

# Advanced Embedded Software Development

## Homework – 5

Date: 04/10/2019

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Github: <https://github.com/sanjuprakashk/Advanced-Embedded-Software-Development/tree/master/HW5>

### References:

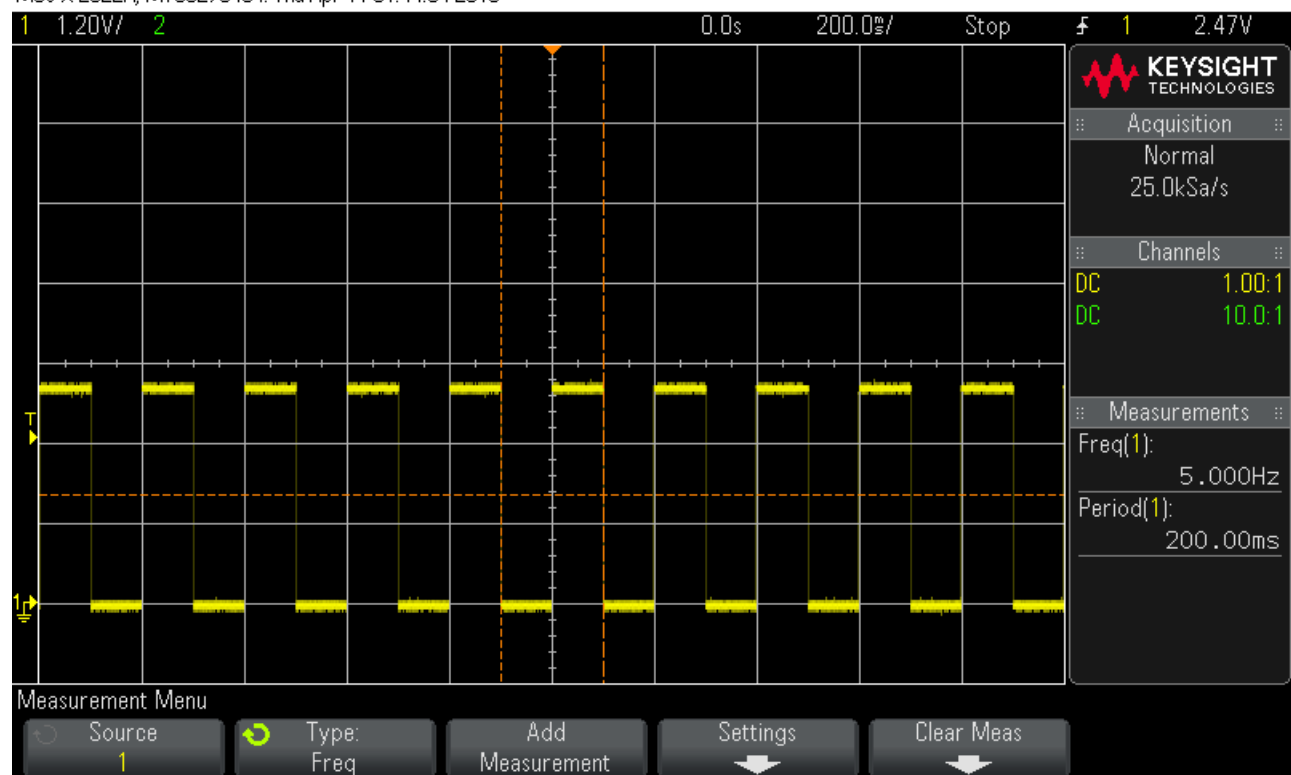
[https://github.com/rheidebr/ECEN5013-LUX\\_Temp\\_demo](https://github.com/rheidebr/ECEN5013-LUX_Temp_demo),  
[https://github.com/akobyl/TM4C129\\_FreRTOS\\_Demo](https://github.com/akobyl/TM4C129_FreRTOS_Demo),  
<https://www.freertos.org/a00106.html>

### Problem 1:

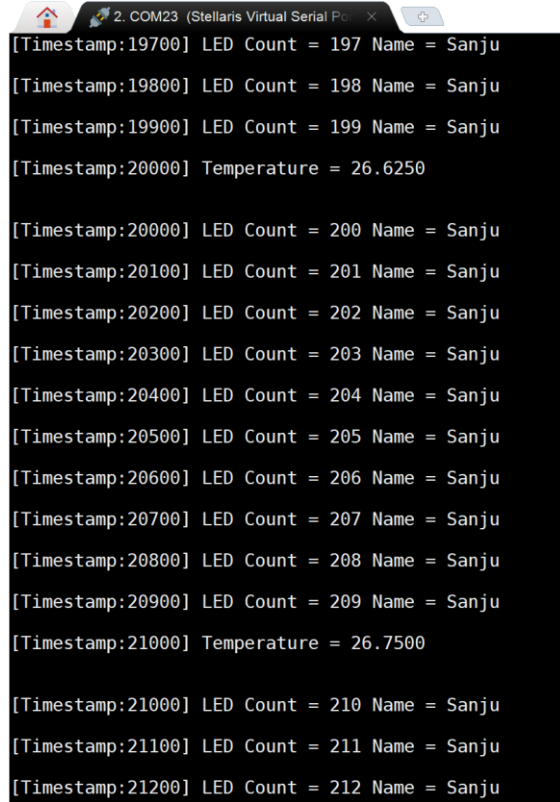
#### Scope shot of LED pin switching at 10Hz:

The scope shot highlights half a cycle and thus shows 5Hz. The full cycle value is 2 times this value.

MSO-X 2022A, MY56270404: Thu Apr 11 01:44:04 2019



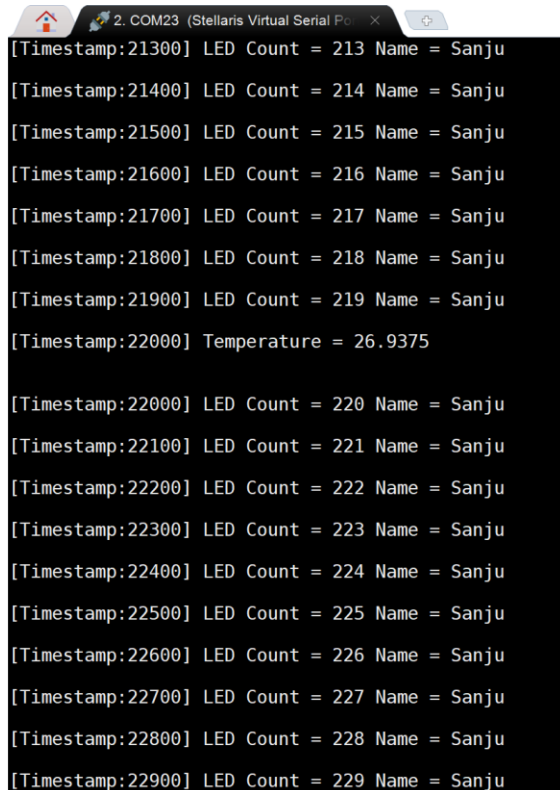
Screenshots of UART terminal on HOST machine showing log output of both tasks:



```
[Timestamp:19700] LED Count = 197 Name = Sanju
[Timestamp:19800] LED Count = 198 Name = Sanju
[Timestamp:19900] LED Count = 199 Name = Sanju
[Timestamp:20000] Temperature = 26.6250

[Timestamp:20000] LED Count = 200 Name = Sanju
[Timestamp:20100] LED Count = 201 Name = Sanju
[Timestamp:20200] LED Count = 202 Name = Sanju
[Timestamp:20300] LED Count = 203 Name = Sanju
[Timestamp:20400] LED Count = 204 Name = Sanju
[Timestamp:20500] LED Count = 205 Name = Sanju
[Timestamp:20600] LED Count = 206 Name = Sanju
[Timestamp:20700] LED Count = 207 Name = Sanju
[Timestamp:20800] LED Count = 208 Name = Sanju
[Timestamp:20900] LED Count = 209 Name = Sanju
[Timestamp:21000] Temperature = 26.7500

[Timestamp:21000] LED Count = 210 Name = Sanju
[Timestamp:21100] LED Count = 211 Name = Sanju
[Timestamp:21200] LED Count = 212 Name = Sanju
```

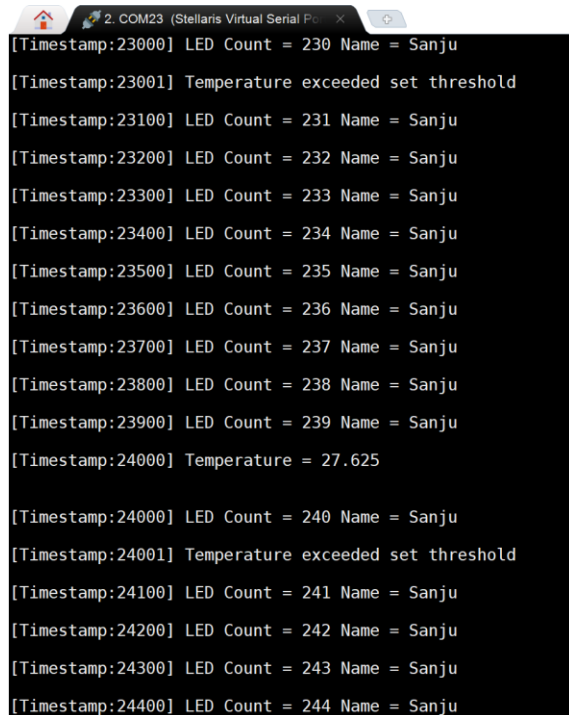


```
[Timestamp:21300] LED Count = 213 Name = Sanju
[Timestamp:21400] LED Count = 214 Name = Sanju
[Timestamp:21500] LED Count = 215 Name = Sanju
[Timestamp:21600] LED Count = 216 Name = Sanju
[Timestamp:21700] LED Count = 217 Name = Sanju
[Timestamp:21800] LED Count = 218 Name = Sanju
[Timestamp:21900] LED Count = 219 Name = Sanju
[Timestamp:22000] Temperature = 26.9375

[Timestamp:22000] LED Count = 220 Name = Sanju
[Timestamp:22100] LED Count = 221 Name = Sanju
[Timestamp:22200] LED Count = 222 Name = Sanju
[Timestamp:22300] LED Count = 223 Name = Sanju
[Timestamp:22400] LED Count = 224 Name = Sanju
[Timestamp:22500] LED Count = 225 Name = Sanju
[Timestamp:22600] LED Count = 226 Name = Sanju
[Timestamp:22700] LED Count = 227 Name = Sanju
[Timestamp:22800] LED Count = 228 Name = Sanju
[Timestamp:22900] LED Count = 229 Name = Sanju
```

**Screenshot of UART terminal showing alert:**

**When the temperature goes beyond a preset threshold(27 degree C in my case), an alert message is sent to the alert task which in turn sends a message to the logger task.**



```
2. COM23 (Stellaris Virtual Serial Port)
[Timestamp:23000] LED Count = 230 Name = Sanju
[Timestamp:23001] Temperature exceeded set threshold
[Timestamp:23100] LED Count = 231 Name = Sanju
[Timestamp:23200] LED Count = 232 Name = Sanju
[Timestamp:23300] LED Count = 233 Name = Sanju
[Timestamp:23400] LED Count = 234 Name = Sanju
[Timestamp:23500] LED Count = 235 Name = Sanju
[Timestamp:23600] LED Count = 236 Name = Sanju
[Timestamp:23700] LED Count = 237 Name = Sanju
[Timestamp:23800] LED Count = 238 Name = Sanju
[Timestamp:23900] LED Count = 239 Name = Sanju
[Timestamp:24000] Temperature = 27.625
[Timestamp:24000] LED Count = 240 Name = Sanju
[Timestamp:24001] Temperature exceeded set threshold
[Timestamp:24100] LED Count = 241 Name = Sanju
[Timestamp:24200] LED Count = 242 Name = Sanju
[Timestamp:24300] LED Count = 243 Name = Sanju
[Timestamp:24400] LED Count = 244 Name = Sanju
```

**When the temperature falls below the threshold the alerts stop.**



```
2. COM23 (Stellaris Virtual Serial Port)
[Timestamp:25000] LED Count = 250 Name = Sanju
[Timestamp:25001] Temperature exceeded set threshold
[Timestamp:25100] LED Count = 251 Name = Sanju
[Timestamp:25200] LED Count = 252 Name = Sanju
[Timestamp:25300] LED Count = 253 Name = Sanju
[Timestamp:25400] LED Count = 254 Name = Sanju
[Timestamp:25500] LED Count = 255 Name = Sanju
[Timestamp:25600] LED Count = 256 Name = Sanju
[Timestamp:25700] LED Count = 257 Name = Sanju
[Timestamp:25800] LED Count = 258 Name = Sanju
[Timestamp:25900] LED Count = 259 Name = Sanju
[Timestamp:26000] Temperature = 26.5625
[Timestamp:26000] LED Count = 260 Name = Sanju
[Timestamp:26100] LED Count = 261 Name = Sanju
[Timestamp:26200] LED Count = 262 Name = Sanju
[Timestamp:26300] LED Count = 263 Name = Sanju
[Timestamp:26400] LED Count = 264 Name = Sanju
```