# PROGRAMS

## 1. Write an ALP to find the largest from given series of Numbers

```
ASSUME CS:CODE, DS:DATA

DATA SEGMENT
LIST DB 04H,0AH,01H,21H,09H
LARG  DB 0H
DATA ENDS

CODE SEGMENT
START:
MOV AX, DATA
MOV DS, AX
MOV AX,0H

MOV CL,04
LEA SI,LIST
MOV AL,[SI]
L2:
CMP AL,[SI+1]
JNC L1
MOV AL,[SI+1]
L1:
INC SI
DEC CL
JNZ L2
MOV LARG,AL

INT 03H
CODE ENDS
END START
```

```
-U
0745:0000 B84407          MOV     AX,0744
0745:0003 8ED8            MOV     DS,AX
0745:0005 B80000          MOV     AX,0000
0745:0008 BE0000          MOV     SI,0000
0745:000B B104            MOV     CL,04
0745:000D 8A04            MOV     AL,[SI]
0745:000F 3A4401          CMP     AL,[SI+01]
0745:0012 7303            JAE     0017
0745:0014 8A4401          MOV     AL,[SI+01]
0745:0017 46              INC     SI
0745:0018 FEC9            DEC     CL
0745:001A 75F3            JNZ     000F
0745:001C A20500          MOV     [0005],AL
0745:001F CC              INT     3
```

**Result**

**Registers**
```
AX=0021 BX=0000 CX=0000
```
**Data Segment**
```
-D DS:0
0744:0000   04 0A 01 21 09 21
```
**Flag Register**
```
NV UP EI PL ZR NA PE NC
```

## 2. Write an ALP to find the smallest from given series of Numbers

```
ASSUME CS:CODE, DS:DATA

DATA SEGMENT
LIST DB 04H,0AH,01H,21H,09H
SMALL  DB  0H
DATA ENDS

CODE SEGMENT
START:
MOV AX, DATA
MOV DS, AX
MOV AX,0H

MOV CL,04
LEA SI,LIST
MOV AL,[SI]
L2:
CMP AL,[SI+1]
JC L1
MOV AL,[SI+1]
L1:
INC SI
DEC CL
JNZ L2
MOV SMALL,AL

INT 03H
CODE ENDS
END START
```

```
-U
0745:0000 B84407          MOV    AX,0744
0745:0003 8ED8            MOV    DS,AX
0745:0005 B80000          MOV    AX,0000
0745:0008 BE0000          MOV    SI,0000
0745:000B B104            MOV    CL,04
0745:000D 8A04            MOV    AL,[SI]
0745:000F 3A4401          CMP    AL,[SI+01]
0745:0012 7203            JB     0017
0745:0014 8A4401          MOV    AL,[SI+01]
0745:0017 46              INC    SI
0745:0018 FEC9            DEC    CL
0745:001A 75F3            JNZ    000F
0745:001C A20500          MOV    [0005],AL
0745:001F CC              INT    3
```

**Result**

**Registers**
```
AX=0001 BX=0000 CX=0000
```
**Data Segment**
```
-D DS:0
0744:0000  04 0A 01 21 09 01
```
**Flag Register**
```
 NV UP EI PL ZR NA PE CY
```

## 3. Write an ALP to sort the given series of Numbers in ascending order

```
ASSUME CS:CODE, DS:DATA

DATA SEGMENT
LIST DB 02H,22H,45H,01H,32H
DATA ENDS

CODE SEGMENT
START:
MOV AX, DATA
MOV DS, AX
MOV AX,0H

MOV CL,04

GO3:    LEA SI,LIST
        MOV DL,04H
GO1:    MOV AL,[SI]
        CMP AL,[SI+1]
        JC GO2
        XCHG AL,[SI+1]
        MOV [SI],AL
GO2:    INC SI
        DEC DL
        JNZ GO1
        DEC CL
        JNZ GO3

INT 03H
CODE ENDS
END START
```

```
-u
0745:0000 B84407          MOV     AX,0744
0745:0003 8ED8            MOV     DS,AX
0745:0005 B80000          MOV     AX,0000
0745:0008 B104            MOV     CL,04
0745:000A BE0000          MOV     SI,0000
0745:000D B204            MOV     DL,04
0745:000F 8A04            MOV     AL,[SI]
0745:0011 3A4401          CMP     AL,[SI+01]
0745:0014 7205            JB      001B
0745:0016 864401          XCHG    AL,[SI+01]
0745:0019 8804            MOV     [SI],AL
0745:001B 46              INC     SI
0745:001C FECA            DEC     DL
0745:001E 75EF            JNZ     000F
-u
0745:0020 FEC9            DEC     CL
0745:0022 75E6            JNZ     000A
0745:0024 CC              INT     3
```

**Result**

**Data Segment**
```
-d ds:0
0744:0000  01 02 22 32 45
```

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## 4. Write an ALP to sort the given series of Numbers in descending order

```
ASSUME CS:CODE, DS:DATA

DATA SEGMENT
LIST DB 02H,22H,45H,01H,32H
DATA ENDS

CODE SEGMENT
START:
MOV AX, DATA
MOV DS, AX
MOV AX,0H

MOV CL,04

GO3:    LEA SI,LIST
        MOV DL,04H
GO1:    MOV AL,[SI]
        CMP AL,[SI+1]
        JNC GO2
        XCHG AL,[SI+1]
        MOV [SI],AL
GO2:    INC SI
        DEC DL
        JNZ GO1
        DEC CL
        JNZ GO3

INT 03H
CODE ENDS
END START
```

```
-u
0745:0000 B84407          MOV     AX,0744
0745:0003 8ED8            MOV     DS,AX
0745:0005 B80000          MOV     AX,0000
0745:0008 B104            MOV     CL,04
0745:000A BE0000          MOV     SI,0000
0745:000D B204            MOV     DL,04
0745:000F 8A04            MOV     AL,[SI]
0745:0011 3A4401          CMP     AL,[SI+01]
0745:0014 7305            JAE     001B
0745:0016 864401          XCHG    AL,[SI+01]
0745:0019 8804            MOV     [SI],AL
0745:001B 46              INC     SI
0745:001C FECA            DEC     DL
0745:001E 75EF            JNZ     000F

-u
0745:0020 FEC9            DEC     CL
0745:0022 75E6            JNZ     000A
0745:0024 CC              INT     3
```

**Result**

**Data Segment**
```
-d ds:0
0744:0000   45 32 22 02 01
```

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