

EXPERIMENT 3.2

Sorting of ten 8-bits numbers stored in internal data memory in decending order

Code:

```
ORG 0000H
ACALL READ      ;copy data loop
MOV R1,#0AH     ;number of bytes to process
AGAIN: MOV A,R1
MOV R2,A        ;number of bytes
MOV R0,#3AH     ;ending address of data
BACK:  MOV A,@R0 ;1st valur to acc
DEC R0         ;prev byte
MOV B,@R0      ;2nd value to B
CLR C          ;carry from previous process
SUBB A,B       ;compare 2 nos
JC SKIP       ;skip swapping
MOV B,@R0      ;put 2nd no in B
INC R0         ;next byte
MOV A,@R0      ;put 1st no in A
MOV @R0,B      ;swap 2nd no
DEC R0         ;prev byte
MOV @R0,A      ;swap 1st no
SKIP:  DJNZ R2,BACK ;repeat for next position
      DJNZ R1,AGAIN ;repeat for next number
      SJMP LAST    ;end statement

READ:  MOV R0,#30H ;1st byte of source
      MOV R1,#20H ;1st byte of destination
      MOV R6,#0AH ;number of bytes
COPY:  MOV A,@R0   ;copying input ...
      MOV @R1,A    ;    for reference
      INC R1       ;next byte
      INC R0       ;next byte
      DJNZ R6,COPY ;repeat for n bytes
      RET         ;return to main program

LAST:  NOP        ;close program
      END
```

Output:

Internal memory:

before running the code:

```
I:0x20: 00 00 00 00 00 00 00 00 00 00 00
I:0x30: 3A 12 FF AC 10 00 12 10 13 01
I:0x40: 00 00 00 00 00 00 00 00 00 00 00
```

after running the code:

```
I:0x20: 3A 12 FF AC 10 00 12 10 13 01 00
I:0x30: FF AC 3A 13 12 12 10 10 01 00 00
I:0x40: 00 00 00 00 00 00 00 00 00 00 00
```

SFRs:

Register	Value
Regs	
r0	0x39
r1	0x00
r2	0x00
r3	0x00
r4	0x00
r5	0x00
r6	0x00
r7	0x00
Sys	
a	0x00
b	0x00
sp	0x07
sp_max	0x09
dptr	0x0000
PC \$	C:0x002D
states	879
sec	0.00043950
psw	0x00