SMALLEST AND LARGEST

AIM

To develop an assembly language program to find the largest and smallest of 8-bit numbers.

ALGORITHM

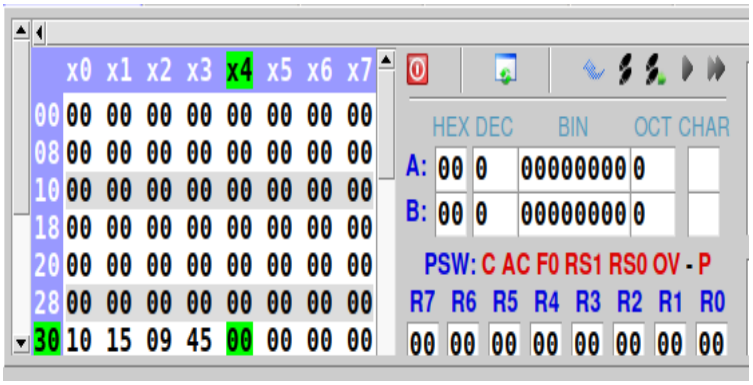
```
Algorithm 1 Largest and smallest of 8-bit numbers
1: Start
2: Read the size of array (n).
3: Read the array (arr).
4: max = arr [0]
5: mi n = arr [0]
6: for i = 1 to (n− 1) do
7:    if arr[i]>max then
8:          max = arr[i]
9:    else if arr[i]< mi n then
10:         min = arr[i]
11:   end if
12:end if
13:Print largest (max) and smallest (min) of the numbers.
14:Stop
```

SOURCE CODE

```
ORG 0000H
MOV R0, #030H ;Start address of array
MOV R7,#04H ;number of elements
MOV A,@R0 ;smallest stored in R1
MOV R1,A
MOV B,@R0
MOV R2,B ;largest stored in R2
INC R0
Find:DJNZ R7,next
JMP END
next:CLR C
MOV A,R1
SUBB A,@R0
JNC small ;a is small
JMP check
small:MOV A,@R0
MOV R1,A
check:CLR C
MOV A,R2
SUBB A,@R0
JC large
JMP finish
large:MOV A,@R0
MOV R2,A
finish:INC R0
```

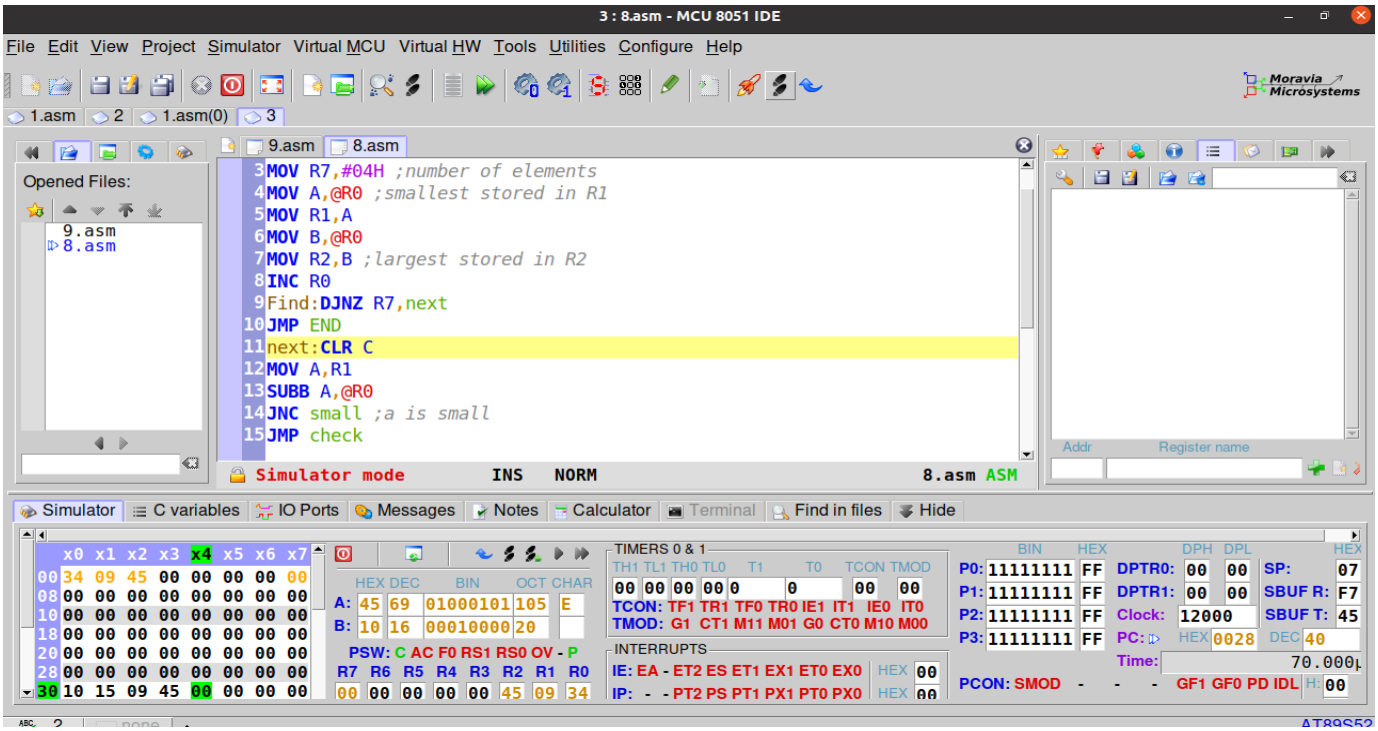
JMP find ;smallest in R1 ,largest in R2
END: END

INPUT:



Input at addresses starting from 0x30

OUTPUT:



Smallest in R1 and Largest in R2

RESULT:

Assembly language programs for finding the largest and smallest of 8-bit numbers have been developed and verified using MCU-8051-IDE.

SACHIN G
RO:54