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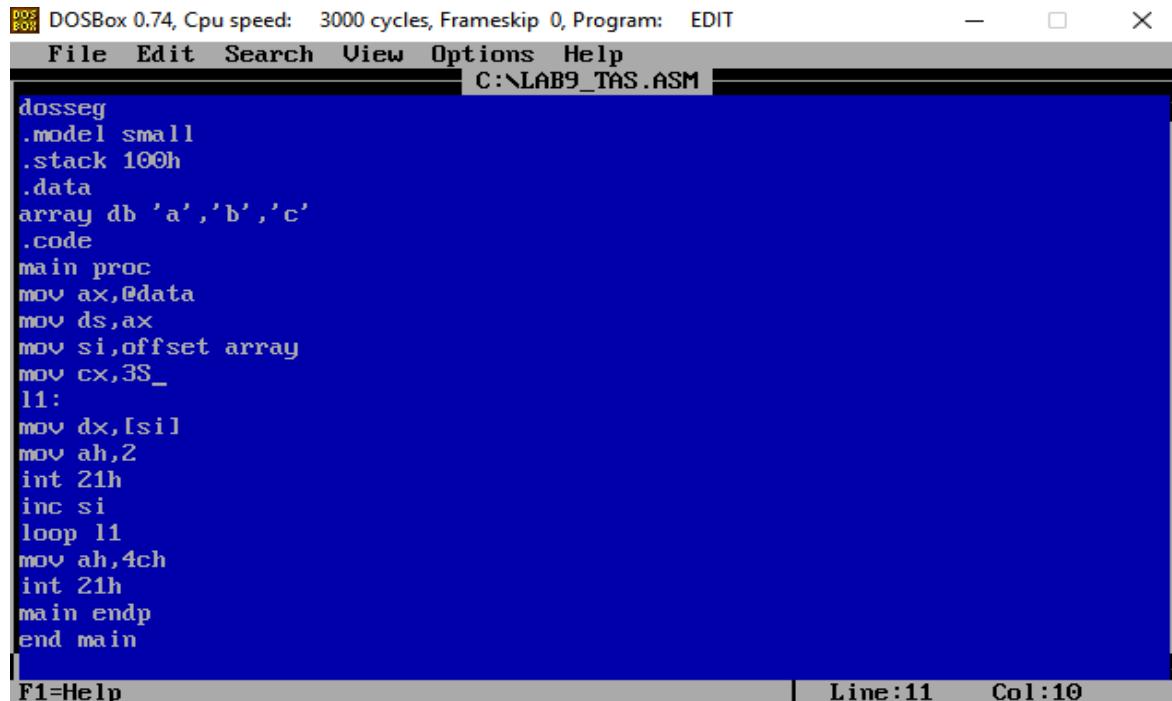
KHOKHAR

SAP ID: 65972

SUBJECT: COAL

LAB9_TASK1: -

In this code, an array is used to print 'abc' in the output.



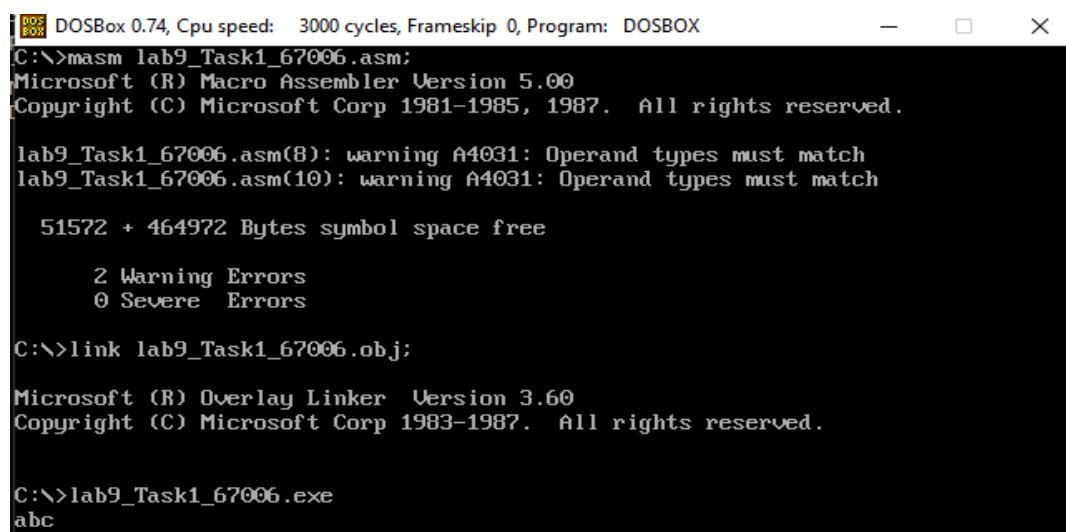
DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT

File Edit Search View Options Help C:\LAB9_TAS.ASM

```
dosseg
.model small
.stack 100h
.data
array db 'a','b','c'
.code
main proc
mov ax,@data
mov ds,ax
mov si,offset array
mov cx,3
l1:
mov dx,[si]
mov ah,2
int 21h
inc si
loop l1
mov ah,4ch
int 21h
main endp
end main
```

F1=Help | Line:11 Col:10

OUTPUT: -



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

```
C:\>masm lab9_Task1_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

lab9_Task1_67006.asm(8): warning A4031: Operand types must match
lab9_Task1_67006.asm(10): warning A4031: Operand types must match

51572 + 464972 Bytes symbol space free

2 Warning Errors
0 Severe Errors

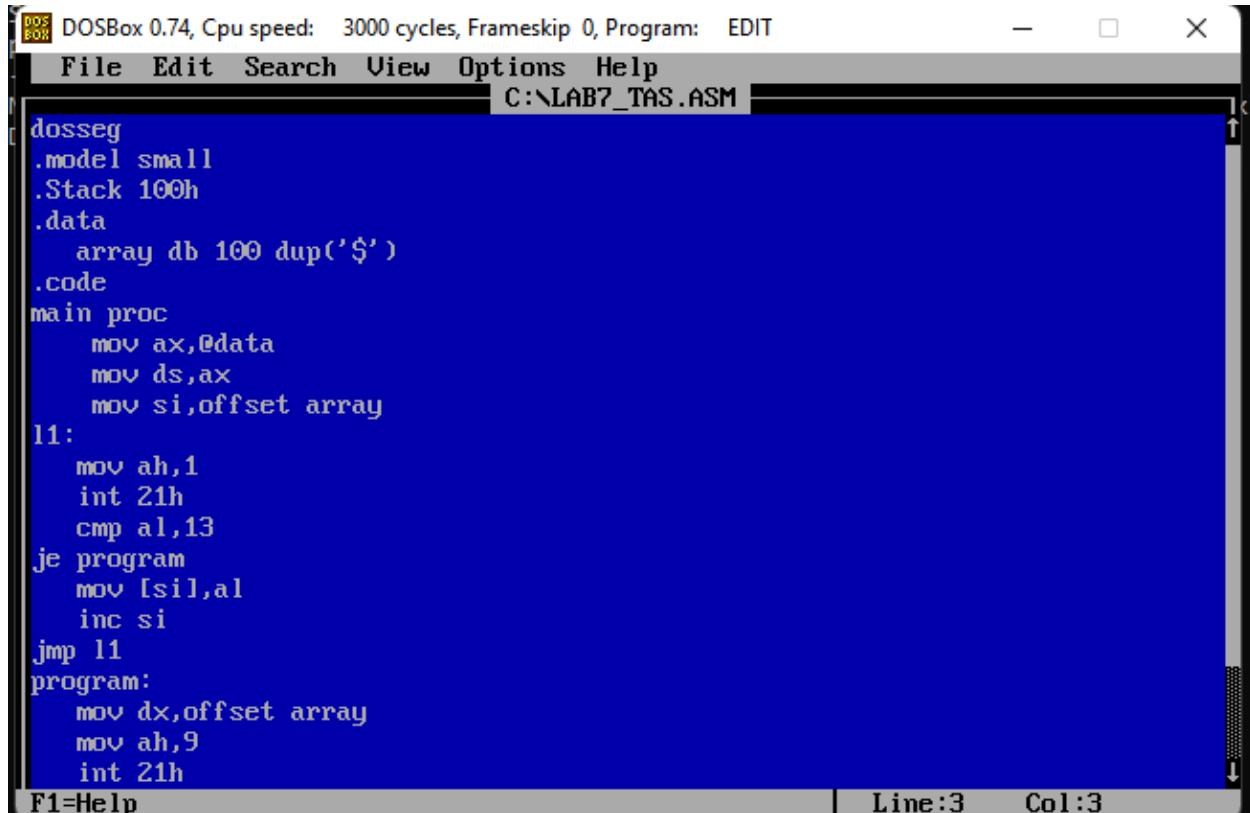
C:\>link lab9_Task1_67006.obj;

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

C:\>lab9_Task1_67006.exe
abc
```

LAB9_TASK2: -

The code is providing specific size and memory to array. The user input is then displayed over provided array.



DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT
File Edit Search View Options Help
C:\LAB7_TAS.ASM

```
dosseg
.model small
.stack 100h
.data
    array db 100 dup('$')
.code
main proc
    mov ax,@data
    mov ds,ax
    mov si,offset array
11:
    mov ah,1
    int 21h
    cmp al,13
je program
    mov [si],al
    inc si
    jmp 11
program:
    mov dx,offset array
    mov ah,9
    int 21h
F1=Help
```

Line:3 Col:3

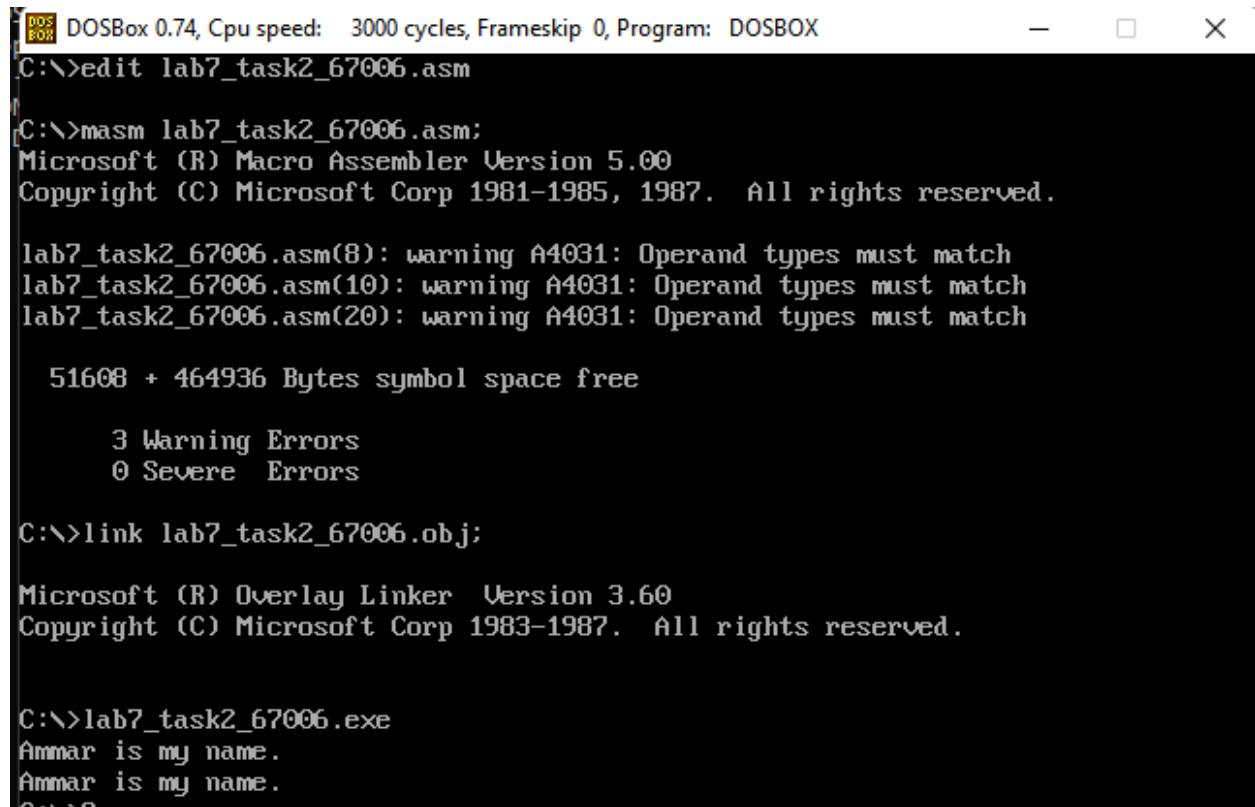


```
int 21h
cmp al,13
je program
    mov [si],al
    inc si
    jmp 11
program:
    mov dx,offset array
    mov ah,9
    int 21h
    mov ah,4ch
    int 21h
main endp
end main
```

F1=Help

Line:20 Col:15

OUTPUT: -



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

```
C:\>edit lab7_task2_67006.asm
C:\>masm lab7_task2_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

lab7_task2_67006.asm(8): warning A4031: Operand types must match
lab7_task2_67006.asm(10): warning A4031: Operand types must match
lab7_task2_67006.asm(20): warning A4031: Operand types must match

51608 + 464936 Bytes symbol space free

3 Warning Errors
0 Severe Errors

C:\>link lab7_task2_67006.obj;
Microsoft (R) Overlay Linker Version 3.60
Copyright (C) Microsoft Corp 1983-1987. All rights reserved.

C:\>lab7_task2_67006.exe
Ammar is my name.
Ammar is my name.
C:\>
```

LAB9_TASK3: -

In this program, stack (FIFO) is implemented using push () and pop () functions. Two numbers are first stored using push () and then remove through pop ().

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

File Edit Search View Options Help C:\LAB9_TAS.ASM

```
dosseg
.model small
.stack 100h
.data
.code
main proc
    mov ax,'1'
    mov bx,'2'
push ax
push bx
pop ax
pop bx
    mov dx,ax
    mov ah,2
    int 21h
    mov dx,bx
    mov ah,2
    int 21h
    mov ah,4ch
    int 21h
main endp
end mainS
```

F1=Help Line:22 Col:10

OUTPUT: -

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

```
0 Warning Errors
1 Severe Errors

C:\>edit lab9_task3_67006.asm

C:\>masm lab9_task3_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

51650 + 464894 Bytes symbol space free

0 Warning Errors
0 Severe Errors

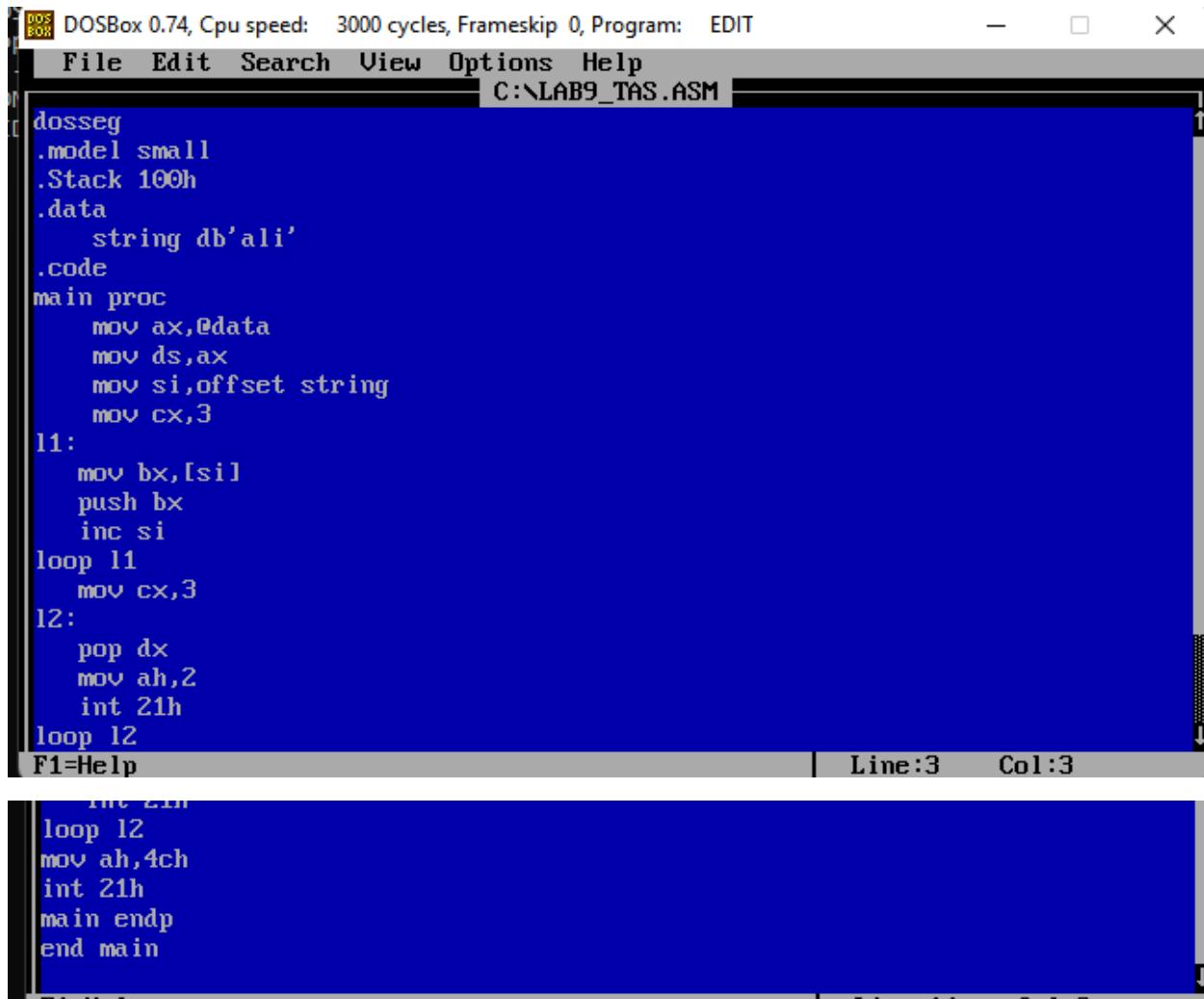
C:\>link lab9_task3_67006.obj;

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

C:\>lab9_task3_67006.exe
21
```

LAB9_TASK4: -

In this program, the given string is reversed using stack. Basically it is code behind the implementation of Ctrl Z function.



The screenshot shows the DOSBox 0.74 interface with the title bar "DOS Box" and "DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: EDIT". The menu bar includes File, Edit, Search, View, Options, and Help. The current file is "C:\LAB9_TASK.ASM". The assembly code is as follows:

```
dosseg
.model small
.stack 100h
.data
    string db'ali'
.code
main proc
    mov ax,@data
    mov ds,ax
    mov si,offset string
    mov cx,3
11:
    mov bx,[si]
    push bx
    inc si
loop 11
    mov cx,3
12:
    pop dx
    mov ah,2
    int 21h
loop 12
    int 21h
main endp
end main
```

The status bar at the bottom shows "F1=Help" and "Line:3 Col:3".

OUTPUT: -

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
C:\>lab9_task3_67006.exe
21
C:\>edit lab9_task4_67006.asm

C:\>masm lab9_task4_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

lab9_task4_67006.asm(8): warning A4031: Operand types must match
lab9_task4_67006.asm(10): warning A4031: Operand types must match

51572 + 464972 Bytes symbol space free

2 Warning Errors
0 Severe Errors

C:\>link lab9_task4_67006.obj;

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

C:\>lab9_task4_67006.exe
ila
```

LAB9_TASK5: -

In this program, stack (FIFO) is implemented in EMU using push () and pop () functions.

The screenshot shows the emu8086 interface with the following windows:

- Top Left Window:** Shows assembly code in a text editor. The code is:


```

01 mov ax,'1'
02 mov bx,'2'
03 push ax
04 push bx
05 pop ax
06 pop bx

```
- Top Right Window:** Shows the original source code in a text editor. The code is identical to the assembly code above.
- Bottom Left Window:** Shows the emulator window titled "emulator: noname.bin.". It displays the assembly code and the state of CPU registers. Registers shown include AX, BX, CX, DX, CS, IP, SS, SP, BP, SI, DI, DS, and ES. The IP register is at address 0100A, pointing to the instruction `90 144`.
- Bottom Right Window:** Shows the stack window. It lists memory addresses from 0100 to FF00. The stack grows downwards, with the top of the stack at address 0100 containing the value FFFC.

LAB9_TASK6: -

The triangle of '' is displayed using stack and loop.*

*

**

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

File Edit Search View Options Help

C:\LAB9_TAS.ASM

```
dosseg
.model small
.Stack 100h
.data
.code
main proc
    mov bx,1
    mov cx,5
l1:
    push cx
    mov cx,bx
l2:
    mov dl,'*'
    mov ah,2
    int 21h
loop l2
mov dx,10
mov ah,2
int 21h
mov dx,13
mov ah,2
int 21h
inc bl
pop cx
loop l1

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

F1=Help | Line:12 Col:6

OUTPUT: -

```
DOSBox 0.74, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
C:\>masm lab9_task8_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

51650 + 464894 Bytes symbol space free

0 Warning Errors
0 Severe Errors

C:\>link lab9_task8_67006.obj;

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

C:\>lab9_task8_67006.exe
*
**
***
****
*****
```

LAB9_TASK7: -

The backward triangle of '' from above program is displayed using stack and loop.*

**

*

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

File Edit Search View Options Help

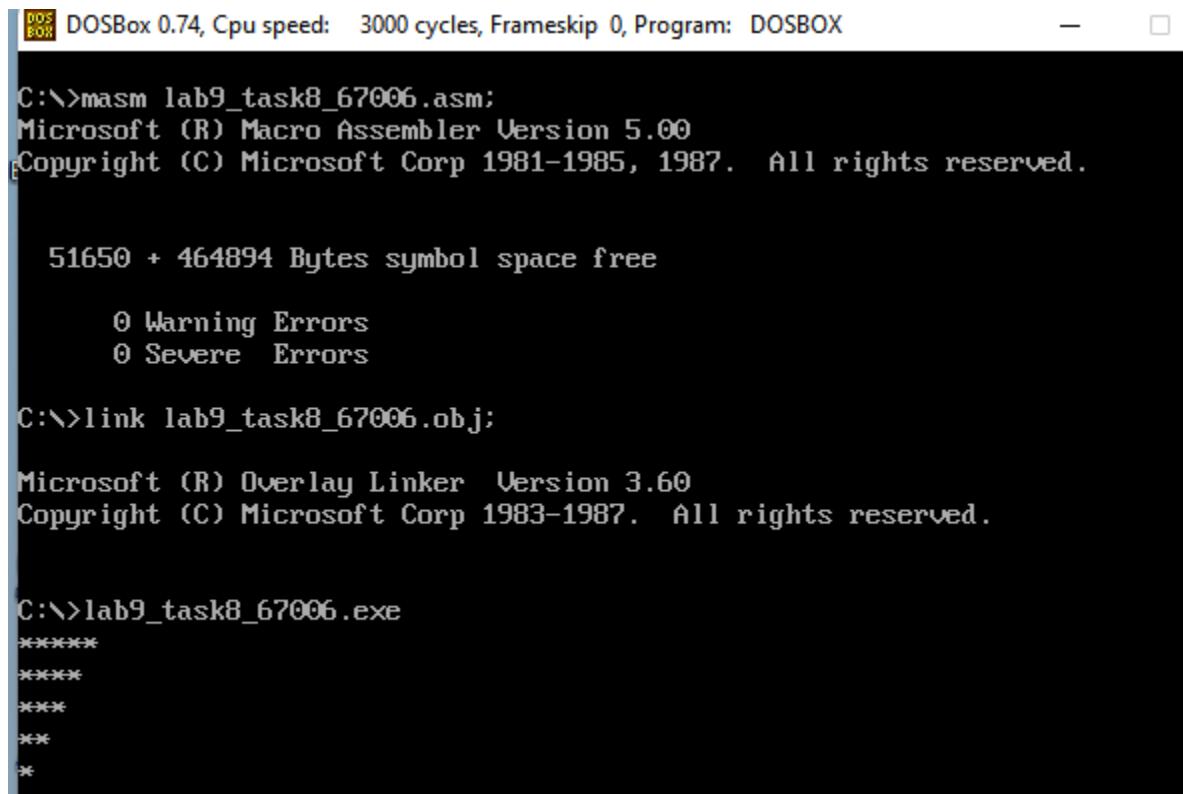
C:\LAB9_TAS.ASM

```
dosseg
.model small
.Stack 100h
.data
.code
main proc
    mov bx,5
    mov cx,5
11:
    push cx
    mov cx,bx
12:
    mov dl,'*'
    mov ah,2
    int 21h
    loop 12
    mov dx,10
    mov ah,2
    int 21h
    mov dx,13
    mov ah,2
    int 21h
    dec bl
    pop cx
    loop 11

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

F1=Help | Line:12 Col:6

OUTPUT: -



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

```
C:\>masm lab9_task8_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

51650 + 464894 Bytes symbol space free

0 Warning Errors
0 Severe Errors

C:\>link lab9_task8_67006.obj;

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

C:\>lab9_task8_67006.exe
*****  
****  
***  
**  
*
```

LAB9_TASK8: -

This code is same as above ones but here A to E are shown as output in triangle form.

The screenshot shows a DOSBox window with assembly code. The code is identical to the one in the previous image, but it includes a section for generating triangle output:

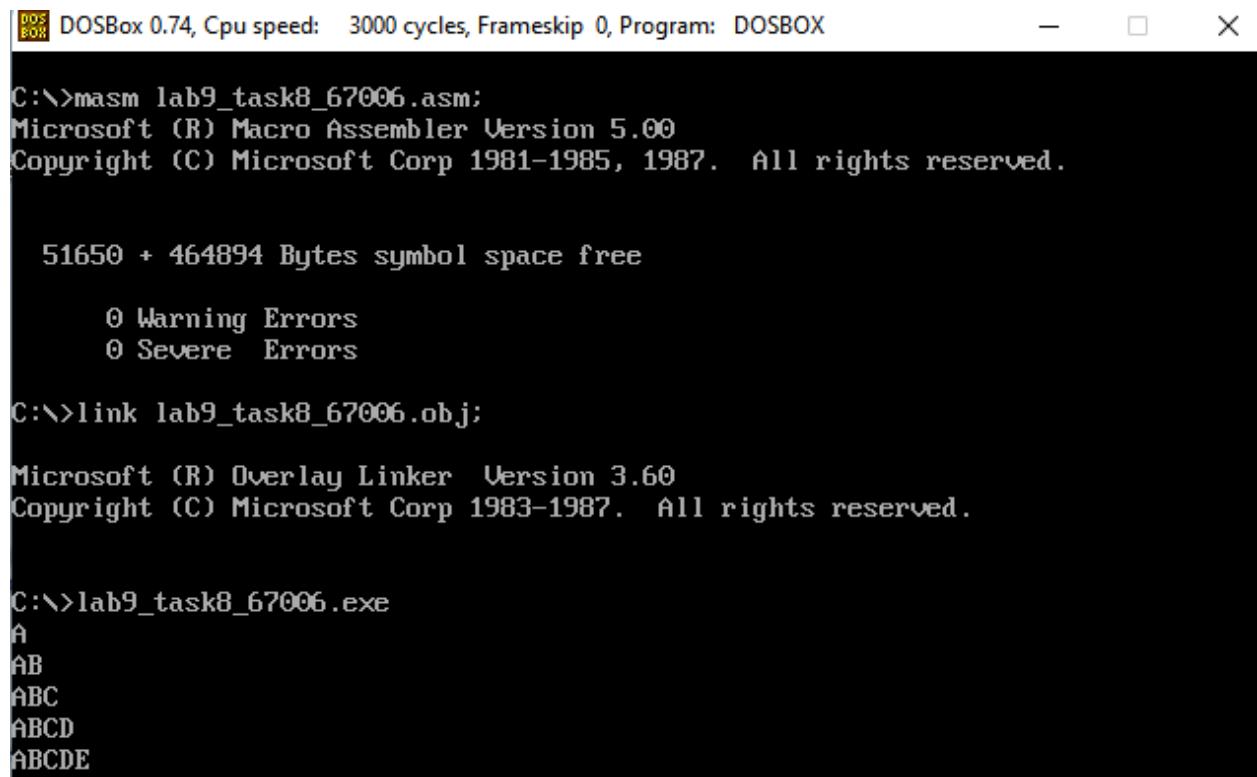
```
loop 12
    mov dx,10
    mov ah,2
    int 21h
    mov dx,13
    mov ah,2
    int 21h
    inc bl
    pop cx
    loop 11

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

The DOSBox status bar at the bottom left shows "F1=Help". The title bar says "C:\LAB9_TAS.ASM". The menu bar includes File, Edit, Search, View, Options, Help, and a file path "C:\LAB9_TAS.ASM". The status bar at the bottom right shows "Line:13 Col:8".

```
dosseg
.model small
.stack 100h
.data
.code
main proc
    mov bx,1
    mov cx,5
11:
    push cx
    mov cx,bx
    mov dl,65
12:
    mov ah,2
    int 21h
    inc dl
```

OUTPUT: -



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

```
C:\>masm lab9_task8_67006.asm;
Microsoft (R) Macro Assembler Version 5.00
Copyright (C) Microsoft Corp 1981-1985, 1987. All rights reserved.

51650 + 464894 Bytes symbol space free

0 Warning Errors
0 Severe Errors

C:\>link lab9_task8_67006.obj;
Microsoft (R) Overlay Linker Version 3.60
Copyright (C) Microsoft Corp 1983-1987. All rights reserved.

C:\>lab9_task8_67006.exe
A
AB
ABC
ABCD
ABCDE
```