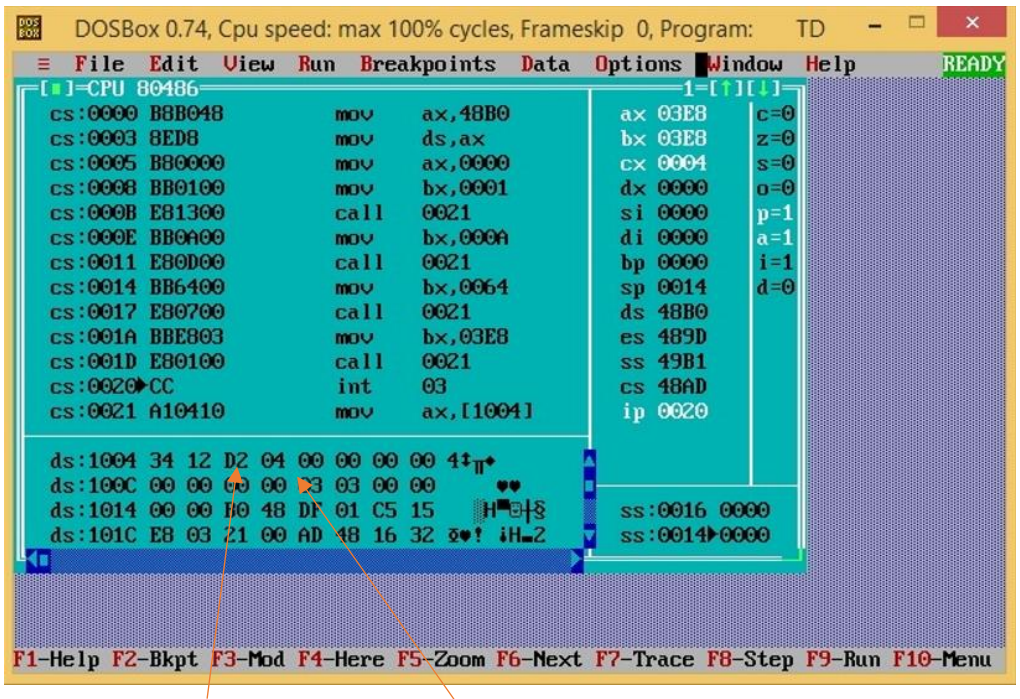
P1:

```
.MODEL SMALL
.STACK 20
.DATA
ORG 1000H
BCD DW 1234H
HEX DW 0
.CODE
START:
MOV AX, @DATA
MOV DS, AX
MOV AX, 0000H
MOV BX, 0001H
CALL BCD2BIN
MOV BX, 000AH
CALL BCD2BIN
MOV BX, 0064H
CALL BCD2BIN
MOV BX, 03E8H
CALL BCD2BIN
INT 3
BCD2BIN PROC NEAR
MOV AX, BCD
AND AX, 00FH
MUL BX
ADD HEX, AX
MOV CL, 04
ROR BCD, CL
RET
BCD2BIN ENDP
END START
```

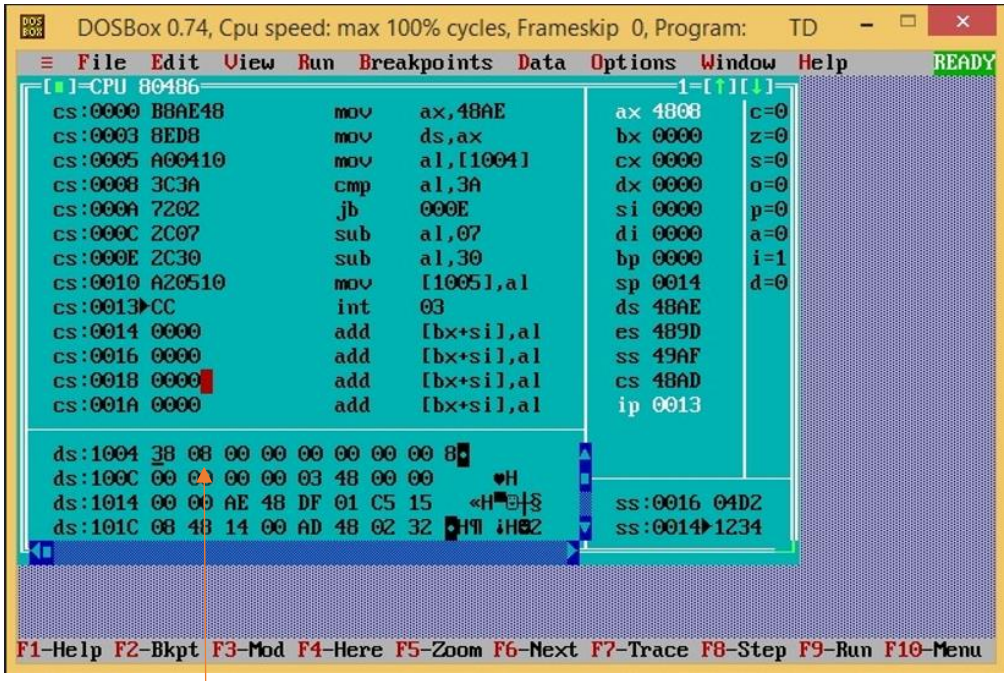


Lower Byte

Higher Byte

P2:

```
.MODEL SMALL
.STACK 20
.DATA
ORG 1000H
Hex_Digit DB 38H
ASCII DB ?
.CODE
START:
MOV AX,@DATA
MOV DS,AX
MOV AL,Hex_Digit
CMP AL, 3AH
JC SUB30
SUB AL, 07H
SUB30:
SUB AL,30H
MOV ASCII, AL
INT 3
END START
```



Output

P3:

```
.MODEL SMALL
.STACK 20
.CODE
START:
MOV AL, 45H
MOV BL, AL
AND AL, 0F0H
ROR AL, 4
CALL HEXASC
MOV DL, AL
MOV AH,02
INT 21H
MOV AL, BL
AND AL, 0FH
CALL HEXASC
MOV DL, AL
MOV AH, 02H
INT 21H
MOV AH, 4CH
INT 21H
HEXASC:
CMP AL, 0AH
JB NUM
ADD AL, 07
NUM:
ADD AL, 30H
RET
END START
```

```
C:\TASM>TLINK LAB4Q3.OBJ
Turbo Link  Version 2.0  Copyright (c) 1987, 1988 Borland International

C:\TASM>LAB4Q3.EXE
45
C:\TASM>_
```

P4:

```
MODEL SMALL
.STACK 20
.CODE
START:
CALL READKB
MOV BL,AL
CALL NXTLINE
CALL READKB
MUL BL
MOV BL, AL
CALL NXTLINE
CALL DISP
MOV AH, 4CH
INT 21H
READKB PROC NEAR
MOV AH, 01
INT 21H
CALL ASCHEX
RET
READKB ENDP
ASCHEX PROC NEAR
CMP AL, 3AH
JC SUB30
SUB AL, 07H
SUB30:
SUB AL, 30H
AND AL, 0FH
RET
ASCHEX ENDP
```

```
NXTLINE PROC NEAR
MOV AH, 2
MOV DL, 0AH
INT 21H
MOV DL, 0DH
INT 21H
RET
NXTLINE ENDP
DISP PROC NEAR
MOV AL, BL
AND AL, 0F0H
ROR AL, 4
CALL HEXASC
MOV DL, AL
INT 21H
MOV AL, BL
AND AL, 0FH
CALL HEXASC
MOV DL, AL
MOV AH, 02
INT 21H
RET
DISP ENDP
HEXASC PROC NEAR
CMP AL, 07
NUM:
ADD AL, 30H
RET
HEXASC ENDP
END START
```

```
C:\TASM>TASM LAB4Q4.ASM
Turbo Assembler  Version 3.0  Copyright (c) 1988, 1991 Borland International

Assembling file:   LAB4Q4.ASM
Error messages:    None
Warning messages:  None
Passes:            1
Remaining memory:  475k


C:\TASM>TLINK LAB4Q4.OBJ
Turbo Link  Version 2.0  Copyright (c) 1987, 1988 Borland International

C:\TASM>LAB4Q4.EXE
1
4
04
C:\TASM>_
```

P5:

```
.MODEL SMALL
GETCHAR MACRO
MOV AH,01H
INT 21H
ENDM
PUTCHAR MACRO CHAR
MOV AH,02H
MOV DL,CHAR
INT 21H
ENDM
PRINTF MACRO MSG
MOV AH,09H
LEA DX,MSG
INT 21H
ENDM
.DATA
MSG1 DB "ENTER A CHARACTER:$"
MSG2 DB "",10,13,"ASCII VALUE--$"
X DB 12
Y DB 34
.CODE
MOV AX,@DATA
MOV DS,AX
PRINTF MSG1
GETCHAR
MOV BH,AL
MOV BL,AL
AND BL,0FH
CMP BL,0AH
JL L1
ADD BL,07H
L1: ADD BL,30H
AND BH,0F0H
MOV CL,04
SHR BH,CL
CMP BH,0AH
JL L2
ADD BH,07H
L2:ADD BH,30H
PUSH BX
MOV DH,X
MOV DL,Y
MOV AH,02H
INT 10H
PRINTF MSG2
POP BX
PUTCHAR BH
PUTCHAR BL
MOV AH,4CH
INT 21H
CLS PROC NEAR
MOV AH,0FH
INT 10H
MOV AH,00H
INT 10H
RET
CLS ENDP
END
```