Programming Embedded Systems 2017 / JB

Exercise 3 / 31.1/1.2.2017 / Deadline for submitting report 10.2.2017

Return report electronically on address: https://abacus.abo.fi/ro.nsf. If you do not have an ÅA account, please email jerker.bjorkqvist@abo.fi

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Equipment and tools

Equipment used:

a) Texas Instruments LaunchPad **MSP430G2** development card
b) Own laptop

Task

Implement a simple traffic light system as a Multi-State machine. The system should work the following: should initialize to amber blinking, after 5 seconds it should go to operation. Red (5 s) -> Red+Green (0,5 s)-> Green (5 s) -> Red+Green (0,5 s)->Red. A button press will switch to green (via Red+Green) immediately (if in Red state).

Using exercise 2 as a starting point, this time the system will be enhanced in the following ways:

- Implement a Multi-State machine
    - Implement the states
    - Timed / input based transitions between states
    - Use
        - Interrupt based task updating
            - Interrupt service routine activates the update of state machine
        - Empty super loop
        - Low power mode, using power mode LPM1 of MSP430
        - Use the supplied UART-support files (users.abo.fi/jbjorkqv/uart.c, users.abo.fi/jbjorkqv/uart.h) to write state updates to serial line using function `UART_Write(char *)`

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General rules for documenting projects:

Each report should include:

- Title
- Name
- Date / timeframe when exercise performed
- Group (if not done individually)
- Assumptions on knowledge of the reader
- Own contribution (if performed in group)
- Description of the task / exercise
- Description of the equipment used
- Description of performed work
- Achieved results