

Comodule Assignment

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Task

The task was to program the nRF52 DK to transmit Bluetooth advertising data. A name had to be given to the Bluetooth device and the advertisement data needed to include GPS coordinates. The program also had to accept GPS coordinate data as input from PC and publish this data as the advertisement.

Solution

1. I downloaded the latest SEGGER Embedded Studio and latest nRF5 SDK.
2. I got the beacon example application to compile (two issues had to be resolved).
3. I got the beacon example application running on the nRF52 device
4. I took the beacon example as a base and started to develop my program on top of it.
5. I read Bluetooth specifications and other tutorials, blogs to understand what is a Bluetooth beacon and what is advertising data.
6. Git commit log displays my progress in developing the program. I solved the task in these steps:
 - change beacon name
 - include scan response packet with GPS data (GPS data is presented as manufacturer data)
 - change scan response packet content at run time
 - accept string input from PC over RTT debug
 - publish input data at run time

The solution is at <https://github.com/johannesehala/ble-gps-beacon>

Usage

- SEGGER Embedded Studio v7.10a
- nRF5 SDK v17.1.0
- add solution project to SDK tree at root
- open project in SEGGER Embedded Studio comodule_ha/ble_gps_beacon/pca10056/s140/ses/ble_app_beacon_pca10056_s140.emProject
- once the program is compiled and running open the debug terminal and give input through the terminal:
 - A - start token, indicates beginning of new string.
 - B - end token, indicates end of string.
 - Max string length is 26 characters.
 - Characters are accepted until buffer is full (26 bytes) or B is received. Only then is the string transmitted as advertising data.
 - Accepts most UTF8 characters.
 - Suggested GPS format - 36*06'46.8"N 115*10'23.2"W
- In nRF Connect App change the manufacturer data display coding to UTF8.

Note

- I didn't spend any time formatting my code to adhere to any style, nor did I spend time on correct structure of the source code. I only made the necessary changes needed to get the beacon example application to do what was asked in the assignment.
- I didn't find any specific information on advertising GPS coordinates in the Bluetooth spec. I didn't find a GPS data type, so I coded the GPS coordinates as text characters (UTF8).