Assignment 1
Due Monday, April 15th, by 11:55pm.

If you have not already installed Edsim51 simulator, follow these instructions:
http://www.edsim51.com/installationInstructions.html

In this assignment we are designing a digital filter. The filter's mathematical description is as follows:

$$f(x) = \sum_{i=1}^{N}(a_i x_i)$$

Write a subroutine that acts as a filter. It should compute the sum of the multiplication of data stored in the two arrays $[a_1 \ldots a_N]$ and $[x_1 \ldots x_N]$ in memory. The degree of the filter(N) is stored in register R0. The arrays *a* and *x* start from addresses 0X50H and 0X60H, respectively. (assume N=<8, and **the numbers are unsigned integers**.). The subroutine should return the result *f(x)* in registers R3, R4 and R5 (the most significant byte in R5 and the least significant byte in R3). You may complete the rest of this code:

```
        ORG 50H
        ARRAY1: DB 10, 5, 120, 255, 240, 70, 40, 255 ; array a
        ORG 60H
        ARRAY2:  DB  5, 20, 2, 50, 100, 240, 250, 200 ; array x
        ORG 0
        MOV R0, #2H ;set the filter degree, N, here
.(your code goes here)
.
.
```

Your code should be parametrizable i.e. It should work for any value of $1 \leq N \leq 8$. Using the same data above for arrays *a* and *x*, test your code on the following values of N: 2, 4, 8.

Please note that:

1. The code should be commented
2. Submit commented asm file
3. Submit screen shot showing the data in code memory and register values after each test case
4. Submit the assignment through Canvas, in a zip file.