INEL 4206. Final Exam, Take home problems. Problem 5
Due on May 10, 2013, 11:30 AM

NAME:

Section:

RULES:

1. Pages must be numbered. You must write your name and section at the top of each page.
2. You must write with blue or blank ink. No pencil, and no computer generated text, except if absolutely necessary.
3. Use both sides of sheet of paper or else use recycled paper.
4. Staple your sheets. NO loose sheets.
5. This sheet of paper should be rendered too. Keep a copy of what you rendered and also keep all your work available for discussion or happy hour, if necessary.
6. The professor may ask the student to answer oral questions about the problem.

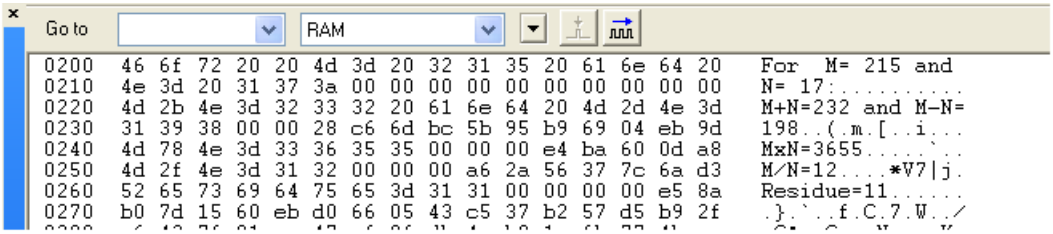
ON THE SOURCE PROGRAMS:

7. Programs should be handled in hard copy (handwritten with blue or black ink, no pencil) AND sent by email as *.asm files. The handwritten copy may omit the general documentation section (but not comments to instructions).
8. Undocumented or ill documented programs are not valid and result in 0 for the whole problem.
9. The first two lines of the source program should be the student's name and student number ID (not Random ID).
10. The following lines should state the problem and explain how can the user introduce data and verify the correctness of the program.
11. The program file should be named as XXYYZZ_ProbW.asm, where XX are the first two letters of your paternal last name, YY those of your maternal last name, ZZ those of your name and W the number of the problem. (For example, in my case PAGARO_Prob1.asm)
12. Send your program by email to rogelio.palomera@upr.edu. The subject should say "Final Exam: Problem X", where X is the number of the program.

Problem 5: We do not have a screen, but we have the Memory window in the IAR to do this problem. Assume we have two numbers M=XXX and N=YYY between 0 and 255. M may be greater, equal or less than N.

1. Starting at address 0200h I should read 'For M=XXX and N=YYY:'
2. Starting at address 0220h I should read M+N = (addition result here)
3. Starting at address 0230h I should read M-N = (subtraction result here, it may be negative)
4. Starting at address 0240h I should read MxN = (Multiplication result)
5. Starting at address 0250h I should read M/N = (integer quotient)
   - If N=0, there should appear an error message instead.
6. Starting at address 0260h I should read Residue = (residue of division)

The following figure shows an example for M=215 and n=17.



The following features must be respected:

1. The first line is introduced with something like
   DB 'For M= 215 and N= 17:',0,0
   where the two 0,0 are to isolate the message clearly.
2. No left zeroes are accepted in neither data introduction nor results. Thus M=7 is valid but M= 007 is not.
3. After a message, introduce at least two bytes 0 so I can be sure that the message is not corrupted by unwanted characters.
4. I will run your program changing the values, so be sure you do not have something running for only one example.

You must present a flowchart of the program. The comments for the instructions MUST MAKE CLEAR WHICH STEP IN THE FLOWCHART IS BEING EXECUTED.