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Question 1:

Write a program that does the following in given order:

- **Define 4 word-type variables named var1,var2,var3 and var4 initialized to zero**
- **Move following values in variables var1= 4AC8(hex) , Var2 = 478 (decimal), var3= 0110_1010_0010_1101 (binary) and var4 = 'BD' (chars)**
- **ADD var1 and var2 and store its result in var1. What answer do you expect in var1**
- **SUB var1 from var3 and store result in var3 . What answer do you expect in var3.**
- **Increment var3 and decrement var1**
- **Swap the values of var1 and var4**
- **Gets the negative value of var3**

Answer:

```
1    ORG 100h
2
3    .DATA
4
5        var1 DW 0
6        var2 DW 0
7        var3 DW 0
8        var4 DW 0
9        var5 DB 0xFFFFh
10
11   .CODE
12
13       MOV var1, 4AC8h
14       MOV var2, 478
15       MOV var3, 0110101000101101b
16       MOV var4, 'BD'
17
18       MOV AX, var1
19       ADD var1, BX     ; 4CA6h
20
21       MOV AX, var1
22       SUB var3, AX     ; 1F65h
23
24       INC var3
```

```
25          DEC var1
26
27          MOV AX, var4
28          XCHG var1, AX
29          MOV var4, AX
30
31          NEG var3
32
33      RET
```

Question 2:

Suppose you define a byte variable var5 initialized to some value. Can you add it to var1 , subtract it from var2 , swap it with var3 and get it's negative value?

Answer:

```
1       ORG 100h
2
3       .DATA
4
5           var1 DW 0
6           var2 DW 0
7           var3 DW 0
8           var4 DW 0
9           var5 DB 0xFFFFh
10
11      .CODE
12
13          MOV var1, 4AC8h
14          MOV var2, 478
15          MOV var3, 0110101000101101b
16          MOV var4, 'BD'
17
18          MOV AX, var1
19          ADD var1, BX     ; 4CA6h
20
21          MOV AX, var1
22          SUB var3, AX     ; 1F65h
23
24          INC var3
25          DEC var1
26
27          MOV AX, var4
```

```
28          XCHG var1, AX
29          MOV var4, AX
30
31          NEG var3
32
33          MOV AX, var1    ; ADD var5 to var1
34          ADD AL, var5
35          MOV var1, AX
36
37          MOV AX, var2    ; SUB var5 from var2
38          SUB AL, var5
39          MOV var2, AX
40
41          MOV AX, var3    ; Swap var5 with var3
42          XCHG AL, var5
43          MOV var3, AX
44
45          NEG var5        ; Negative of var5
46
47      RET
```