

Lab Report #6

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(20P-0051)

Shift Logical Right (SHR):

The shift logical right operation inserts a zero from the left and moves every bit one position to the right and copies the rightmost bit in the carry flag.

Code:

```
ASM shr.asm  X  ASM shl.asm
coal > ASM shr.asm
1  [org 0x0100]
2
3  mov ax , 9
4
5  mov cx , 4
6
7  ok:
8  shr ax , 1
9  dec cx
10 jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14 |
```

Output:

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 0010	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 0

CMD >

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 FFf.
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11	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 00 00

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

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

AX 0009 SI 0000 CS 19F5 IP 0102	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0010 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 0

CMD >															
0100 B009	MOV	AL,09	1	0	1	2	3	4	5	6	7				
0102 B104	MOV	CL,04	DS:0000	CD 20 FF 9F 00 EA F0 FE											
0104 C0E808	SHR	AL,08	DS:0008	AD DE 1B 05 C5 06 00 00											
0107 FEC9	DEC	CL	DS:0010	18 01 10 01 18 01 92 01											
0109 75F9	JNZ	0104	DS:0018	01 01 01 00 02 FF FF FF											
010B B8004C	MOV	AX,4C00	DS:0020	FF FF FF FF FF FF FF											
010E CD21	INT	21	DS:0028	FF FF FF FF EB 19 C0 11											
0110 0000	ADD	[BX+SI],AL	DS:0030	A2 01 14 00 18 00 F5 19											
0112 0000	ADD	[BX+SI],AL	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											

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 FFff.													
DS:0020	FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00													

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

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

AX 0009 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD >															
0102 B104	MOV	CL,04	1	0	1	2	3	4	5	6	7				
0104 C0E808	SHR	AL,08	DS:0000	CD 20 FF 9F 00 EA F0 FE											
0107 FEC9	DEC	CL	DS:0008	AD DE 1B 05 C5 06 00 00											
0109 75F9	JNZ	0104	DS:0010	18 01 10 01 18 01 92 01											
010B B8004C	MOV	AX,4C00	DS:0018	01 01 01 00 02 FF FF FF											
010E CD21	INT	21	DS:0020	FF FF FF FF FF FF FF											
0110 0000	ADD	[BX+SI],AL	DS:0028	FF FF FF FF EB 19 C0 11											
0112 0000	ADD	[BX+SI],AL	DS:0030	A2 01 14 00 18 00 F5 19											
0114 0000	ADD	[BX+SI],AL	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											

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 FFff.													
DS:0020	FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00													

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

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

AX 0000	SI 0000	CS 19F5	IP 0107	Stack +0 0000	Flags 7254
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0004	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 1 1 1 0

CMD >				1 0 1 2 3 4 5 6 7
0104 C0E808	SHR	AL,08	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0107 FEC9	DEC	CL	DS:0008 AD DE 1B 05 C5 06 00 00	
0109 75F9	JNZ	0104	DS:0010 18 01 10 01 18 01 92 01	
010B B8004C	MOU	AX,4C00	DS:0018 01 01 01 00 02 FF FF FF	
010E CD21	INT	21	DS:0020 FF FF FF FF FF FF FF FF	
0110 0000	ADD	[BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11	
0112 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0114 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00	
0116 0000	ADD	[BX+SI],AL	DS:0040 05 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				= f. R≡≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00fl.	
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.	
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11J.
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

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

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

AX 0000	SI 0000	CS 19F5	IP 0109	Stack +0 0000	Flags 7204
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0003	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 1 0

CMD >I				1 0 1 2 3 4 5 6 7
0107 FEC9	DEC	CL	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0109 75F9	JNZ	0104	DS:0008 AD DE 1B 05 C5 06 00 00	
010B B8004C	MOU	AX,4C00	DS:0010 18 01 10 01 18 01 92 01	
010E CD21	INT	21	DS:0018 01 01 01 00 02 FF FF FF	
0110 0000	ADD	[BX+SI],AL	DS:0020 FF FF FF FF EB 19 C0 11	
0112 0000	ADD	[BX+SI],AL	DS:0028 A2 01 14 00 18 00 F5 19	
0114 0000	ADD	[BX+SI],AL	DS:0030 FF FF FF 00 00 00 00 00	
0116 0000	ADD	[BX+SI],AL	DS:0038 05 00 00 00 00 00 00 00	
0118 0000	ADD	[BX+SI],AL	DS:0040 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				= f. R≡≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00fl.	
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.	
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11J.
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

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

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

AX 0000 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

```

CMD >[REDACTED]
0109 75F9 JNZ 0104
0104 COE808 SHR AL,08
0107 FEC9 DEC CL
0109 75F9 JNZ 0104
010B B8004C MOU AX,4C00
010E CD21 INT Z1
0110 0000 ADD [BX+SI],AL
0112 0000 ADD [BX+SI],AL
0114 0000 ADD [BX+SI],AL

```

1 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
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 EB 19 C0 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

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
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 EB 19 C0 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

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

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

AX 0000 SI 0000 CS 19F5 IP 0107	Stack +0 0000 Flags 7254
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 1 0

```

CMD >[REDACTED]
0104 COE808 SHR AL,08
0107 FEC9 DEC CL
0109 75F9 JNZ 0104
010B B8004C MOU AX,4C00
010E CD21 INT Z1
0110 0000 ADD [BX+SI],AL
0112 0000 ADD [BX+SI],AL
0114 0000 ADD [BX+SI],AL
0116 0000 ADD [BX+SI],AL

```

1 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
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 EB 19 C0 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

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
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 EB 19 C0 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

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

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

AX 0000 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >		1 0 1 2 3 4 5 6 7
0107 FEC9 DEC CL	DS:0000 CD 20 FF 9F 00 EA F0 FE	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75F9 JNZ 0104	DS:0010 18 01 10 01 18 01 92 01	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF	DS:0028 FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19	DS:0038 FF FF FF FF 00 00 00 00
0110 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00	DS:0048 00 00 00 00 00 00 00 00
0112 0000 ADD [BX+SI],AL		
0114 0000 ADD [BX+SI],AL		
0116 0000 ADD [BX+SI],AL		
0118 0000 ADD [BX+SI],AL		

2 0 1 2 3 4 5 6 7 8 9 A B C D E F		= f.Q≡■ i ..+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00	= f.Q≡■ i ..+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFft.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11J.
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	

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

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

AX 0000 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >		1 0 1 2 3 4 5 6 7
0109 75F9 JNZ 0104	DS:0000 CD 20 FF 9F 00 EA F0 FE	DS:0008 AD DE 1B 05 C5 06 00 00
0104 C0EB08 SHR AL,08	DS:0010 18 01 10 01 18 01 92 01	DS:0018 01 01 01 00 02 FF FF FF
0107 FEC9 DEC CL	DS:0020 FF FF FF FF FF FF FF	DS:0028 FF FF FF FF EB 19 C0 11
0109 75F9 JNZ 0104	DS:0030 A2 01 14 00 18 00 F5 19	DS:0038 FF FF FF FF 00 00 00 00
010B B8004C MOU AX,4C00	DS:0040 05 00 00 00 00 00 00 00	DS:0048 00 00 00 00 00 00 00 00
010E CD21 INT 21		
0110 0000 ADD [BX+SI],AL		
0112 0000 ADD [BX+SI],AL		
0114 0000 ADD [BX+SI],AL		

2 0 1 2 3 4 5 6 7 8 9 A B C D E F		= f.Q≡■ i ..+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00	= f.Q≡■ i ..+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFft.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11J.
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	

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

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

AX 0000	SI 0000	CS 19F5	IP 0107	Stack +0 0000	Flags 7254
BX 0000	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 1 1 1 0

CMD >				1 0 1 2 3 4 5 6 7
0104 C0E808	SHR	AL,08		DS:0000 CD 20 FF 9F 00 EA F0 FE
0107 FEC9	DEC	CL		DS:0008 AD DE 1B 05 C5 06 00 00
0109 75F9	JNZ	0104		DS:0010 18 01 10 01 18 01 92 01
010B B8004C	MOU	AX,4C00		DS:0018 01 01 01 00 02 FF FF FF
010E CD21	INT	21		DS:0020 FF FF FF FF FF FF FF FF
0110 0000	ADD	[BX+SI],AL		DS:0028 FF FF FF EB 19 C0 11
0112 0000	ADD	[BX+SI],AL		DS:0030 A2 01 14 00 18 00 F5 19
0114 0000	ADD	[BX+SI],AL		DS:0038 FF FF FF 00 00 00 00 00
0116 0000	ADD	[BX+SI],AL		DS:0040 05 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	= f. R≡≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE f.
DS:0010 18 01 10 01 18 01 92 01 d. L.
DS:0020 FF FF FF FF FF FF FF FF J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0000	SI 0000	CS 19F5	IP 0109	Stack +0 0000	Flags 7200
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0001	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 >				1 0 1 2 3 4 5 6 7
0107 FEC9	DEC	CL		DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75F9	JNZ	0104		DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C	MOU	AX,4C00		DS:0010 18 01 10 01 18 01 92 01
010E CD21	INT	21		DS:0018 01 01 01 00 02 FF FF FF
0110 0000	ADD	[BX+SI],AL		DS:0020 FF FF FF FF FF FF FF FF
0112 0000	ADD	[BX+SI],AL		DS:0028 FF FF FF EB 19 C0 11
0114 0000	ADD	[BX+SI],AL		DS:0030 A2 01 14 00 18 00 F5 19
0116 0000	ADD	[BX+SI],AL		DS:0038 FF FF FF 00 00 00 00 00
0118 0000	ADD	[BX+SI],AL		DS:0040 05 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	= f. R≡≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE f.
DS:0010 18 01 10 01 18 01 92 01 d. L.
DS:0020 FF FF FF FF FF FF FF FF J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD >	
0109 75F9 JNZ 0104	1 0 1 2 3 4 5 6 7
0104 C0E808 SHR AL,08	DS:0000 CD 20 FF 9F 00 EA F0 FE
0107 FEC9 DEC CL	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75F9 JNZ 0104	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	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

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,ft.
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0107	Stack +0 0000 Flags 7254
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 1 1 1 0

CMD >	
0104 C0E808 SHR AL,08	1 0 1 2 3 4 5 6 7
0107 FEC9 DEC CL	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75F9 JNZ 0104	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	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

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,ft.
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7244
BX 0000 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 > █	
0107 FEC9 DEC CL	1 0 1 2 3 4 5 6 7
0109 75F9 JNZ 0104	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	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

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	= f.Ω≡■ i ...+
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FF FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 010B	Stack +0 0000 Flags 7244
BX 0000 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 75F9 JNZ 0104	1 0 1 2 3 4 5 6 7
010B B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	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

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	= f.Ω≡■ i ...+
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 4C00 SI 0000 CS 19F5 IP 010E	Stack +0 0000 Flags 7244
BX 0000 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 > 	I 0 1 2 3 4 5 6 7
010B B8004C MOU AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
011C 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 00 00 00 00 00 00 00

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡≡ i .+...fl. δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 FF EB 19 C0 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

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

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

AX 4C00 SI 0000 CS F000 IP 14A0	Stack +0 42BD Flags 7044
BX 0000 DI 0000 DS 19F5	+2 06C5
CX 0000 BP 0000 ES 19F5 HS 19F5	+4 7044 OF DF IF SF ZF AF PF CF
DX 0000 SP FFF2 SS 19F5 FS 19F5	+6 0110 0 0 0 0 1 0 1 0

CMD > 	I 0 1 2 3 4 5 6 7
010E CD21 INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825 CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF ADD BH,CL	DS:0020 FF FF FF FF FF FF FF FF
14A6 CB RET Far	DS:0028 FF FF FF FF EB 19 C0 11
14A7 51 PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001 MOU CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB EZFE LOOP 14AB	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 00 00 00 00 00 00 00

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡≡ i .+...fl. δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 FF EB 19 C0 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

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

Shift Logical Left (SHL):

The shift logical left operation is the exact opposite of shift logical right. In this operation the zero bit is inserted from the right and every bit moves one position to its left with the most significant bit dropping into the carry flag.

Code:

ASM: shl.asm X ASM: sar.asm

```

coal > asm shl.asm
1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     shl ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

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

AX 0000	SI 0000	CS 19F5	IP 0100	Stack +0 0000	Flags 7202
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0010	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 0

CMD > []	1 0 1 2 3 4 5 6 7
0100 B80400 MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1E0 SHL AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOV AX,4C00	DS:0028 FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	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

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡≡ i ...+
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0103 Stack +0 0000 Flags 7200	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0	
CX 0010 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD > []	1 0 1 2 3 4 5 6 7
0100 B80400 MOU AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOU CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1E0 SHL AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOU AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0112 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i ...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01	δ. L.
DS:0020 FF FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7200	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0	
CX 0004 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD > []	1 0 1 2 3 4 5 6 7
0103 B90400 MOU CX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i ...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01	δ. L.
DS:0020 FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7200	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0	
CX 0004 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD >	1 0 1 2 3 4 5 6 7
0103 B90400 MOU CX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7210	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 1 0 0	
CX 0004 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD > 1	0 1 2 3 4 5 6 7
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD >	
0108 49 DEC CX	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 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	= f.Ω≡■ i ..+...
DS:0010 18 01 10 01 18 01 92 01fl.
DS:0020 FF FF FF FF FF FF FFδ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD >	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 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	= f.Ω≡■ i ..+...
DS:0010 18 01 10 01 18 01 92 01fl.
DS:0020 FF FF FF FF FF FFδ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7210
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0 0

CMD >	1	0 1 2 3 4 5 6 7
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.Q≡■ i ..+...
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00fl.
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01δ.L.
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FFJ.
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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 = f.Q≡■ i|..+...
 DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00fl.
 DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FFδ.L.
 DS:0020 FF EB 19 C0 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

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

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

AX 0010 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 >	1	0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.Q≡■ i ..+...
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00fl.
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01δ.L.
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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 = f.Q≡■ i|..+...
 DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00fl.
 DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FFδ.L.
 DS:0020 FF EB 19 C0 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

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

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

AX 0008 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7204	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 00 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	= f. R≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE ft.
DS:0010 18 01 10 01 18 01 92 01
DS:0020 FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7210	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 00 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	= f. R≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE ft.
DS:0010 18 01 10 01 18 01 92 01
DS:0020 FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 00 00 00 00 00 00 00 00

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.R=■ i. .+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.R=■ i. .+...
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 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

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

AX 0010 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 00 00 00 00 00 00 00

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.R=■ i. .+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.R=■ i. .+...
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0020 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7210
BX 0000 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 1 0 0

CMD >	1 0 1 2 3 4 5 6 ?
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡≡ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 0020 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 >	1 0 1 2 3 4 5 6 ?
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡≡ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 0020 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 00 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	= f.Ω≡≡ i .+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 FF EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00 00 00

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

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

AX 0040 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7210	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 1 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 00 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	= f.Ω≡≡ i .+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00 00 00

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

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

AX 0040 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7244
BX 0000 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 >	1 0 1 2 3 4 5 6 ?
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡≡ i .+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01δ. L.
DS:0020 FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0040 SI 0000 CS 19F5 IP 010B	Stack +0 0000 Flags 7244
BX 0000 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 >	1 0 1 2 3 4 5 6 ?
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
011A 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡≡ i .+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01δ. L.
DS:0020 FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 4C00 SI 0000 CS 19F5 IP 010E	Stack +0 0000 Flags 7244
BX 0000 DI 0000 DS 19F5	+2 00CD
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 > █
010B B8004C MOV AX,4C00
010E CD21 INT 21
0110 0000 ADD [BX+S1],AL
0112 0000 ADD [BX+S1],AL
0114 0000 ADD [BX+S1],AL
0116 0000 ADD [BX+S1],AL
0118 0000 ADD [BX+S1],AL
011A 0000 ADD [BX+S1],AL
011C 0000 ADD [BX+S1],AL

```

	1 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	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 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
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	01 01 01 00 02 FF FF FF	FF FF FF FF EB 19 C0 11	FF FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11	A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00	05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX 4C00 SI 0000 CS F000 IP 14A0	Stack +0 42BD Flags 7044
BX 0000 DI 0000 DS 19F5	+2 06C5
CX 0000 BP 0000 ES 19F5 HS 19F5	+4 7044 OF DF IF SF ZF AF PF CF
DX 0000 SP FFFF SS 19F5 FS 19F5	+6 0110 0 0 0 0 1 0 1 0

```

CMD >
010E CD21 INT 21
14A0 FB STI
14A1 FE DB FE
14A2 3825 CMP [DI],AH
14A4 00CF ADD BH,CL
14A6 CB RET Far
14A7 51 PUSH CX
14A8 B94001 MOV CX,0140
14AB EZFE LOOP 14AB

```

	1 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	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 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
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	01 01 01 00 02 FF FF FF	FF FF FF FF EB 19 C0 11	FF FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11	A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00	05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

Shift Arithmetic Right (SAR):

The operation of shift arithmetic right is to shift every bit one place to the right with a copy of the most significant bit left at the most significant place. The bit dropped from the right is caught in the carry basket. The sign bit is retained in this operation.

Code:

```

ASM sar.asm   X  ASM sal.asm

coal > ASM sar.asm
1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     sar ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

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

AX 0000 SI 0000 CS 19F5 IP 0100 Stack +0 0000 Flags 7202	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0010 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	[] 0 1 2 3 4 5 6 7
0100 B80400 MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1F8 SAR AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOV AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00
	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.2≡■ i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE 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 EB 19 C0 11 FF FF FF FF 00 00 00 00	
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	

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

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

AX 0004 SI 0000 CS 19F5 IP 0103	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0010 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0100 B80400 MOU AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOU CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1F8 SAR AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOU AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21 INT Z1	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SII],AL	DS:0038 FF FF FF 00 00 00 00 00 00
0112 0000 ADD [BX+SII],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i ..+...ft.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF 00 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0103 B90400 MOU CX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1F8 SAR AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF
010E CD21 INT Z1	DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SII],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SII],AL	DS:0038 FF FF FF 00 00 00 00 00 00
0114 0000 ADD [BX+SII],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i ..+...ft.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF 00 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0002 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7210
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 1 0 0

```

CMD >
0106 D1F8      SAR    AX,1
0108 49        DEC    CX
0109 75FB      JNZ    0106
010B B8004C    MOV    AX,4C00
010E CD21      INT    21
0110 0000      ADD    [BX+SI],AL
0112 0000      ADD    [BX+SI],AL
0114 0000      ADD    [BX+SI],AL
0116 0000      ADD    [BX+SI],AL

```

	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
DS:0010	18	01	10	01	18	01	92	01	01	01	01	00	02	FF	FF	FF
DS:0020	FF	EB	19	C0	11											
DS:0030	A2	01	14	00	18	00	F5	19	FF	FF	FF	FF	00	00	00	
DS:0040	05	00	00	00	00	00	00	00	00	00	00	00	00	00	00	

= f.Q≡≡ 4|..+...
.....ft.
.....δ.L.
6.....J.
.....

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

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

AX 0002 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

```

CMD >
0108 49        DEC    CX
0109 75FB      JNZ    0106
010B B8004C    MOV    AX,4C00
010E CD21      INT    21
0110 0000      ADD    [BX+SI],AL
0112 0000      ADD    [BX+SI],AL
0114 0000      ADD    [BX+SI],AL
0116 0000      ADD    [BX+SI],AL
0118 0000      ADD    [BX+SI],AL

```

	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
DS:0010	18	01	10	01	18	01	92	01	01	01	01	00	02	FF	FF	FF
DS:0020	FF	EB	19	C0	11											
DS:0030	A2	01	14	00	18	00	F5	19	FF	FF	FF	FF	00	00	00	
DS:0040	05	00	00	00	00	00	00	00	00	00	00	00	00	00	00	

= f.Q≡≡ 4|..+...
.....ft.
.....δ.L.
6.....J.
.....

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

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

AX 0002	SI 0000	CS 19F5	IP 0106	Stack +0 0000	Flags 7204
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0003	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 1 0

CMD >				1	0 1 2 3 4 5 6 7
0109 75FB	JNZ	0106	DS:0000	CD 20 FF 9F 00 EA F0 FE	
0106 D1F8	SAR	AX,1	DS:0008	AD DE 1B 05 C5 06 00 00	
0108 49	DEC	CX	DS:0010	18 01 10 01 18 01 92 01	
0109 75FB	JNZ	0106	DS:0018	01 01 01 00 02 FF FF FF	
010B B8004C	MOU	AX,4C00	DS:0020	FF FF FF FF EB 19 C0 11	
010E CD21	INT	21	DS:0028	FF FF FF FF EB 19 C0 11	
0110 0000	ADD	[BX+SI],AL	DS:0030	A2 01 14 00 18 00 F5 19	
0112 0000	ADD	[BX+SI],AL	DS:0038	FF FF FF FF 00 00 00 00	
0114 0000	ADD	[BX+SI],AL	DS:0040	05 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.Q≡■ i ..+...
DS:0010	18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.
DS:0020	FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00

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

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

AX 0001	SI 0000	CS 19F5	IP 0108	Stack +0 0000	Flags 7210
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0003	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 1 0

CMD >				1	0 1 2 3 4 5 6 7
0106 D1F8	SAR	AX,1	DS:0000	CD 20 FF 9F 00 EA F0 FE	
0108 49	DEC	CX	DS:0008	AD DE 1B 05 C5 06 00 00	
0109 75FB	JNZ	0106	DS:0010	18 01 10 01 18 01 92 01	
010B B8004C	MOU	AX,4C00	DS:0018	01 01 01 00 02 FF FF FF	
010E CD21	INT	21	DS:0020	FF FF FF FF EB 19 C0 11	
0110 0000	ADD	[BX+SI],AL	DS:0028	FF FF FF FF EB 19 C0 11	
0112 0000	ADD	[BX+SI],AL	DS:0030	A2 01 14 00 18 00 F5 19	
0114 0000	ADD	[BX+SI],AL	DS:0038	FF FF FF FF 00 00 00 00	
0116 0000	ADD	[BX+SI],AL	DS:0040	05 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.Q≡■ i ..+...
DS:0010	18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.
DS:0020	FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00

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

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

AX 0001 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >	
0106 49 DEC CX	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOU AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	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

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≡ 4 ..+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF,fl.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0001 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
0106 D1F8 SAR AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	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

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≡ 4 ..+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF,fl.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7255
BX 0000 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 1 1 1 1

CMD > []	1 0 1 2 3 4 5 6 7
0106 D1F8 SAR AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 0000 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7201
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 1

CMD > []	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 0000 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7201	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 0 0 1	
CX 0001 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD > 	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1F8 SAR AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.?= i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 11	FF 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:0040 05 00 00 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

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

AX 0000 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7254	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 1 1 1 0	
CX 0001 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD > 	1 0 1 2 3 4 5 6 7
0106 D1F8 SAR AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.?= i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 11	FF 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:0040 05 00 00 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

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

AX 0000 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7244	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF	+6 EA00 0 0 1 0 1 0 1 0
BX 0000 DI 0000 DS 19F5			
CX 0000 BP 0000 ES 19F5 HS 19F5			
DX 0000 SP FFFE SS 19F5 FS 19F5			

CMD > []	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT Z1	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	
DS:0010 18 01 10 01 18 01 92 01	
DS:0020 FF	
DS:0030 A2 01 14 00 18 00 F5 19	
DS:0040 05 00 00 00 00 00 00 00	

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

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

AX 0000 SI 0000 CS 19F5 IP 010B Stack +0 0000 Flags 7244	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF	+6 EA00 0 0 1 0 1 0 1 0
BX 0000 DI 0000 DS 19F5			
CX 0000 BP 0000 ES 19F5 HS 19F5			
DX 0000 SP FFFE SS 19F5 FS 19F5			

CMD > []	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT Z1	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
011A 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	
DS:0010 18 01 10 01 18 01 92 01	
DS:0020 FF	
DS:0030 A2 01 14 00 18 00 F5 19	
DS:0040 05 00 00 00 00 00 00 00	

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

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

AX 4C00	SI 0000	CS 19F5	IP 010E	Stack +0 0000	Flags 7244
BX 0000	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 0

CMD > []	1 0 1 2 3 4 5 6 7
010B B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+S1],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+S1],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+S1],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+S1],AL	DS:0028 FF FF FF EB 19 C0 11
0118 0000 ADD [BX+S1],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+S1],AL	DS:0038 FF FF FF FF 00 00 00 00
011C 0000 ADD [BX+S1],AL	DS:0040 05 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	= f.Ω≡≡ i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 4C00	SI 0000	CS F000	IP 14A0	Stack +0 42BD	Flags 7044
BX 0000	DI 0000	DS 19F5		+2 06C5	
CX 0000	BP 0000	ES 19F5	HS 19F5	+4 7044	OF DF IF SF ZF AF PF CF
DX 0000	SP FFF2	SS 19F5	FS 19F5	+6 0110	0 0 0 0 1 0 1 0

CMD > []	1 0 1 2 3 4 5 6 7
010E CD21 INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825 CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF ADD BH,CL	DS:0020 FF FF FF FF FF FF FF
14A6 CB RET Far	DS:0028 FF FF FF EB 19 C0 11
14A7 51 PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001 MOV CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB E2FE LOOP 14AB	DS:0040 05 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	= f.Ω≡≡ i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

Shift Arithmetic Left (SAL):

Shift arithmetic left is just another name for shift logical left.

Code:

ASM sal.asm X ASM ror.asm

```

coal > asm sal.asm
1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     sal ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

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

AX 0000	SI 0000	CS 19F5	IP 0100	Stack +0 0000	Flags 7202
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0010	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 0

CMD >		1 0 1 2 3 4 5 6 7
0100 B80100	MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400	MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1E0	SHL AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49	DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB	JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C	MOV AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21	INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000	ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
2 0 1 2 3 4 5 6 7	8 9 A B C D E F	DS:0040 05 00 00 00 00 00 00 00 00
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 FFfl.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0103 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0010 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0100 B80400 MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1E0 SHL AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOV AX,4C00	DS:0028 FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0112 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i .+...fl.δ. L.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0004 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0103 B90400 MOV CX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i .+...fl.δ. L.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7210
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 1 0 0

CMD > 		1 0 1 2 3 4 5 6 7
0106 D1E0	SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49	DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB	JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C	MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21	INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000	ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000	ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000	ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
0116 0000	ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡ i.+.+
DS:0000 CD 20 FF 9F 00 EA F0 FEf.
DS:0010 18 01 10 01 18 01 92 01d. L.
DS:0020 FF FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0 0

CMD > 		1 0 1 2 3 4 5 6 7
0108 49	DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB	JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C	MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21	INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000	ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0112 0000	ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000	ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000	ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
0118 0000	ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡ i.+.+
DS:0000 CD 20 FF 9F 00 EA F0 FEf.
DS:0010 18 01 10 01 18 01 92 01d. L.
DS:0020 FF FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7204	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡■ i ...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEft.
DS:0010 18 01 10 01 18 01 92 01	δ.L.
DS:0020 FF FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7210	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > 1	0 1 2 3 4 5 6 7
0106 D1E0 SHL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡■ i ...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEft.
DS:0010 18 01 10 01 18 01 92 01	δ.L.
DS:0020 FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >		1 0 1 2 3 4 5 6 ?
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00	
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01	
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF	
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF	
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11	
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00	
0118 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00	
	DS:0048 00 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		= f.Ω≡≡ i ..+...
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00fl.
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.
DS:0020 FF FF FF FF FF FF FF	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 00	6.....J.
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD >		1 0 1 2 3 4 5 6 ?
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0106 D1E0 SHL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00	
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01	
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF	
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF	
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11	
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00	
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00	
	DS:0048 00 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		= f.Ω≡≡ i ..+...
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00fl.
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.
DS:0020 FF FF FF FF FF FF FF	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 00	6.....J.
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0020 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7210
BX 0000 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 1 0 0

CMD > []	
0106 D1E0 SHL AX,1	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SII],AL	DS:0020 FF FF FF FF FF FF FF FF
0112 0000 ADD [BX+SII],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SII],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SII],AL	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

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	= f.Q== i ..+...
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FF FFd.L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0020 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 > []	
0108 49 DEC CX	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOU AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SII],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SII],AL	DS:0020 FF FF FF FF FF FF FF
0114 0000 ADD [BX+SII],AL	DS:0028 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SII],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SII],AL	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

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	= f.Q== i ..+...
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FFd.L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0020	SI 0000	CS 19F5	IP 0106	Stack +0 0000	Flags 7200
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0001	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 0

CMD > []				1 0 1 2 3 4 5 6 7
0109 75FB	JNZ	0106	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0106 D1E0	SHL	AX,1	DS:0008 AD DE 1B 05 C5 06 00 00	
0108 49	DEC	CX	DS:0010 18 01 10 01 18 01 92 01	
0109 75FB	JNZ	0106	DS:0018 01 01 01 00 02 FF FF FF	
010B B8004C	MOU	AX,4C00	DS:0020 FF FF FF FF FF FF FF FF	
010E CD21	INT	21	DS:0028 FF FF FF EB 19 C0 11	
0110 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0112 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0114 0000	ADD	[BX+SI],AL	DS:0040 05 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				1 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:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFft.		
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00		

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

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

AX 0040	SI 0000	CS 19F5	IP 0108	Stack +0 0000	Flags 7210
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0001	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 1 0 0 0

CMD > []				1 0 1 2 3 4 5 6 7
0106 D1E0	SHL	AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0108 49	DEC	CX	DS:0008 AD DE 1B 05 C5 06 00 00	
0109 75FB	JNZ	0106	DS:0010 18 01 10 01 18 01 92 01	
010B B8004C	MOU	AX,4C00	DS:0018 01 01 01 00 02 FF FF FF	
010E CD21	INT	21	DS:0020 FF FF FF FF FF FF FF FF	
0110 0000	ADD	[BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11	
0112 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0114 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0116 0000	ADD	[BX+SI],AL	DS:0040 05 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				1 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:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFft.		
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00		

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

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

AX 0040 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7244	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0000 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 ?
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡≡ i ..+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01δ. L.
DS:0020 FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0040 SI 0000 CS 19F5 IP 010B Stack +0 0000 Flags 7244	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0000 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > 1	0 1 2 3 4 5 6 ?
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
011A 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡≡ i ..+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01δ. L.
DS:0020 FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 4C00 SI 0000 CS 19F5 IP 010E Stack +0 0000 Flags 7244	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0000 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
010B B8004C MOU AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT Z1	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
011C 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡≡ i ..+...ft. δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 FF EB 19 C0 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

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

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

AX 4C00 SI 0000 CS F000 IP 14A0 Stack +0 42BD Flags 7044	+2 06C5
BX 0000 DI 0000 DS 19F5	+4 7044 OF DF IF SF ZF AF PF CF
CX 0000 BP 0000 ES 19F5 HS 19F5	+6 0110 0 0 0 0 1 0 1 0
DX 0000 SP FFF2 SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
010E CD21 INT Z1	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825 CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF ADD BH,CL	DS:0020 FF FF FF FF FF FF FF FF
14A6 CB RET Far	DS:0028 FF FF FF FF EB 19 C0 11
14A7 51 PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001 MOV CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB EZFE LOOP 14AB	DS:0040 05 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	= f.Ω≡≡ i ..+...ft. δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 FF EB 19 C0 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

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

Rotate Right (ROR):

In the rotate right operation, every bit moves one position to the right and the bit dropped from the right is inserted at the left. This bit is also copied into the carry flag.

Code:

```

ASM ror.asm X ASM rol.asm
coal > ASM ror.asm
1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     ror ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

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

AX 0000 SI 0000 CS 19F5 IP 0100 Stack +0 0000 Flags 7202	BX 0000 DI 0000 DS 19F5 +2 20CD	CX 0010 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 >			
0100 B004 MOV AL,04	0102 B104 MOV CL,04	0104 C0C808 ROR AL,08	0107 FEC9 DEC CL
0109 75F9 JNZ 0104	010B B8004C MOV AX,4C00	010E CD21 INT 21	0110 0000 ADD [BX+SI],AL
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	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	DS:0050 = f.Ω≡■ i ..+...	DS:0058ft.
DS:0058 FF FF FF FF FF FF FF	DS:0060 FF FF FF FF 00 00 00 00	DS:0068 6.....J.	DS:0070 δ. L.
DS:0070 00 00 00 00 00 00 00 00	DS:0078 00 00 00 00 00 00 00 00	DS:0080	DS:0088

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

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

AX 0004 SI 0000 CS 19F5 IP 0102 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0010 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
0100 B004 MOU AL,04	DS:0000 CD 20 FF 9F 00 EA F0 FE
0102 B104 MOU CL,04	DS:0008 AD DE 1B 05 C5 06 00 00
0104 CCC808 ROR AL,08	DS:0010 18 01 10 01 18 01 92 01
0107 FEC9 DEC CL	DS:0018 01 01 01 00 02 FF FF FF
0109 75F9 JNZ 0104	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOU AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21 INT Z1	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0112 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Q≡■ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 FF EB 19 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0104 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0004 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
0102 B104 MOU CL,04	DS:0000 CD 20 FF 9F 00 EA F0 FE
0104 CCC808 ROR AL,08	DS:0008 AD DE 1B 05 C5 06 00 00
0107 FEC9 DEC CL	DS:0010 18 01 10 01 18 01 92 01
0109 75F9 JNZ 0104	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF
010E CD21 INT Z1	DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡■ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0107	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD >									
0104 C0C808 ROR AL,08	1 0 1 2 3 4 5 6 ?								
0107 FEC9 DEC CL	DS:0000 CD 20 FF 9F 00 EA F0 FE								
0109 75F9 JNZ 0104	DS:0008 AD DE 1B 05 C5 06 00 00								
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01								
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF								
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF								
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11								
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19								
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00								
	DS:0040 05 00 00 00 00 00 00 00 00 00								
	DS:0048 00 00 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	= f.Ω≡≡ i ..+...								
DS:0010 18 01 10 01 18 01 92 01fl.								
DS:0020 FF FF FF FF FF FF FF	δ. L.								
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.								
DS:0040 05 00 00 00 00 00 00 00 00 00								

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

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

AX 0004 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD >									
0107 FEC9 DEC CL	1 0 1 2 3 4 5 6 ?								
0109 75F9 JNZ 0104	DS:0000 CD 20 FF 9F 00 EA F0 FE								
010B B8004C MOU AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00								
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01								
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF								
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF								
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11								
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19								
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00								
	DS:0040 05 00 00 00 00 00 00 00 00 00								
	DS:0048 00 00 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	= f.Ω≡≡ i ..+...								
DS:0010 18 01 10 01 18 01 92 01fl.								
DS:0020 FF FF FF FF FF FF FF	δ. L.								
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.								
DS:0040 05 00 00 00 00 00 00 00 00 00								

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

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

AX 0004 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD > []	1 0 1 2 3 4 5 6 7
0109 75F9 JNZ 0104	DS:0000 CD 20 FF 9F 00 EA F0 FE
0104 C0C808 ROR AL,08	DS:0008 AD DE 1B 05 C5 06 00 00
0107 FEC9 DEC CL	DS:0010 18 01 10 01 18 01 92 01
0109 75F9 JNZ 0104	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q== i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.Q== i ..+...
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FF FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0107	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD > []	1 0 1 2 3 4 5 6 7
0104 C0C808 ROR AL,08	DS:0000 CD 20 FF 9F 00 EA F0 FE
0107 FEC9 DEC CL	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75F9 JNZ 0104	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q== i ..+...ft. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.Q== i ..+...
DS:0010 18 01 10 01 18 01 92 01ft.
DS:0020 FF FF FF FF FF FF FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 EAO0 0 0 1 0 0 0 0 0 0

CMD >									
0107 FEC9	DEC	CL	1 0 1 2 3 4 5 6 7						
0109 75F9	JNZ	0104	DS:0000 CD 20 FF 9F 00 EA F0 FE						
010B B8004C	MOU	AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00						
010E CD21	INT	Z1	DS:0010 18 01 10 01 18 01 92 01						
0110 0000	ADD	[BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF						
0112 0000	ADD	[BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF						
0114 0000	ADD	[BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11						
0116 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19						
0118 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF 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.Q≡≡ i ..+...							
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.							
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00							

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

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

AX 0004 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7200
BX 0000 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 EAO0 0 0 1 0 0 0 0 0 0

CMD >									
0109 75F9	JNZ	0104	1 0 1 2 3 4 5 6 7						
0104 CEC808	ROR	AL,08	DS:0000 CD 20 FF 9F 00 EA F0 FE						
0107 FEC9	DEC	CL	DS:0008 AD DE 1B 05 C5 06 00 00						
0109 75F9	JNZ	0104	DS:0010 18 01 10 01 18 01 92 01						
010B B8004C	MOU	AX,4C00	DS:0018 01 01 01 00 02 FF FF FF						
010E CD21	INT	Z1	DS:0020 FF FF FF FF FF FF FF FF						
0110 0000	ADD	[BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11						
0112 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19						
0114 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF 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.Q≡≡ i ..+...							
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.							
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00							

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

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

AX 0004 SI 0000 CS 19F5 IP 0107	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 Z0CD
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 0

CMD >		1 0 1 2 3 4 5 6 7
0104 C0C808 ROR AL,08	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0107 FEC9 DEC CL	DS:0008 AD DE 1B 05 C5 06 00 00	
0109 75F9 JNZ 0104	DS:0010 18 01 10 01 18 01 92 01	
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF	
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF	
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11	
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0116 0000 ADD [BX+SI],AL	DS:0040 05 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		= f.Q≡■ i ..+...ft.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00	= f.Q≡■ i ..+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFft.
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11δ. 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 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 Z0CD
CX 0001 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 0

CMD >		1 0 1 2 3 4 5 6 7
0107 FEC9 DEC CL	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0109 75F9 JNZ 0104	DS:0008 AD DE 1B 05 C5 06 00 00	
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01	
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF	
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF	
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11	
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0118 0000 ADD [BX+SI],AL	DS:0040 05 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		= f.Q≡■ i ..+...ft.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00	= f.Q≡■ i ..+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFft.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11δ. 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 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 0104	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0109 75F9 JNZ 0104	DS:0000 CD 20 FF 9F 00 EA F0 FE
0104 C0C808 ROR AL,08	DS:0008 AD DE 1B 05 C5 06 00 00
0107 FEC9 DEC CL	DS:0010 18 01 10 01 18 01 92 01
0109 75F9 JNZ 0104	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ i ..+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0107	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0104 C0C808 ROR AL,08	DS:0000 CD 20 FF 9F 00 EA F0 FE
0107 FEC9 DEC CL	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75F9 JNZ 0104	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ i ..+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7244
BX 0000 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 >	
0107 FEC9 DEC CL	I 0 1 2 3 4 5 6 7
0109 75F9 JNZ 0104	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	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

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Q≡■ i ..+...ft.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 11	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:0040 05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX 0004 SI 0000 CS 19F5 IP 010B	Stack +0 0000 Flags 7244
BX 0000 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 75F9 JNZ 0104	I 0 1 2 3 4 5 6 7
010B B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	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

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Q≡■ i ..+...ft.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 11	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:0040 05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX 4C00 SI 0000 CS 19F5 IP 010E	Stack +0 0000 Flags 7244
BX 0000 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 >	0 1 2 3 4 5 6 7
010B B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
011C 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡≡ i .+...ft. δ. L. 6....J.
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 FFft.
DS:0020 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 00 00

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

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

AX 4C00 SI 0000 CS F000 IP 14A0	Stack +0 42BD Flags 7044
BX 0000 DI 0000 DS 19F5	+2 06C5
CX 0000 BP 0000 ES 19F5 HS 19F5	+4 7044 OF DF IF SF ZF AF PF CF
DX 0000 SP FFF2 SS 19F5 FS 19F5	+6 0110 0 0 0 0 1 0 1 0

CMD >	0 1 2 3 4 5 6 7
010E CD21 INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825 CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF ADD BH,CL	DS:0020 FF FF FF FF FF FF FF FF
14A6 CB RET Far	DS:0028 FF FF FF EB 19 C0 11
14A7 51 PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001 MOV CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB E2FE LOOP 14AB	DS:0040 05 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	= f.Ω≡≡ i .+...ft. δ. L. 6....J.
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 FFft.
DS:0020 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 00 00

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

Rotate Left (ROL):

In the operation of rotate left instruction, the most significant bit is copied to the carry flag and is inserted from the right, causing every bit to move one position to the left.

Code:

coal > [ASM](#) rol.asm X [ASM](#) rcr.asm

```

1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     rol ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

DOSBox 0.74-3, Cpu speed: 3000 cycles, Frameskip 0, Program: AFD - [X](#)

AX 0000	SI 0000	CS 19F5	IP 0100	Stack +0 0000	Flags 7202
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0010	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 0

CMD > █	1 0 1 2 3 4 5 6 7
0100 B80400 MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1C0 ROL AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOV AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	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

2 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡■ i ...+....
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0103	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0010 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 0

CMD >	1 0 1 2 3 4 5 6 7
0100 B80400 MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1C0 ROL AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF EB 19 C0 11
010B B8004C MOV AX,4C00	DS:0028 FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0112 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Q≡≡ i ..+...fl.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD >	1 0 1 2 3 4 5 6 7
0103 B90400 MOV CX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1C0 ROL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡≡ i ..+...fl.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0008 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD >	1 0 1 2 3 4 5 6 7
0106 D1C0 ROL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡■ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0008 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD >	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡■ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0000 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7204	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >		1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.Q≡■ i ..+...
0106 D1C0 ROL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00fl.
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01δ. L.
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FFJ.
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11	
0110 0000 ADD [BX+SII],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0112 0000 ADD [BX+SII],AL	DS:0038 FF FF FF FF 00 00 00 00	
0114 0000 ADD [BX+SII],AL	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

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

AX 0010 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7204	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >		1 0 1 2 3 4 5 6 7
0106 D1C0 ROL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE	= f.Q≡■ i ..+...
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00fl.
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01δ. L.
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FFJ.
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SII],AL	DS:0028 FF FF FF FF EB 19 C0 11	
0112 0000 ADD [BX+SII],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0114 0000 ADD [BX+SII],AL	DS:0038 FF FF FF FF 00 00 00 00	
0116 0000 ADD [BX+SII],AL	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

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

AX 0010 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7200	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0	
CX 0002 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD >	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i .+...fl.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	
DS:0010 18 01 10 01 18 01 92 01	
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 00	
DS:0040 05 00 00 00 00 00 00 00 00	
DS:0048 00 00 00 00 00 00 00 00 00	

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

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

AX 0010 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7200	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF
BX 0000 DI 0000 DS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0	
CX 0002 BP 0000 ES 19F5 HS 19F5		
DX 0000 SP FFFE SS 19F5 FS 19F5		

CMD >	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1C0 ROL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ i .+...fl.δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	
DS:0010 18 01 10 01 18 01 92 01	
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 00	
DS:0040 05 00 00 00 00 00 00 00 00	
DS:0048 00 00 00 00 00 00 00 00 00	

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

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

AX 0020 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0106 D1C0 ROL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡ i .+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0020 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡ i .+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0020 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

```

CMD >■
0109 75FB JNZ 0106
0106 D1C0 ROL AX,1
0108 49 DEC CX
0109 75FB JNZ 0106
010B B8004C MOV AX,4C00
010E CD21 INT 21
0110 0000 ADD [BX+SI],AL
0112 0000 ADD [BX+SI],AL
0114 0000 ADD [BX+SI],AL

```

1	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.Q≡■ i ..+...						
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.						
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11δ. 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 00 00						

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

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

AX 0040 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

```

CMD >
0106 D1C0 ROL AX,1
0108 49 DEC CX
0109 75FB JNZ 0106
010B B8004C MOV AX,4C00
010E CD21 INT 21
0110 0000 ADD [BX+SI],AL
0112 0000 ADD [BX+SI],AL
0114 0000 ADD [BX+SI],AL
0116 0000 ADD [BX+SI],AL

```

1	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.Q≡■ i ..+...						
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.						
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11δ. 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 00 00						

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

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

AX 0040 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7244
BX 0000 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 >	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT Z1	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f. R≡■ i . + f. δ. L. J.
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00	= f. R≡■ i . + ...
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF f.
DS:0020 FF FF FF FF FF FF EB 19 C0 11 δ. L.
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00 J.
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

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

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

AX 0040 SI 0000 CS 19F5 IP 010B	Stack +0 0000 Flags 7244
BX 0000 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 > 1	0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT Z1	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
011A 0000 ADD [BX+SI],AL	DS:0040 05 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	= f. R≡■ i . + f. δ. L. J.
DS:0000 CD 20 FF 9F 00 EA F0 FE AD DE 1B 05 C5 06 00 00	= f. R≡■ i . + ...
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF f.
DS:0020 FF FF FF FF FF FF EB 19 C0 11 δ. L.
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF FF 00 00 00 00 J.
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

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

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

AX 4C00	SI 0000	CS 19F5	IP 010E	Stack +0 0000	Flags 7244
BX 0000	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 >	1 0 1 2 3 4 5 6 7
010B B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
011C 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 00 00 00 00 00 00 00

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Q≡■ i...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEft.
DS:0010 18 01 10 01 18 01 92 01	δ.L.
DS:0020 FF FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 4C00	SI 0000	CS F000	IP 14A0	Stack +0 42BD	Flags 7044
BX 0000	DI 0000	DS 19F5		+2 06C5	
CX 0000	BP 0000	ES 19F5	HS 19F5	+4 7044	OF DF IF SF ZF AF PF CF
DX 0000	SP FFF2	SS 19F5	FS 19F5	+6 0110	0 0 0 0 1 0 1 0

CMD > 1	0 1 2 3 4 5 6 7
010E CD21 INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825 CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF ADD BH,CL	DS:0020 FF FF FF FF FF FF FF FF
14A6 CB RET Far	DS:0028 FF FF FF FF EB 19 C0 11
14A7 51 PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001 MOU CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB EZFE LOOP 14AB	DS:0040 05 00 00 00 00 00 00 00
	DS:0048 00 00 00 00 00 00 00 00

Z 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Q≡■ i...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEft.
DS:0010 18 01 10 01 18 01 92 01	δ.L.
DS:0020 FF FF FF FF FF FF FF FF	6.....J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

Rotate Through Carry Right (RCR):

In the rotate through carry right instruction, the carry flag is inserted from the left, every bit moves one position to the right, and the right most bit is dropped in the carry flag.

Code:

coal > rcr.asm

```

1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     rcr ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

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

	AX	SI	CS	IP	Stack	Flags
0100	0000	0000	19F5	0100	+0 0000	7202
0103	B90400	MOU	AX,0004		+2 20CD	
0106	D1D8	RCR	AX,1		+4 9FFF	OF DF IF SF ZF AF PF CF
0108	49	DEC	CX		+6 EA00	0 0 1 0 0 0 0 0
0109	75FB	JNZ	0106			
010B	B8004C	MOU	AX,4C00			
010E	CD21	INT	21			
0110	0000	ADD	[BX+SI],AL			

	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
DS:0010	18	01	10	01	18	01	92	01	01	01	01	00	02	FF	FF	FF
DS:0020	FF	EB	19	C0												
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	FF	FF	FF	FF	00	00	00	00
DS:0048	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

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

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

AX 0004 SI 0000 CS 19F5 IP 0103	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0010 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 0 0 0 0

CMD >	1 0 1 2 3 4 5 6 7
0100 B80400 MOV AX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0103 B90400 MOV CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00
0106 D1D8 RCR AX,1	DS:0010 18 01 10 01 18 01 92 01
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
0109 75FB JNZ 0106	DS:0020 FF FF FF FF FF FF FF FF
010B B8004C MOV AX,4C00	DS:0028 FF FF FF EB 19 C0 11
010E CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0110 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00
0112 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 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	= f.Ω≡■ i ...+...fl. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0004 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0 0 0 0

CMD >	1 0 1 2 3 4 5 6 7
0103 B90400 MOV CX,0004	DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1D8 RCR AX,1	DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106	DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF
010E CD21 INT 21	DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00
0114 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 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	= f.Ω≡■ i ...+...fl. δ. L. 6....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 EB 19 C0 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

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

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

AX 0002 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0004 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0106 D1D8 RCR AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡≡ i ..+...ft. δ. L. 6.....J.
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 FFft.
DS:0020 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 00 00

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

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

AX 0002 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7204	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0003 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 1 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00
0118 0000 ADD [BX+SI],AL	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	= f.Ω≡≡ i ..+...ft. δ. L. 6.....J.
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 FFft.
DS:0020 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 00 00

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

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

AX 0002	SI 0000	CS 19F5	IP 0106	Stack +0 0000	Flags 7204
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0003	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 1 0

CMD >				1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106				DS:0000 CD 20 FF 9F 00 EA F0 FE
0106 D1D8 RCR AX,1				DS:0008 AD DE 1B 05 C5 06 00 00
0108 49 DEC CX				DS:0010 18 01 10 01 18 01 92 01
0109 75FB JNZ 0106				DS:0018 01 01 01 00 02 FF FF FF
010B B8004C MOU AX,4C00				DS:0020 FF FF FF FF FF FF FF FF
010E CD21 INT 21				DS:0028 FF FF FF EB 19 C0 11
0110 0000 ADD [BX+SI],AL				DS:0030 A2 01 14 00 18 00 F5 19
0112 0000 ADD [BX+SI],AL				DS:0038 FF FF FF 00 00 00 00 00
0114 0000 ADD [BX+SI],AL				DS:0040 05 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				1 0 1 2 3 4 5 6 7
DS:0000 CD 20 FF 9F 00 EA F0 FE				DS:0000 CD 20 FF 9F 00 EA F0 FE
DS:0010 18 01 10 01 18 01 92 01				DS:0008 AD DE 1B 05 C5 06 00 00
DS:0020 FF FF FF FF FF FF FF FF				DS:0010 18 01 10 01 18 01 92 01
DS:0030 A2 01 14 00 18 00 F5 19				DS:0018 01 01 01 00 02 FF FF FF
DS:0040 05 00 00 00 00 00 00 00				DS:0020 FF FF FF FF FF FF FF
				DS:0028 FF FF FF EB 19 C0 11
				DS:0030 A2 01 14 00 18 00 F5 19
				DS:0038 FF FF FF 00 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 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 7 up 8 dn 9 le 10 ri

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

AX 0001	SI 0000	CS 19F5	IP 0108	Stack +0 0000	Flags 7204
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0003	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 1 0

CMD >				1 0 1 2 3 4 5 6 7
0106 D1D8 RCR AX,1				DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX				DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106				DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00				DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21				DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL				DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL				DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL				DS:0038 FF FF FF 00 00 00 00 00
0116 0000 ADD [BX+SI],AL				DS:0040 05 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				1 0 1 2 3 4 5 6 7
DS:0000 CD 20 FF 9F 00 EA F0 FE				DS:0000 CD 20 FF 9F 00 EA F0 FE
DS:0010 18 01 10 01 18 01 92 01				DS:0008 AD DE 1B 05 C5 06 00 00
DS:0020 FF FF FF FF FF FF FF				DS:0010 18 01 10 01 18 01 92 01
DS:0030 A2 01 14 00 18 00 F5 19				DS:0018 01 01 01 00 02 FF FF FF
DS:0040 05 00 00 00 00 00 00 00				DS:0020 FF FF FF FF FF FF
				DS:0028 FF FF FF EB 19 C0 11
				DS:0030 A2 01 14 00 18 00 F5 19
				DS:0038 FF FF FF 00 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 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 7 up 8 dn 9 le 10 ri

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

AX 0001 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD > []	
0108 49 DEC CX	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOU AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT Z1	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0001 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD > []	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
0106 D1D8 RCR AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOU AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT Z1	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7201
BX 0000 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 1

CMD >	
0106 D1D8 RCR AX,1	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7201
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0001 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 1

CMD > 1	
0108 49 DEC CX	0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOU AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0106 Stack +0 0000 Flags 7201	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 1
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
0106 D1D8 RCR AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	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

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. R≡■ i .+...
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 EB 19 C0 11 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 00 00

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

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

AX 8000 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7A00	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 1 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >■	
0106 D1D8 RCR AX,1	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	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

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. R≡■ i .+...
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 EB 19 C0 11 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 00 00

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

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

AX 8000 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7244	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5			
CMD >			
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE	1 0 1 2 3 4 5 6 7	
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00		
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01		
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF		
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF		
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11		
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19		
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00		
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ i .+...ft.J.		
DS:0000 CD 20 FF 9F 00 EA F0 FE 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			
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF EB 19 C0 11			
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 7 up 8 dn 9 le 10 ri			

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

AX 8000 SI 0000 CS 19F5 IP 010B Stack +0 0000 Flags 7244	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5			
CMD >			
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE	1 0 1 2 3 4 5 6 7	
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00		
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01		
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF		
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF		
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11		
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19		
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00		
011A 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ i .+...ft.J.		
DS:0000 CD 20 FF 9F 00 EA F0 FE 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			
DS:0030 A2 01 14 00 18 00 F5 19 FF FF FF EB 19 C0 11			
DS:0040 05 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00			
1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 7 up 8 dn 9 le 10 ri			

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

AX 4C00 SI 0000 CS 19F5 IP 010E	Stack +0 0000 Flags 7244
BX 0000 DI 0000 DS 19F5	+2 00CD
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 >	1 0 1 2 3 4 5 6 7
010B B8004C MOU AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SII],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SII],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SII],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+SII],AL	DS:0028 FF FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SII],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SII],AL	DS:0038 FF FF FF FF 00 00 00 00
011C 0000 ADD [BX+SII],AL	DS:0040 05 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	= f.Ω≡≡ i .+...fl. δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

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

AX 4C00 SI 0000 CS F000 IP 14A0	Stack +0 42BD Flags 7044
BX 0000 DI 0000 DS 19F5	+2 06C5
CX 0000 BP 0000 ES 19F5 HS 19F5	+4 7044 OF DF IF SF ZF AF PF CF
DX 0000 SP FFF2 SS 19F5 FS 19F5	+6 0110 0 0 0 0 1 0 1 0

CMD >	1 0 1 2 3 4 5 6 7
010E CD21 INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825 CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF ADD BH,CL	DS:0020 FF FF FF FF FF FF FF
14A6 CB RET Far	DS:0028 FF FF FF FF EB 19 C0 11
14A7 51 PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001 MOU CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB EZFE LOOP 14AB	DS:0040 05 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	= f.Ω≡≡ i .+...fl. δ. L. 6.....J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 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

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

Rotate Through Carry Left (RCL):

The exact opposite of rotate through carry right instruction is the rotate through carry left instruction. In its operation the carry flag is inserted from the right causing every bit to move one location to its left and the most significant bit occupying the carry flag.

Code:

```

ASM rcl.asm X
coal > ASH|rcl.asm
1 [org 0x0100]
2
3 mov ax , 4
4
5 mov cx , 4
6
7 ok:
8     rcl ax , 1
9     dec cx
10    jnz ok
11
12 mov ax , 0x4c00
13 int 0x21
14

```

Output:

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

AX 0000 SI 0000 CS 19F5 IP 0100 Stack +0 0000 Flags 7202	DX 0000 DI 0000 DS 19F5 +2 20CD	CX 0010 BP 0000 ES 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 0
CMD >			
0100 B80400 MOV AX,0004	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
0103 B90400 MOV CX,0004	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 EB 19 C0 11
0106 D1D0 RCL AX,1	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
0108 49 DEC CX	DS:0048 00 00 00 00 00 00 00 00	DS:0040 05 00 00 00 00 00 00 00	DS:0048 00 00 00 00 00 00 00 00
0109 75FB JNZ 0106	DS:0040 05 00 00 00 00 00 00 00	DS:0048 00 00 00 00 00 00 00 00	DS:0040 05 00 00 00 00 00 00 00
010B B8004C MOV AX,4C00	DS:0048 00 00 00 00 00 00 00 00	DS:0040 05 00 00 00 00 00 00 00	DS:0048 00 00 00 00 00 00 00 00
010E CD21 INT 21	DS:0040 05 00 00 00 00 00 00 00	DS:0048 00 00 00 00 00 00 00 00	DS:0040 05 00 00 00 00 00 00 00
0110 0000 ADD [BX+SI],AL	DS:0048 00 00 00 00 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 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 up 7 dn 8 le 9 ri

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

AX 0004 SI 0000 CS 19F5 IP 0103	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0010 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 0

CMD > []															
0100 B80400 MOU AX,0004	1 0 1 2 3 4 5 6 7	DS:0000 CD 20 FF 9F 00 EA F0 FE	= f. R≡≡ i .+...												
0103 B90400 MOU CX,0004	DS:0008 AD DE 1B 05 C5 06 00 00	DS:0010 18 01 10 01 18 01 92 01ft.												
0106 D1D0 RCL AX,1	DS:0018 01 01 01 00 02 FF FF FF	DS:0020 FF FF FF FF FF FF FF FF	δ. L.												
0108 49 DEC CX	DS:0028 FF FF FF FF EB 19 C0 11	DS:0030 A2 01 14 00 18 00 F5 19	6.....J.												
0109 75FB JNZ 0106	DS:0038 FF FF FF FF 00 00 00 00	DS:0040 05 00 00 00 00 00 00 00												
010B B8004C MOU AX,4C00	DS:0048 00 00 00 00 00 00 00 00														
010E CD21 INT 21															
0110 0000 ADD [BX+SI],AL															
0112 0000 ADD [BX+SI],AL															

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

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

AX 0004 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD > []															
0103 B90400 MOU CX,0004	1 0 1 2 3 4 5 6 7	DS:0000 CD 20 FF 9F 00 EA F0 FE	= f. R≡≡ i .+...												
0106 D1D0 RCL AX,1	DS:0008 AD DE 1B 05 C5 06 00 00	DS:0010 18 01 10 01 18 01 92 01ft.												
0108 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF	DS:0020 FF FF FF FF FF FF FF FF	δ. L.												
0109 75FB JNZ 0106	DS:0028 FF FF FF FF EB 19 C0 11	DS:0030 A2 01 14 00 18 00 F5 19	6.....J.												
010B B8004C MOU AX,4C00	DS:0038 FF FF FF FF 00 00 00 00	DS:0040 05 00 00 00 00 00 00 00												
010E CD21 INT 21	DS:0048 00 00 00 00 00 00 00 00														
0110 0000 ADD [BX+SI],AL															
0112 0000 ADD [BX+SI],AL															
0114 0000 ADD [BX+SI],AL															

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 = f. R≡≡ i | .+... DS:0010 18 01 10 01 18 01 92 01ft. 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 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 [] 7 up 8 dn 9 le 10 ri

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

AX 0008 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7200
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0004 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 0

CMD > []	1 0 1 2 3 4 5 6 7
0106 D1D0 RCL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00 00
0116 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Q≡■ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD > []	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0118 0000 ADD [BX+SI],AL	DS:0040 05 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	= f.Q≡■ i ..+...fl.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00 00

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

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

AX 0008 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD >	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
0106 D1D0 RCL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
	DS:0040 05 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	= f.Q≡■ : ...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEft.
DS:0010 18 01 10 01 18 01 92 01δ. L.
DS:0020 FF FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0108	Stack +0 0000 Flags 7204
BX 0000 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 0

CMD >■	
0106 D1D0 RCL AX,1	1 0 1 2 3 4 5 6 7
0108 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
0109 75FB JNZ 0106	DS:0008 AD DE 1B 05 C5 06 00 00
010B B8004C MOV AX,4C00	DS:0010 18 01 10 01 18 01 92 01
010E CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0114 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0116 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
	DS:0040 05 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	= f.Q≡■ : ...+...
DS:0000 CD 20 FF 9F 00 EA F0 FEft.
DS:0010 18 01 10 01 18 01 92 01δ. L.
DS:0020 FF FF FF FF FF FF FFJ.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0109	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD > []	
0108 49 DEC CX	1 0 1 2 3 4 5 6 7
0109 75FB JNZ 0106	DS:0000 CD 20 FF 9F 00 EA F0 FE
010B B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
010E CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0110 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0112 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0116 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0118 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00
	DS:0040 05 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
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0010 SI 0000 CS 19F5 IP 0106	Stack +0 0000 Flags 7200
BX 0000 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 0

CMD > []	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
0106 D1D0 RCL AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0108 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00
0109 75FB JNZ 0106	DS:0010 18 01 10 01 18 01 92 01
010B B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF
010E CD21 INT 21	DS:0020 FF FF FF FF FF FF FF
0110 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0112 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0114 0000 ADD [BX+SI],AL	DS:0038 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

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
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11 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 00 00

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

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

AX 0020 SI 0000 CS 19F5 IP 0108 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0002 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > █ <pre> 0106 D1D0 RCL AX,1 0108 49 DEC CX 0109 75FB JNZ 0106 010B B8004C MOV AX,4C00 010E CD21 INT 21 0110 0000 ADD [BX+SI],AL 0112 0000 ADD [BX+SI],AL 0114 0000 ADD [BX+SI],AL 0116 0000 ADD [BX+SI],AL </pre>	<table border="0" style="width: 100%;"> <tr><td style="width: 10%;">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>F0</td><td>FE</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>EB</td><td>19</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: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> </table> <table border="0" style="width: 100%;"> <tr><td style="width: 10%;">2</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>F0</td><td>FE</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: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: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: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> </table>	1	0	1	2	3	4	5	6	7	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	EB	19	DS:0030	A2	01	14	00	18	00	F5	19	DS:0040	05	00	00	00	00	00	00	00	2	0	1	2	3	4	5	6	7	DS:0000	CD	20	FF	9F	00	EA	F0	FE	DS:0010	18	01	10	01	18	01	92	01	DS:0020	FF	DS:0030	A2	01	14	00	18	00	F5	19	DS:0040	05	00	00	00	00	00	00	00							
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█ Step █ ProcStep █ Retrieve █ Help ON █ BRK Menu █ 6 █ up █ dn █ le █ ri █

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

AX 0020 SI 0000 CS 19F5 IP 0109 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > █ <pre> 0108 49 DEC CX 0109 75FB JNZ 0106 010B B8004C MOV AX,4C00 010E CD21 INT 21 0110 0000 ADD [BX+SI],AL 0112 0000 ADD [BX+SI],AL 0114 0000 ADD [BX+SI],AL 0116 0000 ADD [BX+SI],AL 0118 0000 ADD [BX+SI],AL </pre>	<table border="0" style="width: 100%;"> <tr><td style="width: 10%;">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>F0</td><td>FE</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: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: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> </table> <table border="0" style="width: 100%;"> <tr><td style="width: 10%;">2</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>F0</td><td>FE</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: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: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: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> </table>	1	0	1	2	3	4	5	6	7	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	DS:0030	A2	01	14	00	18	00	F5	19	DS:0040	05	00	00	00	00	00	00	00	2	0	1	2	3	4	5	6	7	DS:0000	CD	20	FF	9F	00	EA	F0	FE	DS:0010	18	01	10	01	18	01	92	01	DS:0020	FF	DS:0030	A2	01	14	00	18	00	F5	19	DS:0040	05	00	00	00	00	00	00	00														
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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:0030	A2	01	14	00	18	00	F5	19																																																																																																																							
DS:0040	05	00	00	00	00	00	00	00																																																																																																																							
2	0	1	2	3	4	5	6	7																																																																																																																							
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DS:0040	05	00	00	00	00	00	00	00																																																																																																																							

█ Step █ ProcStep █ Retrieve █ Help ON █ BRK Menu █ 6 █ up █ dn █ le █ ri █

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

AX 0020	SI 0000	CS 19F5	IP 0106	Stack +0 0000	Flags 7200
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0001	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 0

CMD > []				1 0 1 2 3 4 5 6 7
0109 75FB	JNZ	0106	DS:0000 CD 20 FF 9F 00 EA F0 FE	
010A D1D0	RCL	AX,1	DS:0008 AD DE 1B 05 C5 06 00 00	
010B 49	DEC	CX	DS:0010 18 01 10 01 18 01 92 01	
0109 75FB	JNZ	0106	DS:0018 01 01 01 00 02 FF FF FF	
010B B8004C	MOV	AX,4C00	DS:0020 FF FF FF FF FF FF FF FF	
010E CD21	INT	Z1	DS:0028 FF FF FF EB 19 C0 11	
0110 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0112 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0114 0000	ADD	[BX+SI],AL	DS:0040 05 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. R≡≡ i .+...		
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.		
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00		

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

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

AX 0040	SI 0000	CS 19F5	IP 0108	Stack +0 0000	Flags 7200
BX 0000	DI 0000	DS 19F5		+2 20CD	
CX 0001	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 0

CMD > []				1 0 1 2 3 4 5 6 7
0106 D1D0	RCL	AX,1	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0108 49	DEC	CX	DS:0008 AD DE 1B 05 C5 06 00 00	
0109 75FB	JNZ	0106	DS:0010 18 01 10 01 18 01 92 01	
010B B8004C	MOV	AX,4C00	DS:0018 01 01 01 00 02 FF FF FF	
010E CD21	INT	Z1	DS:0020 FF FF FF FF FF FF FF FF	
0110 0000	ADD	[BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11	
0112 0000	ADD	[BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0114 0000	ADD	[BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0116 0000	ADD	[BX+SI],AL	DS:0040 05 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. R≡≡ i .+...		
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.		
DS:0020 FF FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00		

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

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

AX 0040 SI 0000 CS 19F5 IP 010B Stack +0 0000 Flags 7244	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0000 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	
0109 75FB JNZ 0106	1 0 1 2 3 4 5 6 7
010B B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
010E CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0110 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0112 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0114 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0118 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011A 0000 ADD [BX+SI],AL	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

2 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡■ i .+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	
DS:0010 18 01 10 01 18 01 92 01	
DS:0020 FF FF FF FF FF FF FF FF	
DS:0030 A2 01 14 00 18 00 F5 19	
DS:0040 05 00 00 00 00 00 00 00	

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

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

AX 4C00 SI 0000 CS 19F5 IP 010E Stack +0 0000 Flags 7244	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0000 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 0 1 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	
010B B8004C MOV AX,4C00	1 0 1 2 3 4 5 6 7
010E CD21 INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
0110 0000 ADD [BX+SI],AL	DS:0008 AD DE 1B 05 C5 06 00 00
0112 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0114 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0116 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0118 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
011A 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
011C 0000 ADD [BX+SI],AL	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

2 0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡■ i .+...ft.J.
DS:0000 CD 20 FF 9F 00 EA F0 FE	
DS:0010 18 01 10 01 18 01 92 01	
DS:0020 FF FF FF FF FF FF FF FF	
DS:0030 A2 01 14 00 18 00 F5 19	
DS:0040 05 00 00 00 00 00 00 00	

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

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

AX 4C00	SI 0000	CS F000	IP 14A0	Stack +0 42BD	Flags 7044
BX 0000	DI 0000	DS 19F5		+2 06C5	
CX 0000	BP 0000	ES 19F5	HS 19F5	+4 7044	OF DF IF SF ZF AF PF CF
DX 0000	SP FFF2	SS 19F5	FS 19F5	+6 0110	0 0 0 0 1 0 1 0

CMD >		1 0 1 2 3 4 5 6 7
010E CD21	INT 21	DS:0000 CD 20 FF 9F 00 EA F0 FE
14A0 FB	STI	DS:0008 AD DE 1B 05 C5 06 00 00
14A1 FE	DB FE	DS:0010 18 01 10 01 18 01 92 01
14A2 3825	CMP [DI],AH	DS:0018 01 01 01 00 02 FF FF FF
14A4 00CF	ADD BH,CL	DS:0020 FF FF FF FF FF FF FF FF
14A6 CB	RET Far	DS:0028 FF FF FF FF EB 19 C0 11
14A7 51	PUSH CX	DS:0030 A2 01 14 00 18 00 F5 19
14A8 B94001	MOV CX,0140	DS:0038 FF FF FF FF 00 00 00 00
14AB EZFE	LOOP 14AB	DS:0040 05 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	= f.Ω≡≡ i .+...
DS:0000 CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00ft.
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	6.....J.
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

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

Multiplication:

First we initialize multiplicand by 13 in db in 8 bit because we need to multiply by 4 bit number so the result will be in 8 bits and we will also initialize multiplier by 5. Now we need to apply this loop 4 times to move cl to 4 .Now we will move multiplicand value to bl and multiplier to dl .Now loop will start and shr dl, mean will start the revolution so that right bit will move to carry flag if the carry flag do not set then shift to next bit and if set then add to result after the loop is completed the decrement cl and jump to loop again so that it will run again.

Code:

```

ASM mul.asm  X

coal > ASM mul.asm
1  [org 0x0100]
2
3  jmp start
4
5  num1: db 13
6  num2: db 5
7
8  result: dw 0
9
10
11 start:
12     mov al , [num1]
13     mov bl , [num2]
14     mov cx , 4
15
16
17     check:
18         shr al , 1
19         jnc ok
20         add [result] , al
21
22     ok:
23         shl bl , 1
24         dec cx
25         jnz check
26
27     mov ax , 0x4c00
28     int 0x21
29

```

Output:

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

AX 0000 SI 0000 CS 19F5 IP 0100 Stack +0 0000 Flags 7202	+2 20CD	+4 9FFF OF DF IF SF ZF AF PF CF	+6 EA00 0 0 1 0 0 0 0 0 0
BX 0000 DI 0000 DS 19F5			
CX 0023 BP 0000 ES 19F5 HS 19F5			
DX 0000 SP FFFE SS 19F5 FS 19F5			
CMD >			
0100 E90400	JMP	0107	
0103 0D0500	OR	AX,0005	
0106 00A00301	ADD	[0103+BX+SI],AH	
010A 8A1E0401	MOV	BL,[0104]	
010E B90400	MOV	CX,0004	
0111 D0E8	SHR	AL,1	
0113 7304	JNC	0119	
0115 00060501	ADD	[0105],AL	
1	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		
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			
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 FFfl.	
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00	
1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 up 7 dn 8 le 9 ri			

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

AX 0000 SI 0000 CS 19F5 IP 0107 Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0023 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []		OD-
0100 E90400	JMP 0107	
0107 A00301	MOU AL,[0103]	
010A 8A1E0401	MOU BL,[0104]	
010E B90400	MOU CX,0004	
0111 D0E8	SHR AL,1	
0113 7304	JNC 0119	
0115 00060501	ADD [0105],AL	
0119 D0E3	SHL BL,1	
011B 49	DEC CX	

[]		1 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.R≡■ 4 ...+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00	δ.....J.
DS:0040 05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 010A Stack +0 0000 Flags 7200	+2 20CD
BX 0000 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0023 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > []		OD-
0107 A00301	MOU AL,[0103]	
010A 8A1E0401	MOU BL,[0104]	
010E B90400	MOU CX,0004	
0111 D0E8	SHR AL,1	
0113 7304	JNC 0119	
0115 00060501	ADD [0105],AL	
0119 D0E3	SHL BL,1	
011B 49	DEC CX	
011C 75F3	JNZ 0111	

[]		1 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.R≡■ 4 ...+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFfl.
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF FF 00 00 00 00	δ.....J.
DS:0040 05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX 000D	SI 0000	CS 19F5	IP 010E	Stack +0 0000	Flags 7200
BX 0005	DI 0000	DS 19F5		+2 20CD	
CX 0023	BP 0000	ES 19F5	HS 19F5	+4 9FFF	OF DF IF SF ZF AF FF CF
DX 0000	SP FFFE	SS 19F5	FS 19F5	+6 EA00	0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0

CMD >

010A BA1E0401	MOV BL,[0104]
010E B90400	MOV CX,0004
0111 D0E8	SHR AL,1
0113 7304	JNC 0119
0115 00060501	ADD [0105],AL
0119 D0E3	SHL BL,1
011B 49	DEC CX
011C 75F3	JNZ 0111
011E B8004C	MOV AX,4C00

1 0 1 2 3 4 5 6 7
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 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

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. 0≡■ i | .+...
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 02 FF FF FF, f.
DS:0020 FF FF FF FF FF FF FF FF EB 19 C0 11 J.
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 00 00

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

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

AX 000D	SI 0000	CS 19F5	IP 0111	Stack +0 0000	Flags 7200
BX 0005	DI 0000	DS 19F5		+2 20CD	
CX 0004	BP 0000	ES 19F5	HS 19F5	+4 9FFF	OF DF IF SF ZF AF FF CF
DX 0000	SP FFFE	SS 19F5	FS 19F5	+6 EA00	0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0

CMD >				1	0 1 2 3 4 5 6 7
				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 EB 19 C0 11
				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

2	0 1 2 3 4 5 6 7	8 9 A B C D E F	= f. @■ i . + ...
DS:0000	CD 20 FF 9F 00 EA F0 FE	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 C0 11@.
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 00 00

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

AX 0006 SI 0000 CS 19F5 IP 0113 Stack +0 0000 Flags 7215	+2 20CD
BX 0005 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0004 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 1 1 1
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
0111 D0E8 SHR AL,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0113 7304 JNC 0119	DS:0008 AD DE 1B 05 C5 06 00 00
0115 00060501 ADD [0105],AL	DS:0010 18 01 10 01 18 01 92 01
0119 D0E3 SHL BL,1	DS:0018 01 01 01 00 02 FF FF FF
011B 49 DEC CX	DS:0020 FF FF FF FF FF FF FF FF
011C 75F3 JNZ 0111	DS:0028 FF FF FF EB 19 C0 11
011E B8004C MOU AX,4C00	DS:0030 A2 01 14 00 18 00 F5 19
0121 CD21 INT 21	DS:0038 FF FF FF 00 00 00 00 00
0123 0000 ADD [BX+SI],AL	DS:0040 05 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
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 EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX 0006 SI 0000 CS 19F5 IP 0115 Stack +0 0000 Flags 7215	+2 20CD
BX 0005 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0004 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 1 1 1
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > 00	1 0 1 2 3 4 5 6 7
0113 7304 JNC 0119	DS:0000 CD 20 FF 9F 00 EA F0 FE
0115 00060501 ADD [0105],AL	DS:0008 AD DE 1B 05 C5 06 00 00
0119 D0E3 SHL BL,1	DS:0010 18 01 10 01 18 01 92 01
011B 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
011C 75F3 JNZ 0111	DS:0020 FF FF FF EB 19 C0 11
011E B8004C MOU AX,4C00	DS:0028 FF FF FF 00 00 00 00 00
0121 CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0123 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0125 0000 ADD [BX+SI],AL	DS:0040 05 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
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 EB 19 C0 11
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

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

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

AX	0006	SI	0000	CS	19F5	IP	0119	Stack	+0	0000	Flags	7204
BX	0005	DI	0000	DS	19F5				+2	20CD		
CX	0004	BP	0000	ES	19F5	HS	19F5		+4	FFF	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 1 0	

CMD >|

1	0	1	2	3	4	5	6	7
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							
DS:0028	FF	FF	FF	FF	EB	19	00	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

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
DS:0010	18	01	10	01	18	01	92	01	01	01	01	00	02	FF	FF	FF
DS:0020	FF	EB	19	00												
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

1 Step 2 ProcStep 3 Retrieve 4 Help 0M 5 BRK Menu 6 up 7 dn 8 le 9 ri

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

AX 0006 SI 0000 CS 19F5 IP 011B Stack +0 0000 Flags 7214	BX 000A DI 0000 DS 19F5 +2 20CD	CX 0004 BP 0000 ES 19F5 HS 19F5 +4 9FFF OF DF IF SF ZF AF FF CF	DX 0000 SP FFFE SS 19F5 FS 19F5 +6 EA00 0 0 1 0 0 1 1 0
CMD >			
0119 D0E3 SHL BL,1	311B 49 DEC CX	011C 75F3 JNZ 0111	011E B8004C MOV AX,4C00
0121 CD21 INT 21	0123 0000 ADD [BX+SI],AL	0125 0000 ADD [BX+SI],AL	0127 0000 ADD [BX+SI],AL
0129 0000 ADD [BX+SI],AL			
1	0 1 2 3 4 5 6 7	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	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
DS:0028 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			
2	0 1 2 3 4 5 6 7 8 9 A B C D E F	= f.Ω≡■ i +A.
DS:0000 CD 20 FF 9F 00 EA F0 FE	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 C0 11
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 00 00
1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 SBRK Menu 6	7 up 8 dn 9 le 10 ri		

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

AX 0006 SI 0000 CS 19F5 IP 011C	Stack +0 0000 Flags 7204
BX 000A DI 0000 DS 19F5	+2 Z0CD
CX 0003 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 1 0

<pre>CMD > [REDACTED]</pre> <pre>011B 49 DEC CX 011C 75F3 JNZ 0111 011E B8004C MOU AX,4C00 0121 CD21 INT 21 0123 0000 ADD [BX+SI],AL 0125 0000 ADD [BX+SI],AL 0127 0000 ADD [BX+SI],AL 0129 0000 ADD [BX+SI],AL 012B 0000 ADD [BX+SI],AL</pre>	<pre>1 0 1 2 3 4 5 6 7 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 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</pre>
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<pre>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 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 EB 19 C0 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</pre>	<pre>= f. R≡≡ i . + f. J.</pre>
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1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 7 up 8 dn 9 le 10 ri

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

AX 0006 SI 0000 CS 19F5 IP 0111	Stack +0 0000 Flags 7204
BX 000A DI 0000 DS 19F5	+2 Z0CD
CX 0003 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 1 0

<pre>CMD > [REDACTED]</pre> <pre>011C 75F3 JNZ 0111 0111 D0E8 SHR AL,1 0113 7304 JNC 0119 0115 00060501 ADD [0105],AL 0119 D0E3 SHL BL,1 011B 49 DEC CX 011C 75F3 JNZ 0111 011E B8004C MOU AX,4C00 0121 CD21 INT 21</pre>	<pre>1 0 1 2 3 4 5 6 7 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 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</pre>
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<pre>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 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 EB 19 C0 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</pre>	<pre>= f. R≡≡ i . + f. J.</pre>
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1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 7 up 8 dn 9 le 10 ri

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

AX 0003 SI 0000 CS 19F5 IP 0113	Stack +0 0000 Flags 7214
BX 000A DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 1 0

CMD >		1 0 1 2 3 4 5 6 7
0111 D0E8	SHR AL,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0113 7304	JNC 0119	DS:0008 AD DE 1B 05 C5 06 00 00
0115 00060501	ADD [0105],AL	DS:0010 18 01 10 01 18 01 92 01
0119 D0E3	SHL BL,1	DS:0018 01 01 01 00 02 FF FF FF
011B 49	DEC CX	DS:0020 FF FF FF FF FF FF FF FF
011C 75F3	JNZ 0111	DS:0028 FF FF FF FF EB 19 C0 11
011E B8004C	MOU AX,4C00	DS:0030 A2 01 14 00 18 00 F5 19
0121 CD21	INT 21	DS:0038 FF FF FF FF 00 00 00 00
0123 0000	ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ 4 ..+...
DS:0000	CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00ft.
DS:0010	18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.
DS:0020	FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	6.....J.
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

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

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

AX 0003 SI 0000 CS 19F5 IP 0119	Stack +0 0000 Flags 7214
BX 000A DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 1 0

CMD > 2		1 0 1 2 3 4 5 6 7
0113 7304	JNC 0119	DS:0000 CD 20 FF 9F 00 EA F0 FE
0119 D0E3	SHL BL,1	DS:0008 AD DE 1B 05 C5 06 00 00
011B 49	DEC CX	DS:0010 18 01 10 01 18 01 92 01
011C 75F3	JNZ 0111	DS:0018 01 01 01 00 02 FF FF FF
011E B8004C	MOU AX,4C00	DS:0020 FF FF FF FF FF FF FF
0121 CD21	INT 21	DS:0028 FF FF FF FF EB 19 C0 11
0123 0000	ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0125 0000	ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0127 0000	ADD [BX+SI],AL	DS:0040 05 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	= f.Ω≡■ 4 ..+...
DS:0000	CD 20 FF 9F 00 EA F0 FE	AD DE 1B 05 C5 06 00 00ft.
DS:0010	18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FF	δ. L.
DS:0020	FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	6.....J.
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

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

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

AX 0003 SI 0000 CS 19F5 IP 011B	Stack +0 0000 Flags 7214
BX 0014 DI 0000 DS 19F5	+2 20CD
CX 0003 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 1 1 0

CMD > []	
0119 D0E3 SHL BL,1	1 0 1 2 3 4 5 6 7
011B 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
011C 75F3 JNZ 0111	DS:0008 AD DE 1B 05 C5 06 00 00
011E B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
0121 CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0123 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0125 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0127 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0129 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 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. R≡# i...+
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 EB 19 C0 11 δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00	06.....J.

DS:0048 00 00 00 00 00 00 00 00															
1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 [] 7 up 8 dn 9 le 10 ri															

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

AX 0003 SI 0000 CS 19F5 IP 011C	Stack +0 0000 Flags 7200
BX 0014 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 0

CMD > []	
011B 49 DEC CX	1 0 1 2 3 4 5 6 7
011C 75F3 JNZ 0111	DS:0000 CD 20 FF 9F 00 EA F0 FE
011E B8004C MOU AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
0121 CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0123 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0125 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF
0127 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0129 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
012B 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 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. R≡# i...+
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 EB 19 C0 11 δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	FF FF FF 00 00 00 00 00
DS:0040 05 00 00 00 00 00 00 00	06.....J.

DS:0048 00 00 00 00 00 00 00 00															
1 Step 2 ProcStep 3 Retrieve 4 Help ON 5 BRK Menu 6 [] 7 up 8 dn 9 le 10 ri															

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

AX 0003 SI 0000 CS 19F5 IP 0111	Stack +0 0000 Flags 7200
BX 0014 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 0

CMD >	1 0 1 2 3 4 5 6 7
011C 75F3 JNZ 0111	DS:0000 CD 20 FF 9F 00 EA F0 FE
0111 D0E8 SHR AL,1	DS:0008 AD DE 1B 05 C5 06 00 00
0113 7304 JNC 0119	DS:0010 18 01 10 01 18 01 92 01
0115 00060501 ADD [0105],AL	DS:0018 01 01 01 00 02 FF FF FF
0119 D0E3 SHL BL,1	DS:0020 FF FF FF FF FF FF FF FF
011B 49 DEC CX	DS:0028 FF FF FF EB 19 C0 11
011C 75F3 JNZ 0111	DS:0030 A2 01 14 00 18 00 F5 19
011E B8004C MOU AX,4C00	DS:0038 FF FF FF FF 00 00 00 00
0121 CD21 INT 21	DS:0040 05 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
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 EB 19 C0 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

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

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

AX 0001 SI 0000 CS 19F5 IP 0113	Stack +0 0000 Flags 7211
BX 0014 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 1 0 1

CMD >	1 0 1 2 3 4 5 6 7
0111 D0E8 SHR AL,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0113 7304 JNC 0119	DS:0008 AD DE 1B 05 C5 06 00 00
0115 00060501 ADD [0105],AL	DS:0010 18 01 10 01 18 01 92 01
0119 D0E3 SHL BL,1	DS:0018 01 01 01 00 02 FF FF FF
011B 49 DEC CX	DS:0020 FF FF FF FF FF FF FF
011C 75F3 JNZ 0111	DS:0028 FF FF FF EB 19 C0 11
011E B8004C MOU AX,4C00	DS:0030 A2 01 14 00 18 00 F5 19
0121 CD21 INT 21	DS:0038 FF FF FF FF 00 00 00 00
0123 0000 ADD [BX+SI],AL	DS:0040 05 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
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 EB 19 C0 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

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

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

AX 0001 SI 0000 CS 19F5 IP 0115 Stack +0 0000 Flags 7211	+2 20CD
BX 0014 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0002 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 1 0 1
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >1	05
0113 7304 JNC 0119	
0115 00060501 ADD [0105],AL	
0119 D0E3 SHL BL,1	
011B 49 DEC CX	
011C 75F3 JNZ 0111	
011E B8004C MOV AX,4C00	
0121 CD21 INT 21	
0123 0000 ADD [BX+SI],AL	
0125 0000 ADD [BX+SI],AL	

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 FFft.	
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00	

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

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

AX 0001 SI 0000 CS 19F5 IP 0119 Stack +0 0000 Flags 7200	+2 20CD
BX 0014 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0002 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 0 0 0 0
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	05
0115 00060501 ADD [0105],AL	
0119 D0E3 SHL BL,1	
011B 49 DEC CX	
011C 75F3 JNZ 0111	
011E B8004C MOV AX,4C00	
0121 CD21 INT 21	
0123 0000 ADD [BX+SI],AL	
0125 0000 ADD [BX+SI],AL	
0127 0000 ADD [BX+SI],AL	

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 FFft.	
DS:0020 FF FF FF FF FF FF FF	FF FF FF FF EB 19 C0 11	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 00 00	

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

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

AX 0001 SI 0000 CS 19F5 IP 011C	Stack +0 0000 Flags 7200
BX 0028 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD > []	1 0 1 2 3 4 5 6 7
011B 49 DEC CX	DS:0000 CD 20 FF 9F 00 EA F0 FE
011C 75F3 JNZ 0111	DS:0008 AD DE 1B 05 C5 06 00 00
011E B8004C MOU AX,4C00	DS:0010 18 01 10 01 18 01 92 01
0121 CD21 INT 21	DS:0018 01 01 01 00 02 FF FF FF
0123 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF FF FF FF
0125 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0127 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
0129 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00
012B 0000 ADD [BX+SI],AL	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ ≡ ...+
DS:0000 CD 20 FF 9F 00 EA F0 FE	DS:0008
DS:0010 18 01 10 01 18 01 92 01	DS:0018
DS:0020 FF FF FF FF FF FF FF	DS:0028
DS:0030 A2 01 14 00 18 00 F5 19	DS:0038
DS:0040 05 00 00 00 00 00 00 00	DS:0048

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

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

AX 0001 SI 0000 CS 19F5 IP 0111	Stack +0 0000 Flags 7200
BX 0028 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD > []	1 0 1 2 3 4 5 6 7
011C 75F3 JNZ 0111	DS:0000 CD 20 FF 9F 00 EA F0 FE
0111 D0E8 SHR AL,1	DS:0008 AD DE 1B 05 C5 06 00 00
0113 7304 JNC 0119	DS:0010 18 01 10 01 18 01 92 01
0115 00060501 ADD [0105],AL	DS:0018 01 01 01 00 02 FF FF FF
0119 D0E3 SHL BL,1	DS:0020 FF FF FF FF FF FF FF
011B 49 DEC CX	DS:0028 FF FF FF EB 19 C0 11
011C 75F3 JNZ 0111	DS:0030 A2 01 14 00 18 00 F5 19
011E B8004C MOU AX,4C00	DS:0038 FF FF FF 00 00 00 00 00 00
0121 CD21 INT 21	DS:0040 05 00 00 00 00 00 00 00 00
	DS:0048 00 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	= f.Ω≡≡ ≡ ...+
DS:0000 CD 20 FF 9F 00 EA F0 FE	DS:0008
DS:0010 18 01 10 01 18 01 92 01	DS:0018
DS:0020 FF FF FF FF FF FF FF	DS:0028
DS:0030 A2 01 14 00 18 00 F5 19	DS:0038
DS:0040 05 00 00 00 00 00 00 00	DS:0048

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

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

AX 0000 SI 0000 CS 19F5 IP 0113 Stack +0 0000 Flags 7255	+2 20CD
BX 0028 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 1 1 1
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD >	1 0 1 2 3 4 5 6 7
0111 D0E8 SHR AL,1	DS:0000 CD 20 FF 9F 00 EA F0 FE
0113 7304 JNC 0119	DS:0008 AD DE 1B 05 C5 06 00 00
0115 00060501 ADD [0105],AL	DS:0010 18 01 10 01 18 01 92 01
0119 D0E3 SHL BL,1	DS:0018 01 01 01 00 02 FF FF FF
011B 49 DEC CX	DS:0020 FF FF FF FF FF FF FF FF
011C 75F3 JNZ 0111	DS:0028 FF FF FF FF EB 19 C0 11
011E B8004C MOU AX,4C00	DS:0030 A2 01 14 00 18 00 F5 19
0121 CD21 INT 21	DS:0038 FF FF FF FF 00 00 00 00
0123 0000 ADD [BX+SI],AL	DS:0040 05 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	= f. R≡≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE f. ..
DS:0010 18 01 10 01 18 01 92 01
DS:0020 FF FF FF FF FF FF FF FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0115 Stack +0 0000 Flags 7255	+2 20CD
BX 0028 DI 0000 DS 19F5	+4 9FFF OF DF IF SF ZF AF PF CF
CX 0001 BP 0000 ES 19F5 HS 19F5	+6 EA00 0 0 1 0 1 1 1 1
DX 0000 SP FFFE SS 19F5 FS 19F5	

CMD > 07	1 0 1 2 3 4 5 6 7
0113 7304 JNC 0119	DS:0000 CD 20 FF 9F 00 EA F0 FE
0115 00060501 ADD [0105],AL	DS:0008 AD DE 1B 05 C5 06 00 00
0119 D0E3 SHL BL,1	DS:0010 18 01 10 01 18 01 92 01
011B 49 DEC CX	DS:0018 01 01 01 00 02 FF FF FF
011C 75F3 JNZ 0111	DS:0020 FF FF FF FF FF FF FF
011E B8004C MOU AX,4C00	DS:0028 FF FF FF FF EB 19 C0 11
0121 CD21 INT 21	DS:0030 A2 01 14 00 18 00 F5 19
0123 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00
0125 0000 ADD [BX+SI],AL	DS:0040 05 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	= f. R≡≡ i . + ...
DS:0000 CD 20 FF 9F 00 EA F0 FE f. ..
DS:0010 18 01 10 01 18 01 92 01
DS:0020 FF FF FF FF FF FF FF	δ. L.
DS:0030 A2 01 14 00 18 00 F5 19	6.....J.
DS:0040 05 00 00 00 00 00 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 0119	Stack +0 0000 Flags 7200
BX 0028 DI 0000 DS 19F5	+2 20CD
CX 0001 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 0

CMD >	1	0 1 2 3 4 5 6 7
0115 00060501 ADD [0105],AL	DS:0000 CD 20 FF 9F 00 EA F0 FE	
0119 D0E3 SHL BL,1	DS:0008 AD DE 1B 05 C5 06 00 00	
011B 49 DEC CX	DS:0010 18 01 10 01 18 01 92 01	
011C 75F3 JNZ 0111	DS:0018 01 01 01 00 02 FF FF FF	
011E B8004C MOV AX,4C00	DS:0020 FF FF FF FF FF FF FF FF	
0121 CD21 INT 21	DS:0028 FF FF FF EB 19 C0 11	
0123 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0125 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0127 0000 ADD [BX+SI],AL	DS:0040 05 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. R≡# i .+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFR.
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11	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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 011B	Stack +0 0000 Flags 7214
BX 0050 DI 0000 DS 19F5	+2 20CD
CX 0001 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 1 1 0

CMD > 1	0 1 2 3 4 5 6 7	
0119 D0E3 SHL BL,1	DS:0000 CD 20 FF 9F 00 EA F0 FE	
011B 49 DEC CX	DS:0008 AD DE 1B 05 C5 06 00 00	
011C 75F3 JNZ 0111	DS:0010 18 01 10 01 18 01 92 01	
011E B8004C MOV AX,4C00	DS:0018 01 01 01 00 02 FF FF FF	
0121 CD21 INT 21	DS:0020 FF FF FF FF FF FF FF	
0123 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11	
0125 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19	
0127 0000 ADD [BX+SI],AL	DS:0038 FF FF FF FF 00 00 00 00	
0129 0000 ADD [BX+SI],AL	DS:0040 05 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. R≡# i .+...
DS:0010 18 01 10 01 18 01 92 01	01 01 01 00 02 FF FF FFR.
DS:0020 FF FF FF FF FF FF FF	FF FF FF EB 19 C0 11	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 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 011C	Stack +0 0000 Flags 7244
BX 0050 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 0

CMD >	
011B 49 DEC CX	1 0 1 2 3 4 5 6 7
011C 75F3 JNZ 0111	DS:0000 CD 20 FF 9F 00 EA F0 FE
011E B8004C MOV AX,4C00	DS:0008 AD DE 1B 05 C5 06 00 00
0121 CD21 INT 21	DS:0010 18 01 10 01 18 01 92 01
0123 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0125 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0127 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
0129 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
012B 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00
	DS:0040 05 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 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	= f.Ω≡≡ 4 ..+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01	δ. L.
DS:0020 FF FF FF FF FF EB 19 C0 11J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00 00 00

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

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

AX 0000 SI 0000 CS 19F5 IP 011E	Stack +0 0000 Flags 7244
BX 0050 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 0

CMD >	
011C 75F3 JNZ 0111	1 0 1 2 3 4 5 6 7
011E B8004C MOV AX,4C00	DS:0000 CD 20 FF 9F 00 EA F0 FE
0121 CD21 INT 21	DS:0008 AD DE 1B 05 C5 06 00 00
0123 0000 ADD [BX+SI],AL	DS:0010 18 01 10 01 18 01 92 01
0125 0000 ADD [BX+SI],AL	DS:0018 01 01 01 00 02 FF FF FF
0127 0000 ADD [BX+SI],AL	DS:0020 FF FF FF FF FF EB 19 C0 11
0129 0000 ADD [BX+SI],AL	DS:0028 FF FF FF EB 19 C0 11
012B 0000 ADD [BX+SI],AL	DS:0030 A2 01 14 00 18 00 F5 19
012D 0000 ADD [BX+SI],AL	DS:0038 FF FF FF 00 00 00 00 00 00
	DS:0040 05 00 00 00 00 00 00 00 00 00
	DS:0048 00 00 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	= f.Ω≡≡ 4 ..+...
DS:0000 CD 20 FF 9F 00 EA F0 FEfl.
DS:0010 18 01 10 01 18 01 92 01	δ. L.
DS:0020 FF FF FF FF FF EB 19 C0 11J.
DS:0030 A2 01 14 00 18 00 F5 19
DS:0040 05 00 00 00 00 00 00 00 00 00

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

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

AX 4C00	SI 0000	CS 19F5	IP 0121	Stack +0 0000	Flags 7244
BX 0050	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 EAC0	0 0 1 0 1 0 1 0

CMD > []				1	0 1 2 3 4 5 6 7
011E B8004C	MOV AX,4C00	DS:0000	CD 20 FF 9F 00 EA F0 FE		
0121 CD21	INT 21	DS:0008	AD DE 1B 05 C5 06 00 00		
0123 0000	ADD [BX+SI],AL	DS:0010	18 01 10 01 18 01 92 01		
0125 0000	ADD [BX+SI],AL	DS:0018	01 01 01 00 02 FF FF FF		
0127 0000	ADD [BX+SI],AL	DS:0020	FF FF FF FF FF FF FF FF		
0129 0000	ADD [BX+SI],AL	DS:0028	FF FF FF FF EB 19 C0 11		
012B 0000	ADD [BX+SI],AL	DS:0030	A2 01 14 00 18 00 F5 19		
012D 0000	ADD [BX+SI],AL	DS:0038	FF FF FF FF 00 00 00 00		
012F 0000	ADD [BX+SI],AL	DS:0040	05 00 00 00 00 00 00 00		
		DS:0048	00 00 00 00 00 00 00 00		

CMD > []				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 FFft.		
DS:0020	FF FF 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 EB 19 C0 11	6.....J.		
DS:0040	05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00		

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

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

AX 4C00	SI 0000	CS F000	IP 14A0	Stack +0 42BD	Flags 7044
BX 0050	DI 0000	DS 19F5		+2 06C5	
CX 0000	BP 0000	ES 19F5	HS 19F5	+4 7044	OF DF IF SF ZF AF PF CF
DX 0000	SP FFF2	SS 19F5	FS 19F5	+6 0123	0 0 0 0 1 0 1 0

CMD > []				1	0 1 2 3 4 5 6 7
0121 CD21	INT 21	DS:0000	CD 20 FF 9F 00 EA F0 FE		
14A0 FB	STI	DS:0008	AD DE 1B 05 C5 06 00 00		
14A1 FE	DB FE	DS:0010	18 01 10 01 18 01 92 01		
14A2 3825	CMP [DI],AH	DS:0018	01 01 01 00 02 FF FF FF		
14A4 00CF	ADD BH,CL	DS:0020	FF FF FF FF FF FF FF FF		
14A6 CB	RET Far	DS:0028	FF FF FF FF EB 19 C0 11		
14A7 51	PUSH CX	DS:0030	A2 01 14 00 18 00 F5 19		
14A8 B94001	MOV CX,0140	DS:0038	FF FF FF FF 00 00 00 00		
14AB E2FE	LOOP 14AB	DS:0040	05 00 00 00 00 00 00 00		
		DS:0048	00 00 00 00 00 00 00 00		

CMD > []				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 FFft.		
DS:0020	FF FF 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 EB 19 C0 11	6.....J.		
DS:0040	05 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00		

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