
Computer Organization and Assembly Language

Fall-2022

Assignment-01

Marks: 10

Due Date: 20 Nov. 2022

Grading scheme:

The assignment's 50% mark is reserved for submitting a complete assignment (answering all questions correctly). The remaining 50% of the marks will be determined by the viva or the assignment-based quiz, as the instructor prefers. If a student fails to submit an assignment but appears on the quiz, he will receive a zero on the assignment. However, if a student has submitted an assignment and did not appear in the assignment-based quiz, the instructor can give him assignment submission marks only or have him retake VIVA on an individual basis.

Note:

.asm files are to be submitted to MS-Teams in an **uncompressed** format by the due date. Assignments sent through email or MS-Teams chat will not be accepted.

Write programs in assembly language for 8086 processor, executable on the Emu8086 and submit only .asm files.

Question: Declare and initialize three matrices of [3x3] size to perform the following operations.

- a) Write a program to add same indices of two matrices A and B and place their sum in the third matrix in the same index as shown in figure below for your reference.
- b) Compare the values with the same indices of two matrices A and B and place the maximum of the two values in the same index of the third matrix C. You are required to perform the comparison considering the **signed numbers**.

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$$\begin{aligned} A + C &= \begin{bmatrix} -5 & 2 & 0 \\ 7 & -3 & 4 \\ -1 & 3 & 2 \end{bmatrix} + \begin{bmatrix} 0 & -1 & 8 \\ 6 & -14 & 2 \\ 9 & 5 & 1 \end{bmatrix} \\ &= \begin{bmatrix} (-5)+(0) & (2)+(-1) & (0)+(8) \\ (7)+(6) & (-3)+(-14) & (4)+(2) \\ (-1)+(9) & (3)+(5) & (2)+(1) \end{bmatrix} \\ A + C &= \begin{bmatrix} -5 & 1 & 8 \\ 13 & -17 & 6 \\ 8 & 8 & 3 \end{bmatrix} \end{aligned}$$

Note that a 2D matrix is stored in a memory as a linear array as shown in the image below. You can access this linear array using base plus index addressing mode. Base register (BX) will hold the base address of the array, while the index address will be incremented as you access the linear array.

row,col	0,0	0,1	0,2
	1,0	1,1	1,2
	2,0	2,1	2,2

			0,0	0,1	0,2	1,0	1,1	1,2	2,0	2,1	2,2			
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