

# Programming Embedded Systems 2012 / JB

Exercise 1 / 19/20.1.2012 / Deadline for submitting report 27.1.2012

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

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## 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](http://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 macsfolder** on the L:\PES\ -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 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.

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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