Homework 5

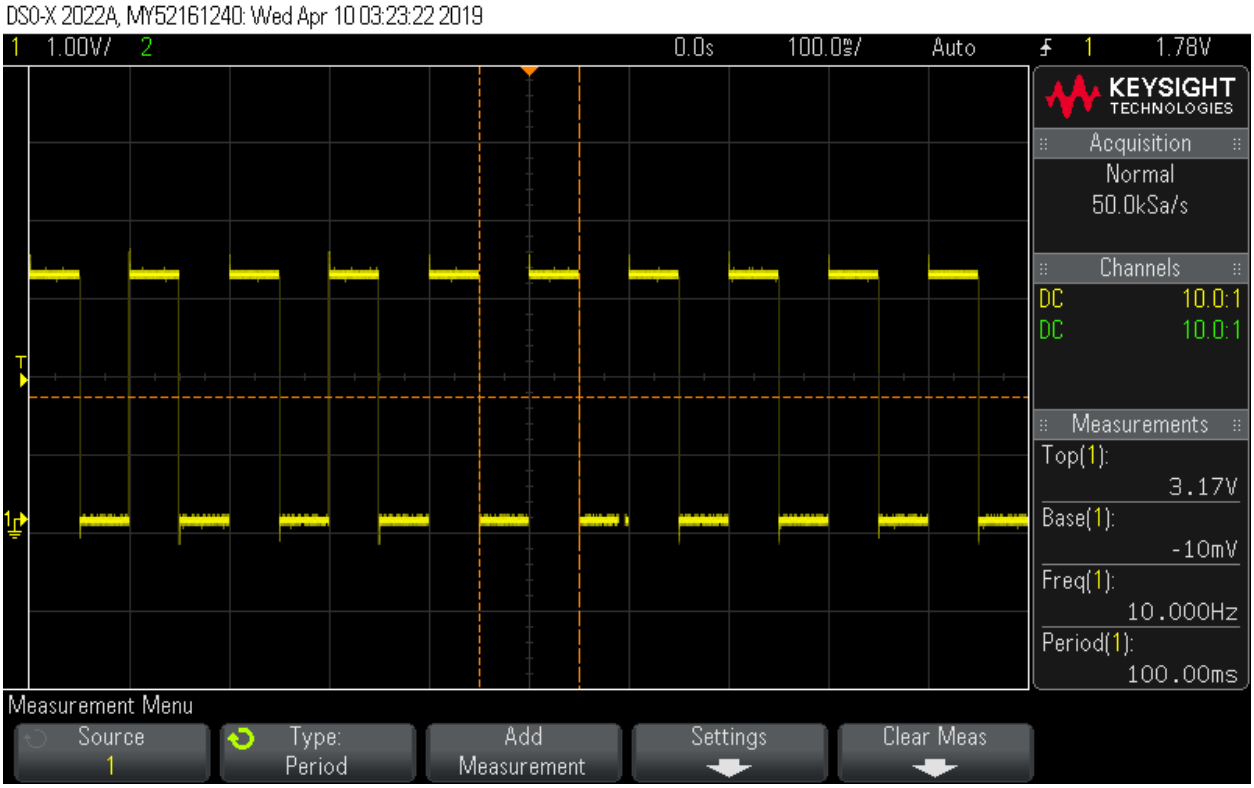
Nachiket Kelkar **Date: 10th April 2019**

1. GITHUB repo link: https://github.com/NachiketKelkar/AESD-HW5

As mentioned in the document about frequency the requirements were not clear hence the two cases are presented in the following report.

Case 1: The frequency is 10Hz

2. LED pin toggle scope shots:



3. **UART showing message from both tasks:**

As frequency is 10Hz the period is 100msec. That is the LED will toggle every 50 milliseconds.

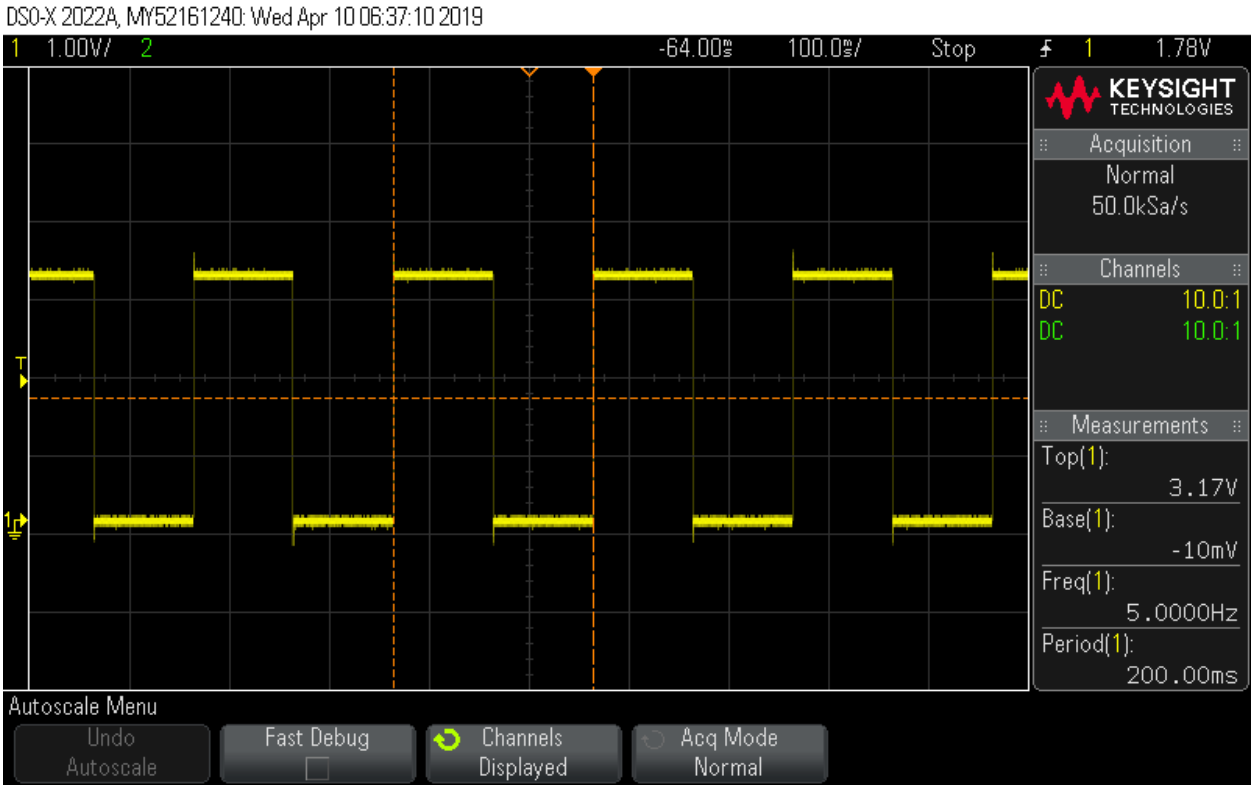
```
[4 sec 751 msec][gpio]Toggle count is 94    Your name is nachiket
[4 sec 801 msec][gpio]Toggle count is 95    Your name is nachiket
[4 sec 851 msec][gpio]Toggle count is 96    Your name is nachiket
[4 sec 901 msec][gpio]Toggle count is 97    Your name is nachiket
[4 sec 951 msec][gpio]Toggle count is 98    Your name is nachiket
[5 sec 001 msec][gpio]Toggle count is 99    Your name is nachiket
[5 sec 006 msec][temperature]Temperature is 24.500000
[5 sec 050 msec][gpio]Toggle count is 100    Your name is nachiket
[5 sec 100 msec][gpio]Toggle count is 101    Your name is nachiket
[5 sec 150 msec][gpio]Toggle count is 102    Your name is nachiket
[5 sec 200 msec][gpio]Toggle count is 103    Your name is nachiket
[5 sec 250 msec][gpio]Toggle count is 104    Your name is nachiket
[5 sec 300 msec][gpio]Toggle count is 105    Your name is nachiket
[5 sec 350 msec][gpio]Toggle count is 106    Your name is nachiket
[5 sec 400 msec][gpio]Toggle count is 107    Your name is nachiket
[5 sec 450 msec][gpio]Toggle count is 108    Your name is nachiket
[5 sec 500 msec][gpio]Toggle count is 109    Your name is nachiket
[5 sec 550 msec][gpio]Toggle count is 110    Your name is nachiket
[5 sec 600 msec][gpio]Toggle count is 111    Your name is nachiket
[5 sec 650 msec][gpio]Toggle count is 112    Your name is nachiket
[5 sec 700 msec][gpio]Toggle count is 113    Your name is nachiket
[5 sec 750 msec][gpio]Toggle count is 114    Your name is nachiket
[5 sec 800 msec][gpio]Toggle count is 115    Your name is nachiket
[5 sec 850 msec][gpio]Toggle count is 116    Your name is nachiket
[5 sec 900 msec][gpio]Toggle count is 117    Your name is nachiket
[5 sec 950 msec][gpio]Toggle count is 118    Your name is nachiket
[6 sec 000 msec][gpio]Toggle count is 119    Your name is nachiket
[6 sec 009 msec][temperature]Temperature is 24.500000
[6 sec 052 msec][gpio]Toggle count is 120    Your name is nachiket
[6 sec 102 msec][gpio]Toggle count is 121    Your name is nachiket
[6 sec 152 msec][gpio]Toggle count is 122    Your name is nachiket
[6 sec 202 msec][gpio]Toggle count is 123    Your name is nachiket
[6 sec 252 msec][gpio]Toggle count is 124    Your name is nachiket
[6 sec 302 msec][gpio]Toggle count is 125    Your name is nachiket
[6 sec 352 msec][gpio]Toggle count is 126    Your name is nachiket
[6 sec 402 msec][gpio]Toggle count is 127    Your name is nachiket
[6 sec 452 msec][gpio]Toggle count is 128    Your name is nachiket
[6 sec 502 msec][gpio]Toggle count is 129    Your name is nachiket
[6 sec 552 msec][gpio]Toggle count is 130    Your name is nachiket
[6 sec 602 msec][gpio]Toggle count is 131    Your name is nachiket
```

4. **The alert messages are sent every 200msec to the logger to log the values.**

```
[5 sec 002 msec][alert]Temperature is above threshold
[5 sec 009 msec][temperature]Temperature is 29.312500
[5 sec 051 msec][gpio]Toggle count is 100    Your name is nachiket
[5 sec 101 msec][gpio]Toggle count is 101    Your name is nachiket
[5 sec 151 msec][gpio]Toggle count is 102    Your name is nachiket
[5 sec 201 msec][gpio]Toggle count is 103    Your name is nachiket
[5 sec 203 msec][alert]Temperature is above threshold
[5 sec 250 msec][gpio]Toggle count is 104    Your name is nachiket
[5 sec 300 msec][gpio]Toggle count is 105    Your name is nachiket
[5 sec 350 msec][gpio]Toggle count is 106    Your name is nachiket
[5 sec 400 msec][gpio]Toggle count is 107    Your name is nachiket
[5 sec 402 msec][alert]Temperature is above threshold
[5 sec 452 msec][gpio]Toggle count is 108    Your name is nachiket
[5 sec 502 msec][gpio]Toggle count is 109    Your name is nachiket
[5 sec 552 msec][gpio]Toggle count is 110    Your name is nachiket
[5 sec 602 msec][gpio]Toggle count is 111    Your name is nachiket
[5 sec 652 msec][gpio]Toggle count is 112    Your name is nachiket
[5 sec 702 msec][gpio]Toggle count is 113    Your name is nachiket
[5 sec 752 msec][gpio]Toggle count is 114    Your name is nachiket
[5 sec 802 msec][gpio]Toggle count is 115    Your name is nachiket
[5 sec 852 msec][gpio]Toggle count is 116    Your name is nachiket
[5 sec 902 msec][gpio]Toggle count is 117    Your name is nachiket
[5 sec 952 msec][gpio]Toggle count is 118    Your name is nachiket
[6 sec 002 msec][gpio]Toggle count is 119    Your name is nachiket
[6 sec 007 msec][temperature]Temperature is 26.000000
[6 sec 051 msec][gpio]Toggle count is 120    Your name is nachiket
[6 sec 101 msec][gpio]Toggle count is 121    Your name is nachiket
[6 sec 151 msec][gpio]Toggle count is 122    Your name is nachiket
```

2. Case 2: The toggle frequency is 10Hz

This means the LED pin will toggle every 100milliceconds.



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3. UART message from both tasks:

The gpio has output every 100milliseconds as it toggles every 100msec

```
[8 sec 801 msec][gpio]Toggle count is 87    Your name is nachiket
[8 sec 902 msec][gpio]Toggle count is 88    Your name is nachiket
[9 sec 000 msec][gpio]Toggle count is 89    Your name is nachiket
[9 sec 009 msec][temperature]Temperature is 22.812500
[9 sec 100 msec][gpio]Toggle count is 90    Your name is nachiket
[9 sec 201 msec][gpio]Toggle count is 91    Your name is nachiket
[9 sec 302 msec][gpio]Toggle count is 92    Your name is nachiket
[9 sec 400 msec][gpio]Toggle count is 93    Your name is nachiket
[9 sec 501 msec][gpio]Toggle count is 94    Your name is nachiket
[9 sec 602 msec][gpio]Toggle count is 95    Your name is nachiket
[9 sec 700 msec][gpio]Toggle count is 96    Your name is nachiket
[9 sec 801 msec][gpio]Toggle count is 97    Your name is nachiket
[9 sec 902 msec][gpio]Toggle count is 98    Your name is nachiket
[10 sec 000 msec][gpio]Toggle count is 99    Your name is nachiket
[10 sec 009 msec][temperature]Temperature is 22.875000
[10 sec 100 msec][gpio]Toggle count is 100    Your name is nachiket
[10 sec 201 msec][gpio]Toggle count is 101    Your name is nachiket
[10 sec 302 msec][gpio]Toggle count is 102    Your name is nachiket
[10 sec 400 msec][gpio]Toggle count is 103    Your name is nachiket
[10 sec 501 msec][gpio]Toggle count is 104    Your name is nachiket
[10 sec 602 msec][gpio]Toggle count is 105    Your name is nachiket
[10 sec 700 msec][gpio]Toggle count is 106    Your name is nachiket
[10 sec 801 msec][gpio]Toggle count is 107    Your name is nachiket
[10 sec 902 msec][gpio]Toggle count is 108    Your name is nachiket
[11 sec 000 msec][gpio]Toggle count is 109    Your name is nachiket
```

4. The alert messages are sent every 200msec to the logger to log the values.

```
[1 sec 400 msec][gpio]Toggle count is 13    Your name is nachiket
[1 sec 501 msec][gpio]Toggle count is 14    Your name is nachiket
[1 sec 602 msec][gpio]Toggle count is 15    Your name is nachiket
[1 sec 700 msec][gpio]Toggle count is 16    Your name is nachiket
[1 sec 801 msec][gpio]Toggle count is 17    Your name is nachiket
[1 sec 841 msec][alert]Temperature is above threshold
[1 sec 900 msec][gpio]Toggle count is 18    Your name is nachiket
[2 sec 001 msec][gpio]Toggle count is 19    Your name is nachiket
[2 sec 003 msec][alert]Temperature is above threshold
[2 sec 006 msec][temperature]Temperature is 27.750000
[2 sec 100 msec][gpio]Toggle count is 20    Your name is nachiket
[2 sec 201 msec][gpio]Toggle count is 21    Your name is nachiket
[2 sec 203 msec][alert]Temperature is above threshold
[2 sec 301 msec][gpio]Toggle count is 22    Your name is nachiket
[2 sec 402 msec][gpio]Toggle count is 23    Your name is nachiket
[2 sec 404 msec][alert]Temperature is above threshold
[2 sec 502 msec][gpio]Toggle count is 24    Your name is nachiket
[2 sec 600 msec][gpio]Toggle count is 25    Your name is nachiket
[2 sec 602 msec][alert]Temperature is above threshold
[2 sec 700 msec][gpio]Toggle count is 26    Your name is nachiket
[2 sec 801 msec][gpio]Toggle count is 27    Your name is nachiket
[2 sec 803 msec][alert]Temperature is above threshold
[2 sec 901 msec][gpio]Toggle count is 28    Your name is nachiket
[3 sec 002 msec][gpio]Toggle count is 29    Your name is nachiket
[3 sec 004 msec][alert]Temperature is above threshold
[3 sec 007 msec][temperature]Temperature is 27.250000
[3 sec 101 msec][gpio]Toggle count is 30    Your name is nachiket
[3 sec 202 msec][gpio]Toggle count is 31    Your name is nachiket
[3 sec 300 msec][gpio]Toggle count is 32    Your name is nachiket
[3 sec 401 msec][gpio]Toggle count is 33    Your name is nachiket
[3 sec 502 msec][gpio]Toggle count is 34    Your name is nachiket
[3 sec 600 msec][gpio]Toggle count is 35    Your name is nachiket
[3 sec 701 msec][gpio]Toggle count is 36    Your name is nachiket
[3 sec 802 msec][gpio]Toggle count is 37    Your name is nachiket
[3 sec 900 msec][gpio]Toggle count is 38    Your name is nachiket
[4 sec 001 msec][gpio]Toggle count is 39    Your name is nachiket
[4 sec 006 msec][temperature]Temperature is 25.750000
[4 sec 101 msec][gpio]Toggle count is 40    Your name is nachiket
[4 sec 202 msec][gpio]Toggle count is 41    Your name is nachiket
[4 sec 300 msec][gpio]Toggle count is 42    Your name is nachiket
```

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References:

1. http://www.ti.com/lit/an/spma073/spma073.pdf (This describes the I2C API in detail)
2. Code Composer Studio -> TM4C129x -> Examples -> freertos_demo