

Programming Embedded Systems 2018 – Exercise 2

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Task

The task for this exercise was to rewrite the code from exercise one into object oriented code. The tasks of the program was blink the leds, have a variable hardware delay and use the switch to turn the blinking on and off.

Equipment used

- Texas Instruments LaunchPad MSP430g2553 microcontroller
- Laptop

Preformed work

I started off by putting the code related to the leds in a separate file and trying to make it work that way. At this stage the led.c file consisted of a init function and a update function that is used in the supplied timer.c file. After some tweaking and debugging I got the blinking to work. The delay of the blinking is implemented by setting a delay value by a parameter in the init file and each time the update function is called a tick counts one step up. When the tick is equal to the delay variable the led alternates the led blinking and resets the tick counter.

Next step was to try to get the switch to work. Using the code from the exercise description I managed to at least get the switch to work but I realized that the led update function needed to be changed a bit.

Instead of just switching the green and red bits every time the update function was called I tried implementing a simple state system. The leds can be either on or off and the blinking can also be either on or off. when both the led state and the blink state is on the leds blink. This is checked in the update function. I also wrote a led reset function that gets called when the led state is on but the blink state is off. This function initializes the blinking by turning the green led on and the red off, this makes it possible to alternate using the blink function.

Results

Now when the switch is pressed the leds are completely turned off, when the switch is released the blinking starts from the green led and there is no problem with both leds starting to blink at the same time or some other unexpected behavior that I saw earlier.

The timer works correctly and the duration can be adjusted.