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20i-1884

Task1

.MODEL SMALL

.STACK 100H

.DATA

.CODE

MOV AL, 48

MOV BL, 58

L2:

CMP AL, BL

JNE L1

JE EXIT

L1:

MOV DL, AL

MOV AH, 02

INT 21H

INC AL

JMP L2

exit:

MOV AH, 4CH

INT 21H

END

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

Assembling: Labtask1.asm
Labtask1.asm(16): error A2008: syntax error : JML

C:\>ml Labtask1.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

Assembling: Labtask1.asm

Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: Labtask1.obj
Run File [Labtask1.exe]: "Labtask1.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:
LINK : warning L4038: program has no starting address

C:\>Labtask1.exe
0123456789
C:\>
```

Task2

.MODEL SMALL

.STACK 100H

.DATA

.CODE

MOV AL, 58

MOV BL, 47

L2:

CMP AL, BL

JNE L1

JE EXIT

L1:

MOV DL, AL

MOV AH, 02

INT 21H

DEC AL

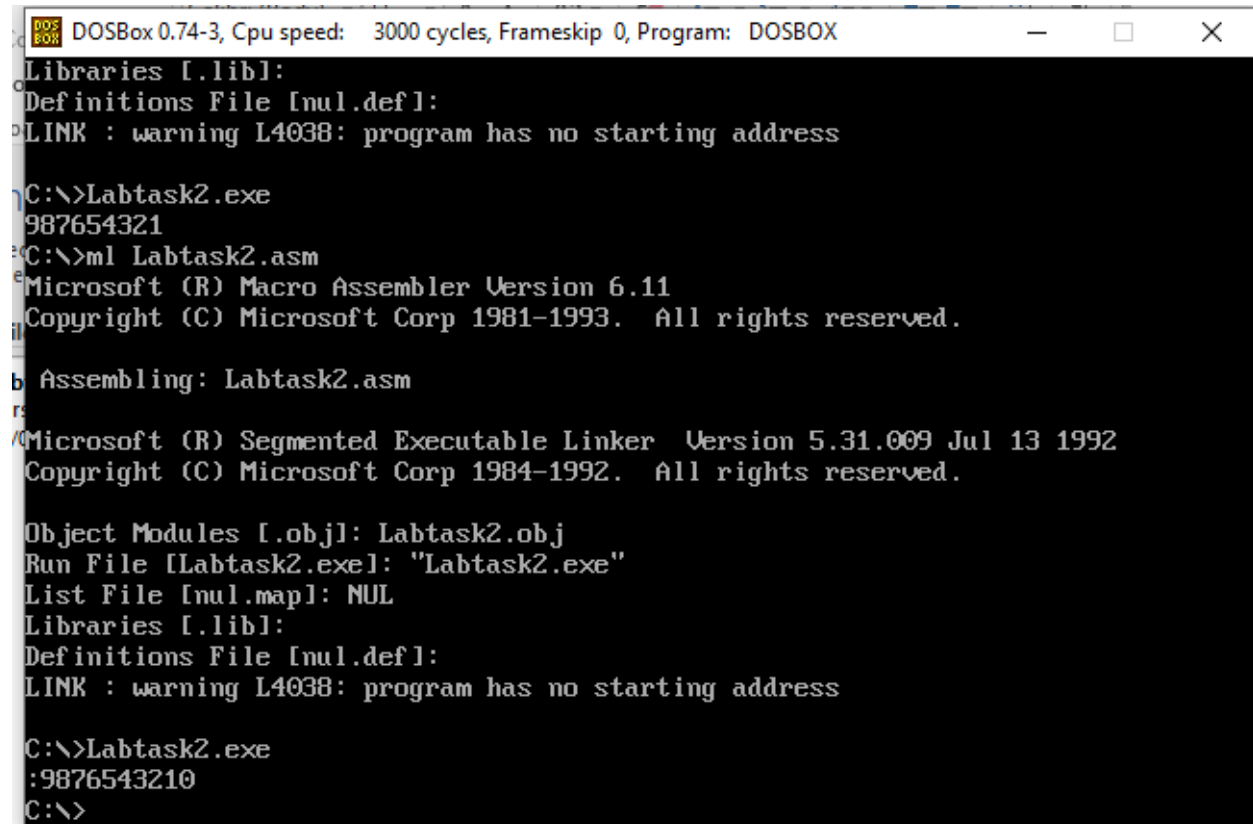
JMP L2

exit:

MOV AH, 4CH

INT 21H

END

A screenshot of a DOSBox window titled "DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX". The window has a black background with white text. The text shows the execution of assembly and linking commands. It starts with "C:\>Labtask2.exe" followed by a memory address "987654321". Then "C:\>ml Labtask2.asm" is entered, followed by the Microsoft Macro Assembler version 6.11 copyright notice. Next, "b Assembling: Labtask2.asm" is shown. Then "Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992" is displayed, followed by its copyright notice. The linker options are listed: "Object Modules [.obj]: Labtask2.obj", "Run File [Labtask2.exe]: 'Labtask2.exe'", "List File [nul.map]: NUL", "Libraries [.lib]:", and "Definitions File [nul.def]:". A warning "LINK : warning L4038: program has no starting address" is shown. Finally, "C:\>Labtask2.exe" is entered again, followed by the memory address "9876543210", and the prompt "C:\>" is visible at the bottom.

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
Libraries [.lib]:
Definitions File [nul.def]:
LINK : warning L4038: program has no starting address

C:\>Labtask2.exe
987654321
C:\>ml Labtask2.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

b Assembling: Labtask2.asm
Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: Labtask2.obj
Run File [Labtask2.exe]: "Labtask2.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:
LINK : warning L4038: program has no starting address

C:\>Labtask2.exe
:9876543210
C:\>
```

Task3

.model small

.stack 100h

.data

.CODE

main proc

mov al, 65

mov bl, 91

L2:

cmp al,bl

JNE L1

JE exit

L1:

mov dl, al

mov ah, 02h

int 21h

inc al

JMP L2

exit:

mov AH,4ch

int 21h

main endp

end main

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:
LINK : warning L4038: program has no starting address

C:\>Labtask2.exe
:9876543210
C:\>ml Labtask3.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

: Assembling: Labtask3.asm

Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: Labtask3.obj
Run File [Labtask3.exe]: "Labtask3.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask3.exe
ABCDEFGHIJKLMNOPQRSTUVWXYZ
C:\>
```

Task4

.model small

.stack 100h

.data

.CODE

main proc

mov al, 90

mov bl, 64

L2:

cmp al,bl

JNE L1

JE exit

L1:

mov dl, al

mov ah, 02h

int 21h

dec al

JMP L2

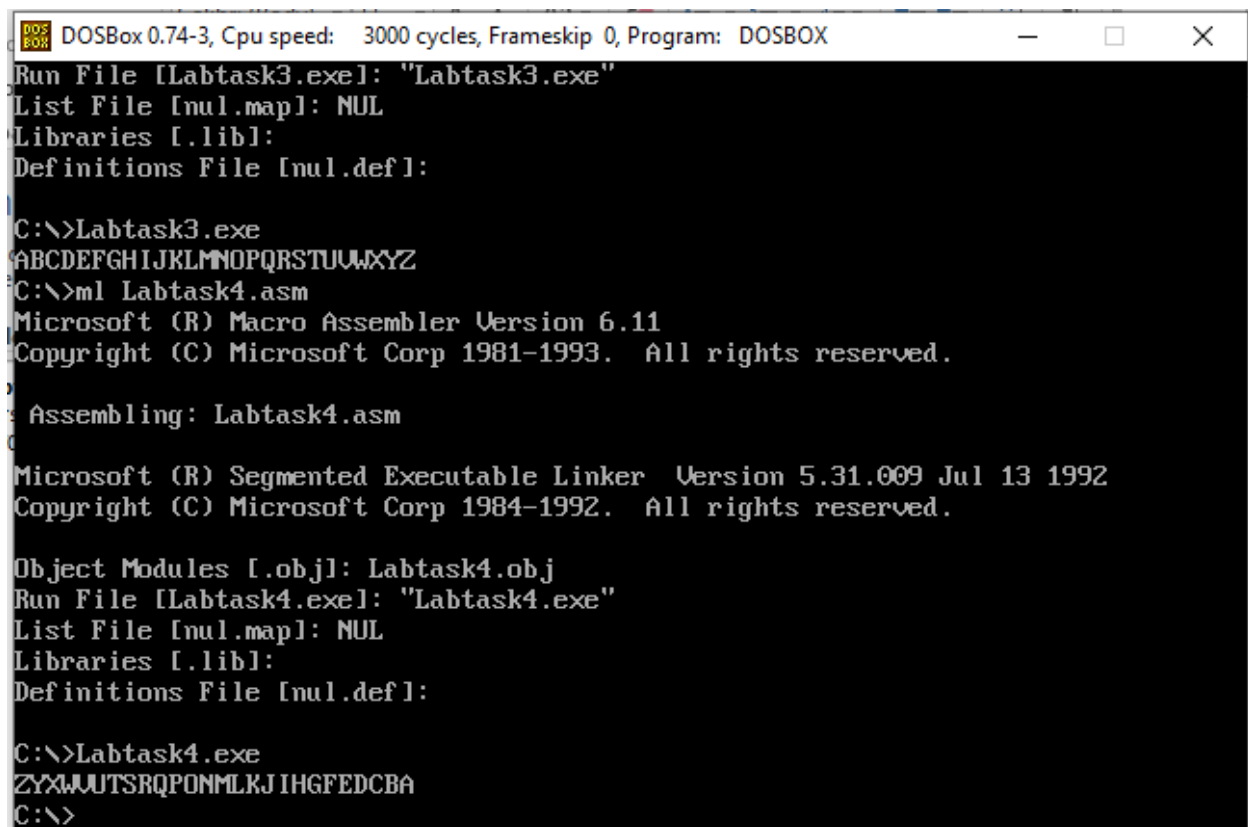
exit:

mov AH,4ch

int 21h

main endp

end main



DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX

Run File [Labtask3.exe]: "Labtask3.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask3.exe
ABCDEFGHIJKLMNOPQRSTUVWXYZ
C:\>ml Labtask4.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

Assembling: Labtask4.asm

Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: Labtask4.obj
Run File [Labtask4.exe]: "Labtask4.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask4.exe
ZYXWVUTSRQPONMLKJIHGFEDCBA
C:\>

Task5

.model small

.stack 100h

.data

.CODE

main proc

mov al, 97

mov bl, 123

L2:

cmp al,bl

JNE L1

JE exit

L1:

mov dl, al

mov ah, 02h

int 21h

inc al

JMP L2

exit:

mov AH,4ch

int 21h

main endp

end main

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
Run File [Labtask4.exe]: "Labtask4.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask4.exe
ZYXWVUTSRQPONMLKJIHGFEDCBA
C:\>ml Labtask5.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

Assembling: Labtask5.asm

Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: Labtask5.obj
Run File [Labtask5.exe]: "Labtask5.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask5.exe
abcdefghijklmnopqrstuvwxyz
C:\>
```

Task6

.model small

.stack 100h

.data

.CODE

main proc

mov al, 122

mov bl, 96

L2:

cmp al,bl

JNE L1

JE exit

L1:

mov dl, al

mov ah, 02h

int 21h

dec al

JMP L2

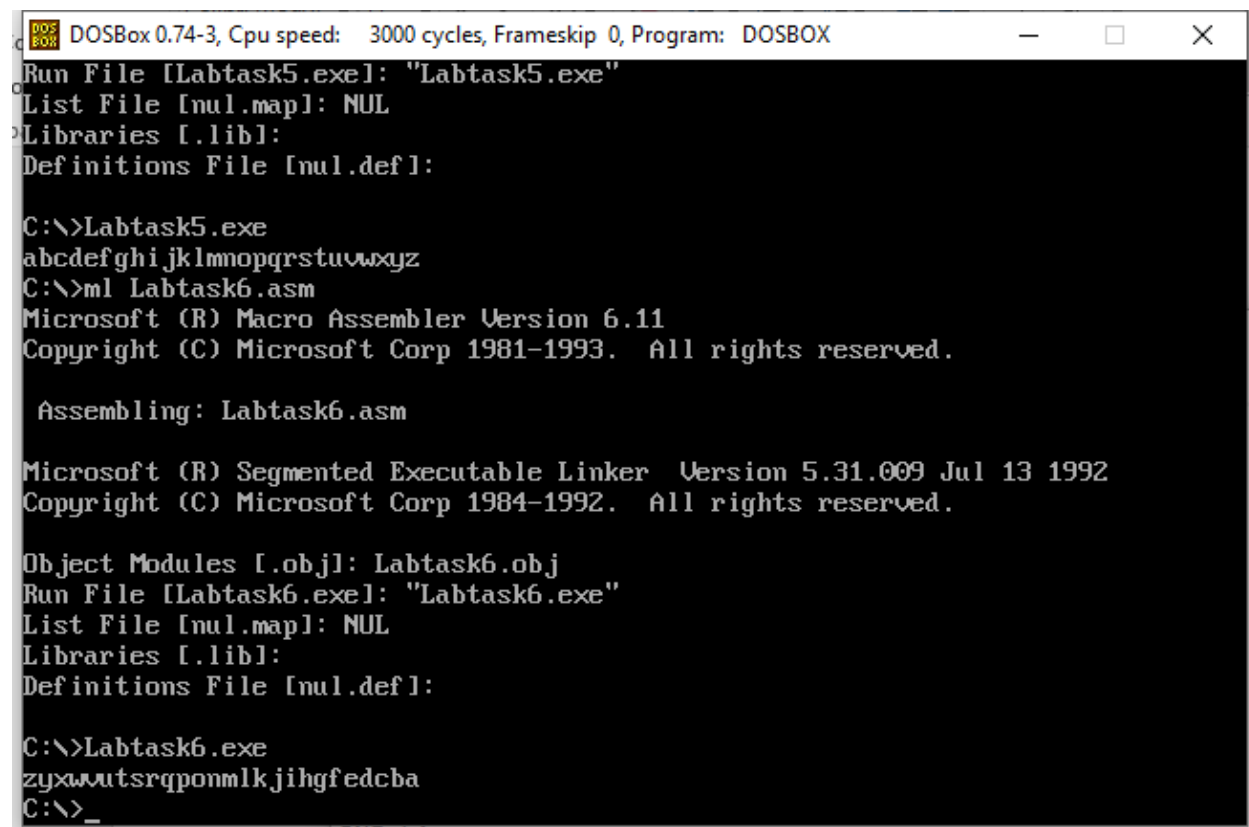
exit:

mov AH,4ch

int 21h

main endp

end main



```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
Run File [Labtask5.exe]: "Labtask5.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask5.exe
abcdefghijklmnopqrstuvwxyz
C:\>ml Labtask6.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

Assembling: Labtask6.asm

Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: Labtask6.obj
Run File [Labtask6.exe]: "Labtask6.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>Labtask6.exe
zyxwutsrqponmlkjihgfedcba
C:\>_
```

Task7

```
.model small  
.stack 100h  
.data  
.CODE
```

```
main proc
```

```
mov ah, 01  
int 21h
```

```
mov bh, 0  
mov bl, al
```

```
mov ax, bx
```

```
mov bl, 2  
div bl
```

```
cmp ah,0  
JNE L1  
mov dl, 'E'  
mov ah, 02  
int 21h  
JMP exit
```

```
L1:  
mov dl, 'O'  
mov ah, 02  
int 21h  
exit:
```

```
mov AH,4ch  
int 21h
```

```
main endp  
end main
```

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: DOSBOX
Assembling: LAB7.asm
LAB7.asm(21): error A2070: invalid instruction operands
LAB7.asm(27): error A2070: invalid instruction operands

C:\>ml LAB7.asm
Microsoft (R) Macro Assembler Version 6.11
Copyright (C) Microsoft Corp 1981-1993. All rights reserved.

Assembling: LAB7.asm

Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
Copyright (C) Microsoft Corp 1984-1992. All rights reserved.

Object Modules [.obj]: LAB7.obj
Run File [LAB7.exe]: "LAB7.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:

C:\>LAB7.exe
2E
C:\>LAB7.exe
10
C:\>_
```

MultiDigit Input and Output

```
.MODEL SMALL

.STACK 100H

.DATA
digitCount db 0
anotherCounter db 0
enteredNumber dw 0
temp1 dw 0

.CODE

MOV AX, @DATA
MOV DS, AX

input:
MOV AH,01

INT 21H

CMP AL, 13
```

```
Je StopIt
SUB AL,48
MOV AH,0
MOV temp1, AX
MOV AX, 0
MOV AX, enteredNumber
MOV BL, 10
MUL BL
ADD AX, temp1
MOV enteredNumber, AX
inc DigitCount
jmp input
StopIt:
mov al, digitCount
mov anotherCounter, al
BreakIt:
CMP digitCount, 0
JE DisplayIt
DEC digitCount
mov ax, enteredNumber
mov BL, 10
DIV BL
mov dx, 0
mov dl, ah
push dx
mov ah, 0
mov enteredNumber, ax
Jmp BreakIt
displayIt:
```

CMP anotherCounter, 0

JE EXIT

DEC anotherCounter

pop dx

add dl, 48

mov Ah, 02

INT 21H

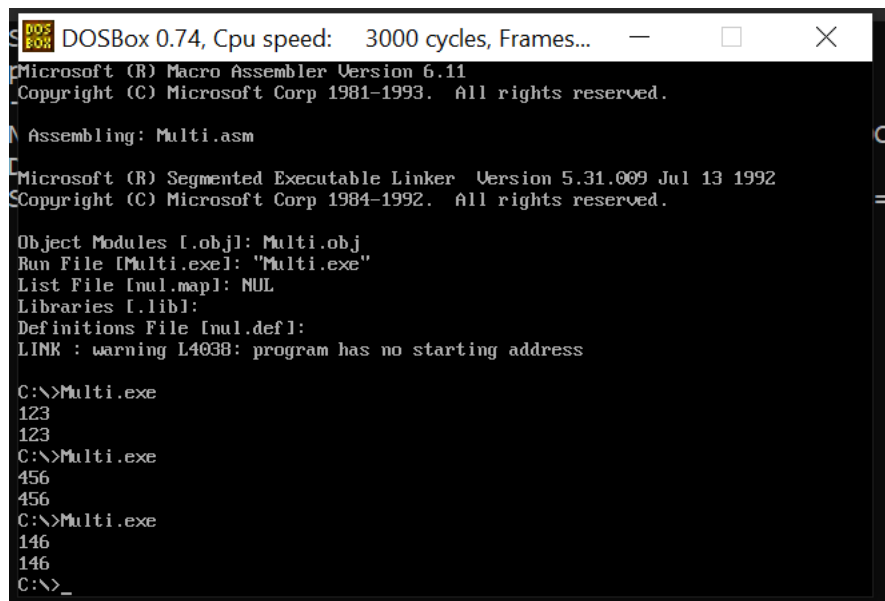
JMP DisplayIt

EXIT:

MOV AH, 4CH

INT 21H

END



```
S DOSBox 0.74, Cpu speed: 3000 cycles, Frames...
Microsoft (R) Macro Assembler Version 6.11
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N Assembling: Multi.asm
Microsoft (R) Segmented Executable Linker Version 5.31.009 Jul 13 1992
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Object Modules [.obj]: Multi.obj
Run File [Multi.exe]: "Multi.exe"
List File [nul.map]: NUL
Libraries [.lib]:
Definitions File [nul.def]:
LINK : warning L4038: program has no starting address

C:\>Multi.exe
123
123
C:\>Multi.exe
456
456
C:\>Multi.exe
146
146
C:\>_
```