MP & PC.

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S6 CSE
Roll no: 5

Exp-3.

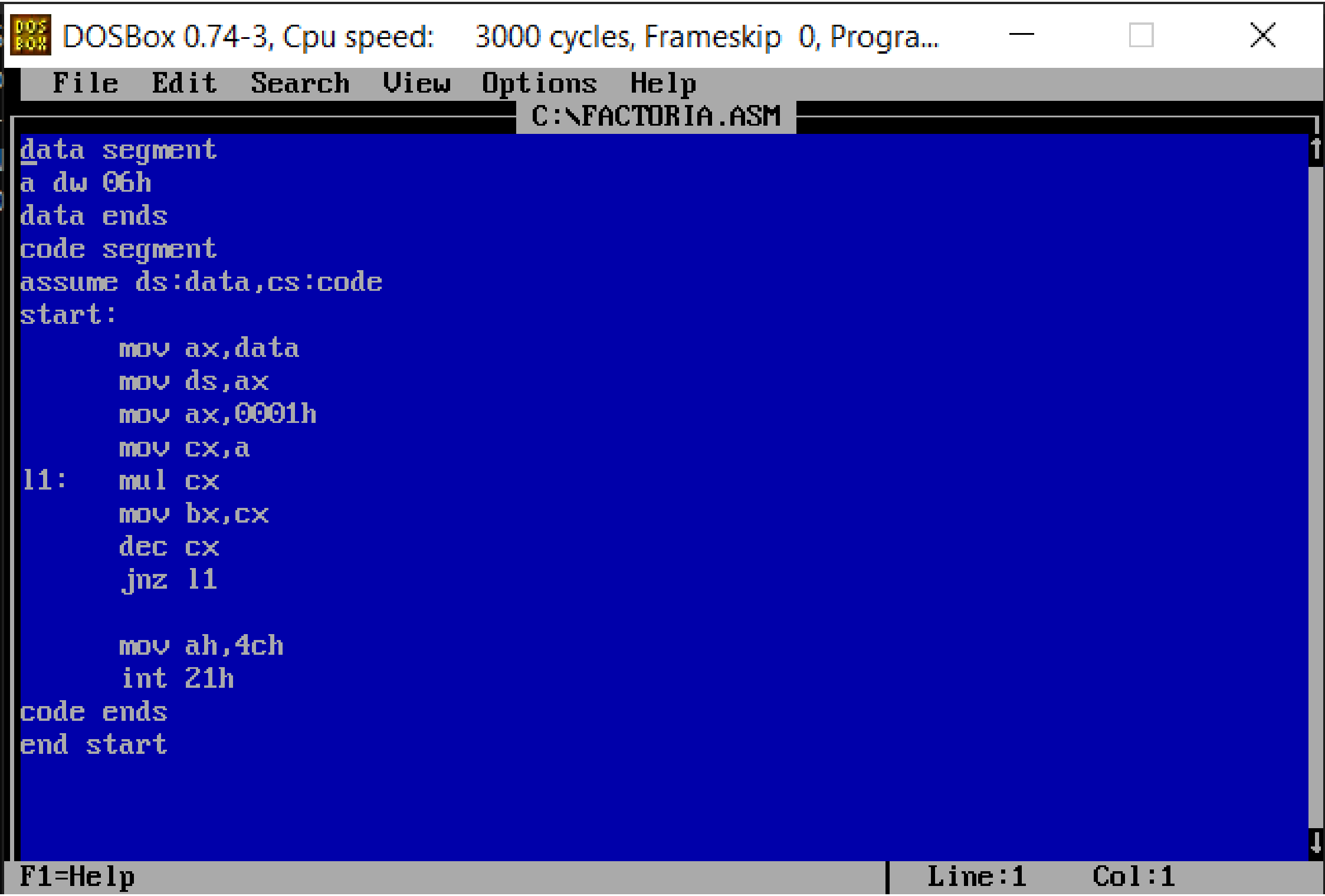
Write an assembly program to find the factorial of a given number.

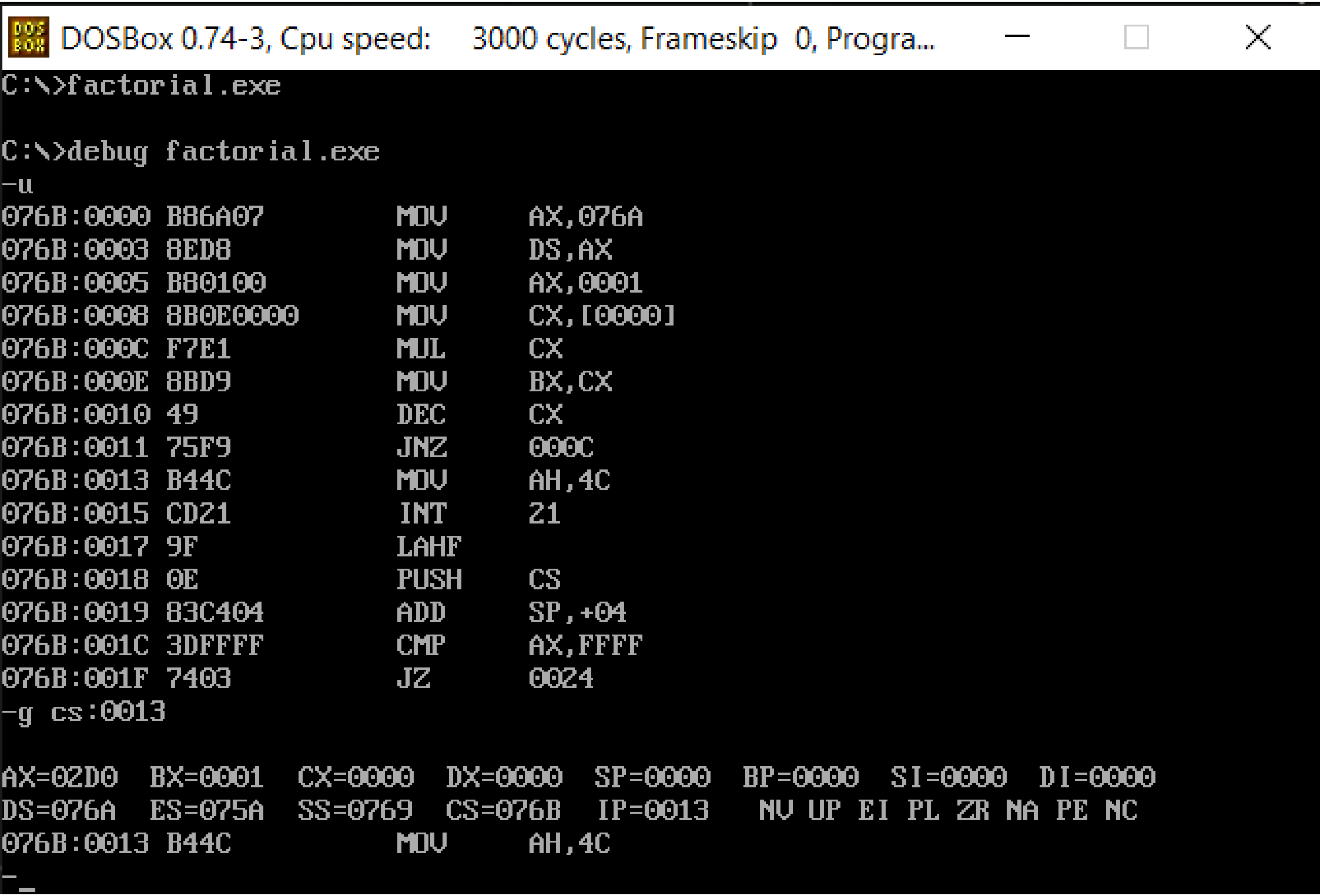
Ans: Algorithm

1- Input the number whose factorial is to be calculated
2. Store that number in CX register
3. Insert 0001 in AX register (condition for MUL instruction)
4. Multiply CX with AX
5. Decement CX.
6. Repeat the step 4 & 5 until CX become Zero
7. Stop execution.

Program

```
Data segment.
a dw 0065.
Code segment
assume ds: data, cs: code.
start:
        MOV  ax, data
        MOV  ds, ax
        MOV  ax, 0001h.
        MOV  cx, a.
L1  :   MUL  cx
        MOV  bx, cx
        dec  cx
        JNZ  l1
        MOV  ah, 4ch
        INT  21h.
Code ends
end start
```


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...
File Edit Search View Options Help
C:\FACTORIA.ASM
data segment
a dw 06h
data ends
code segment
assume ds:data,cs:code
start:
mov ax,data
mov ds,ax
mov ax,0001h
mov cx,a
l1: mul cx
mov bx,cx
dec cx
jnz l1
mov ah,4ch
int 21h
code ends
end start
F1=Help
Line:1 Col:1


DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Progra...
C:\>factorial.exe
C:\>debug factorial.exe
-u
076B:0000 B86A07 MOV AX,076A
076B:0003 8ED8 MOV DS,AX
076B:0005 B80100 MOV AX,0001
076B:0008 8B0E0000 MOV CX,[0000]
076B:000C F7E1 MUL CX
076B:000E 8BD9 MOV BX,CX
076B:0010 49 DEC CX
076B:0011 75F9 JNZ 000C
076B:0013 B44C MOV AH,4C
076B:0015 CD21 INT 21
076B:0017 9F LAHF
076B:0018 0E PUSH CS
076B:0019 83C404 ADD SP,+04
076B:001C 3DFFFF CMP AX,FFFF
076B:001F 7403 JZ 0024
-g cs:0013
AX=02D0 BX=0001 CX=0000 DX=0000 SP=0000 BP=0000 SI=0000 DI=0000
DS=076A ES=075A SS=0769 CS=076B IP=0013 NV UP EI PL ZR NA PE NC
076B:0013 B44C MOV AH,4C
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