

Step Number:01

We just moved 1 in Ax and 2 in Bx and 3 in Cx Register

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: AFD
AX 0000 SI 0000 CS 19F5 IP 0100 Stack +0 0000 Flags 7202
BX 0000 DI 0000 DS 19F5          +2 20CD
CX 001F BP 0000 ES 19F5 HS 19F5   +4 9FFF 0F DF IF SF ZF AF PF CF
DX 0000 SP FFFE SS 19F5 FS 19F5   +6 EA00  0 0 1 0 0 0 0 0

CMD >

0100 B80100    MOV    AX,0001
0103 BB0200    MOV    BX,0002
0106 B90300    MOV    CX,0003
0109 81E90100  SUB     CX,0001
010D 75FA      JNZ     0109
010F 81EB0100  SUB     BX,0001
0113 75F1      JNZ     0106
0115 2D0100    SUB     AX,0001

01    0 1 2 3 4 5 6 7
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00 = f.Ω≡ i|..†...
DS:0008 AD DE 1B 05 C5 06 00 00 .....ff. ....
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF
DS:0018 01 01 01 00 02 FF FF FF
DS:0020 FF FF FF FF FF FF FF FF FF FF FF FF FF FF
DS:0028 FF FF FF FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00
DS:0038 FF FF FF FF 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00
DS:0048 00 00 00 00 00 00 00 00

2    0 1 2 3 4 5 6 7 8 9 A B C D E F
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00 = f.Ω≡ i|..†...
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF .....ff. ....
DS:0020 FF FF FF FF FF FF FF FF FF FF FF FF FF FF δ.L.
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00 6.....J. ....
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

1 Step 2ProcStep 3Retrieve 4Help ON 5BRK Menu 6 7 up 8 dn 9 le 10 ri
```

Step Number :02

So we basically subtract 1 from CX register and check the jnz condition we move every iteration.

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: AFD
AX 0001 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7200
BX 0002 DI 0000 DS 19F5          +2 20CD
CX 0003 BP 0000 ES 19F5 HS 19F5   +4 9FFF 0F DF IF SF ZF AF PF CF
DX 0000 SP FFFE SS 19F5 FS 19F5   +6 EA00  0 0 1 0 0 0 0 0

CMD >

0106 B90300    MOV    CX,0003
0109 81E90100  SUB     CX,0001
010D 75FA      JNZ     0109
010F 81EB0100  SUB     BX,0001
0113 75F1      JNZ     0106
0115 2D0100    SUB     AX,0001
0118 75E9      JNZ     0103
011A B8004C    MOV     AX,4C00
011D CD21      INT     21

01    0 1 2 3 4 5 6 7
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00 = f.Ω≡ i|..†...
DS:0008 AD DE 1B 05 C5 06 00 00 .....ff. ....
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF
DS:0018 01 01 01 00 02 FF FF FF
DS:0020 FF FF FF FF FF FF FF FF FF FF FF FF FF FF
DS:0028 FF FF FF FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00
DS:0038 FF FF FF FF 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00
DS:0048 00 00 00 00 00 00 00 00

2    0 1 2 3 4 5 6 7 8 9 A B C D E F
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00 = f.Ω≡ i|..†...
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF .....ff. ....
DS:0020 FF FF FF FF FF FF FF FF FF FF FF FF FF FF δ.L.
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00 6.....J. ....
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

1 Step 2ProcStep 3Retrieve 4Help ON 5BRK Menu 6 7 up 8 dn 9 le 10 ri
```

Step Number :03

As we can see we back on CX and with that we move every iteration and when the upper loop goes zero it goes inner and in inner if it jumps then we again going to reinitialize the values and do for every iteration.

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: AFD
AX 0001 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7200
BX 0002 DI 0000 DS 19F5 +2 20CD
CX 0002 BP 0000 ES 19F5 HS 19F5 +4 9FFF OF DF IF SF ZF AF PF CF
DX 0000 SP FFFE SS 19F5 FS 19F5 +6 EA00 0 0 1 0 0 0 0 0

CMD >

010D 75FA JNZ 0109
0109 81E90100 SUB CX,0001
010D 75FA JNZ 0109
010F 81EB0100 SUB BX,0001
0113 75F1 JNZ 0106
0115 2D0100 SUB AX,0001
0118 75E9 JNZ 0103
011A B8004C MOV AX,4C00
011D CD21 INT 21

DS:0000 CD 20 FF 9F 00 EA F0 FE
DS:0008 AD DE 1B 05 C5 06 00 00
DS:0010 18 01 10 01 18 01 92 01
DS:0018 01 01 01 00 02 FF FF FF
DS:0020 FF FF FF FF FF FF FF FF
DS:0028 FF FF FF FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19
DS:0038 FF FF FF FF 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00
DS:0048 00 00 00 00 00 00 00 00

1 Step 2ProcStep 3Retrieve 4Help ON 5BRK Menu 6 7 up 8 dn 9 le 10 ri
```

Step Number :04

Here condition meet the required number like for jnz it's zero so it did not jump and goes on termination of program.

```
DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: AFD
AX 0001 SI 0000 CS 19F5 IP 010D Stack +0 0000 Flags 7244
BX 0002 DI 0000 DS 19F5 +2 20CD
CX 0000 BP 0000 ES 19F5 HS 19F5 +4 9FFF OF DF IF SF ZF AF PF CF
DX 0000 SP FFFE SS 19F5 FS 19F5 +6 EA00 0 0 1 0 1 0 1 0

CMD >

0109 81E90100 SUB CX,0001
010D 75FA JNZ 0109
010F 81EB0100 SUB BX,0001
0113 75F1 JNZ 0106
0115 2D0100 SUB AX,0001
0118 75E9 JNZ 0103
011A B8004C MOV AX,4C00
011D CD21 INT 21
011F 46 INC SI

DS:0000 CD 20 FF 9F 00 EA F0 FE
DS:0008 AD DE 1B 05 C5 06 00 00
DS:0010 18 01 10 01 18 01 92 01
DS:0018 01 01 01 00 02 FF FF FF
DS:0020 FF FF FF FF FF FF FF FF
DS:0028 FF FF FF FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19
DS:0038 FF FF FF FF 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00
DS:0048 00 00 00 00 00 00 00 00

1 Step 2ProcStep 3Retrieve 4Help ON 5BRK Menu 6 7 up 8 dn 9 le 10 ri
```


CMD >										<table border="1"> <tr> <td>1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td> </tr> <tr> <td>DS:0000</td><td>CD</td><td>20</td><td>FF</td><td>9F</td><td>00</td><td>EA</td><td>FF</td><td>FF</td> </tr> <tr> <td>DS:0008</td><td>AD</td><td>DE</td><td>1B</td><td>05</td><td>C5</td><td>06</td><td>00</td><td>00</td> </tr> <tr> <td>DS:0010</td><td>18</td><td>01</td><td>10</td><td>01</td><td>18</td><td>01</td><td>92</td><td>01</td> </tr> <tr> <td>DS:0018</td><td>01</td><td>01</td><td>01</td><td>00</td><td>02</td><td>FF</td><td>FF</td><td>FF</td> </tr> <tr> <td>DS:0020</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td> </tr> <tr> <td>DS:0028</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>EB</td><td>19</td><td>E4</td><td>11</td> </tr> <tr> <td>DS:0030</td><td>A2</td><td>01</td><td>14</td><td>00</td><td>18</td><td>00</td><td>F5</td><td>19</td> </tr> <tr> <td>DS:0038</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>00</td><td>00</td><td>00</td><td>00</td> </tr> <tr> <td>DS:0040</td><td>05</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td> </tr> <tr> <td>DS:0048</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td> </tr> </table>																1	0	1	2	3	4	5	6	7	DS:0000	CD	20	FF	9F	00	EA	FF	FF	DS:0008	AD	DE	1B	05	C5	06	00	00	DS:0010	18	01	10	01	18	01	92	01	DS:0018	01	01	01	00	02	FF	FF	FF	DS:0020	FF	FF	FF	FF	FF	FF	FF	FF	DS:0028	FF	FF	FF	FF	EB	19	E4	11	DS:0030	A2	01	14	00	18	00	F5	19	DS:0038	FF	FF	FF	FF	00	00	00	00	DS:0040	05	00	00	00	00	00	00	00	DS:0048	00	00	00	00	00	00	00	00		
1	0	1	2	3	4	5	6	7																																																																																																																						
DS:0000	CD	20	FF	9F	00	EA	FF	FF																																																																																																																						
DS:0008	AD	DE	1B	05	C5	06	00	00																																																																																																																						
DS:0010	18	01	10	01	18	01	92	01																																																																																																																						
DS:0018	01	01	01	00	02	FF	FF	FF																																																																																																																						
DS:0020	FF	FF	FF	FF	FF	FF	FF	FF																																																																																																																						
DS:0028	FF	FF	FF	FF	EB	19	E4	11																																																																																																																						
DS:0030	A2	01	14	00	18	00	F5	19																																																																																																																						
DS:0038	FF	FF	FF	FF	00	00	00	00																																																																																																																						
DS:0040	05	00	00	00	00	00	00	00																																																																																																																						
DS:0048	00	00	00	00	00	00	00	00																																																																																																																						
> Program terminated OK																																																																																																																														
<table border="1"> <tr> <td>0100</td><td>B80100</td><td>MOV</td><td>AX,0001</td> </tr> <tr> <td>0103</td><td>BB0200</td><td>MOV</td><td>BX,0002</td> </tr> <tr> <td>0106</td><td>B90300</td><td>MOV</td><td>CX,0003</td> </tr> <tr> <td>0109</td><td>81E90100</td><td>SUB</td><td>CX,0001</td> </tr> <tr> <td>010D</td><td>75FA</td><td>JNZ</td><td>0109</td> </tr> <tr> <td>010F</td><td>81EB0100</td><td>SUB</td><td>BX,0001</td> </tr> <tr> <td>0113</td><td>75F1</td><td>JNZ</td><td>0106</td> </tr> <tr> <td>0115</td><td>2D0100</td><td>SUB</td><td>AX,0001</td> </tr> </table>										0100	B80100	MOV	AX,0001	0103	BB0200	MOV	BX,0002	0106	B90300	MOV	CX,0003	0109	81E90100	SUB	CX,0001	010D	75FA	JNZ	0109	010F	81EB0100	SUB	BX,0001	0113	75F1	JNZ	0106	0115	2D0100	SUB	AX,0001																																																																																					
0100	B80100	MOV	AX,0001																																																																																																																											
0103	BB0200	MOV	BX,0002																																																																																																																											
0106	B90300	MOV	CX,0003																																																																																																																											
0109	81E90100	SUB	CX,0001																																																																																																																											
010D	75FA	JNZ	0109																																																																																																																											
010F	81EB0100	SUB	BX,0001																																																																																																																											
0113	75F1	JNZ	0106																																																																																																																											
0115	2D0100	SUB	AX,0001																																																																																																																											
2										<table border="1"> <tr> <td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td> </tr> <tr> <td>DS:0000</td><td>CD</td><td>20</td><td>FF</td><td>9F</td><td>00</td><td>EA</td><td>FF</td><td>FF</td><td>AD</td><td>DE</td><td>1B</td><td>05</td><td>C5</td><td>06</td><td>00</td><td>00</td> </tr> <tr> <td>DS:0010</td><td>18</td><td>01</td><td>10</td><td>01</td><td>18</td><td>01</td><td>92</td><td>01</td><td>01</td><td>01</td><td>01</td><td>00</td><td>02</td><td>FF</td><td>FF</td><td>FF</td> </tr> <tr> <td>DS:0020</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>EB</td><td>19</td><td>E4</td><td>11</td><td></td> </tr> <tr> <td>DS:0030</td><td>A2</td><td>01</td><td>14</td><td>00</td><td>18</td><td>00</td><td>F5</td><td>19</td><td>FF</td><td>FF</td><td>FF</td><td>FF</td><td>00</td><td>00</td><td>00</td><td>00</td> </tr> <tr> <td>DS:0040</td><td>05</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td><td>00</td> </tr> </table>																0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	DS:0000	CD	20	FF	9F	00	EA	FF	FF	AD	DE	1B	05	C5	06	00	00	DS:0010	18	01	10	01	18	01	92	01	01	01	01	00	02	FF	FF	FF	DS:0020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	EB	19	E4	11		DS:0030	A2	01	14	00	18	00	F5	19	FF	FF	FF	FF	00	00	00	00	DS:0040	05	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F																																																																																																															
DS:0000	CD	20	FF	9F	00	EA	FF	FF	AD	DE	1B	05	C5	06	00	00																																																																																																														
DS:0010	18	01	10	01	18	01	92	01	01	01	01	00	02	FF	FF	FF																																																																																																														
DS:0020	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	EB	19	E4	11																																																																																																															
DS:0030	A2	01	14	00	18	00	F5	19	FF	FF	FF	FF	00	00	00	00																																																																																																														
DS:0040	05	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00																																																																																																														
										<table border="1"> <tr> <td>=</td><td>f.n</td><td>i</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td> </tr> <tr> <td>.....f.</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td> </tr> <tr> <td>.....J.</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td> </tr> <tr> <td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td><td>.....</td> </tr> </table>																=	f.n	if.J.																																	
=	f.n	i																																																																																																														
.....f.																																																																																																														
.....J.																																																																																																														
.....																																																																																																														
1 Step										2ProcStep 3Retrieve 4Help ON 5BRK Menu 6																																																																																																																				
7 up										8 dn 9 le 10 ri																																																																																																																				