HW5 REPORT

**Installations:**

Code Composer studio : http://www.ti.com/tool/CCSTUDIO

FreeRTOS : https://www.freertos.org/a00104.html

TivaWare for EK-TM4C1294XL: http://software-dl.ti.com/tiva-c/SW-TM4C/latest/index_FDS.html

Demo Code Modified: C:\ti\tivaware_c_series_2_1_4_178\examples\boards\dk-tm4c129x\freertos_demo

**GIST OF THE HW**

To create 3 tasks temp task, led task and logger task using FREERTOS in TIVA EK-TM4C1294XL board. The temp task has a frequency of 1hz the led task has a frequency of 10hz. The temp task reads the temperature from the TMP102 temperature sensor in fixed intervals and logs it. The led task toggles the LEDs D1 and D2 and logs the count of toggle. The logger task uses queue to communicate between the tasks, enqueues logs from the task and prints it on to the UART. The alert task waits for a semaphore from the temp task. If the temp values exceed the threshold, it give the sem for alert task to log the alert message to the screen.

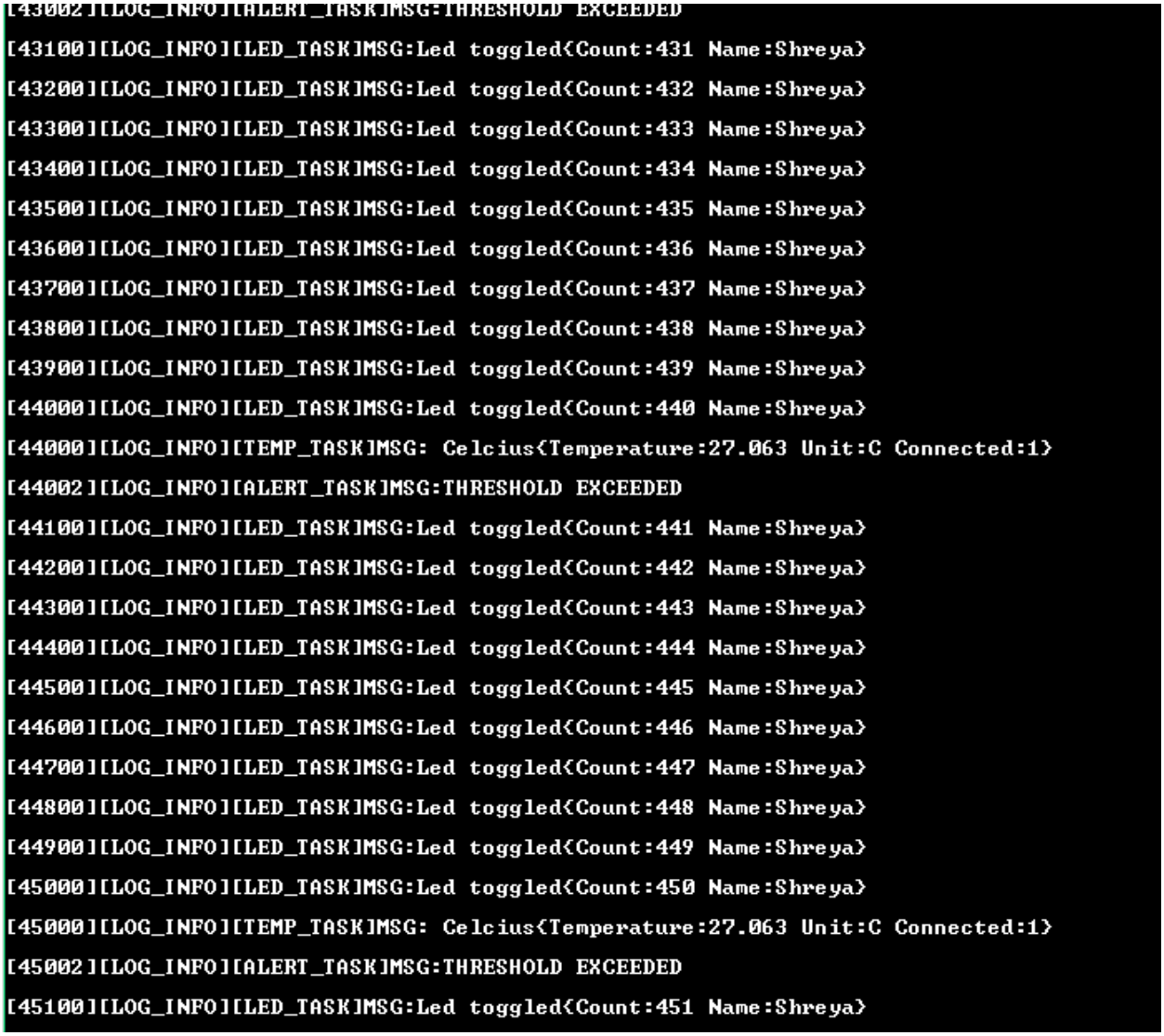
Github link: https://github.com/Shreya1809/ECEN5013_AESD-S19/tree/master/Homeworks/HW5

Screenshot Proof of execution:

```
[11000][LOG_INFO][LED_TASK]MSG:Led toggled<Count:110 Name:Shreya>
[11000][LOG_INFO][TEMP_TASK]MSG: Celcius<Temperature:23.063 Unit:C Connected:1>
[11100][LOG_INFO][LED_TASK]MSG:Led toggled<Count:111 Name:Shreya>
[11200][LOG_INFO][LED_TASK]MSG:Led toggled<Count:112 Name:Shreya>
[11300][LOG_INFO][LED_TASK]MSG:Led toggled<Count:113 Name:Shreya>
[11400][LOG_INFO][LED_TASK]MSG:Led toggled<Count:114 Name:Shreya>
[11500][LOG_INFO][LED_TASK]MSG:Led toggled<Count:115 Name:Shreya>
[11600][LOG_INFO][LED_TASK]MSG:Led toggled<Count:116 Name:Shreya>
[11700][LOG_INFO][LED_TASK]MSG:Led toggled<Count:117 Name:Shreya>
[11800][LOG_INFO][LED_TASK]MSG:Led toggled<Count:118 Name:Shreya>
[11900][LOG_INFO][LED_TASK]MSG:Led toggled<Count:119 Name:Shreya>
[12000][LOG_INFO][LED_TASK]MSG:Led toggled<Count:120 Name:Shreya>
[12000][LOG_INFO][TEMP_TASK]MSG: Celcius<Temperature:23.063 Unit:C Connected:1>
[12100][LOG_INFO][LED_TASK]MSG:Led toggled<Count:121 Name:Shreya>
[12200][LOG_INFO][LED_TASK]MSG:Led toggled<Count:122 Name:Shreya>
[12300][LOG_INFO][LED_TASK]MSG:Led toggled<Count:123 Name:Shreya>
[12400][LOG_INFO][LED_TASK]MSG:Led toggled<Count:124 Name:Shreya>
[12500][LOG_INFO][LED_TASK]MSG:Led toggled<Count:125 Name:Shreya>
[12600][LOG_INFO][LED_TASK]MSG:Led toggled<Count:126 Name:Shreya>
[12700][LOG_INFO][LED_TASK]MSG:Led toggled<Count:127 Name:Shreya>
[12800][LOG_INFO][LED_TASK]MSG:Led toggled<Count:128 Name:Shreya>
[12900][LOG_INFO][LED_TASK]MSG:Led toggled<Count:129 Name:Shreya>
[13000][LOG_INFO][LED_TASK]MSG:Led toggled<Count:130 Name:Shreya>
[13000][LOG_INFO][TEMP_TASK]MSG: Celcius<Temperature:23.063 Unit:C Connected:1>
[13100][LOG_INFO][LED_TASK]MSG:Led toggled<Count:131 Name:Shreya>
[13200][LOG_INFO][LED_TASK]MSG:Led toggled<Count:132 Name:Shreya>
[13300][LOG_INFO][LED_TASK]MSG:Led toggled<Count:133 Name:Shreya>
```

Proof of execution of Bonus Alert Task:

The alert task gets triggered when the temperature exceeds 26 deg celcius.




References:


1. Lecture 17 demo code : https://github.com/rheidebr/ECEN5013-LUX_Temp_demo/blob/master/ECEN_LUX_Temp.zip
2. https://e2e.ti.com/support/microcontrollers/other/f/908/t/654858
3. https://www.freertos.org/Documentation/FreeRTOS_Reference_Manual_V10.0.0.pdf
4. https://www.digikey.com/eewiki/display/microcontroller/I2C+Communication+with+the+TI+Tiva+TM4C123GXL