**Date Submitted: 12/11/19**

**Task 00: Execute provided code**

Youtube Link:[**https://youtu.be/k1Z04HalXCI**](https://youtu.be/k1Z04HalXCI)

**#include <stdint.h>**

**#include <stdbool.h>**

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

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

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

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

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

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

**#include "driverlib/pin\_map.h"**

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

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

**#define PWM\_FREQUENCY 55**

**int main(void)**

**{**

**volatile uint32\_t ui32Load;**

**volatile uint32\_t ui32PWMClock;**

**volatile uint8\_t ui8Adjust;**

**ui8Adjust = 83;**

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

**ROM\_SysCtlPWMClockSet(SYSCTL\_PWMDIV\_64);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_PWM1);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_GPIOD);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_GPIOF);**

**ROM\_GPIOPinTypePWM(GPIO\_PORTD\_BASE, GPIO\_PIN\_0);**

**ROM\_GPIOPinConfigure(GPIO\_PD0\_M1PWM0);**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_LOCK) = GPIO\_LOCK\_KEY;**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_CR) |= 0x01;**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_LOCK) = 0;**

**ROM\_GPIODirModeSet(GPIO\_PORTF\_BASE, GPIO\_PIN\_4|GPIO\_PIN\_0, GPIO\_DIR\_MODE\_IN);**

**ROM\_GPIOPadConfigSet(GPIO\_PORTF\_BASE, GPIO\_PIN\_4|GPIO\_PIN\_0, GPIO\_STRENGTH\_2MA, GPIO\_PIN\_TYPE\_STD\_WPU);**

**ui32PWMClock = SysCtlClockGet() / 64;**

**ui32Load = (ui32PWMClock / PWM\_FREQUENCY) - 1;**

**PWMGenConfigure(PWM1\_BASE, PWM\_GEN\_0, PWM\_GEN\_MODE\_DOWN);**

**PWMGenPeriodSet(PWM1\_BASE, PWM\_GEN\_0, ui32Load);**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_0, ui8Adjust \* ui32Load / 1000);**

**ROM\_PWMOutputState(PWM1\_BASE, PWM\_OUT\_0\_BIT, true);**

**ROM\_PWMGenEnable(PWM1\_BASE, PWM\_GEN\_0);**

**while(1)**

**{**

**if(ROM\_GPIOPinRead(GPIO\_PORTF\_BASE,GPIO\_PIN\_4)==0x00)**

**{**

**ui8Adjust--;**

**if (ui8Adjust < 56)**

**{**

**ui8Adjust = 56;**

**}**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_0, ui8Adjust \* ui32Load / 1000);**

**}**

**if(ROM\_GPIOPinRead(GPIO\_PORTF\_BASE,GPIO\_PIN\_0)==0x00)**

**{**

**ui8Adjust++;**

**if (ui8Adjust > 111)**

**{**

**ui8Adjust = 111;**

**}**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_0, ui8Adjust \* ui32Load / 1000);**

**}**

**ROM\_SysCtlDelay(100000);**

**}**

**}**

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

**Task 01:**

Youtube Link: <https://youtu.be/vP6WjiMrZ5c>

**Modified Code:**

**#include <stdint.h>**

**#include <stdbool.h>**

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

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

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

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

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

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

**#include "driverlib/pin\_map.h"**

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

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

**#define PWM\_FREQUENCY 55**

**int main(void)**

**{**

**volatile uint32\_t ui32Load;**

**volatile uint32\_t ui32PWMClock;**

**volatile uint8\_t ui8Adjust;**

**ui8Adjust=83;**

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

**ROM\_SysCtlPWMClockSet(SYSCTL\_PWMDIV\_64);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_PWM1);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_GPIOD);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_GPIOF);**

**ROM\_GPIOPinTypePWM(GPIO\_PORTD\_BASE, GPIO\_PIN\_0);**

**ROM\_GPIOPinConfigure(GPIO\_PD0\_M1PWM0);**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_LOCK) = GPIO\_LOCK\_KEY;**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_CR) |= 0x01;**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_LOCK) = 0;**

**ROM\_GPIODirModeSet(GPIO\_PORTF\_BASE, GPIO\_PIN\_4|GPIO\_PIN\_0, GPIO\_DIR\_MODE\_IN);**

**ROM\_GPIOPadConfigSet(GPIO\_PORTF\_BASE, GPIO\_PIN\_4|GPIO\_PIN\_0, GPIO\_STRENGTH\_2MA, GPIO\_PIN\_TYPE\_STD\_WPU);**

**ui32PWMClock = SysCtlClockGet() / 64;**

**ui32Load = (ui32PWMClock / PWM\_FREQUENCY) - 1;**

**PWMGenConfigure(PWM1\_BASE, PWM\_GEN\_0, PWM\_GEN\_MODE\_DOWN);**

**PWMGenPeriodSet(PWM1\_BASE, PWM\_GEN\_0, ui32Load);**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_0, ui8Adjust \* ui32Load / 1000);**

**ROM\_PWMOutputState(PWM1\_BASE, PWM\_OUT\_0\_BIT, true);**

**ROM\_PWMGenEnable(PWM1\_BASE, PWM\_GEN\_0);**

**while(1)**

**{**

**if(ROM\_GPIOPinRead(GPIO\_PORTF\_BASE,GPIO\_PIN\_4)==0x00)**

**{**

**ui8Adjust--;**

**if (ui8Adjust < 30)**

**{**

**ui8Adjust = 30;**

**}**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_0, ui8Adjust \* ui32Load / 1000);**

**}**

**if(ROM\_GPIOPinRead(GPIO\_PORTF\_BASE,GPIO\_PIN\_0)==0x00)**

**{**

**ui8Adjust++;**

**if (ui8Adjust > 125)**

**{**

**ui8Adjust = 125;**

**}**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_0, ui8Adjust \* ui32Load / 1000);**

**}**

**ROM\_SysCtlDelay(100000);**

**}**

**}**

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

**Task 02:**

Youtube Link: <https://youtu.be/fANDPXIMKWw>

**Modified Code:**

**#include <stdint.h>**

**#include <stdbool.h>**

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

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

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

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

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

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

**#include "driverlib/pin\_map.h"**

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

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

**#define PWM\_FREQUENCY 55**

**int main(void)**

**{**

**volatile uint32\_t ui32Load;**

**volatile uint32\_t ui32PWMClock;**

**volatile uint8\_t ui8Adjust;**

**ui8Adjust = 83;**

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

**ROM\_SysCtlPWMClockSet(SYSCTL\_PWMDIV\_64);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_PWM1);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_GPIOD);**

**ROM\_SysCtlPeripheralEnable(SYSCTL\_PERIPH\_GPIOF);**

**ROM\_GPIOPinTypePWM(GPIO\_PORTF\_BASE, GPIO\_PIN\_1);**

**ROM\_GPIOPinConfigure(GPIO\_PF1\_M1PWM5);**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_LOCK) = GPIO\_LOCK\_KEY;**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_CR) |= 0x01;**

**HWREG(GPIO\_PORTF\_BASE + GPIO\_O\_LOCK) = 0;**

**ROM\_GPIODirModeSet(GPIO\_PORTF\_BASE, GPIO\_PIN\_4|GPIO\_PIN\_0, GPIO\_DIR\_MODE\_IN);**

**ROM\_GPIOPadConfigSet(GPIO\_PORTF\_BASE, GPIO\_PIN\_4|GPIO\_PIN\_0, GPIO\_STRENGTH\_2MA, GPIO\_PIN\_TYPE\_STD\_WPU);**

**ui32PWMClock = SysCtlClockGet() / 64;**

**ui32Load = (ui32PWMClock / PWM\_FREQUENCY) - 1;**

**ROM\_PWMGenConfigure(PWM1\_BASE, PWM\_GEN\_2, PWM\_GEN\_MODE\_DOWN);**

**ROM\_PWMGenPeriodSet(PWM1\_BASE, PWM\_GEN\_2, ui32Load);**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_5, ui8Adjust \* ui32Load / 100);**

**ROM\_PWMOutputState(PWM1\_BASE, PWM\_OUT\_5\_BIT, true);**

**ROM\_PWMGenEnable(PWM1\_BASE, PWM\_GEN\_2);**

**while(1)**

**{**

**if (ROM\_GPIOPinRead(GPIO\_PORTF\_BASE,GPIO\_PIN\_4)==0x00)**

**{**

**ui8Adjust--;**

**if (ui8Adjust < 1)**

**ui8Adjust = 1;**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_5, ui8Adjust \* ui32Load / 100);**

**}**

**if (ROM\_GPIOPinRead(GPIO\_PORTF\_BASE,GPIO\_PIN\_0)==0x00)**

**{**

**ui8Adjust++;**

**if (ui8Adjust > 100)**

**ui8Adjust = 100;**

**ROM\_PWMPulseWidthSet(PWM1\_BASE, PWM\_OUT\_5, ui8Adjust \* ui32Load / 100);**

**}**

**ROM\_SysCtlDelay(100000);**

**}**

**}**