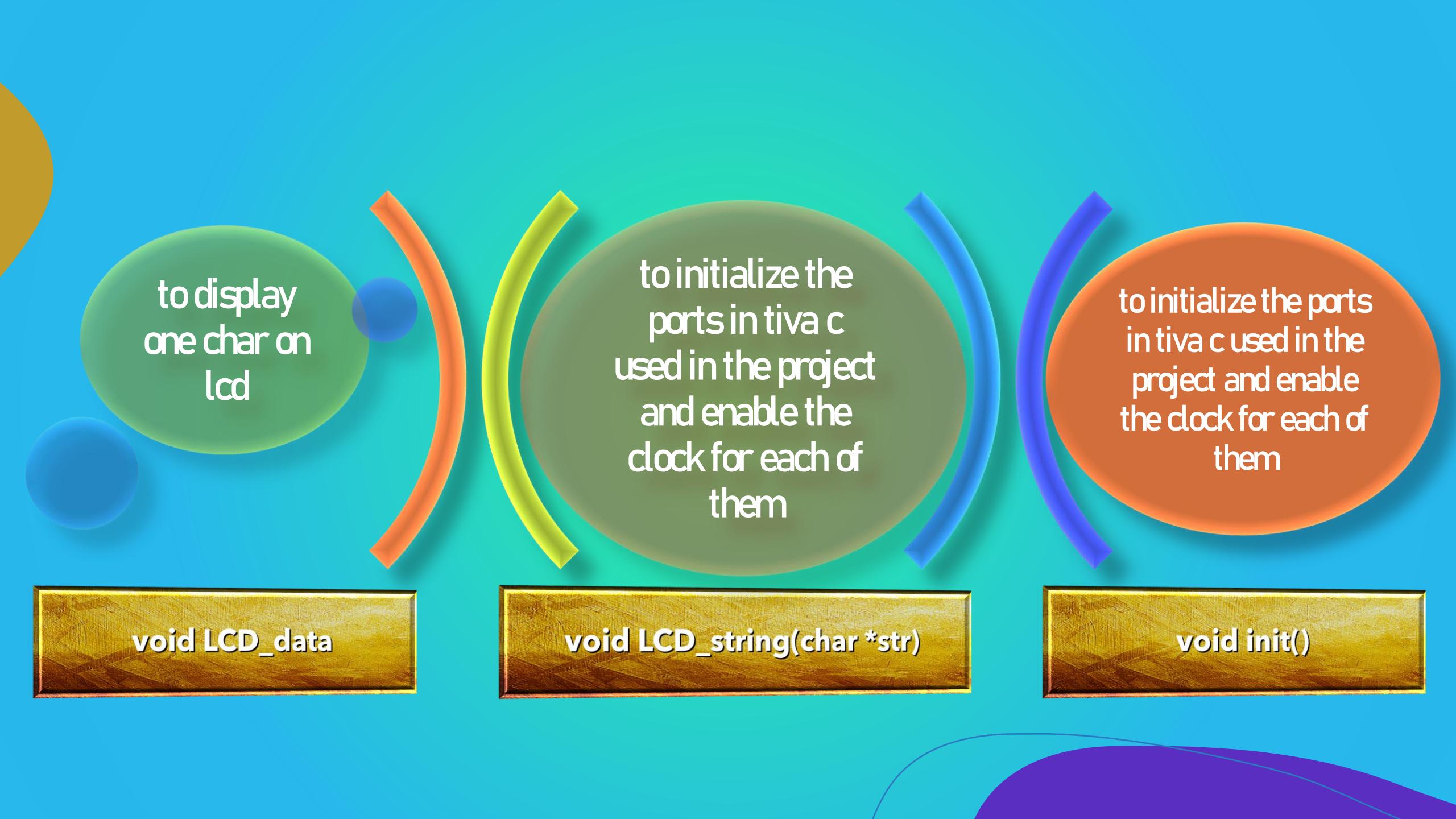
**bool
is_exceeded(float d)**

this function used in different segment of code to make delay required for each component

void delay(uint32_t d)

to write command in lcd

void LCD_command(char com)



to display
one char on
lcd

void LCD_data

to initialize the
parts in tiva c
used in the project
and enable the
clock for each of
them

void LCD_string(char *str)

to initialize the ports
in tiva c used in the
project and enable
the clock for each of
them

void init()

uart initialization to set the baud rate and the configuration for the uart protocol.

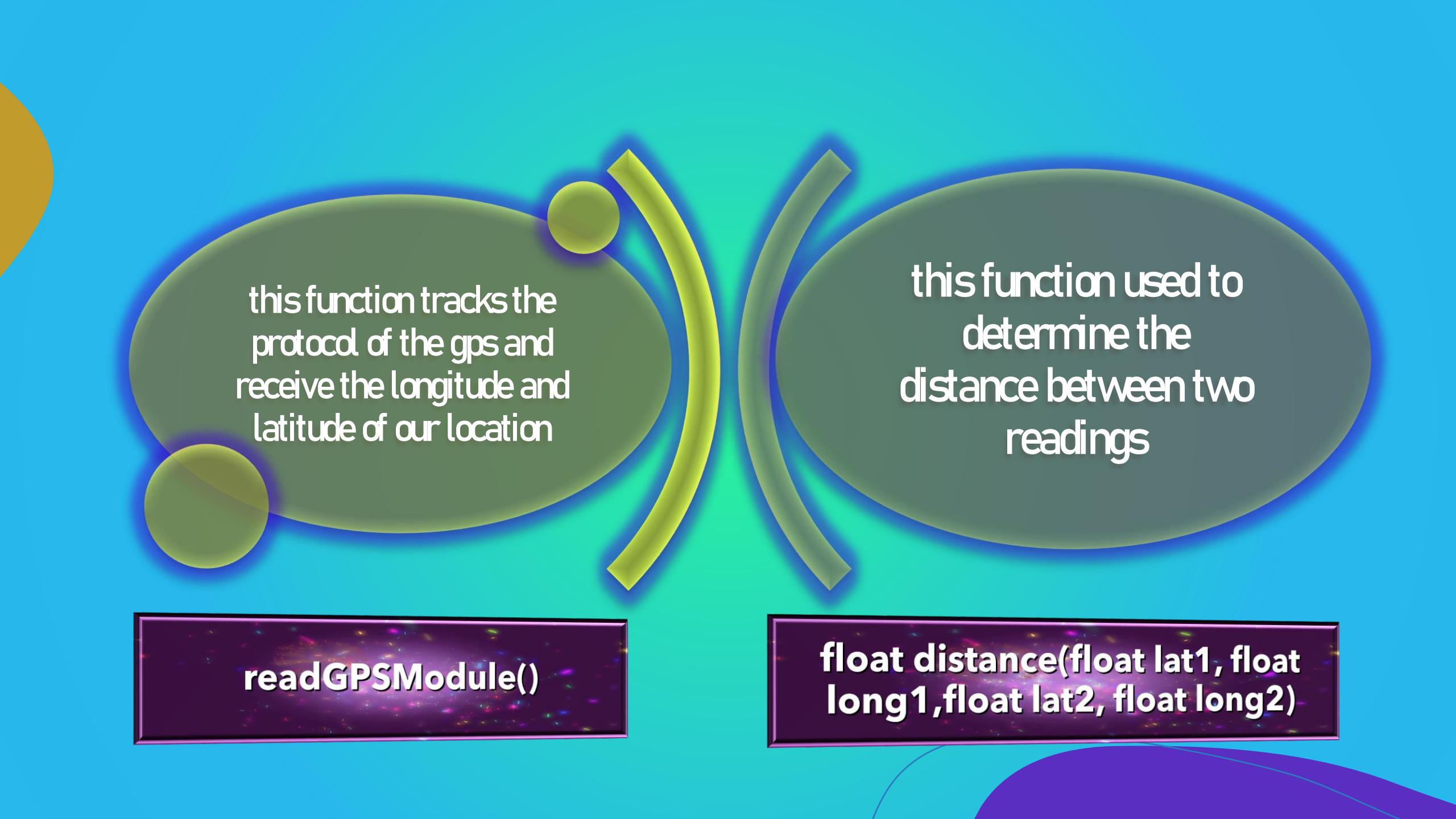
void init_uart()

to select which row or column in lcd

void LCD_G_rc

converts the longitude and latitude from degree to radian

float toRadians(const float degree)



this function tracks the protocol of the gps and receive the longitude and latitude of our location

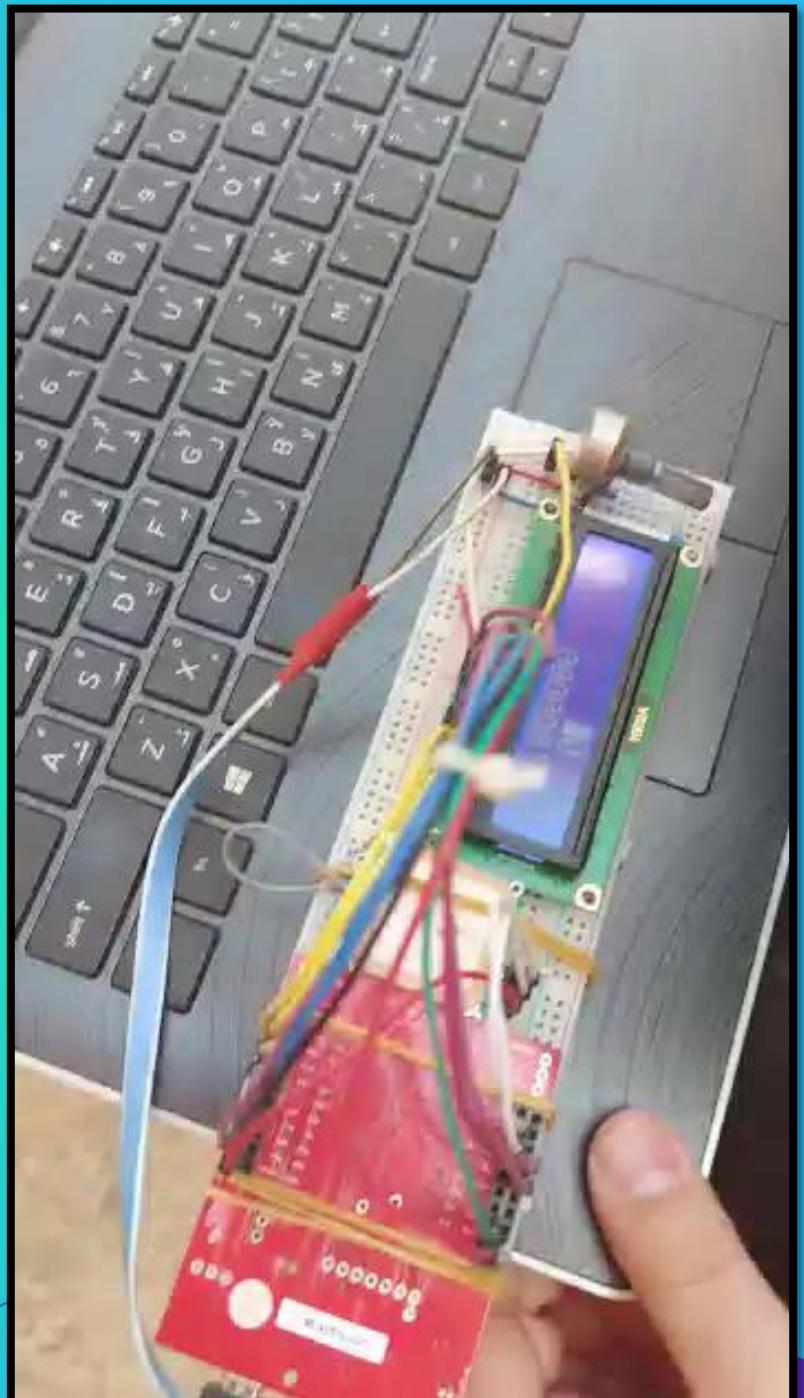
readGPSModule()

this function used to determine the distance between two readings

float distance(float lat1, float long1, float lat2, float long2)



Testing





TRAJECTORY

Coordinates From Console

Latitude,Longitude

30.007914,31.164686

30.007963,31.164812

30.008003,31.164951

30.008049,31.165033

30.008078,31.165152

30.008163,31.165281

30.008205,31.165314

30.00824, 31.16539

30.008314,31.16538

30.008339,31.165354

30.008394,31.16534

DRAWING TRAJECTORY BY ONLINE SOFTWARE

The screenshot shows a map interface titled "Map Maker" with the subtitle "Make & Share Maps". The main area displays a map with a green trajectory line connecting several location markers. The map includes street names in Arabic and English, such as "سليم فياض", "محمد العاصي", and "أحمد عوضين". The trajectory line starts at approximately 30.0080, 31.1645 and ends at approximately 30.0085, 31.1650. The "Layer Editor" panel on the right is open, showing settings for a layer named "56" with 11 locations. It includes options for Data Filters, Show Markers (which is checked), Lines (which is also checked), and Heatmap/Clustering. The "Lines" section shows a color swatch set to green and a width of 2 pixels. The "Metrics" section indicates a total distance of 97 meters (0.06 miles / 0.1 km) using the haversine formula.

Map Maker
Make & Share Maps

Current Map My First Map
you may edit or delete this map.

Map Layers & Data -
On/Off Layer Name 56

Import Data

Geocode Addresses to lat,lng
Create Driving Routes
Getting Started Guide
Upgrade to Map Maker PRO

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Maps Layers View / Edit Export.csv

Map Tools Map Settings Sharing Screenshot

Help Contact abc

Search

Layer Editor

Name: 56

Locations: 11

Data Filters Show Markers

Layer's Default Marker Icon (Individual location marker icons may also be customized)

Pin Dot Image

Icon Size: 20

Pin Colors

Fill Color: Green Fill Opacity: 100% Border & Dot: Black Border Opacity: 100%

Reset all location styles to layer defaults

Show Labels Lines

Color: Green Line Opacity: 100%

Width: 2 pixels

Heatmap Clustering

Metrics

Σ Distance: 97 meters (haversine)
0.06 miles
0.1 km

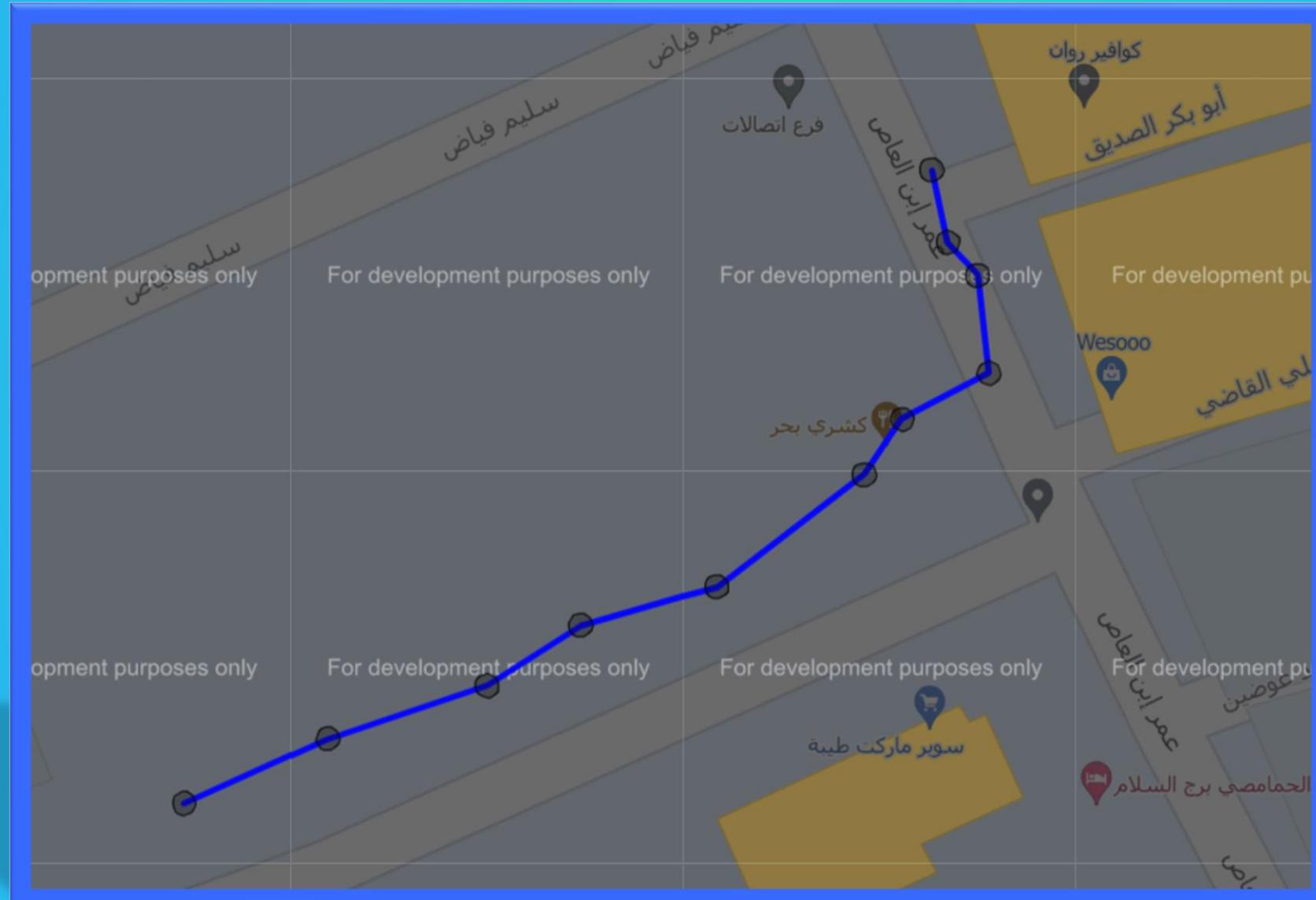
Pergolas center سبعة

Remove Layer From Map

Feedback

Google

DRAWING TRAJECTORY OUR PYTHON CODE



PYTHON CODE

jupyter trajectory Last Checkpoint: ٦٣٢٠٢١ (autosaved)  Logout

File Edit View Insert Cell Kernel Widgets Help Trusted Python 3

In [4]: `pip install gmplot`

```
Requirement already satisfied: gmplot in c:\users\egypt\anaconda3\lib\site-packages (1.4.1)
Requirement already satisfied: requests in c:\users\egypt\anaconda3\lib\site-packages (from gmplot) (2.24.0)
Requirement already satisfied: idna<3,>=2.5 in c:\users\egypt\anaconda3\lib\site-packages (from requests->gmplot) (2.10)
Requirement already satisfied: urllib3!=1.25.0,!>1.25.1,<1.26,>=1.21.1 in c:\users\egypt\anaconda3\lib\site-packages (from requests->gmplot) (1.25.11)
Requirement already satisfied: chardet<4,>=3.0.2 in c:\users\egypt\anaconda3\lib\site-packages (from requests->gmplot) (3.0.4)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\egypt\anaconda3\lib\site-packages (from requests->gmplot) (2020.6.20)
Note: you may need to restart the kernel to use updated packages.
```

In [10]: `import gmplot`

```
lat=[30.007914,30.007963,30.008003,30.008049,30.008078,30.008163,30.008205,30.00824,30.008314,30.008339,30.008394]
lang=[31.164686,31.164812,31.164951,31.165033,31.165152,31.165281,31.165314,31.16539,31.16538,31.165354,31.16534]
gmapOne = gmplot.GoogleMapPlotter(30.007914, 31.164686, 19)
gmapOne.scatter(lat,lang,"#ff0000",size=1,marker=False)
gmapOne.plot(lat,lang,'blue',edge_width=4)
gmapOne.draw("map7.html")
```

