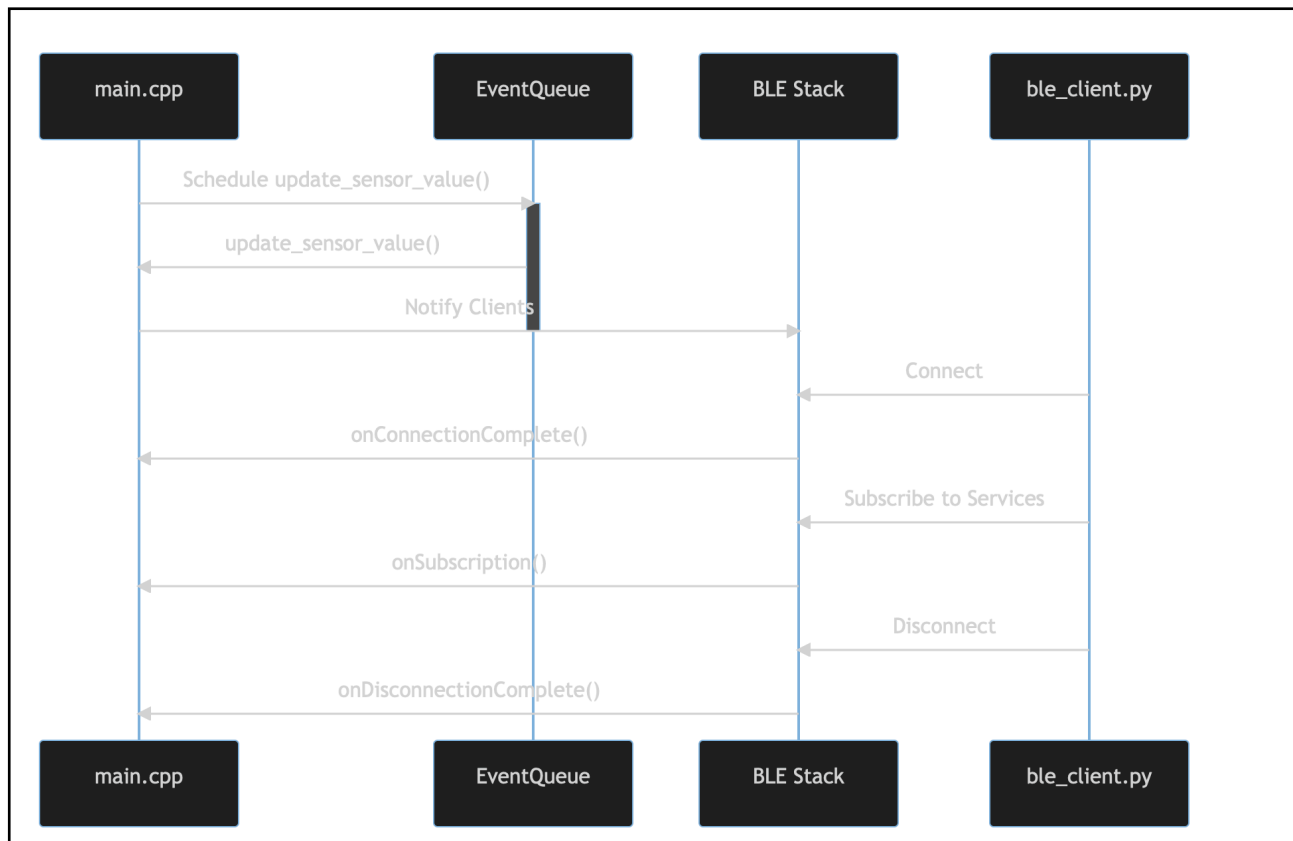


HW4 report

Github URL: <https://github.com/stanthemaker/EmbeddedSystem/tree/main/hw4>

Draw an execution sequence chart of the program and also describe how an EventQueue object play its role in the program:



In summary, the EventQueue in the program serves as the central mechanism for scheduling and dispatching events. It ensures that tasks like updating sensor values and processing BLE events are executed in a timely and organized manner.

There are two major types of events in the even queue: BLE Events and Update Sensor Events. The BLE stack generates events based on various activities, such as incoming BLE connections, disconnections, data transfers, and more. These events need to be processed to ensure the BLE functionality operates correctly. On the other hand, the program periodically updates the sensor values. This is achieved using the `call_every` method of the EventQueue, which schedules the `update_sensor_value` method to be called every 1 second.

Personal report:

This homework requires us to design how to store 3D values obtained by the sensors on board. And because of the memory storage is involved, it is way harder to debug. For example, I encountered the bug below. I thought the bug was memory-related problems, but the compiler did not report any error and the error messages shown were also insufficient for

```
xPSR : A1002600
PSP : 10002208
MSP : 20017FD0
CPUID: 410FC241
HFSR : 40000000
MMFSR: 00000000
BFSR : 00000004
UFSR : 00000000
DFSR : 00000000
AFSR : 00000000
Mode : Thread
Priv : Privileged
Stack: PSP

-- MbedOS Fault Handler --

++ MbedOS Error Info ++
Error Status: 0x80FF013D Code: 317 Module: 255
Error Message: Fault exception
Location: 0x800126A
Error Value: 0x10000188
Current Thread: main Id: 0x10002F9C Entry: 0x8023C91 StackSize: 0x1000 StackMem: 0x10001548 SP: 0x10002274
For more info, visit: https://mbed.com/s/error?error=0x80FF013D&tgt=DISCO\_L475VG\_IOT01A
-- MbedOS Error Info --

= System will be rebooted due to a fatal error =
= Reboot count(=5) reached maximum. system will halt after rebooting =
```

me to debug. I had to manually test out which line of code was the cause, which took me a lot of time. I feel that programming in micro processing unit could be very challenging for me, especially with memory-related problems.