UNC Charlotte, Department of Electrical and Computer Engineering
ECGR 4101/5101, Spring 2010, Homework #10, Due: 04/23/2010

1. Read the Jack G. Ganssle article "Reentrancy". (see the course web site for the link)
   a. In three sentences of correct English, summarize the general concept presented in the article. (2 points)
   b. In three sentences of correct English, mention whether the author's point about reentrancy is still valid in the field of embedded systems after almost 1 decade of the article being published. (2 points)

2. Assume the following,
   a. Timer tick interrupts occur every 1 millisecond
   b. Task A – Display LED1 status on the PC (serial transmission)
   c. Task B – Display LED1 status on the board's LCD
   d. Task C – Toggle LED1
   e. Task A takes 1.2 milliseconds to complete
   f. Task B takes 1 millisecond to complete
   g. Task C takes 0.8 milliseconds to complete
   h. InitialTimerValue for tasks A, B and C are 5, 3 and 2 respectively.
   i. task C has the highest priority, followed by task B and then A

   Note that the entries in the table in column "n-1" (e.g. timer, run, enabled) show the variable's value right after the timer tick in the previous time slice. This means that a task will run on the tick when its timer reaches 0 (but show the value after the tick and after the ISR executes).

   a. Fill in the table below to show which tasks the processor will execute and when, as well as scheduler table contents (14 points).
   b. How many times will the status of LED1 be displayed on the LCD (1 point).
   c. How many times will the status of LED1 be displayed on the PC (1 point).

Tick Number

Task Name		**n-1**	**n**	**n+ 1**	**n+ 2**	**n+ 3**	**n+ 4**	**n+ 5**	**n+ 6**	**n+ 7**	**n+ 8**	**n+ 9**	**n+ 10**	**n+ 11**	**n+ 12**	**n+ 13**
A	**timer**	1														
	run	0														
	enabled	1														
B	**timer**	3														
	run	1														
	enabled	1														
C	**timer**	2														
	run	1														
	enabled	1														
	Activity	C,B														