BIM303 MICROCOMPUTERS
LAB EXPERIMENT #4

Objective(s)

- Become familiar with **using memory copy and arithmetic and logic operations** in 8086 emulator software.

Lab Work

- Write an assembly program that multiplies and sums the input values, and performs thresholding based on the sign of the total.

1. First, store four 16-bit numbers in memory. The numbers are 0005h (+5), FFF6h (-10), FFF9h (-7), and 0002h (+2). Your numbers in memory should look like this:

3000h	05h	num1
3001h	00h	
3002h	F6h	num2
3003h	FFh	

3010h	F9h	num3
3011h	FFh	
3012h	02h	num4
3013h	00h	

2. Then, the value of num1 will be multiplied by num3, and the value of num2 will be multiplied by num4, with all values read from memory. The two resulting products will be added together, and the final sum will be stored in memory (e.g., total = +10). The total in memory should look like this:

3030h	C9h	total
3031h	FFh	

3. A control operation will be performed on the resulting value. Accordingly, if the sum is less than 0, the value FFFFh (-1) will be written to memory; if it is equal to 0, 0000h (0) will be written; and if it is greater than 0, 0001h (+1) will be written. The result of this control will be stored at a separate memory address. The control result in memory will appear as shown below:

3060h	00h	control result
3061h	01h	

- The use of instructions involving **logic and arithmetic operations is mandatory**.
- For the given numbers and memory layout, **it is mandatory to use the values and addresses** specified in the worksheet.
- **The total and control result representations are illustrative** and are provided solely to demonstrate the output format. You don't need to change the address of Data Segment Register.

Evaluation

- You must complete your work until lab hour. You will be evaluated during the lab session. **Your code should not contain any comment lines.**
- **NOTE:** Students who do not submit tasks through **ESTUOYS** will receive **0 (zero)** points. **Late submissions will not be accepted.**