EEET2250: Tips for Lab Test 1

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Clarifications on the Lab Test 1 proforma requirements

- Code to interface to the OUSB will be provided in the Lab Test (as a txt file in the Visual Studio solution) - this is similar to the test files available on Blackboard and the basic code in the lectures to access the OUSB board will also be provided.
- Whilst it is helpful to have code that checks for a disconnected OUSB board (i.e., the Murphy's Law tests), we will *NOT* test for this with the autotester
- For the bitwise operations to keep the top four bits of PORTB unchanged, in the final version of your code that you submit, *DO NOT* write a test value to the top four bits of PORTB in your code. The autotester will set the OUSB board to a value, run your code, and then read the PORTB value to check that the top four bits of PORTB are unchanged.
- A sample text file for your program to read in will be provided in the Lab Test as part of the Visual Studio solution - only edit this file (to test your code) within Visual Studio, otherwise it will cause the Lab Test testing environment to beep at you (and alert the tutor)

What will the autotester test for?

The autotester will perform the following series of tests and check for the correct response from your program:

- More than two input parameters on the command line
- If a file cannot be opened successfully
- Numbers in the file less than zero
- Numbers in the file greater than 15
- Incorrect or invalid numbers or letter and number combinations
- Correctly reading and outputting onto PORTB a file containing one line of number data (no bitwise operations tested - initial value of PORTB set to 0)
- Correctly reading and outputting onto PORTB a file containing multiple lines of number data (no bitwise operations tested - initial value of PORTB set to 0)
- Correctly reading and outputting onto PORTB a file containing one line of number data (bitwise operations tested - initial value of PORTB set to > 15 and top four bits of PORTB must be maintained)
- Correctly reading and outputting onto PORTB a file containing multiple lines of number data (bitwise operations tested - initial value of PORTB set to > 15 and top four bits of PORTB must be maintained)

THREE MAJOR TIPS FOR THE LAB TEST:

1. Get as much working as you can by Week 4, but do not panic if you cannot complete the whole task! As per the tests that the autotester will run as defined above, partially

working code (e.g., everything working except the bitwise operations) will still score partial marks - making your code too complicated with nothing working may score very poorly!

2. In the Lab Test, do not write all your code at once! Write parts of your code and test to make sure that each part works before continuing to write more code, rather than writing all your code at once and trying to debug it!
3. **MAKE SURE YOUR CODE COMPILES** - code that does not compile is a straight non-negotiable zero marks.

Sample Lab Test executable and input text file

A sample executable (LabTest1_Sample.exe) following the requirements of the Lab Test 1 proforma is available for download from Blackboard. You will need to run this exe file using the Windows command prompt (cmd.exe - can be searched for from the Start menu). Make sure that you run LabTest1_Sample.exe from a directory that also has ousb.exe and the accompanying sample input text file (LabTest1_Sample.txt). The program will respond correctly as per the following:

- Typing just 'LabTest1_Sample.exe' on the command prompt will return the student number (without the 's'), email and name (with an underscore between the first name and last name)
- Typing more than two parameters on the command line (i.e., LabTest1_Sample.exe LabTest1_Sample.txt somethingElse') is too many input parameters into the program (only the filename should be entered) and a 'P' is output onto the command prompt
- If two parameters are entered on the command line (i.e., 'LabTest1_Sample.exe myFilename.txt') but the file cannot be opened successfully, a 'F' is output onto the command prompt
- If two parameters are entered on the command line (i.e., 'LabTest1_Sample.exe LabTest1_Sample.txt') and the file is opened successfully, the program will read in one number per line and output the number onto PORTB if the number is valid (i.e., between 0 and 15 inclusive) until the end of the file is reached:
    - Numbers between 0 and 15 (inclusive) will be output onto PORTB, there is no output onto the command prompt
    - Numbers less than 0 (i.e., negative), greater than 15 or invalid text will output a 'Y' onto the command terminal and continue reading in the next number. Nothing should change on PORTB until the next valid number is read in.

Please note that there should not be a newline at the end of the input text file as this is then read in by your program!

To test the bitwise operations to keep the top four bits of PORTB unchanged:

- Firstly set PORTB to a value greater than 15 e.g., to set PORTB to an initial value of 16 (the 5th bit of PORTB), run 'ousb io portb 16' in the command prompt
- Then run 'LabTest1_Sample.exe LabTest1_Sample.txt' - the numbers read in from file should output onto the lower four bits of PORTB without changing the top four bits (i.e., the 5th bit of PORTB should stay on as the lower four bits change)