GPS Tracking System

Project Description

In this project you will develop the following system using TM4C123G LaunchPad:

1. The GPS subsystem stores the coordinates of the start point.
2. After reaching the destination point, the GPS subsystem stores the coordinates of the end point and calculates the total distance that was taken by the user.
3. The output will be translated as the following.
    1. Stage 1: The built-in LED will be turned on(green) when the target destination is reached.
    2. Stage 2: The built-in LED will be turned on(yellow) when the target destination is about to be reached < 5 meters.
    3. Stage 3: The built-in LED will be turned on(red) when the target destination is far away by distance > 5 meters.

4. The trajectory of the distance should satisfy the following criteria:
    1. The total distance between the start and the end point should be > 100 meters.
    2. The path from the start point to the end point should form a non-straight line that is similar to the provided baseline path below.

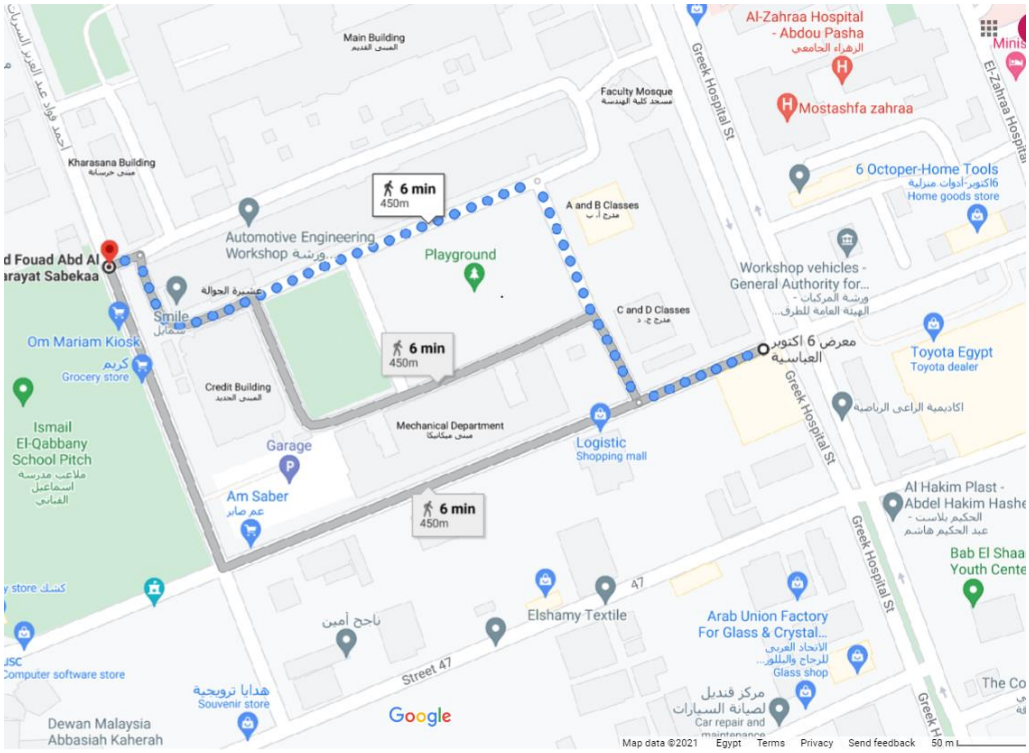

Figure 1:Basline path that you should follow

3. You have the freedom to select any starting point on google maps.
4. Your SW should calculate the distance between the starting point and the end point, and you should compare the calculated distance with the distance obtained from google maps.
5. You should ensure that there is no big difference/deviation (error margin should be <= 5%) between your calculated distance and the one shown by google maps.

Bonus:

Any extra feature will be considered as bonus.

Requirements

Most of GPS systems are using UART protocol to provide the longitude and latitude points (coordinates). So, you have to configure the UART peripheral in your

microcontroller to communicate properly with the external GPS module according to Tiva C datasheet.

- ## Number of Students

  The project team should be between 5 - 10 members.

- ## Delivery and project discussion

  1. The team should deliver source codes compressed in one zip file.
  2. The team should deliver a video for the project. Upload your video on the drive and attach the **video link in the submission form**.
  3. The team should push their codes on **GitHub repository**. Each team member should **contribute** and push **his/her part of code on GitHub**.
  4. The team leader should attach the team **GitHub repository link in the submission form**.
  5. A project discussion will be held.

- ## Deadline

  1. The deadline of the submission will be 13th June at 11:59 pm.
  2. The project delivery files will be submitted through lms.

  3. The initial dates for live demo will be held between 15th June and 18th June.

- ## Evaluation

  1. 25% of the marks for **individual** contribution specially the GitHub repository contribution.

  2. 75% of the marks for the project team.

Note: A team member without contribution on GitHub repo will get ZERO.