

**Reg No:** 18BCE0559

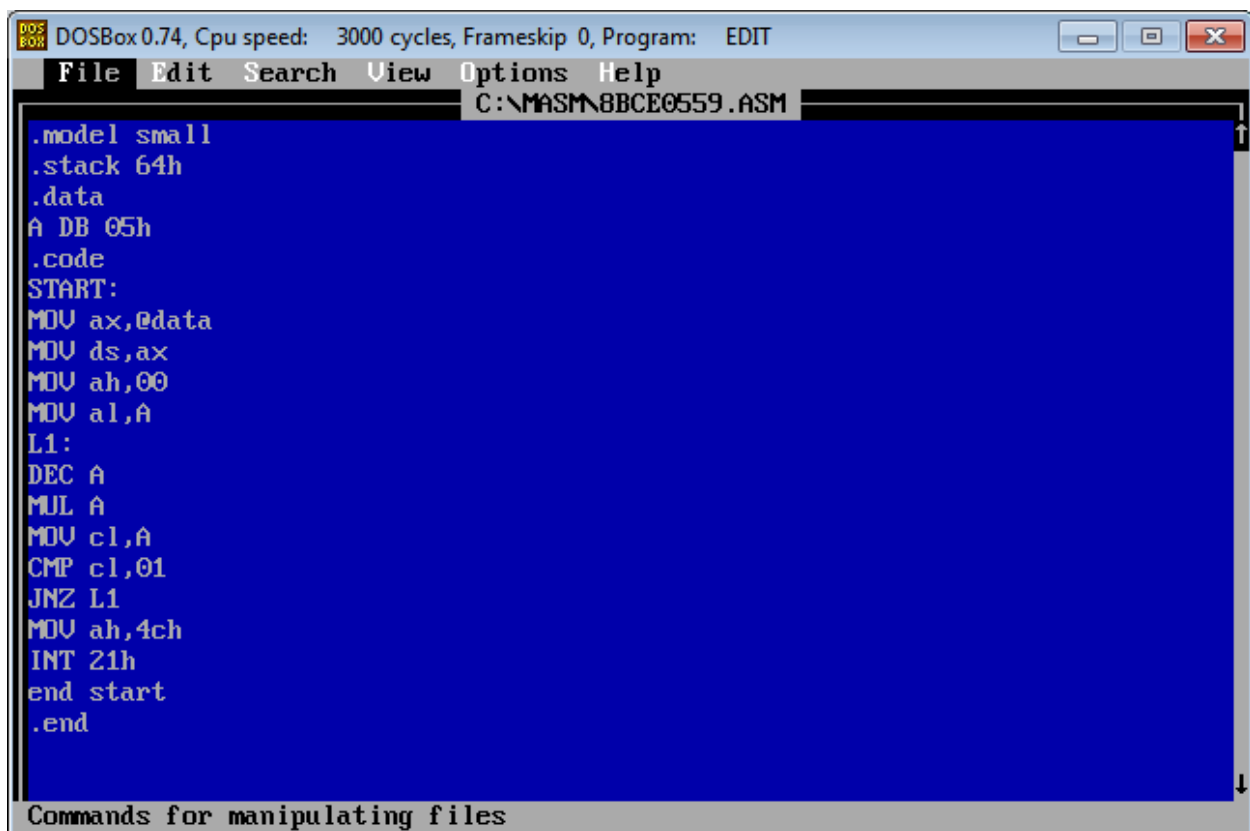
**Name:** Sreenitya Mandava

**Slot:** L29+L30

## ASSESSMENT-2

### **ALP for factorial of a number**

Factorial of 5 =  $(120)_{10} = (78)_{16}$  i.e. 78h



```
DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT
File Edit Search View Options Help
C:\MASM\8BCE0559.ASM

.model small
.stack 64h
.data
A DB 05h
.code
START:
MOV ax,@data
MOV ds,ax
MOV ah,00
MOV al,A
L1:
DEC A
MUL A
MOV cl,A
CMP cl,01
JNZ L1
MOV ah,4ch
INT 21h
end start
.end

Commands for manipulating files
```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
C:\MASM>edit 8BCE0559.asm

C:\MASM>masm 8BCE0559.asm
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

Object filename [8BCE0559.OBJ]:
Source listing [NUL.LST]:
Cross-reference [NUL.CRF]:

51688 + 464856 Bytes symbol space free

0 Warning Errors
0 Severe Errors

C:\MASM>link 8BCE0559.obj

Microsoft 8086 Object Linker
Version 3.02 (C) Copyright Microsoft Corp 1983, 1984, 1985

Run File [8BCE0559.EXE]:
List File [NUL.MAP]:
Libraries [.LIB]:

C:\MASM>

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
List File [NUL.MAP]:
Libraries [.LIB]:

C:\MASM>debug 8BCE0559.exe
-t
AX=0746 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0734 ES=0734 SS=0747 CS=0744 IP=0003 NU UP EI PL ZR NA PE NC
0744:0003 8ED8          MOV     DS,AX
-
AX=0746 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0005 NU UP EI PL ZR NA PE NC
0744:0005 B400          MOV     AH,00
-
AX=0046 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0007 NU UP EI PL ZR NA PE NC
0744:0007 A00000        MOV     AL,[0000]                DS:0000=05
-
AX=0005 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NU UP EI PL ZR NA PE NC
0744:000A FE0E0000      DEC     BYTE PTR [0000]        DS:0000=05
-
AX=0005 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NU UP EI PL NZ NA PO NC
0744:000E F6260000      MUL     BYTE PTR [0000]        DS:0000=04
-

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
AX=0014 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PO NC
0744:0012 8A0E0000      MOV     CL,[0000]                DS:0000=04
-
AX=0014 BX=0000 CX=0004 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901      CMP     CL,01
-
AX=0014 BX=0000 CX=0004 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL NZ NA PE NC
0744:0019 75EF      JNZ     000A
-
AX=0014 BX=0000 CX=0004 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NU UP EI PL NZ NA PE NC
0744:000A FE0E0000      DEC     BYTE PTR [0000]                DS:0000=04
-
AX=0014 BX=0000 CX=0004 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NU UP EI PL NZ NA PE NC
0744:000E F6260000      MUL     BYTE PTR [0000]                DS:0000=03
-
AX=003C BX=0000 CX=0004 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PE NC
0744:0012 8A0E0000      MOV     CL,[0000]                DS:0000=03
-

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
AX=003C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PE NC
0744:0016 80F901      CMP     CL,01
-
AX=003C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL NZ NA PO NC
0744:0019 75EF      JNZ     000A
-
AX=003C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NU UP EI PL NZ NA PO NC
0744:000A FE0E0000      DEC     BYTE PTR [0000]                DS:0000=03
-
AX=003C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NU UP EI PL NZ NA PO NC
0744:000E F6260000      MUL     BYTE PTR [0000]                DS:0000=02
-
AX=0078 BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PO NC
0744:0012 8A0E0000      MOV     CL,[0000]                DS:0000=02
-
AX=0078 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901      CMP     CL,01
-

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
AX=0078 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL NZ NA PO NC
0744:0019 75EF JNZ 000A
-
AX=0078 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NU UP EI PL NZ NA PO NC
0744:000A FE0E0000 DEC BYTE PTR [0000] DS:0000=02
-
AX=0078 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NU UP EI PL NZ NA PO NC
0744:000E F6260000 MUL BYTE PTR [0000] DS:0000=01
-
AX=0078 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PO NC
0744:0012 8A0E0000 MOV CL,[0000] DS:0000=01
-
AX=0078 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901 CMP CL,01
-
AX=0078 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL ZR NA PE NC
0744:0019 75EF JNZ 000A

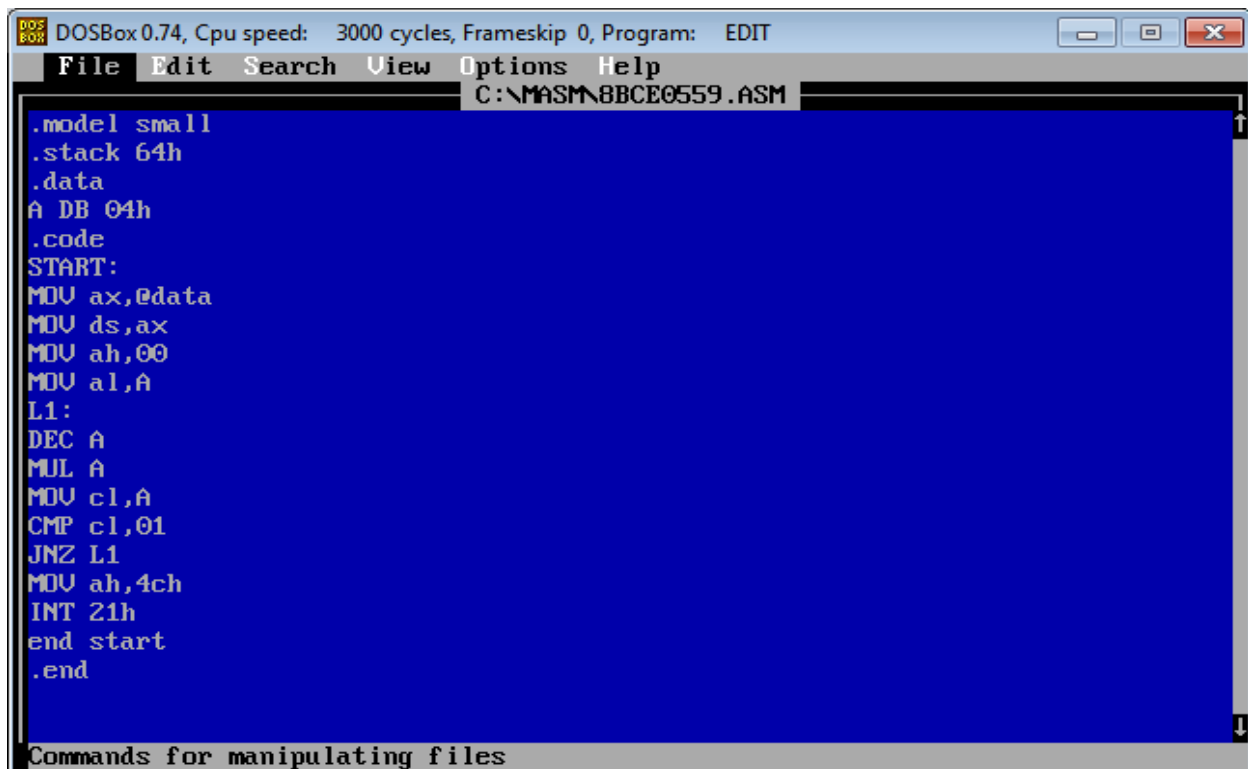
```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
0744:000E F6260000 MUL BYTE PTR [0000] DS:0000=01
-
AX=0078 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PO NC
0744:0012 8A0E0000 MOV CL,[0000] DS:0000=01
-
AX=0078 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901 CMP CL,01
-
AX=0078 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL ZR NA PE NC
0744:0019 75EF JNZ 000A
-
AX=0078 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=001B NU UP EI PL ZR NA PE NC
0744:001B B44C MOV AH,4C
-
AX=4C78 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=001D NU UP EI PL ZR NA PE NC
0744:001D CD21 INT 21
-
Program terminated normally (0078)
-18BCE0559_

```

Factorial of 4 =  $(24)_{10} = (18)_{16}$  i.e. 18h



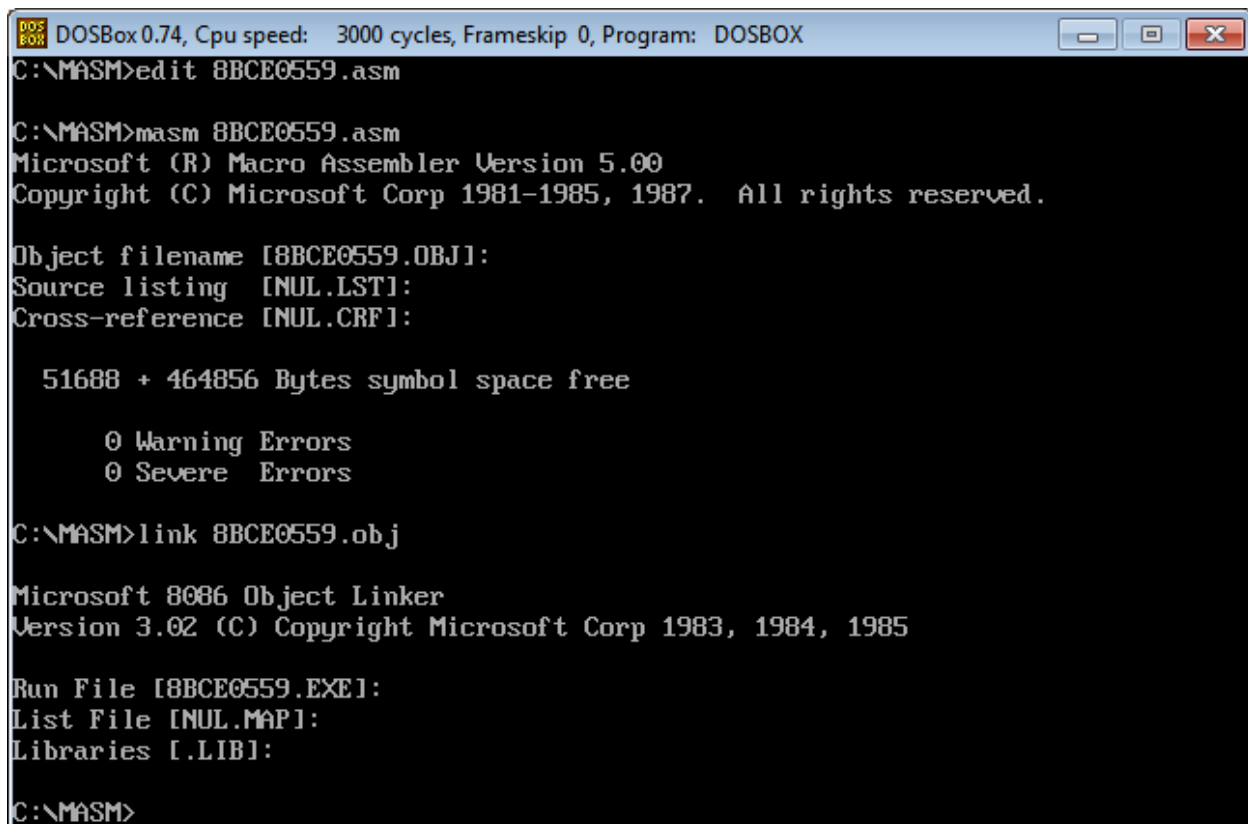
DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT

File Edit Search View Options Help

C:\MASM\8BCE0559.ASM

```
.model small
.stack 64h
.data
A DB 04h
.code
START:
MOV ax,@data
MOV ds,ax
MOV ah,00
MOV al,A
L1:
DEC A
MUL A
MOV cl,A
CMP cl,01
JNZ L1
MOV ah,4ch
INT 21h
end start
.end
```

Commands for manipulating files



DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX

```
C:\MASM>edit 8BCE0559.asm

C:\MASM>masm 8BCE0559.asm
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

Object filename [8BCE0559.OBJ]:
Source listing [NUL.LST]:
Cross-reference [NUL.CRF]:

51688 + 464856 Bytes symbol space free

0 Warning Errors
0 Severe Errors

C:\MASM>link 8BCE0559.obj

Microsoft 8086 Object Linker
Version 3.02 (C) Copyright Microsoft Corp 1983, 1984, 1985

Run File [8BCE0559.EXE]:
List File [NUL.MAP]:
Libraries [.LIB]:

C:\MASM>
```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
List File [NUL.MAP]:
Libraries [.LIB]:

C:\MASM>debug 8BCE0559.exe
-t
AX=0746 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0734 ES=0734 SS=0747 CS=0744 IP=0003 NV UP EI PL ZR NA PE NC
0744:0003 8ED8          MOV     DS,AX
-
AX=0746 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0005 NV UP EI PL ZR NA PE NC
0744:0005 B400          MOV     AH,00
-
AX=0046 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0007 NV UP EI PL ZR NA PE NC
0744:0007 A00000        MOV     AL,[0000]                      DS:0000=04
-
AX=0004 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NV UP EI PL ZR NA PE NC
0744:000A FE0E0000      DEC     BYTE PTR [0000]          DS:0000=04
-
AX=0004 BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NV UP EI PL NZ NA PE NC
0744:000E F6260000      MUL     BYTE PTR [0000]          DS:0000=03
-

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
-
AX=000C BX=0000 CX=0021 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NV UP EI PL NZ NA PE NC
0744:0012 8A0E0000      MOV     CL,[0000]                      DS:0000=03
-
AX=000C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NV UP EI PL NZ NA PE NC
0744:0016 80F901        CMP     CL,01
-
AX=000C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NV UP EI PL NZ NA PO NC
0744:0019 75EF          JNZ     000A
-
AX=000C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NV UP EI PL NZ NA PO NC
0744:000A FE0E0000      DEC     BYTE PTR [0000]          DS:0000=03
-
AX=000C BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NV UP EI PL NZ NA PO NC
0744:000E F6260000      MUL     BYTE PTR [0000]          DS:0000=02
-
AX=0018 BX=0000 CX=0003 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NV UP EI PL NZ NA PO NC
0744:0012 8A0E0000      MOV     CL,[0000]                      DS:0000=02
-

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
AX=0018 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901          CMP     CL,01
-
AX=0018 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL NZ NA PO NC
0744:0019 75EF          JNZ     000A
-
AX=0018 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000A NU UP EI PL NZ NA PO NC
0744:000A FE0E0000      DEC     BYTE PTR [0000]          DS:0000=02
-
AX=0018 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=000E NU UP EI PL NZ NA PO NC
0744:000E F6260000      MUL     BYTE PTR [0000]          DS:0000=01
-
AX=0018 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PO NC
0744:0012 8A0E0000      MOV     CL,[0000]          DS:0000=01
-
AX=0018 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901          CMP     CL,01

```

```

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DEBUG
0744:000E F6260000      MUL     BYTE PTR [0000]          DS:0000=01
-
AX=0018 BX=0000 CX=0002 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0012 NU UP EI PL NZ NA PO NC
0744:0012 8A0E0000      MOV     CL,[0000]          DS:0000=01
-
AX=0018 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0016 NU UP EI PL NZ NA PO NC
0744:0016 80F901          CMP     CL,01
-
AX=0018 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=0019 NU UP EI PL ZR NA PE NC
0744:0019 75EF          JNZ     000A
-
AX=0018 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=001B NU UP EI PL ZR NA PE NC
0744:001B B44C          MOV     AH,4C
-
AX=4C18 BX=0000 CX=0001 DX=0000 SP=0064 BP=0000 SI=0000 DI=0000
DS=0746 ES=0734 SS=0747 CS=0744 IP=001D NU UP EI PL ZR NA PE NC
0744:001D CD21          INT     21
-
Program terminated normally (0018)
-18BCE0559

```