C: > masm > ASM ex11.asm

```
1    TITLE PRG10: Debug program for arithmetic operation
2    .MODEL SMALL
3    .STACK 100H
4    .DATA
5    .CODE
6    MAIN PROC
7         MOV AX,4000H
8         ADD AX,AX
9         SUB AX,0001H
10        NEG AX
11        INC AX
12
13        EXIT:
14        MOV AH,4CH
15        INT 21H
16        MAIN ENDP
17   END MAIN
```
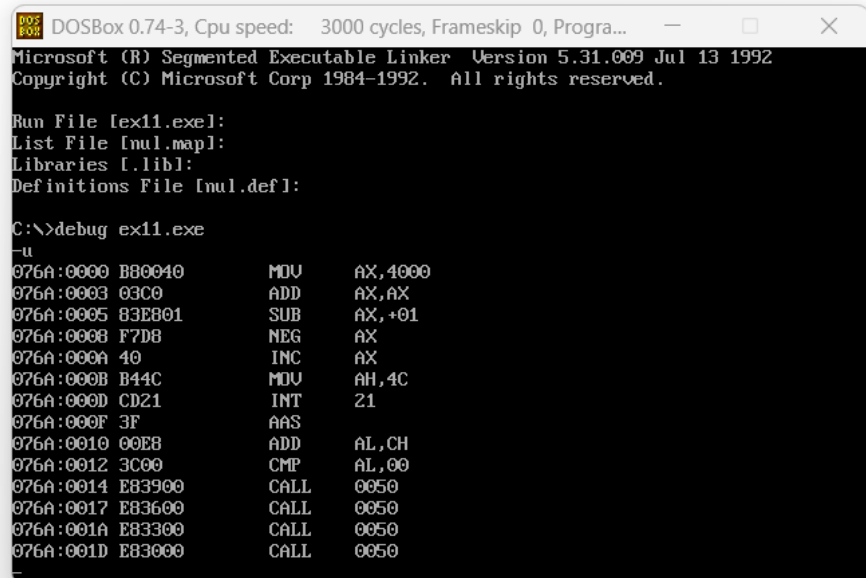

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...   —   □   ✕

```
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Run File [ex11.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>debug ex11.exe
-u
076A:0000 B80040        MOV     AX,4000
076A:0003 03C0          ADD     AX,AX
076A:0005 83E801        SUB     AX,+01
076A:0008 F7D8          NEG     AX
076A:000A 40            INC     AX
076A:000B B44C          MOV     AH,4C
076A:000D CD21          INT     21
076A:000F 3F            AAS
076A:0010 00E8          ADD     AL,CH
076A:0012 3C00          CMP     AL,00
076A:0014 E83900        CALL    0050
076A:0017 E83600        CALL    0050
076A:001A E83300        CALL    0050
076A:001D E83000        CALL    0050
-
```

Figure 11: Output of Experiment 11

C: > masm > ASM ex12.asm

```
1    TITLE prg12 : Debugging Logical operation
2    .MODEL SMALL
3    .STACK 100H
4    .DATA
5    .CODE
6    MAIN PROC
7         MOV AX, 6A78H
8         MOV BX, 5B28H
9         MOV CX, 290AH
10
11        AND AX,BX
12        OR CX,AX
13        NEG AX
14
15        EXIT:
16        MOV AH,4CH
17        INT 21H
18        MAIN ENDP
19   END MAIN
```
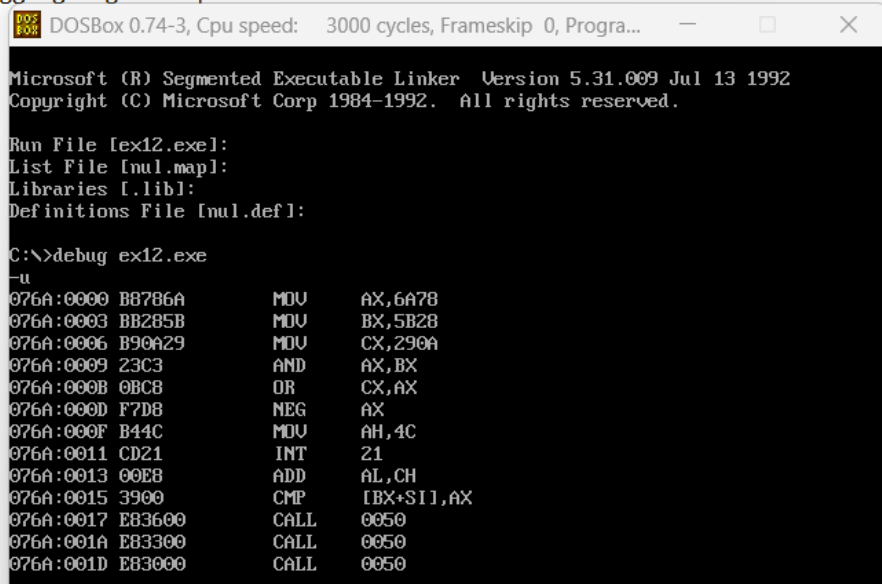

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...   —   □   ✕

```
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Run File [ex12.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>debug ex12.exe
-u
076A:0000 B8786A        MOV     AX,6A78
076A:0003 BB285B        MOV     BX,5B28
076A:0006 B90A29        MOV     CX,290A
076A:0009 23C3          AND     AX,BX
076A:000B 0BC8          OR      CX,AX
076A:000D F7D8          NEG     AX
076A:000F B44C          MOV     AH,4C
076A:0011 CD21          INT     21
076A:0013 00E8          ADD     AL,CH
076A:0015 3900          CMP     [BX+SI],AX
076A:0017 E83600        CALL    0050
076A:001A E83300        CALL    0050
076A:001D E83000        CALL    0050
```

Figure 12: Output of Experiment 12

C: > masm > ASM ex9.asm

```
1    title prg9: Displaying the characters untill the SPACE KEY is pressed
2    .model medium
3    .stack 100h
4    .data
5    .code
6    main proc
7        mov ah,1
8        again:
9            int 21h
10           cmp al, ' '
11           je exit
12       loop again
13       exit:
14           mov ah,4ch
15           int 21h
16           main endp
17   end main
```

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra... — □ X

```
C:\>masm ex9.asm
Microsoft (R) MASM Compatibility Driver
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 Invoking: ML.EXE /I. /Zm /c /Ta ex9.asm

Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993.  All rights reserved.

 Assembling: ex9.asm

C:\>link ex9.obj

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Run File [ex9.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex9
cste16thbatch
C:\>_
```

Figure 09: Output of Experiment 09

C: > masm > ASM ex10.asm

```
1    title prg10: Displaying IBM 256 characters
2    .model small
3    .stack 100h
4    .data
5    .code
6    main proc
7        mov ah, 2h
8        mov cx, 256
9        mov dl,0
10       again:
11           int 21H
12           inc dl
13           dec cx
14           jnz again
15           jcxz exit
16       exit:
17           mov ah,4ch
18           int 21h
19           main endp
20   end main
```

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra... — □ X

```
 Invoking: ML.EXE /I. /Zm /c /Ta ex10.asm

Microsoft (R) Macro Assembler Version 6.11
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 Assembling: ex10.asm

C:\>link ex10.obj

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Run File [ex10.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex10
```

Figure 10: Output of Experiment 10

```
1    title prg7 : Displaying 25 starts in one column
2    .model small
3    .stack 100h
4    .data
5    msg db 0dh, 0ah, '* $'
6    .code
7    main proc
8        mov ax,@data
9        mov ds,ax
10       mov cx, 25
11       lea dx,msg
12       mov ah,9h
13
14       again:
15       int 21h
16       loop again
17
18       exit:
19       mov ah,4ch
20       int 21h
21       main endp
22   end main
23
```
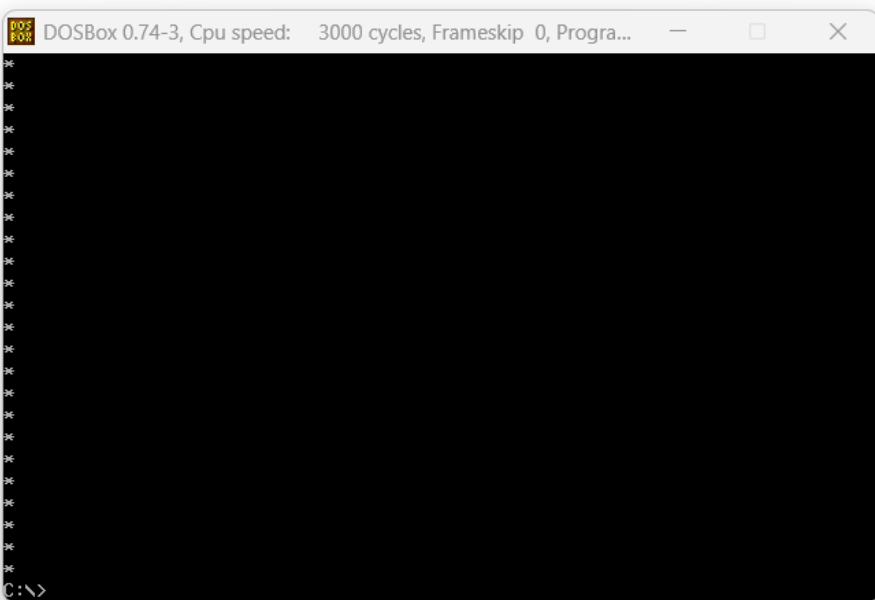
Figure 07: Output of Experiment 07

```
1    title prg8: Displaying the characters untill the ENTER KEY is pressed
2    .model medium
3    .stack 100h
4    .data
5    .code
6    main proc
7        mov ah,1
8        again:
9            cmp al, 0dh
10           je exit
11           int 21h
12       loop again
13
14       exit:
15       mov ah,4ch
16       int 21h
17       main endp
18   end main
19
```
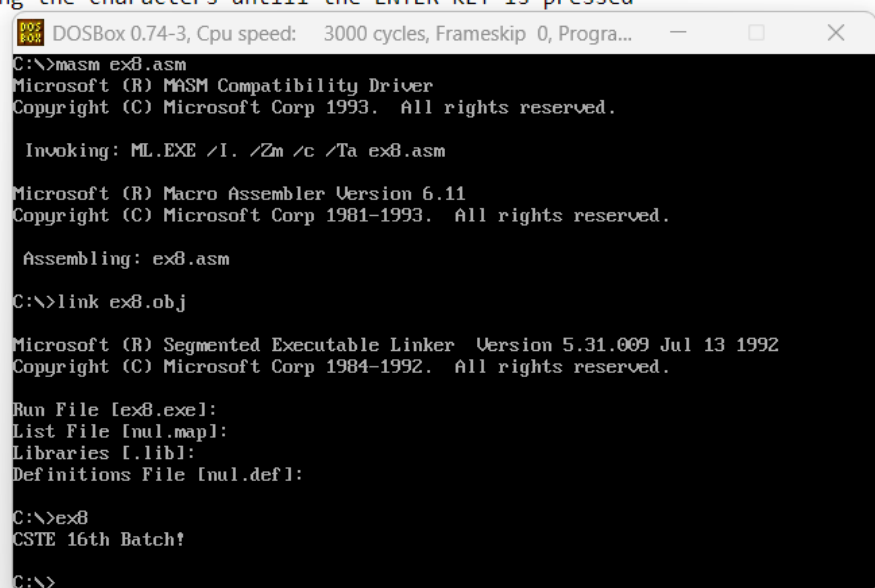
Figure 08: Output of Experiment 08

```
C: > masm > ASM ex5.asm
   1    title prg5 : Displaying CSTE Departments for 20 times
   2    .model small
   3    .stack 100H
   4    .data
   5    msg db 0dh, 0ah, 'CSTE Departme
   6    .code
   7    main proc
   8        mov ax,@data
   9        mov ds,ax
  10
  11        mov cx, 20
  12        lea dx,msg
  13        mov ah,9
  14
  15        level1:
  16        int 21h
  17        loop level1
  18
  19        exit:
  20        mov ah,4ch
  21        int 21h
  22        main endp
  23    end main
```
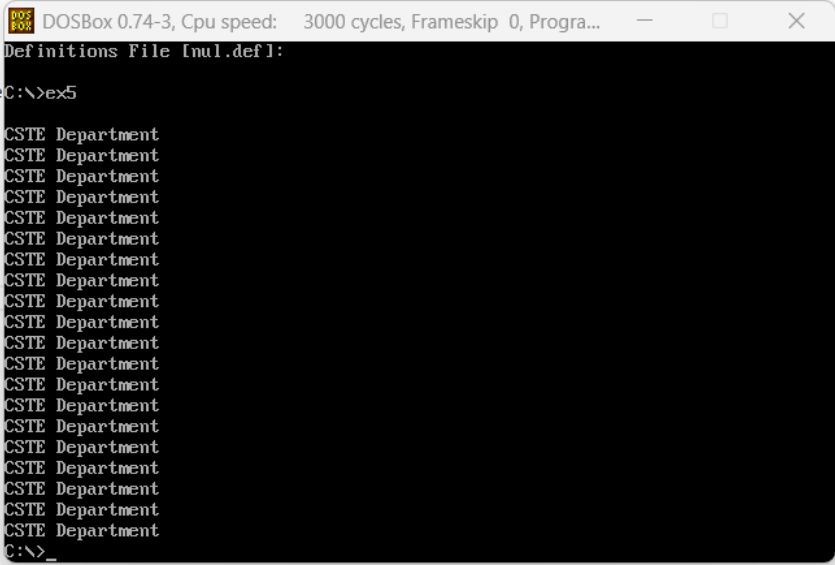
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...

```
Definitions File [nul.def]:
C:\>ex5

CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
CSTE Department
C:\>_
```

Figure 05: Output of Experiment 05

```
C: > masm > ASM ex6.asm
   1    title prg6: Displaying 80 starts
   2    .model small
   3    .stack 100h
   4    .data
   5    .code
   6    main proc
   7        mov cx,80
   8        mov ah,2
   9        mov dl,'*'
  10
  11        top:
  12        int 21h
  13        loop top
  14
  15        exit:
  16        mov ah,4ch
  17        int 21h
  18        main endp
```
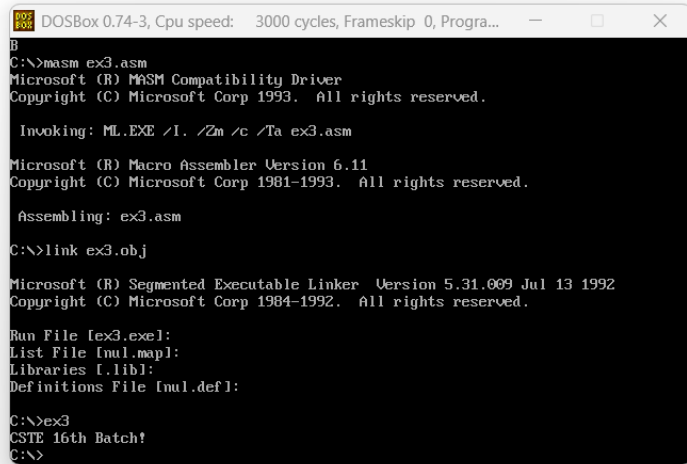
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...

```
C:\>masm ex6.asm
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 Invoking: ML.EXE /I. /Zm /c /Ta ex6.asm

Microsoft (R) Macro Assembler Version 6.11
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 Assembling: ex6.asm

C:\>link ex6.obj

Microsoft (R) Segmented Executable Linker  Version 5.31.009 Jul 13 1992
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Run File [ex6.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex6
*******************************************************************************
```
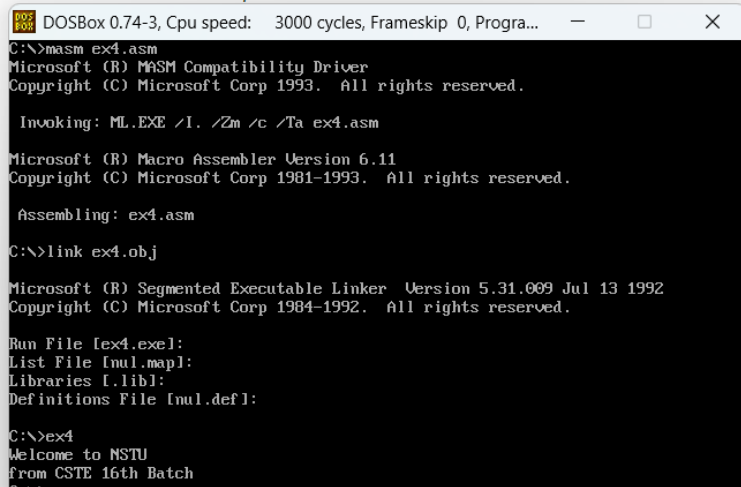
Figure 06: Output of Experiment 06

C: > masm > ASM ex3.asm

```asm
1    title prg3: Displaying an one line messsage
2    .model small
3    .stack 100h
4    .data
5    msg db 'CSTE 16th Batch!$'
6    .code
7    main proc
8        mov ax,@data
9        mov ds, ax
10
11       mov ah,2
12       lea dx,msg
13       mov ah,9h
14       int 21h
15
16   exit:
17       mov ah,4ch
18       int 21h
19       main endp
20   end main
```

```
B
C:\>masm ex3.asm
Microsoft (R) MASM Compatibility Driver
Copyright (C) Microsoft Corp 1993.  All rights reserved.

 Invoking: ML.EXE /I. /Zm /c /Ta ex3.asm

Microsoft (R) Macro Assembler Version 6.11
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 Assembling: ex3.asm

C:\>link ex3.obj

Microsoft (R) Segmented Executable Linker  Version 5.31.009 Jul 13 1992
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Run File [ex3.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex3
CSTE 16th Batch!
C:\>
```
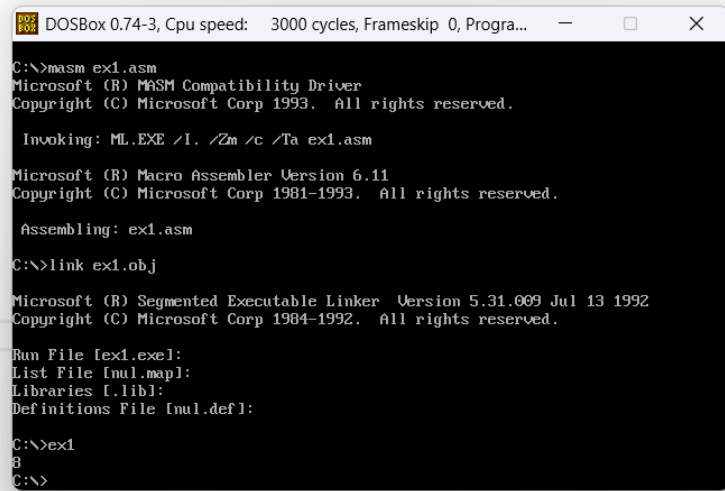
Figure 03: Output of Experiment 03

C: > masm > ASM ex4.asm

```asm
1    TITLE PRG4: DISPLAY TWO LINE MESSAGE
2    .MODEL SMALL
3    .STACK 100H
4    .DATA
5    MSG1 DB 'Welcome to NSTU$'
6    MSG2 DB 0DH,0AH,'from CSTE 16th Batch$'
7    .CODE
8        MAIN PROC
9        MOV AX,@DATA
10       MOV DS,AX
11       LEA DX,MSG1
12       MOV AH,9
13       INT 21H
14       LEA DX,MSG2
15       MOV AH,9
16       INT 21H
17   exit:
18       MOV AH,4CH
19       INT 21H
20       MAIN ENDP
21   END MAIN
```

```
C:\>masm ex4.asm
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 Invoking: ML.EXE /I. /Zm /c /Ta ex4.asm

Microsoft (R) Macro Assembler Version 6.11
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 Assembling: ex4.asm

C:\>link ex4.obj

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Run File [ex4.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex4
Welcome to NSTU
from CSTE 16th Batch
```

Figure 04: Output of Experiment 04

C: > masm > ASM ex1.asm

```
1    title prg1: Taking Input
2    .model small
3    .stack 100h
4    .data
5    .code
6    main proc
7        mov ah,1
8        int 21h
9        mov bl,al
10
11       exit:
12           mov ah,4ch
13           int 21h
14           main endp
15   end main
16
```

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...   —   □   ✕

```
C:\>masm ex1.asm
Microsoft (R) MASM Compatibility Driver
Copyright (C) Microsoft Corp 1993.  All rights reserved.

 Invoking: ML.EXE /I. /Zm /c /Ta ex1.asm

Microsoft (R) Macro Assembler Version 6.11
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 Assembling: ex1.asm

C:\>link ex1.obj

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Run File [ex1.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex1
8
C:\>
```
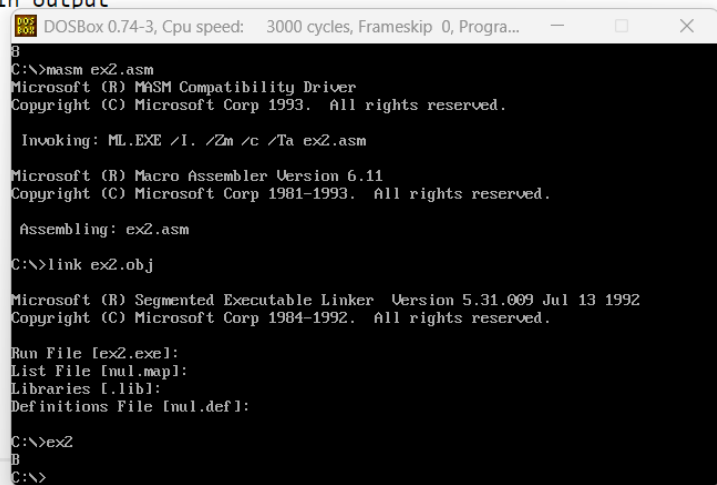
Figure 1: Output of Experiment 01

C: > masm > ASM ex2.asm

```
1    title prg2: Showing a character in output
2    .model small
3    .stack 100h
4    .data
5    .code
6    main proc
7        mov ah,2
8        mov dl,'B'
9        int 21h
10
11       exit:
12       mov ah,4ch
13       int 21h
14       main endp
15   end main
16
```

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...   —   □   ✕

```
8
C:\>masm ex2.asm
Microsoft (R) MASM Compatibility Driver
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 Invoking: ML.EXE /I. /Zm /c /Ta ex2.asm

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 Assembling: ex2.asm

C:\>link ex2.obj

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Run File [ex2.exe]:
List File [nul.map]:
Libraries [.lib]:
Definitions File [nul.def]:

C:\>ex2
B
C:\>
```

Figure 2: Output of Experiment 02