

Week 3

1. Answer the following questions:

- A. Which is the syntax of an instruction?
- B. What is a label?
- C. Explain how the following instructions work (what they do, how many parameters, which restrictions):
 - a. MOV, LEA
 - b. INC, DEC
 - c. ADD, SUB, CMP, MUL, DIV
 - d. NOT, AND, OR, XOR, TEST
 - e. PUSH, POP
- D. How do we declare data? Which are the accepted data types?
- E. How do we declare constants?
- F. How do we declare segments?
- G. How do we declare procedures?
- H. What does ASSUME directive mean?
- I. What does END directive mean?

2. Open s3model.asm with Notepad. The file contains a program model in .EXE format.

Please read with care the comments.

3. Open s3ex1.asm with Notepad. Please follow:

- a. Data declarations
- b. Constant declarations
- c. Program structure
- d. Identify the directives, labels and instruction format

4. Compile s3ex1.asm with MASM Minimal and execute with Olly Debugger (Ollydbg):

- a. Each student will create his own folder and will copy here the archive found at <http://users.utcluj.ro/~madalin/microprocessor-based-systems.html> -> ASM tools. Unzip the archive.
- b. Open Notepad++ from "NPP/notepad++.exe". Open s3ex1.asm within.
- c. Compile s3ex1.asm using the menu "Plugins -> MASM Plugin -> Build MASM. For debugging, use "Plugins -> MASM Plugin -> Debug program (ollydbg)".

- [illegible]

- ## Hex Dump

[illegible]

- g. Execute each instruction and follow the changes in the registers, flags and stack.
5. Compile and execute s3ex2.asm. The program computes the sum of 6 values declared in the data segment.
 6. Write a program that computes the average value of 6 values declared in the data segment.