ET1010 MAPP -- Sample Lab Test

Notes:

- Test duration = 50 minutes.
- Closed book, but the C program files used in the lab experiments may be referred to.
- Cover up to Experiment 4.
- Devices to control/monitor: LED bar, dip switches, 7-segment display, LCD, keypad.

Part 1: (40 marks)

Launch MPLABX-IDE, create a project called LabTest and add the existing file BlinkLeds.c. Modify it to configure RA5 as an input pin and PORTD as an output port and to repeatedly turn on/off the LEDs in the LED bar: 00000011 (0.5 second) ←→ 00110000 (0.5 second). Suitable delays should be used. Compile, download and run.

Next, modify the code so that when the switch at RA5 is pushed up (i.e. == 0), the LED bar shows 00110011. Otherwise, all LEDs should be off. Again, compile, download and run.

Part 2: (30 marks)

Replace the source file with Four7Seg.c and modify it to show -123 on the 4 digits. ('-' means off.) Again, compile, download and run.

Part 3: (30 marks)

Replace the source file with LCDKeypad.c and modify it to show the prompt "Press 1" on the 1st line of the LCD and then to wait for user to press '1'. If other keys are pressed, the program will continue to wait for '1'. Once '1' is pressed, show the message "Bye" on the 2nd line of the LCD and 'stop' (*). Again, compile, download and run.

(*) hint: while(1);   // forever do nothing.

Note: No solution will be posted. If you don't know how to do any of the 3 parts, you can re-do the lab experiments, or discuss with your classmates.