Programming Embedded Systems 2015 / JB

Exercise 1 / 26/31.1.2014 / Deadline for submitting report 13.2.2015

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

Advisor/labs: Åke Syysloiste. Åke will be available during lab hours, at other times he can be found in room A5031.

Equipment and tools

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

Task

The task is to implement a super-loop structured task in software. The Super-loop structured task should do the following:

- Switch the led on the development platform on and off with internals of 1 second (the period of a on/off-cycle being 1 s)
- The delay should (in this exercise) be created using a delay loop

Description

1. Start by building the default software system installed in the Modtronix SBC65EC. This software is found in the folder L:\PES\websrvr65_v310. Copy an own version in an **own folder** on the L:\PES\ -folder (i.e. use and own working folder).
    a. Open the project - websrvr65_mc_hw211.mcp - project for HW version 2.11, bootloader, MPLAB C Compiler
    b. Select the correct microcontroller in the IDE (6627)
    c. Build the project, a file named websrvr65_mc_hw211.hex should be generated in the out folder
2. Upload the generated hex-file to the Modtronix SBC
    a. Start the Modtronix Network Bootloader (in location Start->All Programs->Modtronix)
    b. Select the hex-file generated
    c. Check the that the IP-number matches the one on the SBC
    d. Click connect
    e. Re-connect the power to the SBC, the SBC should be connected to the uploader SW
    f. Click “Upgrade Firmware” to re-program the device
3. After this, start modifying the existing project by replacing most of the code with your own version of the super-loop structure, with a minimal version. Note that the super-loop is found in “mxwebsrvr.c” in the starting project.

NOTES!

1. The default software enables the watchdog timer in the device. Unless properly handled, the watchdog timer will reset the device every 2-3 seconds. To disable the watchdog timer, find the variable WDTCON_SWDTEN (found in mxwebsrvr.c) and give it the value of 0.

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

General rules for documenting projects:

Please note that we are using a Learning diary / journal in this course. The report of the labs will be parts of the learning diary. So please update your learning diary, and submit the lab reports in the new versions of the learning diary.

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