Serak Gebremedhin
Github root directory: https://github.com/Ber-geb/solid-octo-tribble.git

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

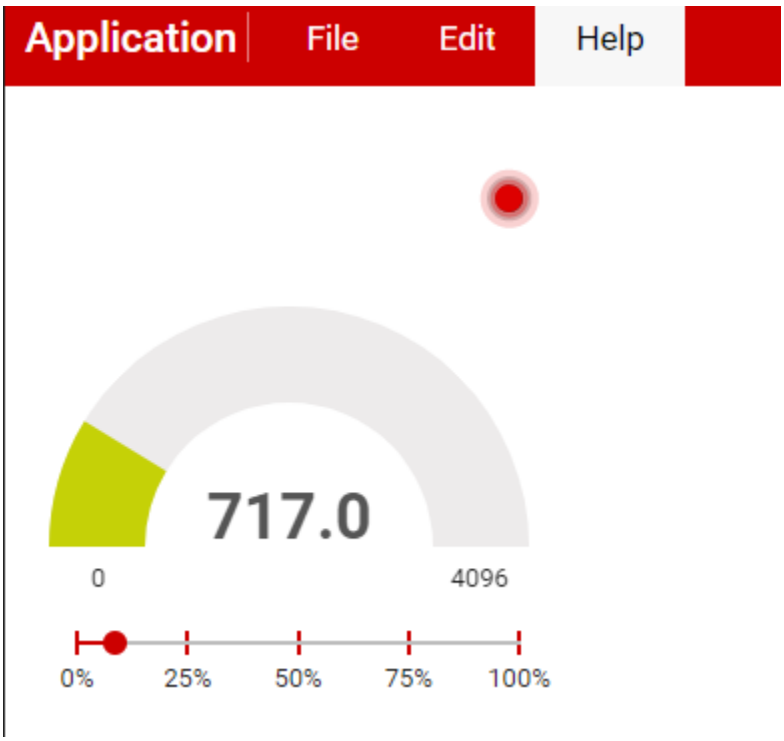
LAB2:

Youtube Link:

Gui Composer: https://youtu.be/ioe5VlzNEec

UART: https://youtu.be/7C1wNGooCO0

Modified Schematic (if applicable):
GUI Composer



UART shown with terminal

Grading scheme: 30% Coding, 30% Documentation, 40% Execution/Video.

COM7

```
ADC Reading 704
ADC Reading 699
ADC Reading 699
ADC Reading 702
ADC Reading 708
ADC Reading 713
ADC Reading 717
ADC Reading 714
ADC Reading 708
ADC Reading 703
ADC Reading 699
ADC Reading 698
ADC Reading 702
ADC Reading 709
ADC Reading 713
ADC Reading 717
ADC Reading 715
ADC Reading 710
ADC Reading 703
ADC Reading 699
ADC Reading 698
ADC Reading 702
ADC Reading 709
ADC Reading 713
ADC Reading 717
ADC Reading 715
ADC Reading 710
```

Modified Code:

```
// Insert code here
```

```
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 */

/*
 *  ======== empty.c ========
 */

/*Include Semaphores*/
#include <ti/sysbios/knl/Semaphore.h>
#include <ti/sysbios/BIOS.h>

// Main loop Semaphore
Semaphore_Struct semMainLoop;
Semaphore_Handle hSemMainLoop;


/*scif header and macro*/
#include "scif.h"
#define BV(x)   (1 << (x))

/* For usleep() */
#include <unistd.h>
#include <stdint.h>
#include <stddef.h>

/* Driver Header files */
#include <ti/drivers/GPIO.h>
// #include <ti/drivers/I2C.h>
// #include <ti/drivers/SPI.h>
// #include <ti/drivers/UART.h>
// #include <ti/drivers/Watchdog.h>

/* Board Header file */
#include "Board.h"

/*SC Task Alert Handling*/
void processTaskAlert(void) {
    // Clear the ALERT interrupt source
    scifClearAlertIntSource();

    //Do SC Task processing here
    // Fetch 'state.high' variable from SC
    uint8_t high = scifTaskData.adcLevelTrigger.state.high;

    // Set Red LED state equal to the state.high variable
    GPIO_write(Board_GPIO_RLED, high);

    //Acknowledge the ALERT event
    scifAckAlertEvents();
}
```

```
/*SC callback functions*/
void scCtrlReadyCallback(void) {

} // scCtrlReadyCallback

void scTaskAlertCallback(void) {
    //Post to main loop semaphore
    Semaphore_post(hSemMainLoop);

} // scTaskAlertCallback


/*
 *  ======== mainThread ========
 */
void *tirtosScThread(void *arg0)
{
    // Semaphore initialization
    Semaphore_Params semParams;
    Semaphore_Params_init(&semParams);
    Semaphore_construct(&semMainLoop, 0, &semParams);
    hSemMainLoop = Semaphore_handle(&semMainLoop);

    /* 1 second delay */
    //uint32_t time = 1;

    /* Call driver init functions */
    GPIO_init();
    // I2C_init();
    // SPI_init();
    // UART_init();
    // Watchdog_init();

    /* Configure the LED pin */
    GPIO_setConfig(Board_GPIO_LED0, GPIO_CFG_OUT_STD | GPIO_CFG_OUT_LOW);

    /* Turn on user LED */
    GPIO_write(Board_GPIO_LED0, Board_GPIO_LED_ON);

    /*SC Driver Initialization*/
    // Initialize the Sensor Controller
    scifOsalInit(); //init OSAL of the scif framework
    scifOsalRegisterCtrlReadyCallback(scCtrlReadyCallback); //init CTRL ready
callback
    scifOsalRegisterTaskAlertCallback(scTaskAlertCallback); //init Task Alert
callback
    scifInit(&scifDriverSetup); //init SC task driver

    // Set the Sensor Controller task tick interval to 1 second
    uint32_t rtc_Hz = 1; // 1Hz RTC
    scifStartRtcTicksNow(0x00010000 / rtc_Hz);
    //bits 31:16 represent the seconds, bits 15:0 represent 1/65536 of a second
```

```
    // Configure Sensor Controller tasks
    scifTaskData.adcLevelTrigger.cfg.threshold = 600; //set threshold value

    //Start Sensor Controller task
    scifStartTasksNbl(BV(SCIF_ADC_LEVEL_TRIGGER_TASK_ID)); //execute task


    while (1) {
        // Wait on sem indefinitely
        Semaphore_pend(hSemMainLoop, BIOS_WAIT_FOREVER);

        // Call process function
        processTaskAlert();
    }
}
```