

Project 2 - Report
Remote Survival Module
Advanced Practical Embedded Software Development

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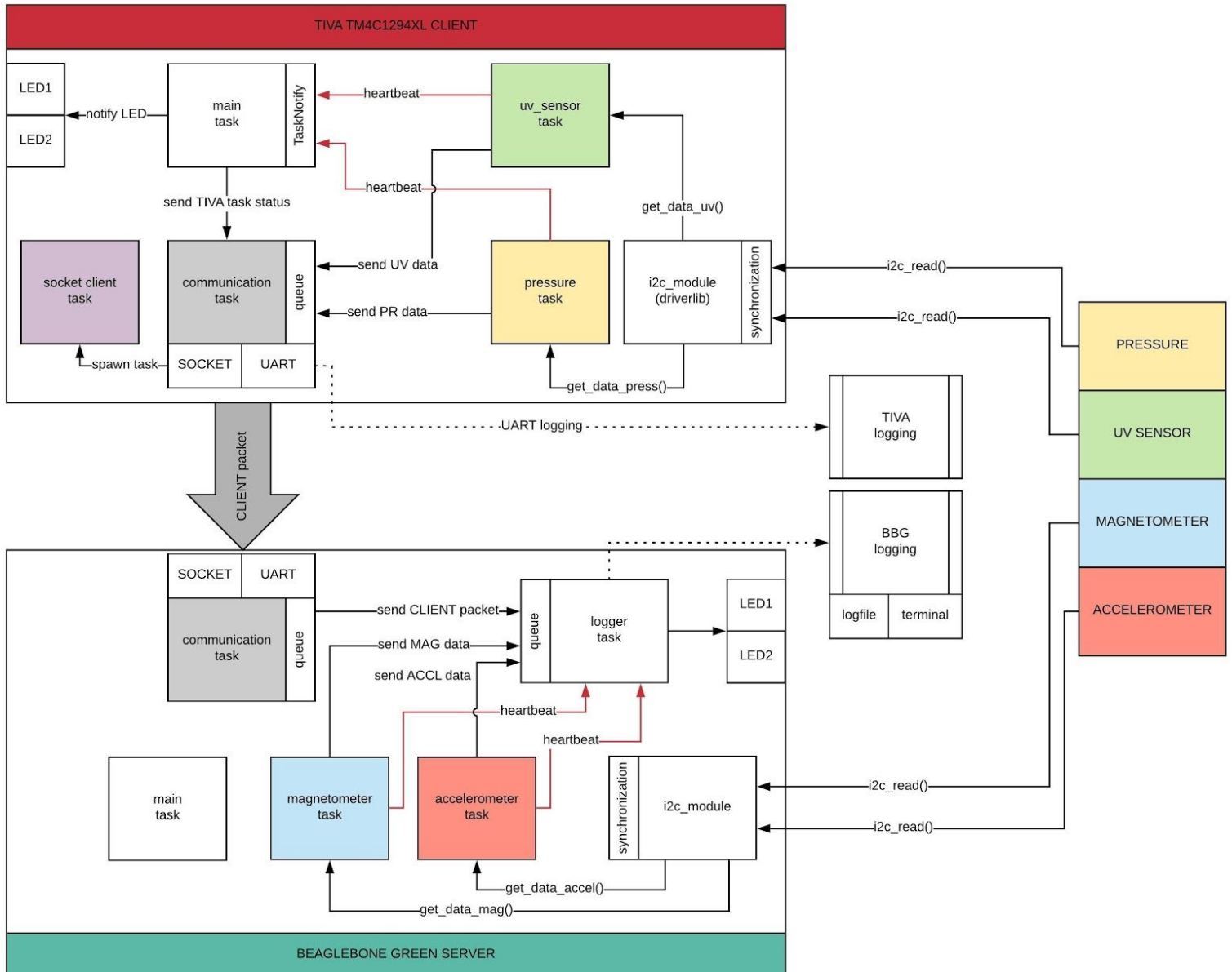
Github link:

TIVA: https://github.com/vijoy-sunil/ECEN5013_APES/tree/master/P2

BBG:

<https://github.com/praveengnan94/Advanced-Practical-Embedded-Software-/tree/master/Project s/Project2/BBG>

Software architecture diagram (updated)



TIVA client side logging

The picture below shows the client ID, TIVAs task status (alive or not), Ultra violetdata UV and pressure sensor PR data.

```
client id: 1
client status: alive [U P] : dead [  ]
sensor: [UV] : [0] : [UVI]
sensor: [PR] : [83.19] : [kPa]

client id: 1
client status: alive [U P] : dead [  ]
sensor: [UV] : [0] : [UVI]
sensor: [PR] : [83.19] : [kPa]

client id: 1
client status: alive [U P] : dead [  ]
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client id: 1
client status: alive [U P] : dead [  ]
sensor: [UV] : [0] : [UVI]
sensor: [PR] : [83.19] : [kPa]
```

BeagleBone Green Server side Logging

The picture below shows the magnetometer and accelerometer data from the Beaglebone and the status of the tasks (alive or not) and sensor data and task status from TIVA along with time stamps.

```
TIME: Mon Apr 30 04:00:07 2018
LEVEL: 1 SOURCE: TIVA ID: 1 PR ALIVE 83.199997 [kPa]

TIME: Mon Apr 30 03:59:50 2018
LEVEL: 1 SOURCE: MAGNETOMETER: X: 199 [G] Y: 183 [G] Z: 236 [G] MAG ALIVE

TIME: Mon Apr 30 03:59:50 2018
LEVEL: 1 SOURCE: ACCELEROMETER: X: 133 [G] Y: 66 [G] Z: 231 [G] ACCEL ALIVE

TIME: Mon Apr 30 04:00:08 2018
LEVEL: 1 SOURCE: TIVA ID: 1 UV ALIVE 3.000000 [UVI]

TIME: Mon Apr 30 04:00:08 2018
LEVEL: 1 SOURCE: TIVA ID: 1 PR ALIVE 83.199997 [kPa]

TIME: Mon Apr 30 03:59:51 2018
LEVEL: 1 SOURCE: MAGNETOMETER: X: 237 [G] Y: 53 [G] Z: 202 [G] MAG ALIVE

TIME: Mon Apr 30 03:59:51 2018
LEVEL: 1 SOURCE: ACCELEROMETER: X: 150 [G] Y: 58 [G] Z: 0 [G] ACCEL ALIVE

TIME: Mon Apr 30 04:00:09 2018
LEVEL: 1 SOURCE: TIVA ID: 1 UV ALIVE 4.000000 [UVI]

TIME: Mon Apr 30 04:00:09 2018
LEVEL: 1 SOURCE: TIVA ID: 1 PR ALIVE 83.199997 [kPa]

TIME: Mon Apr 30 03:59:52 2018
LEVEL: 1 SOURCE: MAGNETOMETER: X: 207 [G] Y: 119 [G] Z: 238 [G] MAG ALIVE

TIME: Mon Apr 30 03:59:52 2018
LEVEL: 1 SOURCE: ACCELEROMETER: X: 167 [G] Y: 61 [G] Z: 254 [G] ACCEL ALIVE

TIME: Mon Apr 30 04:00:10 2018
LEVEL: 1 SOURCE: TIVA ID: 1 UV ALIVE 4.000000 [UVI]
```

CMOCKA test results

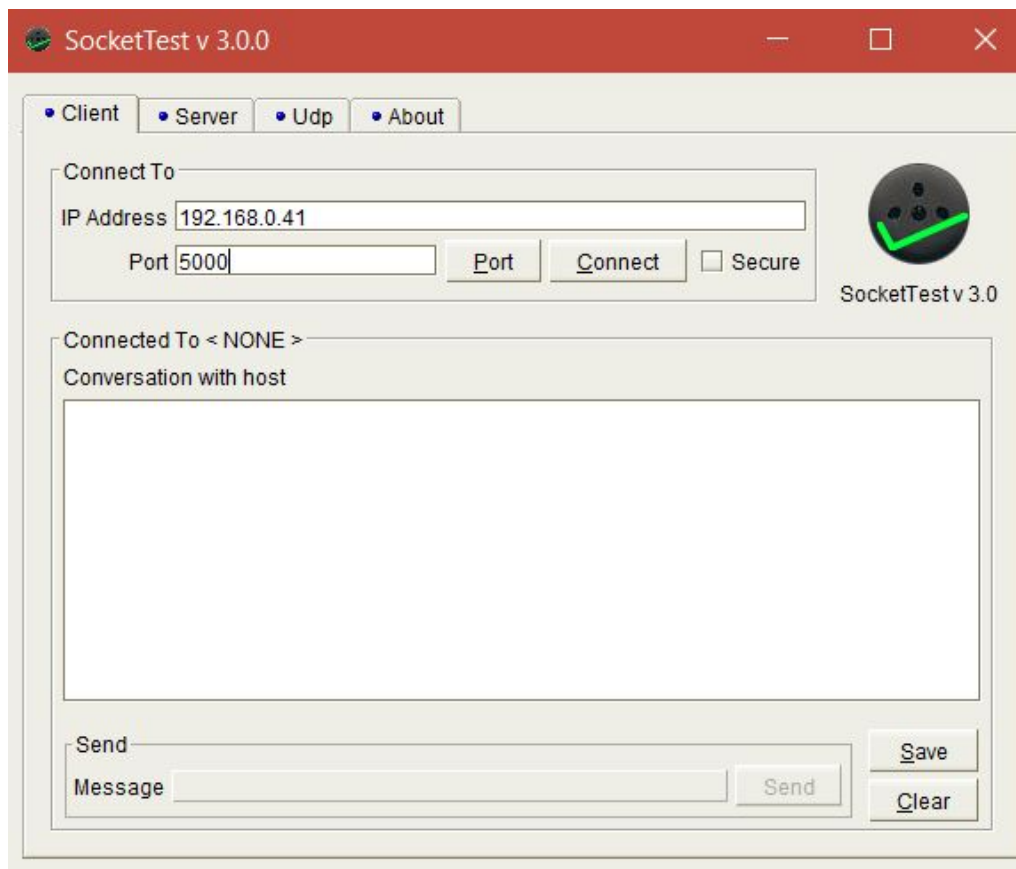
```
root@praveen-Latitude-E5430-non-vPro:~/Desktop/APES/GITHUB/Advanced-Practical-Embedded-
[=====] Running 4 test(s).
[ RUN      ] testsocketcreate
[ OK       ] testsocketcreate
[ RUN      ] testsocketaccept
[ OK       ] testsocketaccept
[ RUN      ] testsocketread
[ OK       ] testsocketread
[ RUN      ] testsocketcompare
[ OK       ] testsocketcompare
[=====] 4 test(s) run.
[ PASSED   ] 4 test(s).

0 FAILED TEST(S)
```

Tests conducted on cmocka

1. Socket creation
2. Socket accept
3. Socket read
4. Socket read string

Client is simulated through “SocketTest” software



Sensors used

All 4 sensors are on MATRIX Creator board

<https://www.matrix.one/products/creator>



Server side:

1. Magnetometer
2. Accelerometer

Client side:

1. Pressure
2. Ultra violet

Server - client communication interface provided

1. UART
2. Socket

Logging

Server side:

1. UART logging on terminal
2. Log file written into disk

Client side:

1. UART logging on terminal.