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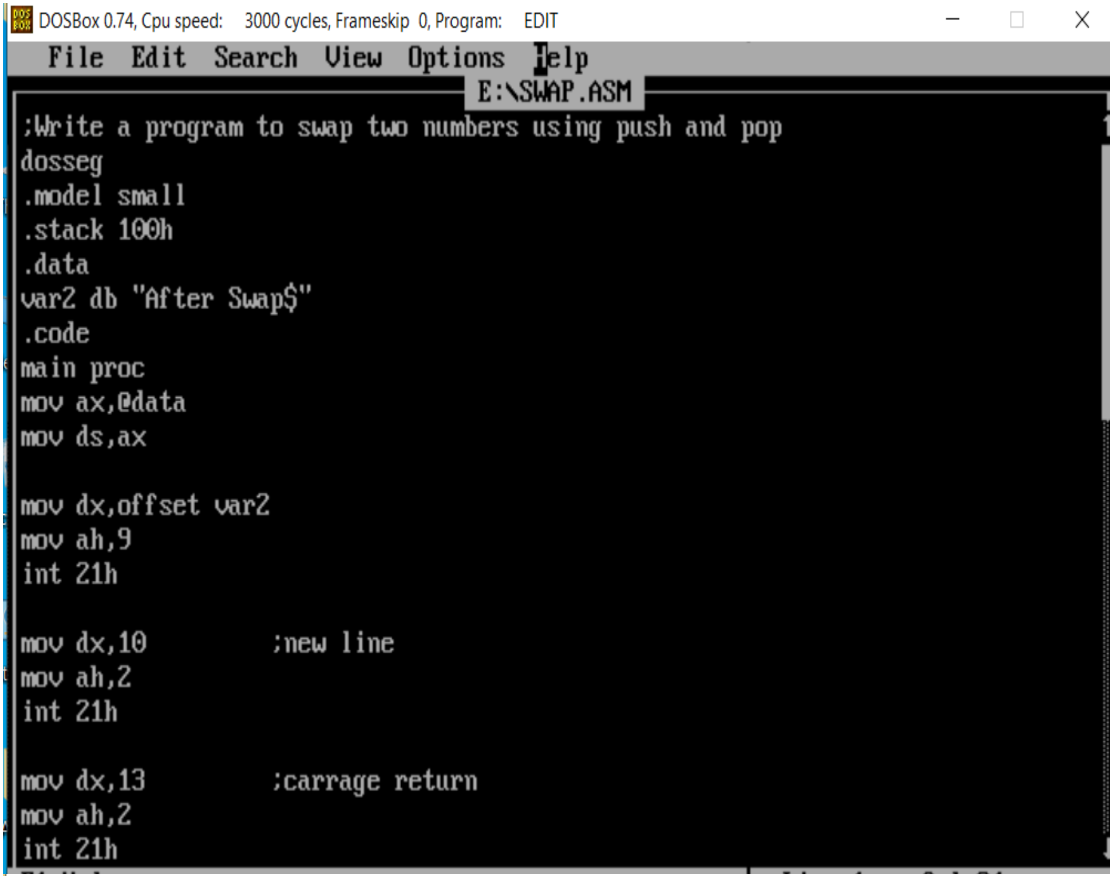
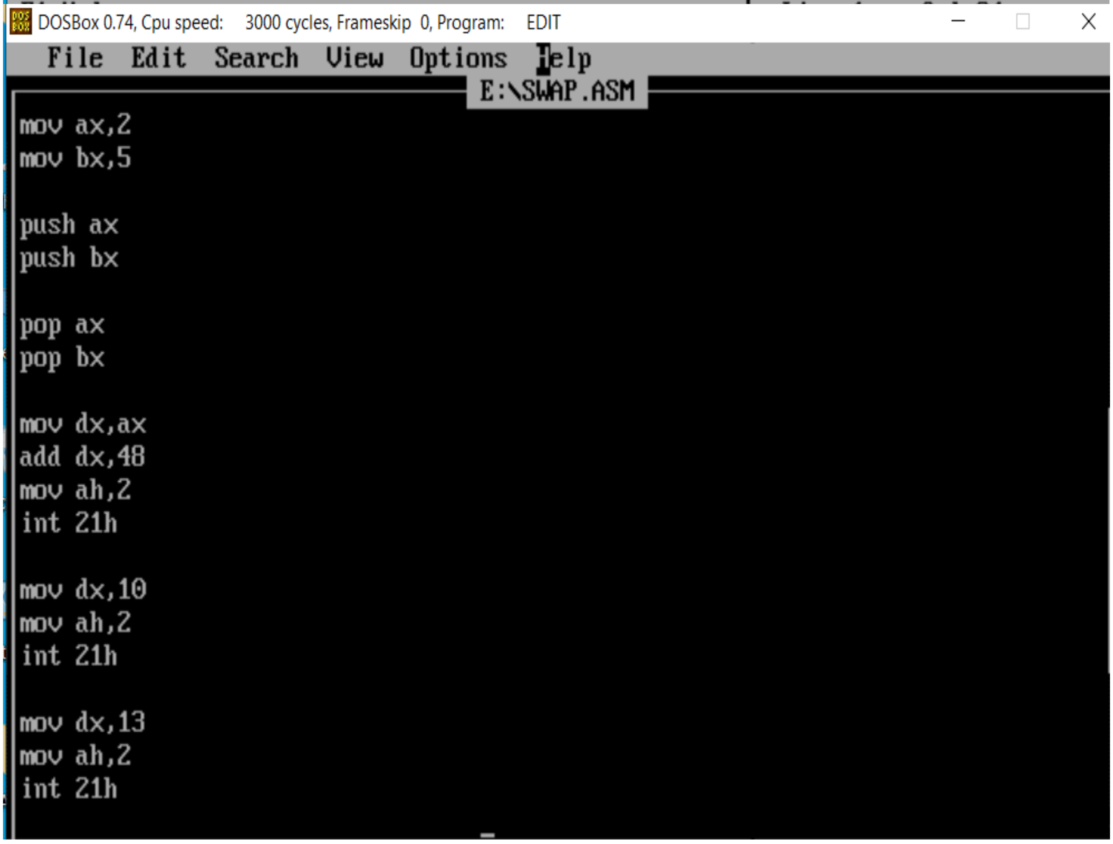
**CLASS: BSSE (4th SEMESTER)**
**COURSE NAME: ASSEMBLY LANGUAGE**
**COURSE CODE: 402**
**DEPARTMENT: COMPUTER SCIENCE**

Task 1: SWAP TWO NUMBERS

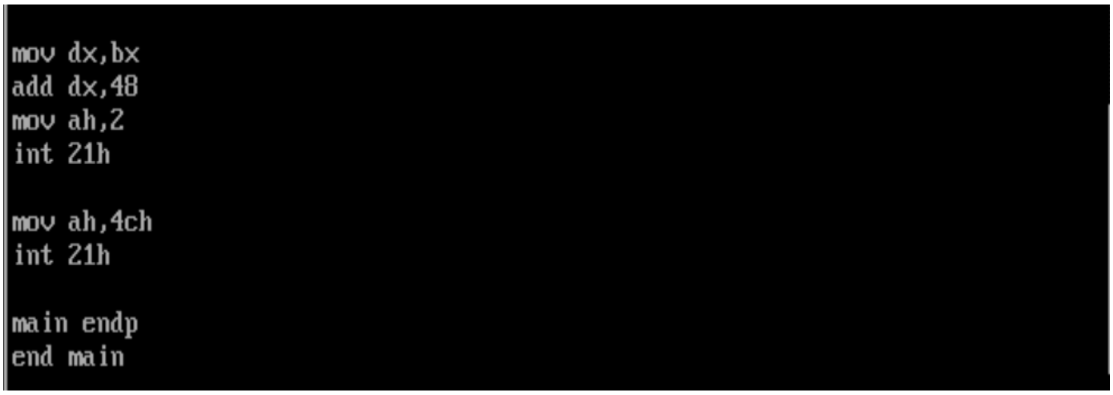
## Program:


DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT
File Edit Search View Options Help
E:\SWAP.ASM

```
;Write a program to swap two numbers using push and pop
dosseg
.model small
.stack 100h
.data
var2 db "After Swap$"
.code
main proc
mov ax,@data
mov ds,ax

mov dx,offset var2
mov ah,9
int 21h

mov dx,10          ;new line
mov ah,2
int 21h

mov dx,13          ;carrage return
mov ah,2
int 21h
```

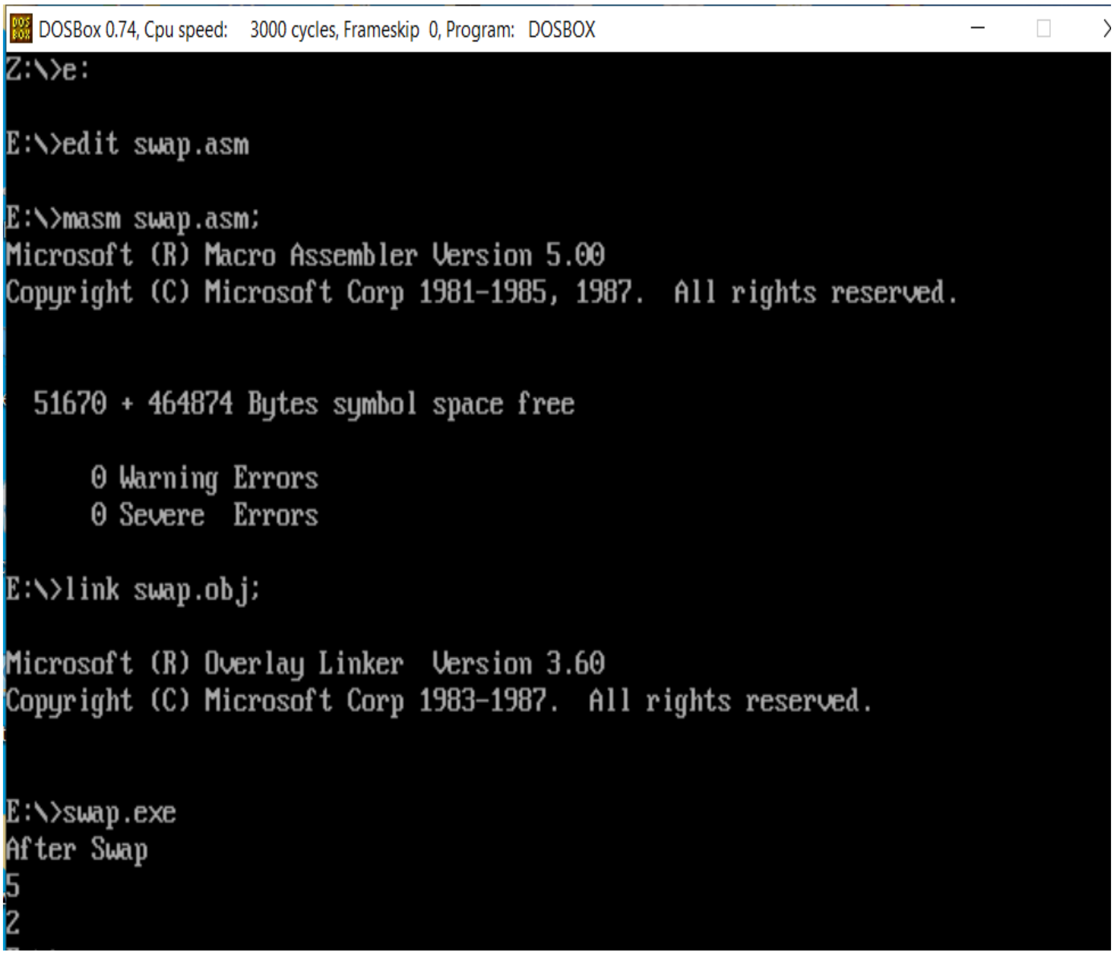

DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT
File Edit Search View Options Help
E:\SWAP.ASM

```
mov ax,2
mov bx,5

push ax
push bx

pop ax
pop bx

mov dx,ax
add dx,48
mov ah,2
int 21h

mov dx,10
mov ah,2
int 21h

mov dx,13
mov ah,2
int 21h
```



```
mov dx,bx
add dx,48
mov ah,2
int 21h

mov ah,4ch
int 21h

main endp
end main
```

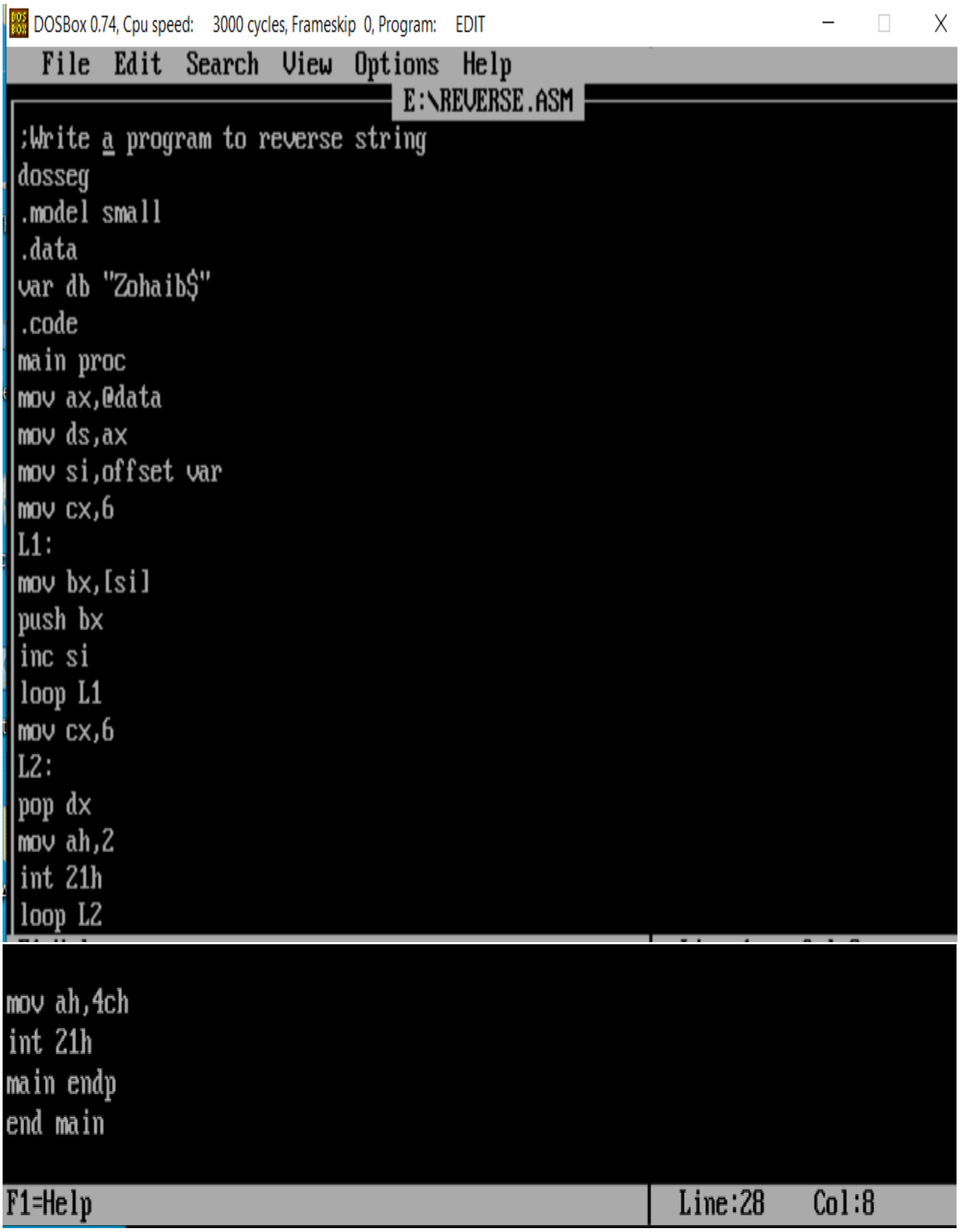
## OUTPUT:



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

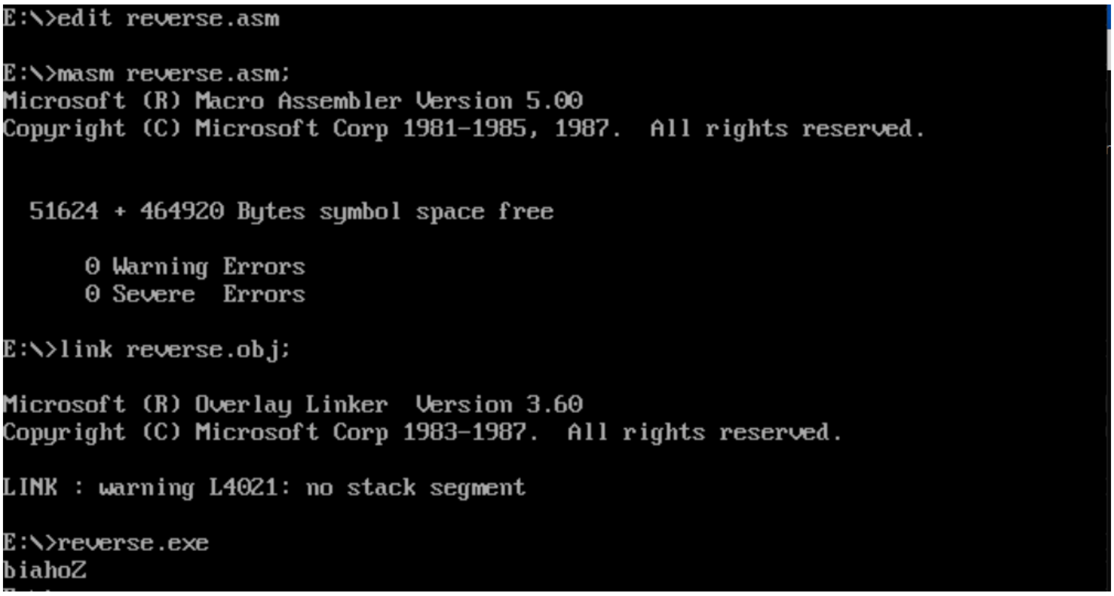
```
Z:\>e:

E:\>edit swap.asm

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


  51670 + 464874 Bytes symbol space free

      0 Warning Errors
      0 Severe  Errors

E:\>link swap.obj;

Microsoft (R) Overlay Linker  Version 3.60
Copyright (C) Microsoft Corp 1983-1987.  All rights reserved.


E:\>swap.exe
After Swap
5
2
```

## Task 2: Reverse String


DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT
File Edit Search View Options Help
E:\REVERSE.ASM
F1=Help
Line:28 Col:8

```
;Write a program to reverse string
dosseg
.model small
.data
var db "Zohaib$"
.code
main proc
mov ax,@data
mov ds,ax
mov si,offset var
mov cx,6
L1:
mov bx,[si]
push bx
inc si
loop L1
mov cx,6
L2:
pop dx
mov ah,2
int 21h
loop L2

mov ah,4ch
int 21h
main endp
end main
```

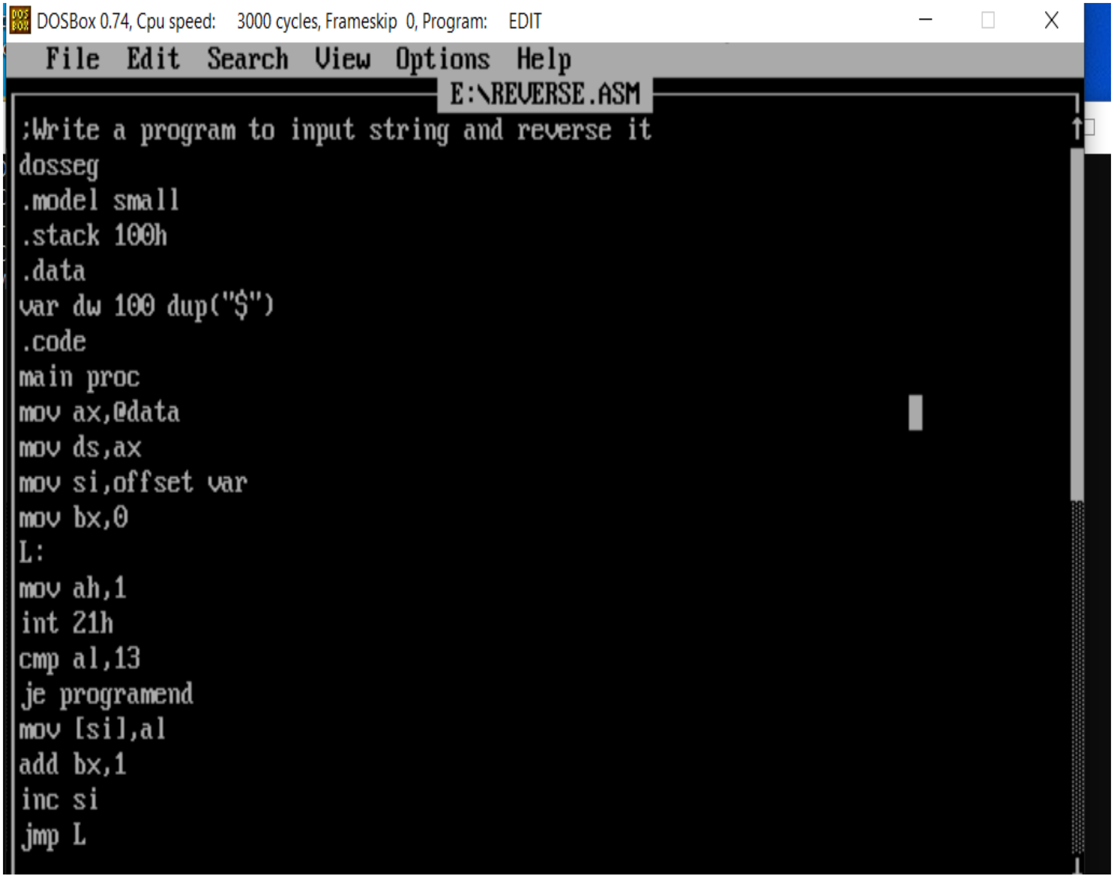
## OUTPUT:



```
E:\>edit reverse.asm

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


  51624 + 464920 Bytes symbol space free

      0 Warning Errors
      0 Severe  Errors

E:\>link reverse.obj;

Microsoft (R) Overlay Linker  Version 3.60
Copyright (C) Microsoft Corp 1983-1987.  All rights reserved.

LINK : warning L4021: no stack segment

E:\>reverse.exe
biahoZ
```

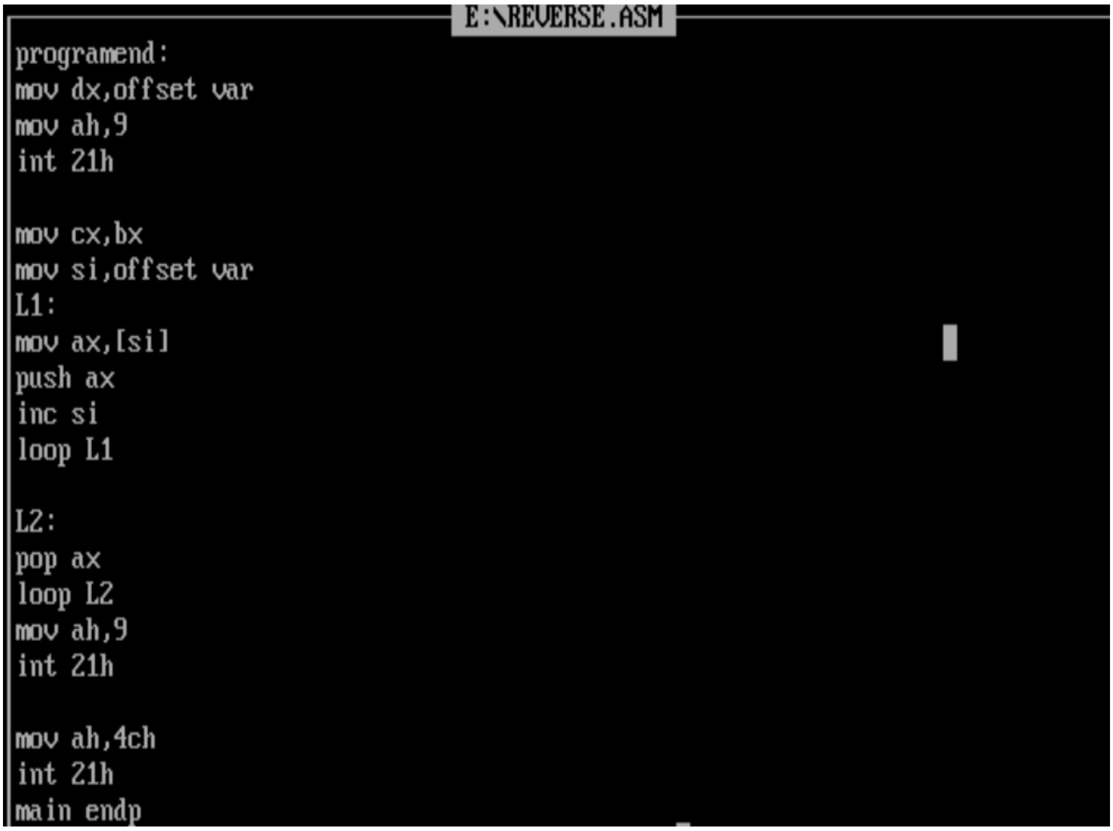
## Task 3(input string and reverse it)

## Program:



DOSBox 0.74, Cpu speed:    3000 cycles, Frameskip  0, Program:    EDIT
File  Edit  Search  View  Options  Help
E:\REVERSE.ASM

```
;Write a program to input string and reverse it
dosseg
.model small
.stack 100h
.data
var dw 100 dup("$")
.code
main proc
mov ax,@data
mov ds,ax
mov si,offset var
mov bx,0
L:
mov ah,1
int 21h
cmp al,13
je programend
mov [si],al
add bx,1
inc si
jmp L
```



```
programend:
mov dx,offset var
mov ah,9
int 21h

mov cx,bx
mov si,offset var
L1:
mov ax,[si]
push ax
inc si
loop L1

L2:
pop ax
loop L2
mov ah,9
int 21h

mov ah,4ch
int 21h
main endp
```