MP1 (by Dr. Wassim El Falou/ Dr. Haitham Ziade)

Ex1:

Given the following MC6800 program:

```
        .org $0000
        clra
        ldab N
loop aba
        decb
        bne loop
        staa Res
        swi
        .org $0100
N .byte $0a
Res     .rmb 1
        .end
```

a- Test this program on simulator and give a screenshot for the result?
b- Test it for ($0100) = 22 (decimal)? What is the functionality of the program?
c- Test if for ($0100)= 50? What should be the result? Compare it to result in memory Res and explain what's wrong?

Ex2:

Modify the program in Ex1, to take care the result should be in 16 bits

Test it for N=50, and for N=255 and give a screenshot for the result?

Ex3:

Given a table T that start at address $0100 and finish at address $0109, and a table W that start at address $0120 and finish at address $0129.

Write a program that compute: $\sum T(i) * W(i)$

We suppose that all result less than 255, and use subroutine to make multiplication.

Test your program using the following data and give a screenshot for your result:

```
        .ORG $0100
T   .BYTE 0,1,2,3,4,5,6,7,8,9
        .ORG $0120
W   .BYTE 20,5,4,10,3,5,6,7,8,2
        .ORG $0130
SUM  .RMB 1
```

Ex4:

Write a program that count the number divided by 4 in a table started at address $0100. The dimension of the table was stored in address N $0130, and the result of counting in address COUNT $0131?

Test your program using the following data and give a screenshot for your result:

```
        .ORG $0100
T   .BYTE 0,12,2,3,4,5,252,7,8,44
        .ORG $0130
N  .BYTE 10
COUNT .RMB 1
```

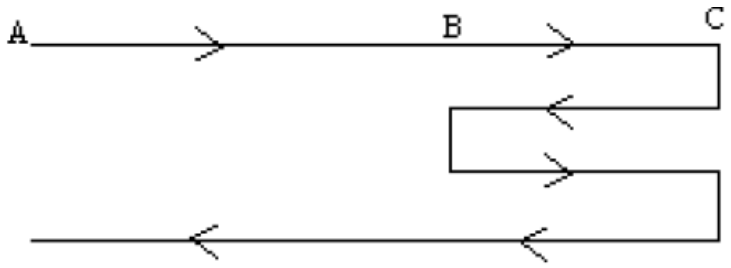
Ex5 (Test on simulator MOTO6800):

Suppose that we have a train remote-controlled by a system containing a microprocessor MC6800 connected to I/O ports A and B. PORTA is a input port made up of 3 encoders positions A, B and C laid out on the lane and respectively connected to bits 0, 1 and 2 of port (C with bit 0, B with bit 1 and A with bit 2). On bit 3, one connected a button S (Start) allowing to make function the system.

Two bit 7 and 6 of output PORTB are configured at exit and makes it possible to order the advance or the retreat of the train (bit 7 to 1 = advances

the train and bit 6 to 1= retreat the train, the stop: corresponds to the two bits with zero.

Write a program, that command the train to follow the target in figure when pressing the bouton S (=1).



When it arrives, of return, in A, the train must stop while waiting for a new action on S.