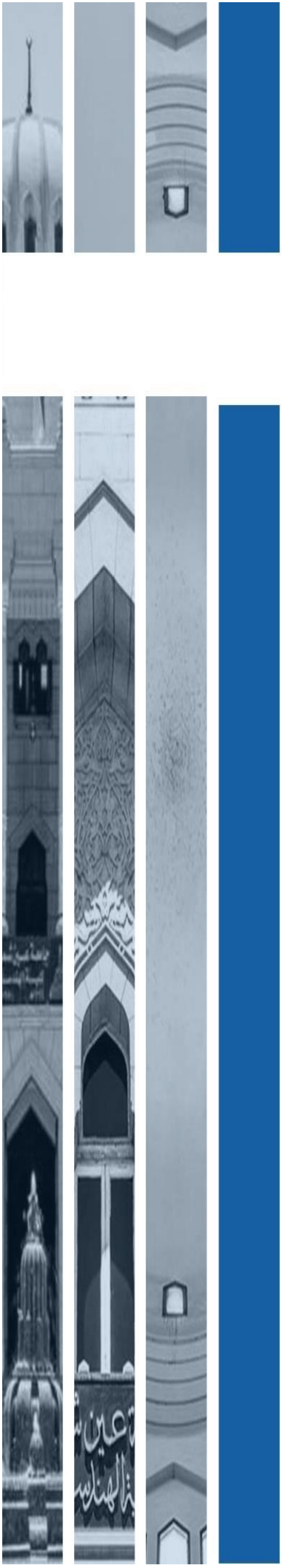


GPS

Embedded Project

TEAM: - 15

1	**MICHAEL SAMIR FAHIM**	**2000949**	**ECE**
2	Ahmed Ayman Samir Osman	2000069	ECE
3	Shrouq Mohamed Khalil Mohamed	2000346	ECE
4	Bassem Sherif Wadie	2000095	ECE
5	Youssef Amgad Selim	2001290	ECE
6	Jolie Nagy Rizkalla	2000191	ECE
7	Pola Hany Sobhy	2001642	ECE
8	Jumana Ahmed Mohamed Amin	2000116	ECE
9	Bahaa Eldin Hassan Mohamed	2000259	ECE

1-Contributions

1)GPS function **(Ahmed Ayman & Shrouq Mohamed)**

First: - we get the latitude and longitude from the GPS device after connecting it to UART 5 PE4 & PE5.

Second: - we get the readings from the GPS device neo 6m as a string then divide it to get the required readings.

Third: - we accumulate the previous readings in GET distance function.

2)Main Function & Debugging **(Michael Samir & Pola Hany)**

This function is used to collect the functions together to synchronize it to get the readings from the GPS function and then send it to the tiva-c using the uart function then display it on the lcd screen by using the GPIO function to use the 2 switches the first to get the last position and the second to start the code.

3)LCD Function **(Jolie Nagy & Jumana Ahmed)**

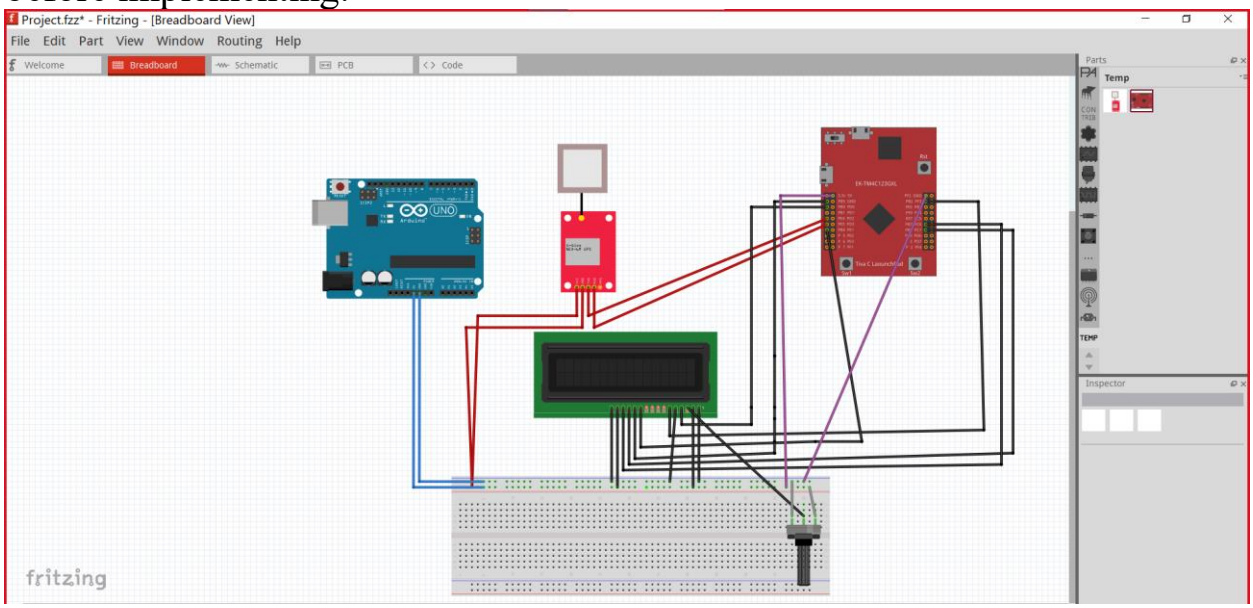
This function first defines the lcd with the tiva-c using port B then converting the GPS readings from float to string by using sprint function then displaying it on the lcd screen.

4)Systick function **(Bahaa Hassan)**

This function is responsible for defining the delays needed for synchronizing the baud rates of each product used with the tiva-c.

5)Hardware implementation (Youssef Amgad & Bassem sherif)

The task is to connect all the used hardware together (Tiva-c, GPS NEO 6M, LCD SCREEN, BREAD CONNECTIONS).
Then a schematic for the circuit is done on fritzing to be more clear before implementing.



6)GitHub repository (Youssef Amgad & Shrouq Mohamed)

prepared the repository and taught us how to push and pull the files of each member.

7)Organization role (Pola hany & Bahaa Hassan)

Organized the files on keil-4 and did a comfort system for the team to work and synchronize the tasks with each other.

8)Buying products (Ahmed Ayman & Bassem Sherif)

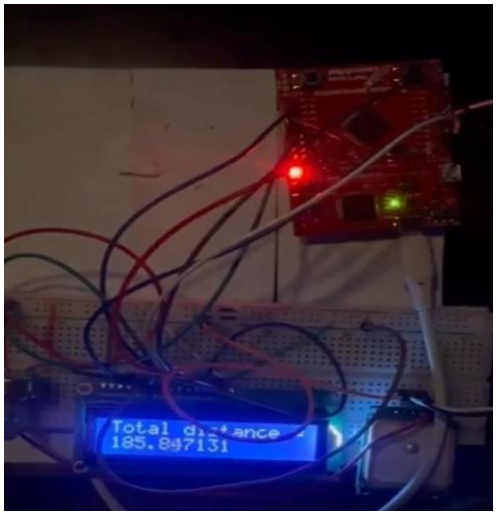
We bought small components like LCD, JUMPERS, GPS module from Ram Stores and we managed to get the tiva-c new with a better price from another store.

9)Report & video (Ahmed Ayman & Jolie Nagy & Jumana Ahmed)

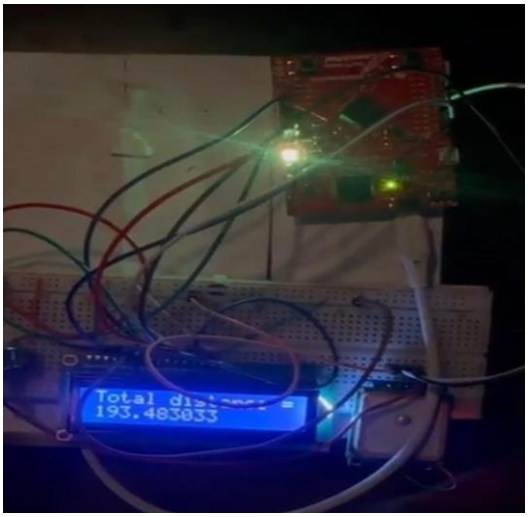
2-Bouns

We managed to make the bonus part after calculating the total distance then we made the tiva-c led light to change from red to yellow when the distance is less than 5 meters and when then when we reach the destination it turns into green, and we managed to display the total distance on the lcd screen.

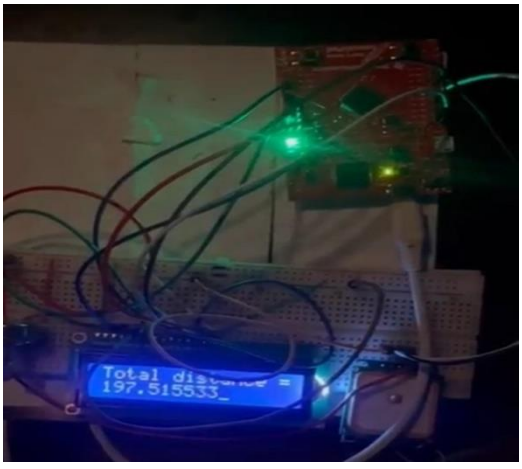
Red



Yellow



Green & Total Dis.



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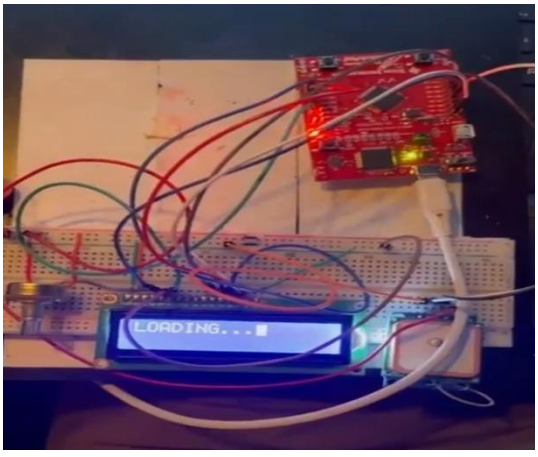
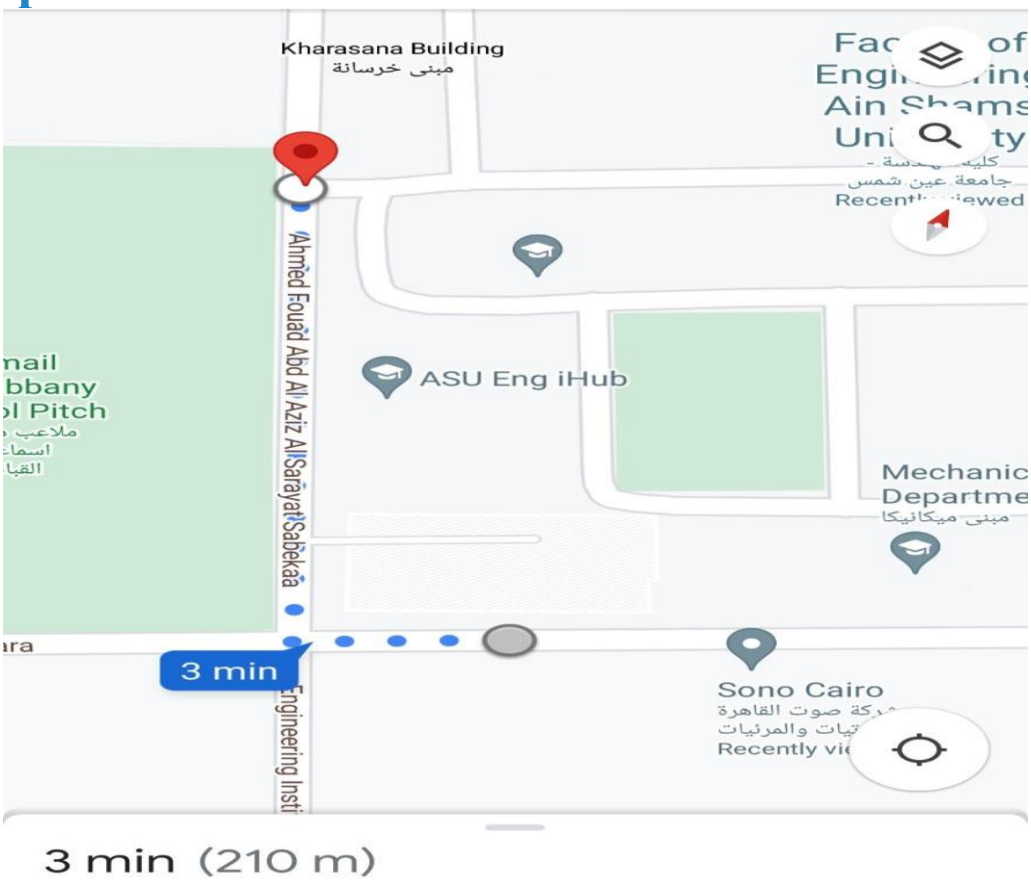


Map



3-Some errors & its solution

1- initializing systick after initializing lcd (it uses systick) so the code stuck in it.

Sol.

```
// initialization ports
init_PORT_F();
init_PORT_B();
SysTick_Init();
UART5_init();
lcd_init();
```

2- using GPS read function without while loop so the gps reads invalid reading and returns 0.

Sol.

```
while (c != 0x01) // c is flag
{
   current_long = GPS_read_long();
}
c=0x0;
while (c != 0x01)
{
   current_lat = GPS_read_lat();
}
```

3- in 1st loop the previous Lat. & previous long initialized and = 0 so when calculating the distance, we found that it was very large value.

Sol.

```
if ( (previous_lat==0)&&(previous_long==0) ){
  previous_lat=current_lat;
  previous_long=current_long;
  continue;
}
```

4-links

Video
https://drive.google.com/drive/u/0/folders/1idCkv6fuiSWRmAzQrisc48bB7vqqquhy

GitHub
https://github.com/Youssef-Amgad/GPS-Project-