Lab 1 report – Implementation of a super-loop structured task in software.

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Assumptions on knowledge of the reader

It is assumed that a reader should know some basic programming skills in C/C++ in order to understand the source code. A basic knowledge of hardware such as processors, LEDs, pin ports should be known.

Description of the task

The task of lab 1 is to implement a round robin software architecture which blinks a LED with a flash interval of 2s – that is, the LED is turned on for 1s and off for 1s. A delay loop is implemented to delay the blinking period of the LED.

Description of the equipment used

The equipment used consists of a Modtronix SBC65EC embedded platform with built in web server and bootloader. A PC with Microchip MPLAB IDE/MCC18 compiler is installed to write and compile the C source code. Besides, Modtronix Network Bootloader must be installed in the development PC to program the executable to the PIC microcontroller of the platform. An Ethernet cable is used to connect the platform to the local area network. A regular 2.1mm jack plug for power supply (7-35VDC) is used to power up the platform.

Description of the performed work

To make a LED blinking application, the source file mxwebsrvr.c from the project websrvr65_mc_hw211.mcp is modified. In the C source file, the watchdog timer is disabled by giving the value of 0 to the variable WDTCON_SWDTEN. The register TRISB_RB6 that controls pin 6 of port B is assigned the value of 0, which means that the pin is set to output. In the while (1) infinite loop, register LATB6 is toggled every time the loop iterates. The delay is implemented by using two for loop with one for loop being nested inside another for loop. By trial and error, the total iteration is determined to be 480000 times so that a delay will last for 1 second.

After modifying the source code, the project is complied. From the output window of the MPLAB IDE, the build is successful. To program the executable to the microcontroller, Modtronix Network Bootloader is used.

Achieved results

Upon successfully programming the microcontroller, the red LED on pin 6 port B starts blinking with about 1 s on and 1s off. It can be seen in Figure 1 below.

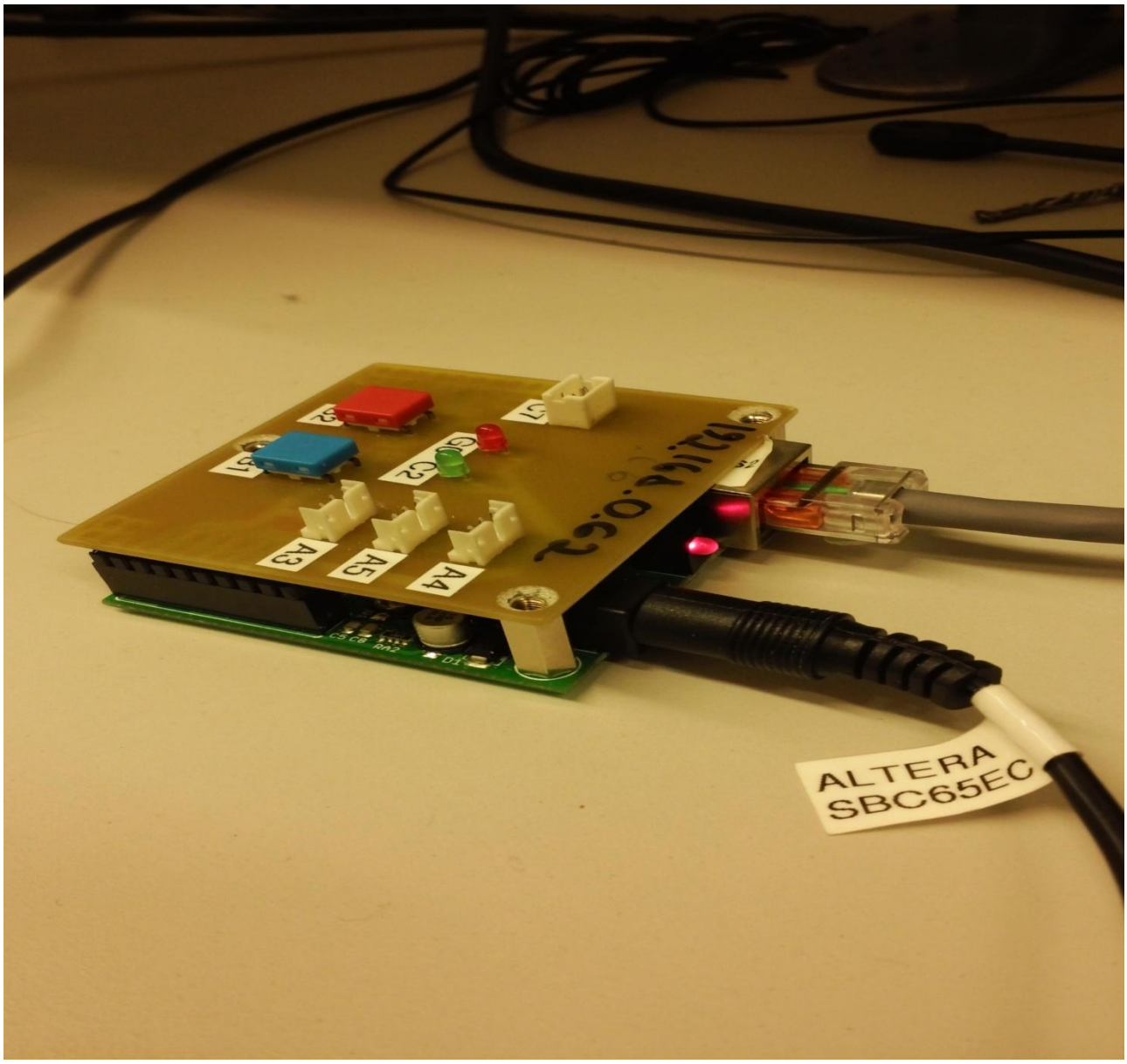

Figure 1. Red LED on port B pin 6 blinking with 1s on and 1s off