



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

|         |         |         |         |               |                         |
|---------|---------|---------|---------|---------------|-------------------------|
| AX 0000 | SI 0000 | CS 19F5 | IP 014D | Stack +0 0000 | Flags 7200              |
| BX 0103 | DI 0000 | DS 19F5 |         | +2 20CD       |                         |
| CX 000A | 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 >

|                 |      |                   |         |                         |
|-----------------|------|-------------------|---------|-------------------------|
| 014A B90A00     | MOV  | CX,000A           | DS:0000 | CD 20 FF 9F 00 EA F0 FE |
| 014D EBCBFF     | CALL | 0118              | DS:0008 | AD DE 1B 05 C5 06 00 00 |
| 0150 B8004C     | MOV  | AX,4C00           | DS:0010 | 18 01 10 01 18 01 92 01 |
| 0153 CD21       | INT  | 21                | DS:0018 | 01 01 01 00 FF 00 01 FF |
| 0155 00EB       | ADD  | BL,CH             | DS:0020 | FF FF FF FF FF FF FF FF |
| 0157 05E942     | ADD  | AX,42E9           | DS:0028 | FF FF FF FF EB 19 C0 11 |
| 015A 0131       | ADD  | [BX+DI],SI        | DS:0030 | A2 01 14 00 18 00 F5 19 |
| 015C C0B946E28B | ROR  | B/[E246+BX+DI],8B | DS:0038 | FF FF FF FF 00 00 00 00 |
| 0161 46         | INC  | SI                | 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 FF 00 01 FF | .....ft. ....    |
| 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 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 0000 | SI 0000 | CS 19F5 | IP 0118 | Stack +0 0150 | Flags 7200              |
| BX 0103 | DI 0000 | DS 19F5 |         | +2 0000       |                         |
| CX 000A | BP 0000 | ES 19F5 | HS 19F5 | +4 20CD       | OF DF IF SF ZF AF PF CF |
| DX 0000 | SP FFFC | SS 19F5 | FS 19F5 | +6 9FFF       | 0 0 1 0 0 0 0 0         |

CMD >

|                 |      |               |         |                         |
|-----------------|------|---------------|---------|-------------------------|
| 014D EBCBFF     | CALL | 0118          | DS:0000 | CD 20 FF 9F 00 EA F0 FE |
| 0118 49         | DEC  | CX            | DS:0008 | AD DE 1B 05 C5 06 00 00 |
| 0119 D1E1       | SHL  | CX,1          | DS:0010 | 18 01 10 01 18 01 92 01 |
| 011B BE0000     | MOV  | SI,0000       | DS:0018 | 01 01 01 00 FF 00 01 FF |
| 011E C606170100 | MOV  | [0117],00     | DS:0020 | FF FF FF FF FF FF FF FF |
| 0123 8B00       | MOV  | AX,[BX+SI]    | DS:0028 | FF FF FF FF EB 19 C0 11 |
| 0125 3B4002     | CMP  | AX,[BX+SI+02] | DS:0030 | A2 01 14 00 18 00 F5 19 |
| 0128 760D       | JNA  | 0137          | DS:0038 | FF FF FF FF 00 00 00 00 |
| 012A 8B5002     | MOV  | DX,[BX+SI+02] | 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 FF 00 01 FF | .....ft. ....    |
| 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 | .....            |

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```

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 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 0 0 0 0

CMD >

> Program terminated OK

0100 E94400 JMP 0147
0103 0000 ADD [BX+SI],AL
0105 1400 ADC AL,00
0107 2300 AND AX,[BX+SI]
0109 2800 SUB [BX+SI],AL
010B 2D0032 SUB AX,3200
010E 0037 ADD [BX],DH
0110 003C ADD [SI],BH

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 FF FF AD DE 1B 05 C5 06 00 00 = f.n i | . + ...
DS:0010 18 01 10 01 18 01 92 01 01 01 01 00 FF 00 01 FF .....f. ....
DS:0020 FF FF FF FF FF FF FF FF FF FF FF FF EB 19 E4 11 .....δ.Σ.
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 .....

```

```

[org 0x0100]
jmp start

data: dw 60, 55, 45, 50, 40, 35, 25, 30, 10, 0
data2: dw 328, 329, 898, 8923, 8293, 2345, 10, 877, 355, 98
      dw 888, 533, 2000, 1020, 30, 200, 761, 167, 90, 5
swap: db 0

bubblesort:
  dec cx
  shl cx, 1
mainloop:
  mov si, 0
  mov byte [swap], 0
innerloop:
  mov ax, [bx+si]
  cmp ax, [bx+si+2]
  jbe noswap

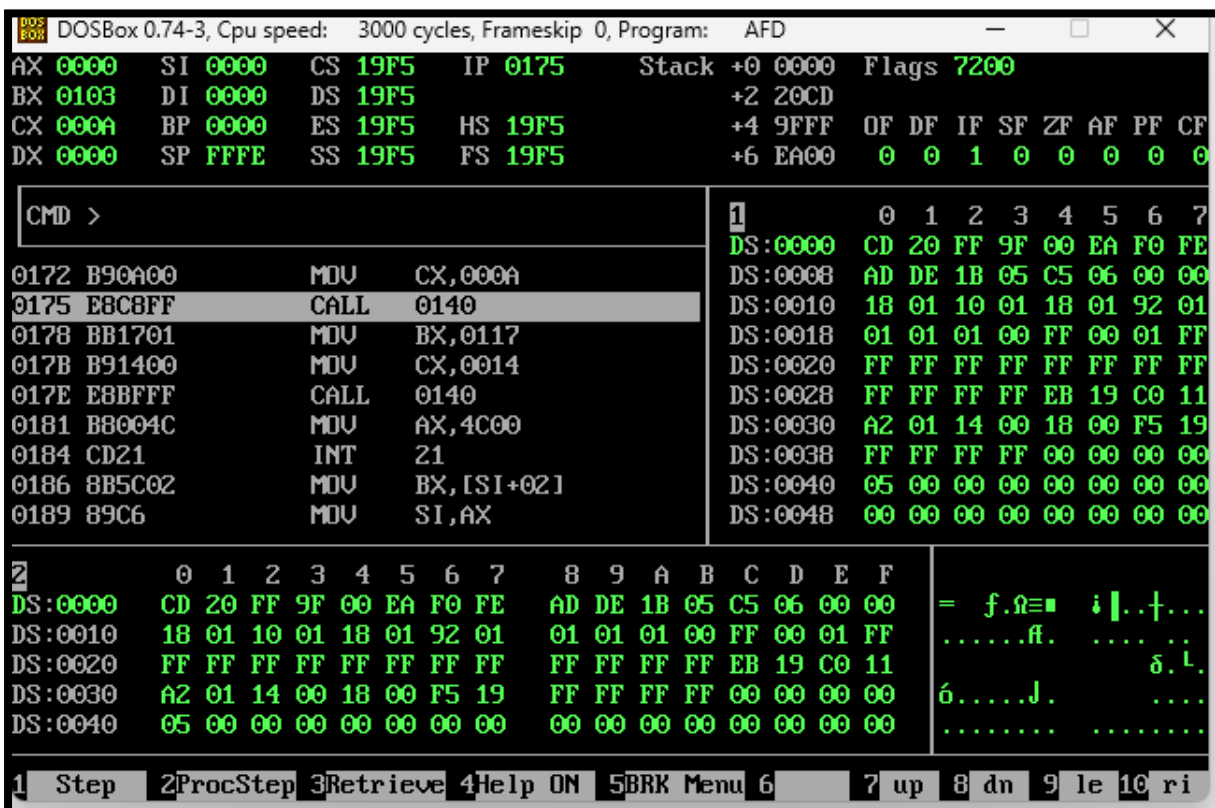
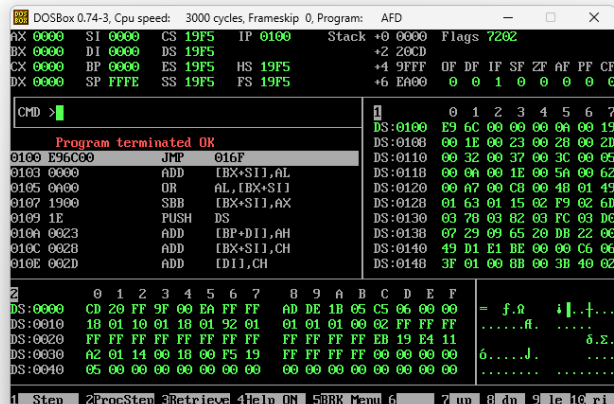
  mov dx, [bx+si+2]
  mov [bx+si], dx
  mov [bx+si+2], ax
  mov byte [swap], 1

noswap:
  add si, 2
  cmp si, cx
  jne innerloop

  cmp byte [swap], 1
  je mainloop
  ret

start:
  mov bx, data
  mov cx, 10
  call bubblesort
  mov bx, data2
  mov cx, 20
  call bubblesort
  mov ax, 0x4c00
  int 0x21

```



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

|         |         |         |         |               |                         |
|---------|---------|---------|---------|---------------|-------------------------|
| AX 0000 | SI 0000 | CS 19F5 | IP 0140 | Stack +0 0178 | Flags 7200              |
| BX 0103 | DI 0000 | DS 19F5 |         | +2 0000       |                         |
| CX 000A | BP 0000 | ES 19F5 | HS 19F5 | +4 20CD       | OF DF IF SF ZF AF PF CF |
| DX 0000 | SP FFFC | SS 19F5 | FS 19F5 | +6 9FFF       | 0 0 1 0 0 0 0 0         |

|                 |      |               |  |                   |                         |  |  |  |  |  |  |
|-----------------|------|---------------|--|-------------------|-------------------------|--|--|--|--|--|--|
| CMD >           |      |               |  | 1 0 1 2 3 4 5 6 7 |                         |  |  |  |  |  |  |
| 0175 E8C8FF     | CALL | 0140          |  | DS:0000           | CD 20 FF 9F 00 EA F0 FE |  |  |  |  |  |  |
| 0140 49         | DEC  | CX            |  | DS:0008           | AD DE 1B 05 C5 06 00 00 |  |  |  |  |  |  |
| 0141 D1E1       | SHL  | CX,1          |  | DS:0010           | 18 01 10 01 18 01 92 01 |  |  |  |  |  |  |
| 0143 BE0000     | MOV  | SI,0000       |  | DS:0018           | 01 01 01 00 FF 00 01 FF |  |  |  |  |  |  |
| 0146 C6063F0100 | MOV  | [013F],00     |  | DS:0020           | FF FF FF FF FF FF FF FF |  |  |  |  |  |  |
| 014B 8B00       | MOV  | AX,[BX+SI]    |  | DS:0028           | FF FF FF FF EB 19 C0 11 |  |  |  |  |  |  |
| 014D 3B4002     | CMP  | AX,[BX+SI+02] |  | DS:0030           | A2 01 14 00 18 00 F5 19 |  |  |  |  |  |  |
| 0150 760D       | JNA  | 015F          |  | DS:0038           | FF FF FF FF 00 00 00 00 |  |  |  |  |  |  |
| 0152 8B5002     | MOV  | DX,[BX+SI+02] |  | 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 FF 00 01 FF | .....ff. ....    |
| 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 | ó.....J. ....    |
| DS:0040 | 05 00 00 00 00 00 00 00 | 00 00 00 00 00 00 00 00 | .....            |

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

|         |         |         |         |               |                         |
|---------|---------|---------|---------|---------------|-------------------------|
| AX 0037 | SI 0012 | CS 19F5 | IP 0178 | Stack +0 0000 | Flags 7295              |
| BX 0103 | DI 0000 | DS 19F5 |         | +2 20CD       |                         |
| CX 0012 | 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 1 0 1 1 1         |

|             |      |            |  |                   |                         |  |  |  |  |  |  |
|-------------|------|------------|--|-------------------|-------------------------|--|--|--|--|--|--|
| CMD >       |      |            |  | 1 0 1 2 3 4 5 6 7 |                         |  |  |  |  |  |  |
| 0175 E8C8FF | CALL | 0140       |  | DS:0000           | CD 20 FF 9F 00 EA F0 FE |  |  |  |  |  |  |
| 0178 BB1701 | MOV  | BX,0117    |  | DS:0008           | AD DE 1B 05 C5 06 00 00 |  |  |  |  |  |  |
| 017B B91400 | MOV  | CX,0014    |  | DS:0010           | 18 01 10 01 18 01 92 01 |  |  |  |  |  |  |
| 017E E8BFFF | CALL | 0140       |  | DS:0018           | 01 01 01 00 FF 00 01 FF |  |  |  |  |  |  |
| 0181 B8004C | MOV  | AX,4C00    |  | DS:0020           | FF FF FF FF FF FF FF FF |  |  |  |  |  |  |
| 0184 CD21   | INT  | 21         |  | DS:0028           | FF FF FF FF EB 19 C0 11 |  |  |  |  |  |  |
| 0186 8B5C02 | MOV  | BX,[SI+02] |  | DS:0030           | A2 01 14 00 18 00 F5 19 |  |  |  |  |  |  |
| 0189 89C6   | MOV  | SI,AX      |  | DS:0038           | FF FF FF FF 00 00 00 00 |  |  |  |  |  |  |
| 018B 895EFE | MOV  | [BP-02],BX |  | 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 FF 00 01 FF | .....ff. ....    |
| 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 | ó.....J. ....    |
| DS:0040 | 05 00 00 00 00 00 00 00 | 00 00 00 00 00 00 00 00 | .....            |

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

|         |         |         |         |               |                         |
|---------|---------|---------|---------|---------------|-------------------------|
| AX 0037 | SI 0012 | CS 19F5 | IP 017E | Stack +0 0000 | Flags 7295              |
| BX 0117 | DI 0000 | DS 19F5 |         | +2 20CD       |                         |
| CX 0014 | 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 1 0 1 1 1         |

|               |      |              |  |         |    |    |    |    |    |    |    |    |
|---------------|------|--------------|--|---------|----|----|----|----|----|----|----|----|
| CMD >         |      |              |  | 1       | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 017B B91400   | MOV  | CX,0014      |  | DS:0100 | E9 | 6C | 00 | 00 | 0A | 00 | 19 |    |
| 017E E8BFFF   | CALL | 0140         |  | DS:0108 | 00 | 1E | 00 | 23 | 00 | 28 | 00 | 2D |
| 0181 B8004C   | MOV  | AX,4C00      |  | DS:0110 | 00 | 32 | 00 | 37 | 00 | 3C | 00 | 48 |
| 0184 CD21     | INT  | 21           |  | DS:0118 | 01 | 49 | 01 | 82 | 03 | DB | 22 | 65 |
| 0186 8B5C02   | MOV  | BX,[SI+02]   |  | DS:0120 | 20 | 29 | 09 | 0A | 00 | 6D | 03 | 63 |
| 0189 89C6     | MOV  | SI,AX        |  | DS:0128 | 01 | 62 | 00 | 78 | 03 | 15 | 02 | D0 |
| 018B 895EFE   | MOV  | [BP-02],BX   |  | DS:0130 | 07 | FC | 03 | 1E | 00 | C8 | 00 | F9 |
| 018E 837EFE00 | CMP  | [BP-02],0000 |  | DS:0138 | 02 | A7 | 00 | 5A | 00 | 05 | 00 | 00 |
| 0192 7504     | JNZ  | 0198         |  | DS:0140 | 49 | D1 | E1 | BE | 00 | 00 | C6 | 06 |
|               |      |              |  | DS:0148 | 3F | 01 | 00 | 8B | 00 | 3B | 40 | 02 |

|         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 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 | 00 | FF | 00 | 01 | 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 |

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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 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 0 0 0 0         |

|                         |      |            |  |         |    |    |    |    |    |    |    |    |
|-------------------------|------|------------|--|---------|----|----|----|----|----|----|----|----|
| CMD >                   |      |            |  | 1       | 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| > Program terminated OK |      |            |  | DS:0100 | E9 | 6C | 00 | 00 | 0A | 00 | 19 |    |
| 0100 E96C00             | JMP  | 016F       |  | DS:0108 | 00 | 1E | 00 | 23 | 00 | 28 | 00 | 2D |
| 0103 0000               | ADD  | [BX+SI],AL |  | DS:0110 | 00 | 32 | 00 | 37 | 00 | 3C | 00 | 05 |
| 0105 0A00               | OR   | AL,[BX+SI] |  | DS:0118 | 00 | 0A | 00 | 1E | 00 | 5A | 00 | 62 |
| 0107 1900               | SBB  | [BX+SI],AX |  | DS:0120 | 00 | A7 | 00 | C8 | 00 | 48 | 01 | 49 |
| 0109 1E                 | PUSH | DS         |  | DS:0128 | 01 | 63 | 01 | 15 | 02 | F9 | 02 | 6D |
| 010A 0023               | ADD  | [BP+DI],AH |  | DS:0130 | 03 | 78 | 03 | 82 | 03 | FC | 03 | D0 |
| 010C 0028               | ADD  | [BX+SI],CH |  | DS:0138 | 07 | 29 | 09 | 65 | 20 | DB | 22 | 00 |
| 010E 002D               | ADD  | [DI],CH    |  | DS:0140 | 49 | D1 | E1 | BE | 00 | 00 | C6 | 06 |
|                         |      |            |  | DS:0148 | 3F | 01 | 00 | 8B | 00 | 3B | 40 | 02 |

|         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 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 | FF | FF | AD | DE | 1B | 05 | C5 | 06 | 00 | 00 |
| DS:0010 | 18 | 01 | 10 | 01 | 18 | 01 | 92 | 01 | 01 | 01 | 00 | FF | 00 | 01 | FF |    |
| DS:0020 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF | EB | 19 | E4 | 11 |    |
| DS:0030 | A2 | 01 | 14 | 00 | 18 | 00 | F5 | 19 | FF | FF | FF | FF | 00 | 00 | 00 | 00 |
| DS:0040 | 05 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |

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

## Question 2: (example 5.2) (changed values)

```
[org 0x0100]
jmp start

data: dw 70, 65, 55, 60, 50, 45, 35, 40, 20, 0
data2: dw 128, 329, 898, 1223, 8213, 23, 20, 957, 365, 97
dw 998, 533, 3000, 1040, 30, 210, 761, 167, 90, 51
swap: db 0

bubblesort:
dec cx
shl cx, 1
mainloop:
mov si, 0
mov byte [swap], 0
innerloop:
mov ax, [bx+si]
cmp ax, [bx+si+2]
jbe noswap

mov dx, [bx+si+2]
mov [bx+si], dx
mov [bx+si+2], ax
mov byte [swap], 1

noswap:
add si, 2
cmp si, cx
jne innerloop

cmp byte [swap], 1
je mainloop
ret

start:
mov bx, data
mov cx, 10
call bubblesort
mov bx, data2
mov cx, 20
call bubblesort
mov ax, 0x4c00
int 0x21
```

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

| Register | Value | Segment | Value | IP | Value | Stack | Value | Flags | Value   |
|----------|-------|---------|-------|----|-------|-------|-------|-------|---------|
| AX       | 0000  | SI      | 0000  | CS | 19F5  | IP    | 0175  | Stack | +0 0000 |
| BX       | 0103  | DI      | 0000  | DS | 19F5  |       |       |       | +2 20CD |
| CX       | 000A  | BP      | 0000  | ES | 19F5  | HS    | 19F5  |       | +4 9FFF |
| DX       | 0000  | SP      | FFFE  | SS | 19F5  | FS    | 19F5  |       | +6 EA00 |

Flags: 7200

OF DF IF SF ZF AF PF CF

0 0 1 0 0 0 0

CMD >

| Address | Instruction | Comment        |
|---------|-------------|----------------|
| 0172    | B90A00      | MOV CX,000A    |
| 0175    | EBC8FF      | CALL 0140      |
| 0178    | BB1701      | MOV BX,0117    |
| 017B    | B91400      | MOV CX,0014    |
| 017E    | EBBFFF      | CALL 0140      |
| 0181    | BB004C      | MOV AX,4C00    |
| 0184    | CD21        | INT 21         |
| 0186    | BB5C02      | MOV BX,[SI+02] |
| 0189    | 89C6        | MOV SI,AX      |

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 FF 00 01 FF .....f. ....

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 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

| Register | Value | Segment | Value | IP | Value | Stack | Value | Flags | Value   |
|----------|-------|---------|-------|----|-------|-------|-------|-------|---------|
| AX       | 0000  | SI      | 0000  | CS | 19F5  | IP    | 0140  | Stack | +0 0178 |
| BX       | 0103  | DI      | 0000  | DS | 19F5  |       |       |       | +2 0000 |
| CX       | 000A  | BP      | 0000  | ES | 19F5  | HS    | 19F5  |       | +4 20CD |
| DX       | 0000  | SP      | FFFC  | SS | 19F5  | FS    | 19F5  |       | +6 9FFF |

Flags: 7200

OF DF IF SF ZF AF PF CF

0 0 1 0 0 0 0

CMD >

| Address | Instruction | Comment           |
|---------|-------------|-------------------|
| 0175    | EBC8FF      | CALL 0140         |
| 0140    | 49          | DEC CX            |
| 0141    | D1E1        | SHL CX,1          |
| 0143    | BE0000      | MOV SI,0000       |
| 0146    | C6063F0100  | MOV [013F],00     |
| 014B    | 8B00        | MOV AX,[BX+SI]    |
| 014D    | 3B4002      | CMP AX,[BX+SI+02] |
| 0150    | 760D        | JNA 015F          |
| 0152    | 8B5002      | MOV DX,[BX+SI+02] |

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 FF 00 01 FF .....f. ....

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 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

|         |         |         |         |               |                         |
|---------|---------|---------|---------|---------------|-------------------------|
| AX 4C00 | SI 0012 | CS F000 | IP 14A0 | Stack +0 42BD | Flags 7095              |
| BX 0103 | DI 0000 | DS 19F5 |         | +2 06C5       |                         |
| CX 0012 | BP 0000 | ES 19F5 | HS 19F5 | +4 7095       | OF DF IF SF ZF AF PF CF |
| DX 0000 | SP FFF2 | SS 19F5 | FS 19F5 | +6 0155       | 0 0 0 1 0 1 1 1         |

CMD >

|             |      |         |
|-------------|------|---------|
| 0153 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 E2FE   | LOOP | 14AB    |

|         |                         |                         |
|---------|-------------------------|-------------------------|
| DS:0000 | CD 20 FF 9F 00 EA FF FF | 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 FF 00 01 00 |                         |
| DS:0020 | 01 FF FF FF FF FF FF FF |                         |
| DS:0028 | FF FF FF FF EB 19 E6 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 |                         |

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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 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 0 0 0 0         |

CMD >

**Program terminated OK**

|             |     |            |
|-------------|-----|------------|
| 0100 E96C00 | JMP | 016F       |
| 0103 0000   | ADD | [BX+SI],AL |
| 0105 1400   | ADC | AL,00      |
| 0107 2300   | AND | AX,[BX+SI] |
| 0109 2800   | SUB | [BX+SI],AL |
| 010B 2D0032 | SUB | AX,3200    |
| 010E 0037   | ADD | [BX],DH    |
| 0110 003C   | ADD | [SI],BH    |

|         |                         |  |
|---------|-------------------------|--|
| DS:0100 | E9 6C 00 00 00 14 00 23 |  |
| DS:0108 | 00 28 00 2D 00 32 00 37 |  |
| DS:0110 | 00 3C 00 41 00 46 00 14 |  |
| DS:0118 | 00 17 00 1E 00 33 00 54 |  |
| DS:0120 | 00 61 00 80 00 A7 00 D2 |  |
| DS:0128 | 00 49 01 6D 01 15 02 F5 |  |
| DS:0130 | 02 82 03 BD 03 E6 03 16 |  |
| DS:0138 | 04 C7 04 B8 0B 15 20 06 |  |
| DS:0140 | 49 D1 E1 BE 00 00 C6 06 |  |
| DS:0148 | 3F 01 00 8B 00 3B 40 02 |  |

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