ESET 269 Project – MSP432 Interface

The project is to create a program that allows a user to interface to the MSP432 via the console window. The user will be able to control digital output, read digital input, and read the temperature of the MSP432.

When the program starts, it displays a menu to the user as shown below. A user selects an option to interact with the Launchpad.

```
MSP432 Menu

1. RGB Control
2. Digital Input
3. Temperature Reading
```

If option 1 is selected, the user is prompted for the following:

- What combination of RBG LED to light up as a number.
- Amount of time to toggle blinking of the LED in seconds. How many seconds the LED is ON and how many seconds the LED is OFF.
- How many times to blink the LED.

```
1
Enter Combination of RGB (1 - 7):5
Enter Toggle Time:2
Enter Number of Blinks:3
Blinking LED...
Done
```

Once the Led has finished blinking, the menu is displayed again.

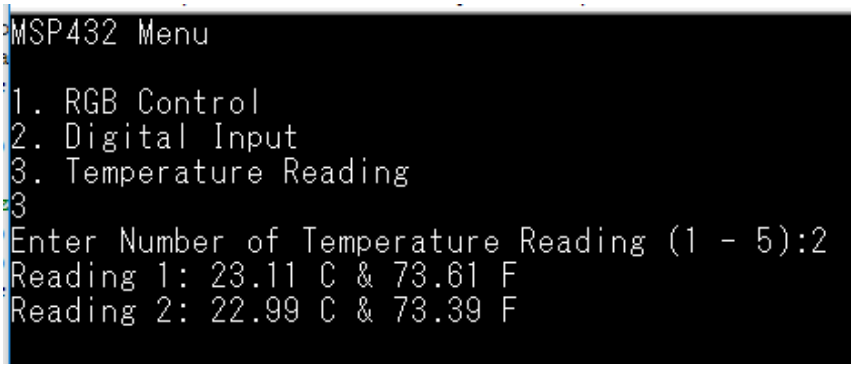
If option 2 is selected, the status of the Launchpad buttons are displayed. The option will state which of the buttons are pressed. It is **not** required to dynamically update which buttons are pressed. The only time the reading of the input is updated is when option 2 is initially selected. The menu is redisplayed after the button status is shown.

```
MSP432 Menu

1. RGB Control
2. Digital Input
3. Temperature Reading
2
No Button pressed.

MSP432 Menu

1. RGB Control
2. Digital Input
3. Temperature Reading
2
Button 2 pressed.

MSP432 Menu
```

If option 3 is selected, the user will be prompted for the following:

- Number of temperature readings to display (between 1 to 5)

Once a user selects the number of readings, a temperature sensor value is displayed to the console window once every second in both Celsius and Fahrenheit. After the number of readings are shown, the main menu is displayed.



Any invalid menu option will display an error message and redisplay the menu. An invalid RGB LED combination, not a number between 1 to 7, will default to 7. An invalid number of temperature readings, not a number between 1 to 5, will default to 5.

Notes on Project

- RGB combination is a number between 1 to 7 which turns on the red, green, and blue LED. For example, 5 in binary is 101, this means that the red and blue LED will be on. 7 will turn on all the LEDs
- Toggle time is how many seconds to turn the LED on and off. A toggle time of 1 second means the LED is on 1 second and off 1 second. The toggling of the LED must be implemented with **Timer32**.
- The number of blinks is how many on/off cycles to do. For example, a number of blinks of 2 will turn the led on and off twice.
- You only need to display what button, or buttons, are held when option 2 is selected. It does not need to dynamically update which button is pressed.
- The ADC and UART function definitions will be provided to you. You are responsible for integrating them into your code. Temperature readings are displayed every second. The second delay must be implemented with **SysTick Timer**.
- `Scanf` and `printf` cannot be used on the code turned in.