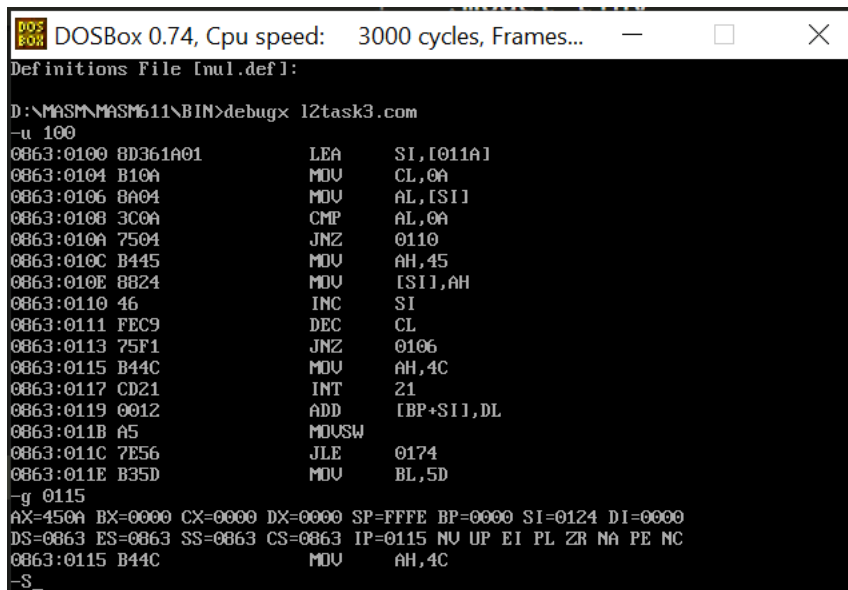


TASK 3

```
[10] l2task3.asm
1  .model tiny
2  .data
3  array1 db 12h, 0a5h, 7eh, 56h, 0b3h, 5dh, 90h, 1fh, 85h, 0ah
4  .code
5  .startup
6      lea si,array1
7      mov cl,10
8  x2: mov al,[si]
9      cmp al,0ah
10     jne x1
11     mov ah,'E'
12     mov [si],ah
13  x1: inc si
14     dec cl
15     jnz x2
16 .exit
17 end
```

ARRAY IS STORED IN LOCATION DS:011AH



```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
Definitions File [nul.def]:
D:\MASM\MASM611\BIN>debugx l2task3.com
-u 100
0063:0100 8D361A01      LEA     SI,[011A]
0063:0104 B10A           MOV     CL,0A
0063:0106 8A04           MOV     AL,[SI]
0063:0108 3C0A           CMP     AL,0A
0063:010A 7504           JNZ     0110
0063:010C B445           MOV     AH,45
0063:010E 8824           MOV     [SI],AH
0063:0110 46             INC     SI
0063:0111 FEC9           DEC     CL
0063:0113 75F1           JNZ     0106
0063:0115 B44C           MOV     AH,4C
0063:0117 CD21           INT     21
0063:0119 0012           ADD     [BP+SI],DL
0063:011B A5             MOUSW
0063:011C 7E56           JLE     0174
0063:011E B35D           MOV     BL,5D
-g 0115
AX=450A BX=0000 CX=0000 DX=0000 SP=FFFE BP=0000 SI=0124 DI=0000
DS=0063 ES=0063 SS=0063 CS=0063 IP=0115 NU UP EI PL ZR NA PE NC
0063:0115 B44C           MOV     AH,4C
-S_
```

DATA AFTER '85H' HAS BEEN RELPACED BY '45H' (= E) WHICH WAS '0AH' EARLIER

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
0063:010E 8824 MOV [SI],AH
0063:0110 46 INC SI
0063:0111 FEC9 DEC CL
0063:0113 75F1 JNZ 0106
0063:0115 B44C MOV AH,4C
0063:0117 CD21 INT 21
0063:0119 0012 ADD [BP+SI],DL
0063:011B A5 MOUSW
0063:011C 7E56 JLE 0174
0063:011E B35D MOV BL,5D
-g 0115
AX=450A BX=0000 CX=0000 DX=0000 SP=FFFE BP=0000 SI=0124 DI=0000
DS=0063 ES=0063 SS=0063 CS=0063 IP=0115 NU UP EI PL ZR NA PE NC
0063:0115 B44C MOV AH,4C
-d ds:011a
0063:0110 - 12 A5 7E 56 B3 5D ...~U.I
0063:0120 90 1F 85 45 2C 50 FF 76-06 B8 F9 09 BA 2D 15 52 ...E,P.v....-R
0063:0130 50 1E 07 9A 42 07 5A 02-8B E5 5D CB 55 8B EC FF P...B.Z...l.U...
0063:0140 76 06 9A 2D 14 EF 06 8B-E5 5D CB 55 8B EC 83 3E v...-.....l.U...>
0063:0150 06 57 02 73 13 8A 46 08-2A E4 50 FF 76 06 9A 0E .W.s...F.*.P.v...
0063:0160 00 DB 09 83 C4 04 EB 30-8B 76 06 8A 04 22 C0 74 .....0.v..."t
0063:0170 25 2A E4 50 0E E8 F4 00-83 C4 02 23 C0 74 05 FF %*.P.....#.t...
0063:0180 46 06 EB 0D 8B 76 06 8A-04 3A 46 00 75 03 96 EB F...v...:F.u...
0063:0190 07 FF 46 06 EB D2 2B C0-5D CB ..F...+.l.
-S
```

TASK 4

```
[i0] l2task4.asm
1  .model tiny
2  .data
3  array1 dw 5e7fh, 1234h, 95abh, 0f437h, 3a89h
4  count db 5
5  neg1 db ?
6  .code
7  .startup
8      lea si,array1
9      mov cl,count
10     mov ch,00
11 x2: mov ax,[si]
12     rol ax,1
13     jnc x1
14     inc ch
15 x1: inc si
16     dec cl
17     jnz x2
18     mov neg1,ch
19 .exit
20 end
```

ARRAY IS STORED IN LOCATION DS:0120H AND COUNT OF NEG. NOS IS STORED IN DS:012B

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
0063:013D 8BEC      MOV     BP,SP
0063:013F FF7606    PUSH    WORD PTR [BP+06]
-q
D:\MASM\MASM611\BIN>debugx l2task4.com
-u 100
0063:0100 8D362001      LEA     SI,[0120]
0063:0104 8A0E2A01      MOV     CL,[012A]
0063:0108 B500          MOV     CH,00
0063:010A 8B04          MOV     AX,[SI]
0063:010C D1C0          ROL     AX,1
0063:010E 7302          JAE     0112
0063:0110 FEC5          INC     CH
0063:0112 46            INC     SI
0063:0113 FEC9          DEC     CL
0063:0115 75F3          JNZ     010A
0063:0117 8B2E2B01      MOV     [012B],CH
0063:011B B44C          MOV     AH,4C
0063:011D CD21          INT     21
0063:011F 007F5E        ADD     [BX+5E],BH
-g 011b
AX=2B57 BX=0000 CX=0200 DX=0000 SP=FFFE BP=0000 SI=0125 DI=0000
DS=0063 ES=0063 SS=0063 CS=0063 IP=011B NU UP EI PL ZR NA PE CY
0063:011B B44C          MOV     AH,4C
-S_
```

(DS:012BH) HAS COUNT OF 02H, AS ARRAY1 HAD 2 NEG. NOS

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
0063:010C D1C0          ROL     AX,1
0063:010E 7302          JAE     0112
0063:0110 FEC5          INC     CH
0063:0112 46            INC     SI
0063:0113 FEC9          DEC     CL
0063:0115 75F3          JNZ     010A
0063:0117 8B2E2B01      MOV     [012B],CH
0063:011B B44C          MOV     AH,4C
0063:011D CD21          INT     21
0063:011F 007F5E        ADD     [BX+5E],BH
-g 011b
AX=2B57 BX=0000 CX=0200 DX=0000 SP=FFFE BP=0000 SI=0125 DI=0000
DS=0063 ES=0063 SS=0063 CS=0063 IP=011B NU UP EI PL ZR NA PE CY
0063:011B B44C          MOV     AH,4C
-d ds:012b
0063:0120      -      02 BA 2D 15 52      ..-R
0063:0130 50 1E 07 9A 42 07 5A 02-8B E5 5D CB 55 8B EC FF P...B.Z...I.U...
0063:0140 76 06 9A 2D 14 EF 06 8B-E5 5D CB 55 8B EC 83 3E v...-...I.U...>
0063:0150 06 57 02 73 13 8A 46 08-2A E4 50 FF 76 06 9A 0E .W.s..F.*.P.v...
0063:0160 00 DB 09 83 C4 04 EB 30-8B 76 06 8A 04 22 C0 74 .....0.v..."t
0063:0170 25 2A E4 50 0E E8 F4 00-83 C4 02 23 C0 74 05 FF %*.P.....#.t..
0063:0180 46 06 EB 0D 8B 76 06 8A-04 3A 46 08 75 03 96 EB F...v...:F.u...
0063:0190 07 FF 46 06 EB D2 2B C0-5D CB 55 8B EC 83 3E 06 ..F...+.I.U...>.
0063:01A0 57 02 73 15 8A 46 0A 2A-E4 50 FF      W.s..F.*.P.
-SS
```

TASK 5

```
[10] l2task5.asm
1  .model tiny
2  .386
3  .data
4  org 0000h
5  array1 dd 11111111h, 22222222h, 33333333h, 44444444h, 55555555h, 66666666h, 77777777h,
88888888h, 99999999h, 0aaaaaaaaah
6  org 0014h
7  array2 dd ?
8  .code
9  .startup
10  lea si,array1
11  lea di,array2
12  add si,36
13  add di,36
14  mov cl,10
15 x1: mov eax,[si]
16     mov [di],eax
17     sub si,04
18     sub di,04
19     dec cl
20     jnz x1
21 .exit
22 end
```

ARRAY1 DATA IS STROED AT DS:0124H AND ARRAY2 DATA IS STORED AT DS:0138H

(20d == 14h FROM ARRAY1)

```
D:\MASM\MASM611\BIN>debugx l2task5.com
-u 100
0063:0100 8D362401      LEA    SI,[0124]
0063:0104 8D3E3801      LEA    DI,[0138]
0063:0108 83C624      ADD    SI,+24
0063:010B 83C724      ADD    DI,+24
0063:010E B10A      MOV    CL,0A
0063:0110 668B04      MOV    EAX,[SI]
0063:0113 668905      MOV    [DI],EAX
0063:0116 83EE04      SUB    SI,+04
0063:0119 83EF04      SUB    DI,+04
0063:011C FEC9      DEC    CL
0063:011E 75F0      JNZ    0110
-S
```

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
0063:0113 668905      MOV    [DI],EAX
0063:0116 83EE04      SUB    SI,+04
0063:0119 83EF04      SUB    DI,+04
0063:011C FEC9      DEC    CL
0063:011E 75F0      JNZ    0110
-u
0063:0120 B44C      MOV    AH,4C
0063:0122 CD21      INT    21
0063:0124 1111      ADC    [BX+DI],DX
0063:0126 1111      ADC    [BX+DI],DX
0063:0128 2222      AND    AH,[BP+SI]
0063:012A 2222      AND    AH,[BP+SI]
0063:012C 3333      XOR    SI,[BP+DI]
0063:012E 3333      XOR    SI,[BP+DI]
0063:0130 44      INC    SP
0063:0131 44      INC    SP
0063:0132 44      INC    SP
0063:0133 44      INC    SP
0063:0134 55      PUSH   BP
0063:0135 55      PUSH   BP
0063:0136 55      PUSH   BP
0063:0137 55      PUSH   BP
0063:0138 666666667777 JA     01B5
0063:013E 7777      JA     01B7
-S
```

STARTING ADDRESS OF ARRAY2 = STARTING ADDRESS OF ARRAY1 + 14h (= 20d)

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
0063:0133 44          INC     SP
0063:0134 55          PUSH    BP
0063:0135 55          PUSH    BP
0063:0136 55          PUSH    BP
0063:0137 55          PUSH    BP
0063:0138 666666667777 JA      01B5
0063:013E 7777       JA      01B7
-rx
386 regs on
-g 0120
EAX=11111111 EBX=00000000 ECX=00000000 EDX=00000000 ESP=0000FFFF EBP=00000000
ESI=00000120 EDI=00000134 EIP=00000120 EFL=00007246 NU UP EI PL ZR NA PE NC
DS=0063 ES=0063 SS=0063 CS=0063 FS=0000 GS=0000
0063:0120 B44C          MOV     AH,4C
-d ds:0124
0063:0120          11 11 11 11-22 22 22 22 33 33 33 33      ...."3333
0063:0130 44 44 44 44 55 55 55 55-11 11 11 11 22 22 22 22 DDDDUUUU...""
0063:0140 33 33 33 33 44 44 44 44-55 55 55 55 66 66 66 66 3333DDDDUUUUffff
0063:0150 77 77 77 77 88 88 88 88-99 99 99 99 AA AA AA AA www.....
0063:0160 00 DB 09 83 C4 04 EB 30-8B 76 06 8A 04 22 C0 74 .....0.v...".t
0063:0170 25 2A E4 50 0E EB F4 00-83 C4 02 23 C0 74 05 FF %*.P.....#.t..
0063:0180 46 06 EB 0D 8B 76 06 8A-04 3A 46 08 75 03 96 EB F...v...:F.u...
0063:0190 07 FF 46 06 EB D2 2B C0-5D CB 55 8B EC 83 3E 06 ..F...+.I.U...>.
0063:01A0 57 02 73 15          -          W.s.
-S_
```

SOURCE (DS:0124H) DATA HAS BEEN COPIED TO DESTINATION (DS:0138H)

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
EAX=11111111 EBX=00000000 ECX=00000000 EDX=00000000 ESP=0000FFFF EBP=00000000
ESI=00000120 EDI=00000134 EIP=00000120 EFL=00007246 NU UP EI PL ZR NA PE NC
DS=0063 ES=0063 SS=0063 CS=0063 FS=0000 GS=0000
0063:0120 B44C          MOV     AH,4C
-d ds:0124
0063:0120          11 11 11 11-22 22 22 22 33 33 33 33      ...."3333
0063:0130 44 44 44 44 55 55 55 55-11 11 11 11 22 22 22 22 DDDDUUUU...""
0063:0140 33 33 33 33 44 44 44 44-55 55 55 55 66 66 66 66 3333DDDDUUUUffff
0063:0150 77 77 77 77 88 88 88 88-99 99 99 99 AA AA AA AA www.....
0063:0160 00 DB 09 83 C4 04 EB 30-8B 76 06 8A 04 22 C0 74 .....0.v...".t
0063:0170 25 2A E4 50 0E EB F4 00-83 C4 02 23 C0 74 05 FF %*.P.....#.t..
0063:0180 46 06 EB 0D 8B 76 06 8A-04 3A 46 08 75 03 96 EB F...v...:F.u...
0063:0190 07 FF 46 06 EB D2 2B C0-5D CB 55 8B EC 83 3E 06 ..F...+.I.U...>.
0063:01A0 57 02 73 15          -          W.s.
-d ds:0138
0063:0130          -11 11 11 11 22 22 22 22      ...."
0063:0140 33 33 33 33 44 44 44 44-55 55 55 55 66 66 66 66 3333DDDDUUUUffff
0063:0150 77 77 77 77 88 88 88 88-99 99 99 99 AA AA AA AA www.....
0063:0160 00 DB 09 83 C4 04 EB 30-8B 76 06 8A 04 22 C0 74 .....0.v...".t
0063:0170 25 2A E4 50 0E EB F4 00-83 C4 02 23 C0 74 05 FF %*.P.....#.t..
0063:0180 46 06 EB 0D 8B 76 06 8A-04 3A 46 08 75 03 96 EB F...v...:F.u...
0063:0190 07 FF 46 06 EB D2 2B C0-5D CB 55 8B EC 83 3E 06 ..F...+.I.U...>.
0063:01A0 57 02 73 15 8A 46 0A 2A-E4 50 FF 76 08 FF 76 06 W.s..F.*.P.v..v.
0063:01B0 0E EB B2 FC 83 C4 06 EB-          .....
-S_
```