

# Largest number of N 8-bit numbers

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## LARGEST NUMBER OF N 8-BIT NUMBERS

### AIM

To write an assembly language program to find the largest of n numbers.

### ASSEMBLY LANGUAGE PROGRAM

```

C500 LXI H C600 21 ; Load the HL register pair immediately
C501          00 ;
C502          C6 ;
C503 MOV B M 46 ; Move the memory content in to B register
C504 INX H 23 ; Increment the HL register pair
C505 MOV A M 7E ; Move the memory content in the A register
C506 DCR B 05 ; Decrement the B register content
C507 INX H 23 ; Increment the HL register pair
C508 CMP M BE ; Compare the memory content with the
           accumulator
C509 JNC C50D D2 ; Jump if carry = 0 to C50DH
C50A          0D ;
C50B          C5 ;
C50C MOV A M 7E ; Move the memory content to accumulator
C50D DCR B 05 ; Decrement the B register content
C50E JNZ C507 C2 ; Jump if not zero to C507H
C50F          07 ;
C510          C5 ;
C511 STA C620 32 ; Store the accumulator at memory location
C512          20 ; C620H
C513          C6 ;
C514 HLT 76 ; Halt the execution

```

### EXECUTION 1

```

C600 05 ; Number of input data
C601 A5 ; Input data
C602 33 ; Input data
C603 C6 ; Input data
C604 B7 ; Input data
C605 D8 ; Input data
C620 D8 ; Largest data (Output)

```

## PROGRAM TRACE

Addr	MC	Mnemonic	A	B	C	D	E	H	L	SP	Flag Word
			00	00	00	00	00	00	00	0000	0000 0000
C500	21	LXI H C600	00	00	00	00	00	C6	00	0000	0000 0000
C503	46	MOV B M	00	05	00	00	00	C6	00	0000	0000 0000
C504	23	INX H	00	05	00	00	00	C6	01	0000	0000 0000
C505	7E	MOV A M	A5	05	00	00	00	C6	01	0000	0000 0000
C506	05	DCR B	A5	04	00	00	00	C6	01	0000	0001 0000
C507	23	INX H	A5	04	00	00	00	C6	02	0000	0001 0000
C508	BE	CMP M	A5	04	00	00	00	C6	02	0000	1001 0000
C509	D2	JNC C50D	A5	04	00	00	00	C6	02	0000	1001 0000
C50D	05	DCR B	A5	03	00	00	00	C6	02	0000	0001 0100
C50E	C2	JNZ C507	A5	03	00	00	00	C6	02	0000	0001 0100
C507	23	INX H	A5	03	00	00	00	C6	03	0000	0001 0100
C508	BE	CMP M	A5	03	00	00	00	C6	03	0000	1001 0001
C509	D2	JNC C50D	A5	03	00	00	00	C6	03	0000	1001 0001
C50C	7E	MOV A M	C6	03	00	00	00	C6	03	0000	1001 0001
C50D	05	DCR B	C6	02	00	00	00	C6	03	0000	0001 0001
C50E	C2	JNZ C507	C6	02	00	00	00	C6	03	0000	0001 0001
C507	23	INX H	C6	02	00	00	00	C6	04	0000	0001 0001
C508	BE	CMP M	C6	02	00	00	00	C6	04	0000	1001 0000
C509	D2	JNC C50D	C6	02	00	00	00	C6	04	0000	1001 0000
C50D	05	DCR B	C6	01	00	00	00	C6	04	0000	0001 0000
C50E	C2	JNZ C507	C6	01	00	00	00	C6	04	0000	0001 0000
C507	23	INX H	C6	01	00	00	00	C6	05	0000	0001 0000
C508	BE	CMP M	C6	01	00	00	00	C6	05	0000	1001 0101
C509	D2	JNC C50D	C6	01	00	00	00	C6	05	0000	1001 0101
C50C	7E	MOV A M	D8	01	00	00	00	C6	05	0000	1001 0101
C50D	05	DCR B	D8	00	00	00	00	C6	05	0000	0101 0101
C50E	C2	JNZ C507	D8	00	00	00	00	C6	05	0000	0101 0101
C511	32	STA C620	D8	00	00	00	00	C6	05	0000	0101 0101
C514	76	HLT	D8	00	00	00	00	C6	05	0000	0101 0101

## FLAG WORD

S	Z	x	Ac	x	P	x	Cy
0	1	0	1	0	1	0	1

## EXECUTION 2

C600 03 ; Number of input data  
 C601 FF ; Input data  
 C602 AB ; Input data  
 C603 DE ; Input data  
 C620 FF ; Largest data (Output)

## PROGRAM TRACE

Addr	MC	Mnemonic	A	B	C	D	E	H	L	SP	Flag Word
			00	00	00	00	00	00	00	0000	0000 0000
C500	21	LXI H C600	00	00	00	00	00	C6	00	0000	0000 0000
C503	46	MOV B M	00	03	00	00	00	C6	00	0000	0000 0000
C504	23	INX H	00	03	00	00	00	C6	01	0000	0000 0000
C505	7E	MOV A M	FF	03	00	00	00	C6	01	0000	0000 0000
C506	05	DCR B	FF	02	00	00	00	C6	01	0000	0001 0000
C507	23	INX H	FF	02	00	00	00	C6	02	0000	0001 0000
C508	BE	CMP M	FF	02	00	00	00	C6	02	0000	1001 0000
C509	D2	JNC C50D	FF	02	00	00	00	C6	02	0000	1001 0000
C50D	05	DCR B	FF	01	00	00	00	C6	02	0000	0001 0000
C50E	C2	JNZ C507	FF	01	00	00	00	C6	02	0000	0001 0000
C507	23	INX H	FF	01	00	00	00	C6	03	0000	0001 0000
C508	BE	CMP M	FF	01	00	00	00	C6	03	0000	1001 0000
C509	D2	JNC C50D	FF	01	00	00	00	C6	03	0000	1001 0000
C50D	05	DCR B	FF	00	00	00	00	C6	03	0000	0101 0100
C50E	C2	JNZ C507	FF	00	00	00	00	C6	03	0000	0101 0100
C511	32	STA C620	FF	00	00	00	00	C6	03	0000	0101 0100
C514	76	HLT	FF	00	00	00	00	C6	03	0000	0101 0100

## FLAG WORD

S	Z	x	Ac	x	P	x	Cy
0	1	0	1	0	1	0	0

## REFERENCE

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