EE2401 微算機系統 Fall 2018

HW#4 (8051 applications on MCU8051IDE) (10/14/2018)

Due date: 11/15/2018. Severe penalty will be given to late homework.

Note:

1. The homework will be graded based on your **documentation** and **demonstration**.
2. For all **(Software Design)** problems, you are required to us **MCU8051IDE**simulators to simulate and verify your programs.
3. You are required to **type** your homework (first the problem then your solution) by using a **word processor** and submit in .doc(or .docx) format under a filename **EE2401f18-hw4-student\_no-vn.doc(or .docx)**, where **student\_no** is your student number, e.g., **106061xxx**(or **X107xxxx**) and **vn** is your version number, e.g., **v3**. You should **upload your .doc file** in **iLMS** by the specified deadline whenever you have a newer version. Follow the iLMS upload homework process to upload your file.
4. The homework will be graded based on your **latest version**. Old version(s) will be discarded.
5. Each homework assignment will have full score of 100 points. 5 points will be deducted if you do not comply with the naming convention. Severe grade penalty will be given to late homework. 5 points will be taken off per day after deadline.
6. Please treat the above requirements as a kind of training in writing a decent homework report. If you have any problem regarding this homework, please feel free to consult with TA or me. If you think the time is too short to accomplish this homework, please let me know in class.

1. (30%)

MCU8051IDE中有提供一個4 x 4 keypad以及1個數字顯示的7段顯示器的Virtual Hardware，請設計一個程式來讀入按鍵及顯示，一開始沒有任何按鍵時先不顯示7段顯示器，當開始有按鍵時，把該按鍵對應的文數字顯示在7段顯示器上，之後的按鍵就依此類推。你最少必須提供流程圖(或pseudo code)，解釋你的做法，你的程式碼，Virtual Hardware儲存檔。可以讓助教驗證你的程式。

2. (30%)

MCU8051IDE中有提供一個4個數字顯示的7段顯示器的Virtual Hardware，假設我們所要顯示的數字是存放在內部資料記憶體30H ,31H(2個bytes共4個hex數字)，請在MCU8051IDE環境下設計一個程式來不斷的顯示這4個數字在7段顯示器的Virtual Hardware上。你最少必須提供流程圖(或pseudo code)，解釋你的做法，你的程式碼，Virtual Hardware儲存檔。可以讓助教驗證你的程式。

3. (40%)

MCU8051IDE中有提供一個DS1620的Virtual Hardware，他是一顆溫度偵測與控制用的IC，它透過3條線(DQ, CLK, RST)與microcontroller連接。請上網找該IC的datasheet，了解它的功能以及如何使用它。假定我們打算做加熱器控制如下圖所示，如果溫度低於17度C就打開加熱器加熱，溫度如果高於23度C就把加熱器關閉，停止加熱。同時，必須持續的從DS1620Virtual Hardware讀入目前的溫度值存到內部資料記憶體，它可以用MCU8051IDE直接觀察。請設計一個程式利用MCU8051IDE的 DS1620 Virtual Hardware來完成這項工作。你最少必須提供流程圖(或pseudo code)，解釋你的做法，你的程式碼，Virtual Hardware儲存檔。可以讓助教驗證你的程式。