**Date Submitted: 10/07/18**

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**Task 01:**

Youtube Link: https://www.youtube.com/watch?v=buHjmWLTrgI

**Modified Code:**

**// Insert code here**

**#include** <stdint.h>

**#include** <stdbool.h>

**#include** "inc/hw\_memmap.h"

**#include** "inc/hw\_types.h"

**#include** "driverlib/debug.h"

**#include** "driverlib/sysctl.h"

**#include** "driverlib/adc.h"

**#include** "driverlib/gpio.h"

**#define** TARGET\_IS\_BLIZZARD\_RB1

**#include** "driverlib/rom.h"

**int** **main**(**void**)

{

uint32\_t ui32ADC0Value[4];

**volatile** uint32\_t ui32TempAvg;

**volatile** uint32\_t ui32TempValueC;

**volatile** uint32\_t ui32TempValueF;

ROM\_SysCtlClockSet(SYSCTL\_SYSDIV\_5|SYSCTL\_USE\_PLL|SYSCTL\_OSC\_MAIN|SYSCTL\_XTAL\_16MHZ);

ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_ADC0);

ROM\_ADCHardwareOversampleConfigure(ADC0\_BASE, 64);

ROM\_ADCSequenceConfigure(ADC0\_BASE, 3, ADC\_TRIGGER\_PROCESSOR, 0);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE, 3, 0, ADC\_CTL\_TS);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE, 3, 1, ADC\_CTL\_TS);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE, 3, 2, ADC\_CTL\_TS);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE,3,3,ADC\_CTL\_TS|ADC\_CTL\_IE|ADC\_CTL\_END);

ROM\_ADCSequenceEnable(ADC0\_BASE, 3);

//led setup

**SysCtlPeripheralEnable**(SYSCTL\_PERIPH\_GPIOF);

**GPIOPinTypeGPIOOutput**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3);

**while**(1)

{

ROM\_ADCIntClear(ADC0\_BASE, 3);

ROM\_ADCProcessorTrigger(ADC0\_BASE, 3);

**while**(!ROM\_ADCIntStatus(ADC0\_BASE, 3, false))

{

}

ROM\_ADCSequenceDataGet(ADC0\_BASE, 3, ui32ADC0Value);

ui32TempAvg = (ui32ADC0Value[0] + ui32ADC0Value[1] + ui32ADC0Value[2] + ui32ADC0Value[3] + 2)/4;

ui32TempValueC = (1475 - ((2475 \* ui32TempAvg)) / 4096)/10;

ui32TempValueF = ((ui32TempValueC \* 9) + 160) / 5;

// turn on blue led if temperature > 72 degrees, off otherwise

**if**(ui32TempValueF > 72)

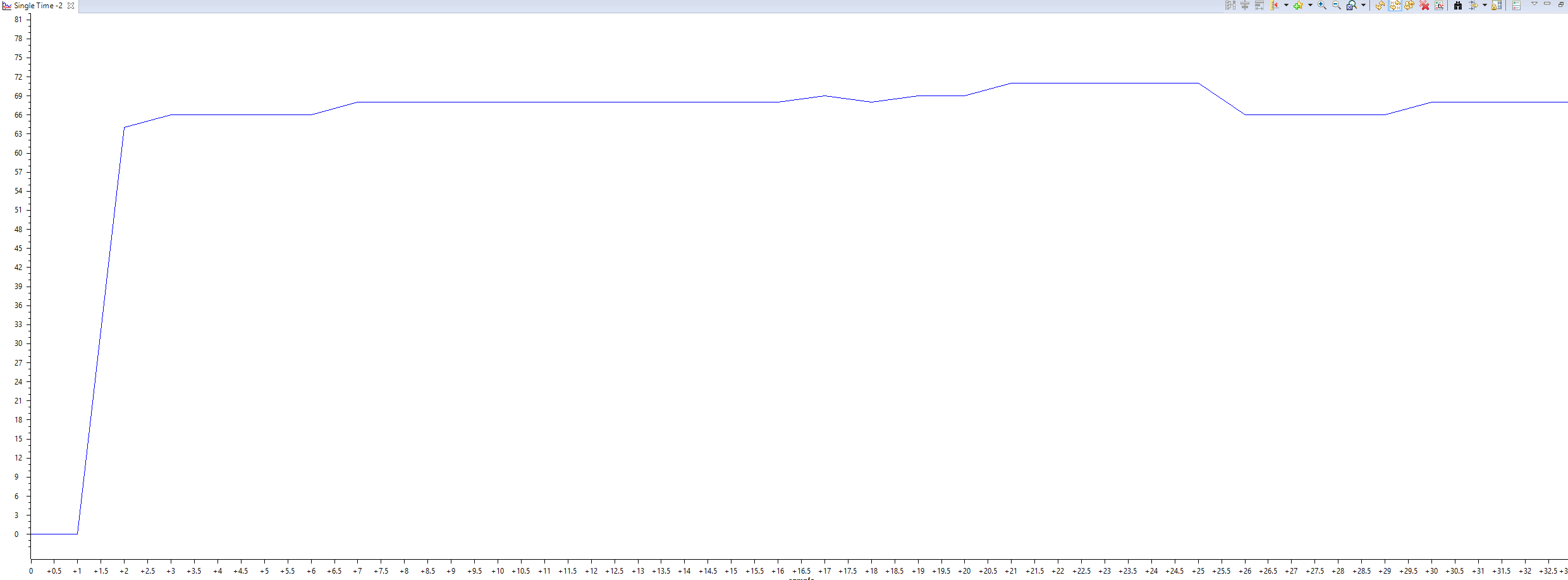
ROM\_GPIOPinWrite(GPIO\_PORTF\_BASE, GPIO\_PIN\_2, 4);

**else**

ROM\_GPIOPinWrite(GPIO\_PORTF\_BASE, GPIO\_PIN\_2, 0);

}

}



**------------------------------------------------------------------------------------**

**Task 02:**

Youtube Link: Nothing to show

**Modified Code:**

**#include** <stdint.h>

**#include** <stdbool.h>

**#include** "inc/tm4c123gh6pm.h"

**#include** "inc/hw\_memmap.h"

**#include** "inc/hw\_types.h"

**#include** "driverlib/debug.h"

**#include** "driverlib/sysctl.h"

**#include** "driverlib/adc.h"

**#include** "driverlib/gpio.h"

**#define** TARGET\_IS\_BLIZZARD\_RB1

**#include** "driverlib/rom.h"

**#include** "driverlib/interrupt.h"

**#include** "driverlib/timer.h"

**int** **main**(**void**)

{

ROM\_SysCtlClockSet(SYSCTL\_SYSDIV\_5|SYSCTL\_USE\_PLL|SYSCTL\_OSC\_MAIN|SYSCTL\_XTAL\_16MHZ);

ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_ADC0);

ROM\_ADCHardwareOversampleConfigure(ADC0\_BASE, 64);

ROM\_ADCSequenceConfigure(ADC0\_BASE, 1, ADC\_TRIGGER\_PROCESSOR, 0);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE, 1, 0, ADC\_CTL\_TS);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE, 1, 1, ADC\_CTL\_TS);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE, 1, 2, ADC\_CTL\_TS);

ROM\_ADCSequenceStepConfigure(ADC0\_BASE,1,3,ADC\_CTL\_TS|ADC\_CTL\_IE|ADC\_CTL\_END);

ROM\_ADCSequenceEnable(ADC0\_BASE, 1);

//led setup

**SysCtlPeripheralEnable**(SYSCTL\_PERIPH\_GPIOF);

**GPIOPinTypeGPIOOutput**(GPIO\_PORTF\_BASE, GPIO\_PIN\_1|GPIO\_PIN\_2|GPIO\_PIN\_3);

// Timer 1 Interrupt setup

ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_TIMER1);

ROM\_TimerConfigure(TIMER1\_BASE, TIMER\_CFG\_PERIODIC);

uint32\_t ui32Period = **SysCtlClockGet**() / 2;

// clock division by two to get 0.5 second delay

ROM\_TimerLoadSet(TIMER1\_BASE, TIMER\_A, ui32Period-1);

ROM\_IntEnable(INT\_TIMER1A);

ROM\_TimerIntEnable(TIMER1\_BASE, TIMER\_TIMA\_TIMEOUT);

ROM\_TimerEnable(TIMER1\_BASE, TIMER\_A);

**while**(1)

{

}

}

**void** **Timer1AIntHandler**(**void**)

{

uint32\_t ui32ADC0Value[4];

**volatile** uint32\_t ui32TempAvg;

**volatile** uint32\_t ui32TempValueC;

**volatile** uint32\_t ui32TempValueF;

**TimerIntClear**(TIMER1\_BASE, TIMER\_TIMA\_TIMEOUT);

//moved everything inside while loop from main

ROM\_ADCIntClear(ADC0\_BASE, 1);

ROM\_ADCProcessorTrigger(ADC0\_BASE, 1);

**while**(!ROM\_ADCIntStatus(ADC0\_BASE, 1, false))

{

}

ROM\_ADCSequenceDataGet(ADC0\_BASE, 1, ui32ADC0Value);

ui32TempAvg = (ui32ADC0Value[0] + ui32ADC0Value[1] + ui32ADC0Value[2] + ui32ADC0Value[3] + 2)/4;

ui32TempValueC = (1475 - ((2475 \* ui32TempAvg)) / 4096)/10;

ui32TempValueF = ((ui32TempValueC \* 9) + 160) / 5;

// turn on blue led if temperature > 72 degrees, off otherwise

**if**(ui32TempValueF > 72)

ROM\_GPIOPinWrite(GPIO\_PORTF\_BASE, GPIO\_PIN\_2, 4);

**else**

ROM\_GPIOPinWrite(GPIO\_PORTF\_BASE, GPIO\_PIN\_2, 0);

}

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