MICROPROCESSOR AND INTERFACING

LAB MANUAL: 7

Lab Tasks

Execute the following tasks.

TASK 1:

Write a code to perform multiplication on 8-bit data (5 data values) and store the result in the next Memory locations.

SOURCE CODE:

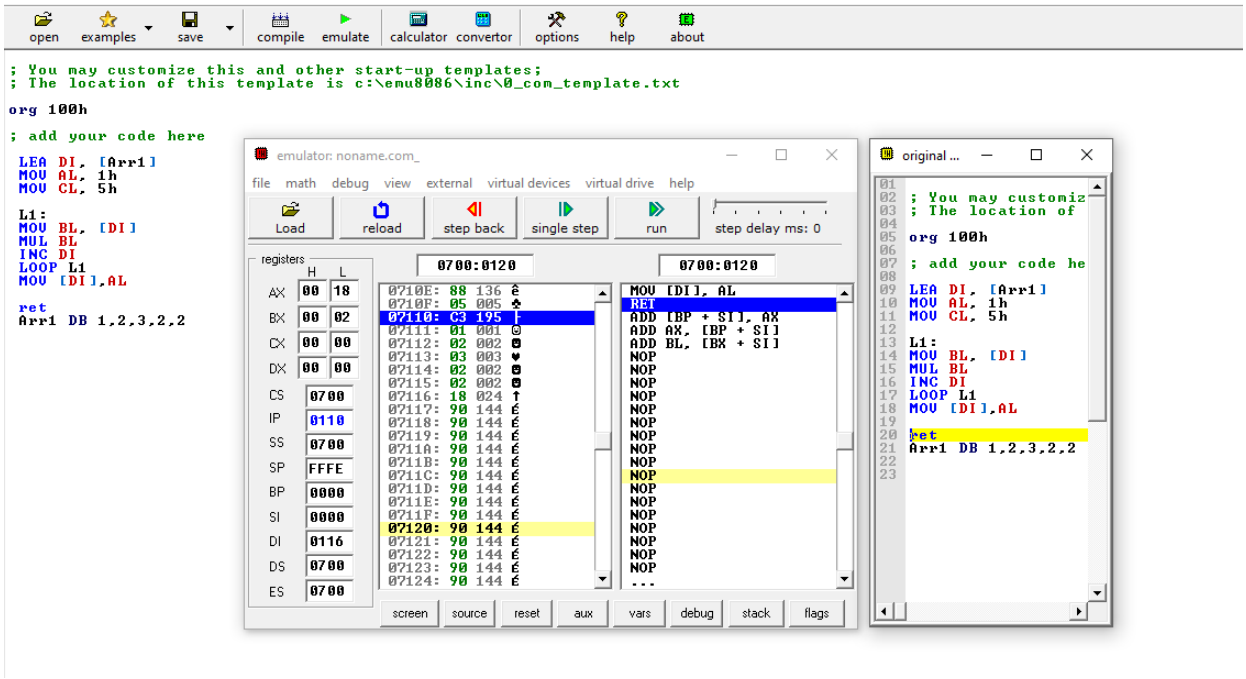
```
 LEA DI, [Arr1]
MOV AL, 1h
MOV CL, 5h

L1:
MOV BL, [DI]
MUL BL
INC DI
LOOP L1
MOV [DI], AL

ret
Arr1 DB 1,2,3,2,2
```

EXPLANATION:

The multiplication of 5 data values or elements of array Arr1 is 18 in hexadecimal and 24 in decimal and is stored in lower 8 bits of accumulator register.



TASK 2:

Write a code to add the numbers of two arrays respectively and multiply their results?

SOURCE CODE:

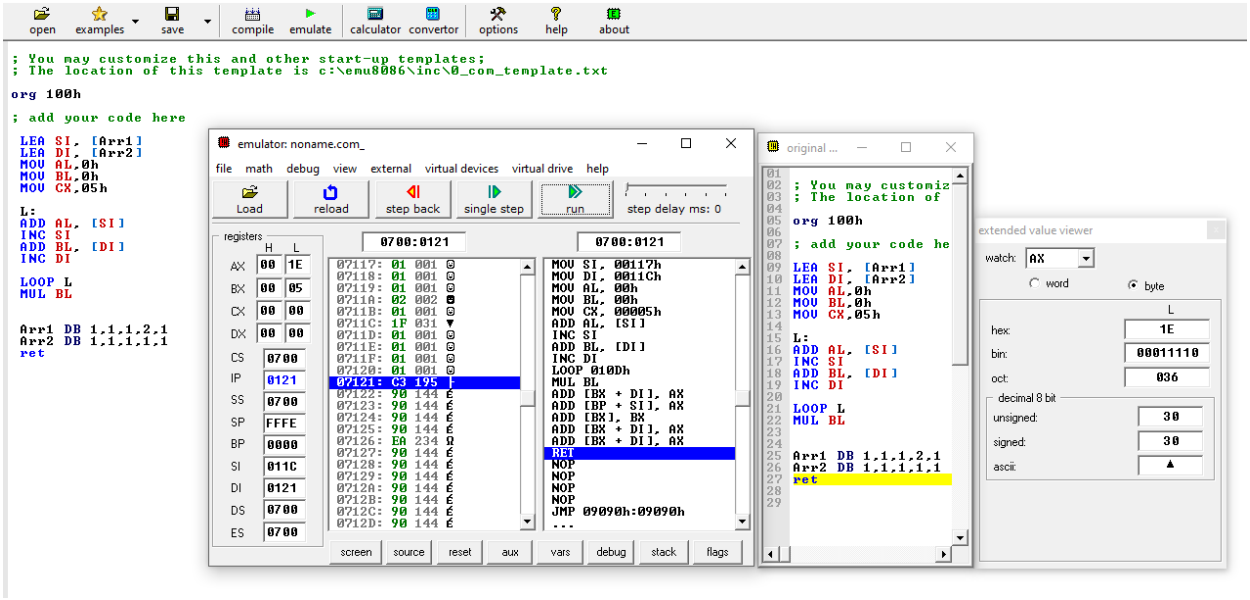
```
LEA SI, [Arr1]
 LEA DI, [Arr2]
 MOV AL,0h
 MOV BL,0h
 MOV CX,05h
 L:
 ADD AL, [SI]
 INC SI
 ADD BL, [DI]
 INC DI

 LOOP L
 MUL BL

 Arr1 DB 1,1,1,2,1
 Arr2 DB 1,1,1,1,1
 Ret
```

EXPLANATION:

Sum of elements of Arr1 is 6 and sum of elements of Arr2 is 5. After multiplying the sum of elements of Arr1 and Arr2, the result which is 30 in decimal will be stored in lower eight bits of Accumulator register.



TASK 3:

Write a program to find the minimum number of a byte sized array and store it in a variable min.

SOURCE CODE:

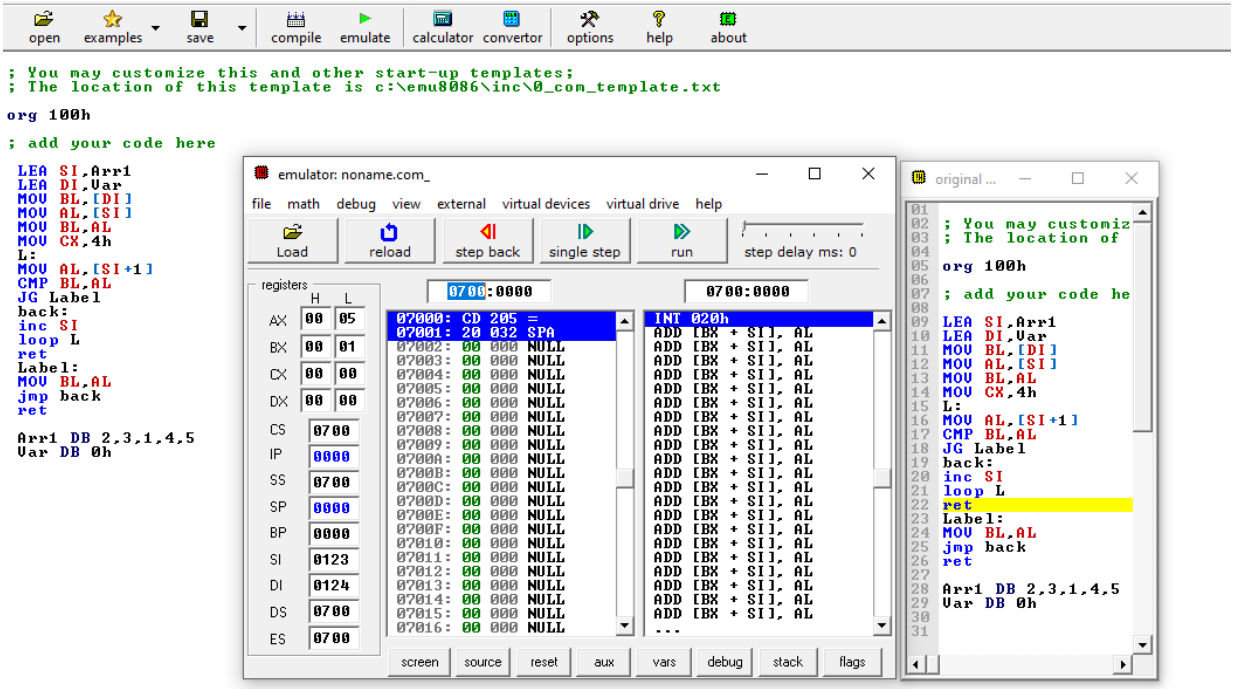
```
LEA SI,Arr1
 LEA DI,Var
 MOV BL,[DI]
 MOV AL,[SI]
 MOV BL,AL
 MOV CX,4h
 L:
 MOV AL,[SI+1]
 CMP BL,AL
 JG Label
 back:
 inc SI
 loop L
 ret
```

Label:
MOV BL,AL
jmp back
ret

Arr1 DB 2,3,1,4,5
Var DB 0h

EXPLANATION:

First element of array is in variable or BL and second element is in lower eight bits of Accumulator register. After comparison if the element of BL is greater than AL then the value in AL will be stored in BL and this will be repeated until unless the minimum value is in BL.



TASK 4:

Search a number in an array (Define any array and search any number from it.

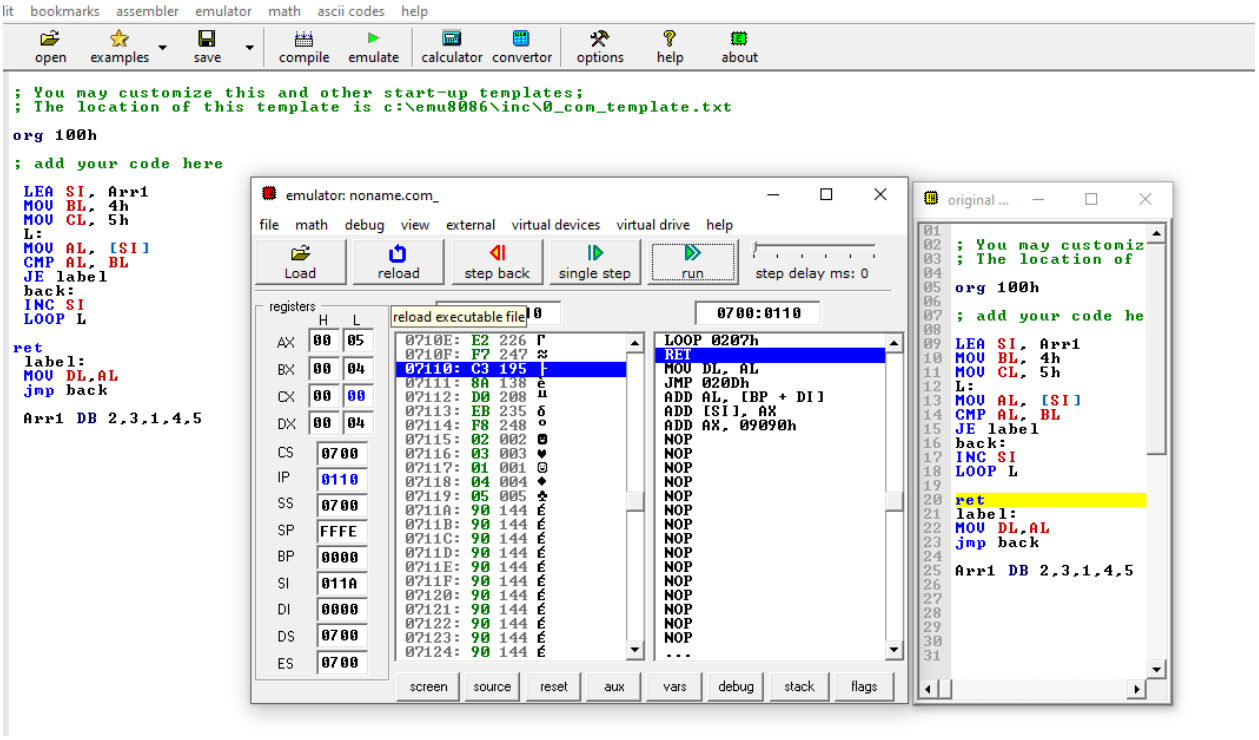
SOURCE CODE:

LEA SI, Arr1
MOV BL, 4h
MOV CL, 5h
L:

MOV AL, [SI]
CMP AL, BL
JE label
back:
INC SI
LOOP L

ret
label:
MOV DL,AL
jmp back

Arr1 DB 2,3,1,4,5



TASK 5:

Write a program to calculate the factorial of a given number?

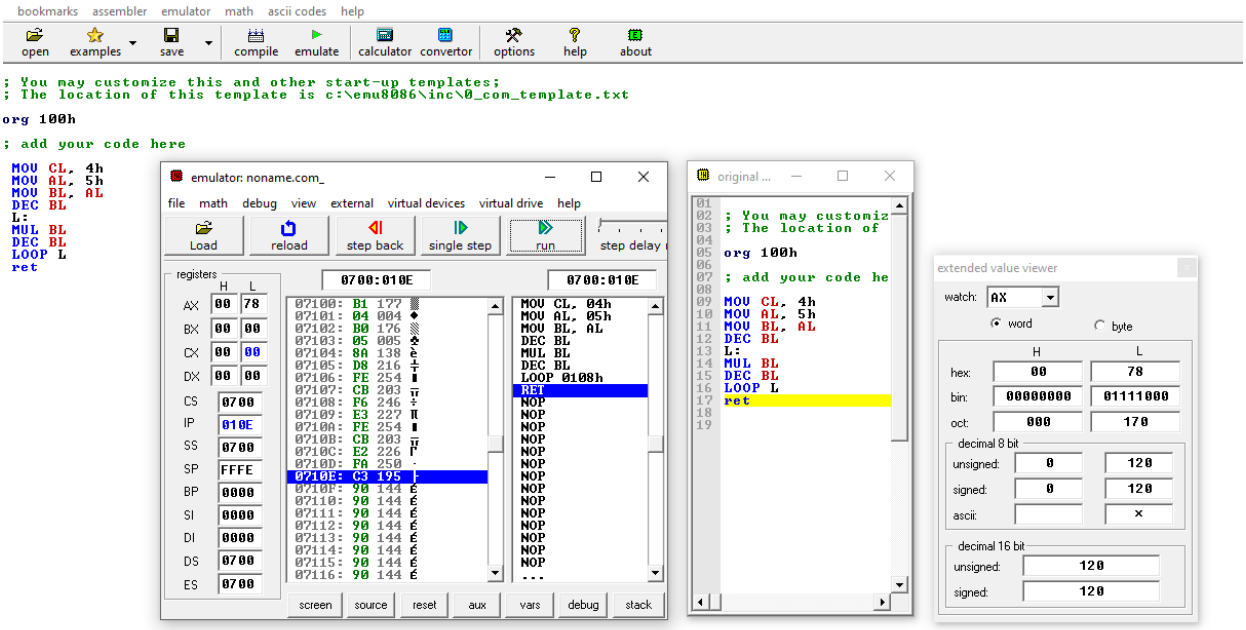
SOURCE CODE:

MOV CL, 4h
MOV AL, 5h
MOV BL, AL

```
DEC BL
L:
MUL BL
DEC BL
LOOP L
Ret
```

EXPLANATION:

The factorial of 5 is 78 in hexadecimal and 120 in decimal which is shown in extended value viewer



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