

Programming Embedded Systems 2010 / JB

Exercise 2 / 26.1.2010 / Deadline for submitting report 2.2.2010

Return report electronically on address: <https://xprog28.cs.abo.fi/ro.nsf>. If you do not have an ÅA account, please email report to jerker.bjorkqvist@abo.fi

Assistant: Dag Ågren. Dag will be available Mon-Thu afternoons for assistance. If not in the lab, please find him on 5th floor, room A5035.

Equipment and tools

Equipment used: Modtronix SBC65EC single-board computer
PC with Microchip MPLAB IDE / MCC18-compiler (both can be downloaded for free from microchip home page: www.microchip.com)

Task

Using the requirements from ex1, rewrite the program to support basic Embedded Operating System (EOS), by

- Rewriting software into tasks
- Writing O-O embedded C-code
- Creating software delays by using programmable timers

Details

Tasks. Create tasks for

- blinking the led and
- reading input from a input Pin
- creating a variable delay (in ms)

O-O embedded C-code means that software modules should be clearly divided into separate files / and functions. Settings specific for microcontroller / topic area should be separated in include (.h) files.

Programmable timers on the Microchip 18F6627. The microcontroller has 4 16/8 bit timers, which are programmable. The TOCON register controls the behavior. The TMR0L and TMR0H are the timer counter values (low and high bytes). The timers can be controlled for interrupts, but here only overflow (TMR0L/H == 0).

Document what you have done, and submit the documentation and the code you have produced electronically to the address give above.

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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