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Roll No: 20CO24

Experiment No. 1

AIM – To implement arithmetic operations (ADD, SUB, MUL, DIV) on 8-bit numbers.

Software required – emu8086

Programs-

i. Addition of two 8-bit numbers.

```
data segment
   n1 db 12h                    ; add your data here!
   n2 db 02h
   result db 00h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data                ; set segment registers
   mov  ds, ax
   mov  al,n1
   mov  bl,n2
   add   al, bl
   mov  result, al
   mov  ax, 4c00h               ; exit to operating system.
   int 21h
ends
end start                       ; set entry point and stop the assembler.
```

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ii. Subtraction of two 8-bit numbers.

```
data segment
   n1  db 12h                   ; add your data here!
   n2  db 02h
   result  db  00h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data                ; set segment registers
   mov  ds, ax
   mov  al,n1
   mov  bl,n2
   sub   al, bl
   mov  result, al
   mov  ax, 4c00h               ; exit to operating system.
```

```
   int 21h
ends
end start                    ; set entry point and stop the assembler.
```

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iii. Multiplication of two 8-bit numbers.

```
data segment
   n1  db 12h                ; add your data here!
   n2  db 02h
   result  dw  0000h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data             ; set segment registers
   mov  ds, ax
   mov  al,n1
   mov  bl,n2
   mul   bl
   mov  result, ax
   mov  ax, 4c00h            ; exit to operating system.
   int 21h
ends
end start                    ; set entry point and stop the assembler.
```

IV) Division of two 8-bit numbers.

```
data segment
   n1 db 12h                 ; add your data here!
   n2 db 02h
   quo db 00h
   rem db 00h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data             ; set segment registers
   mov  ds, ax
  mov ax,0000h
  mov bx,0000h
   mov  al,n1
   mov  bl,n2
   div     bl
   mov  quo, al
```

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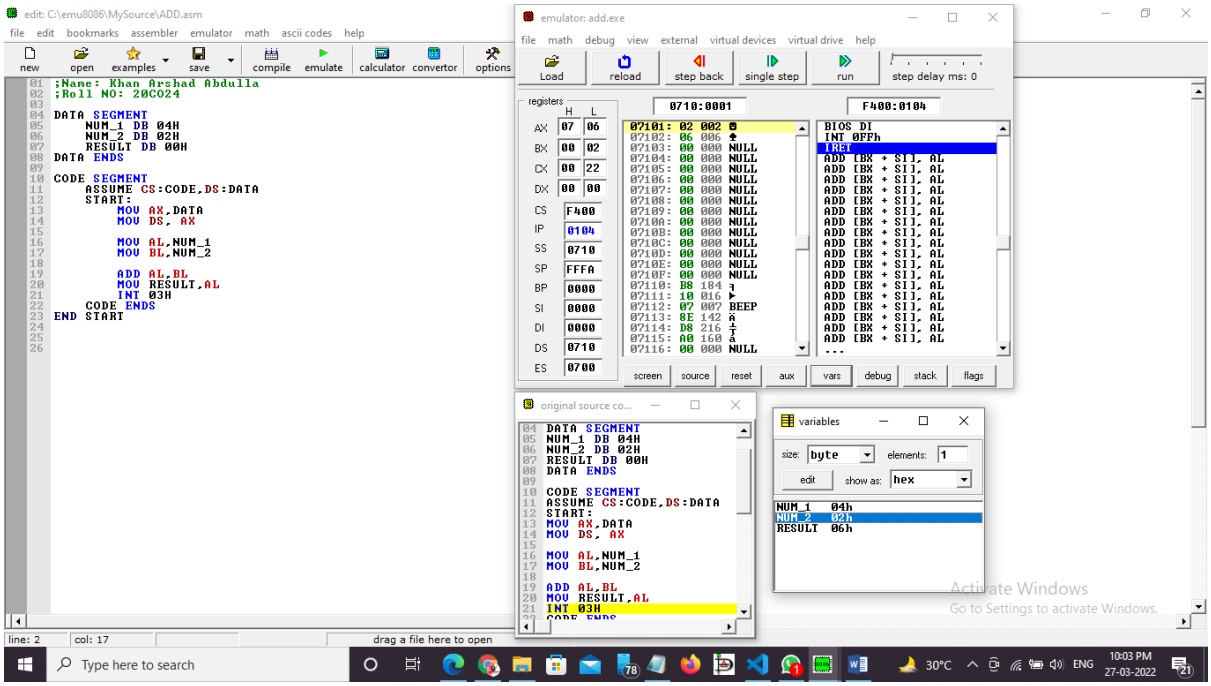
```
    mov  rem, ah
    mov  ax, 4c00h              ; exit to operating system.
    int 21h
ends
end start                       ; set entry point and stop the assembler.
```

Procedure –

1. **Launch emu8086 IDE** from menu.
2. **Edit** your program , save as file_name.asm
3. **Compile** your program to check for syntax errors, rectify if any error is present. Save and recompile your program.
4. **Run** to observe output of your program.

Output –

1. Addition of two 8-bit numbers.



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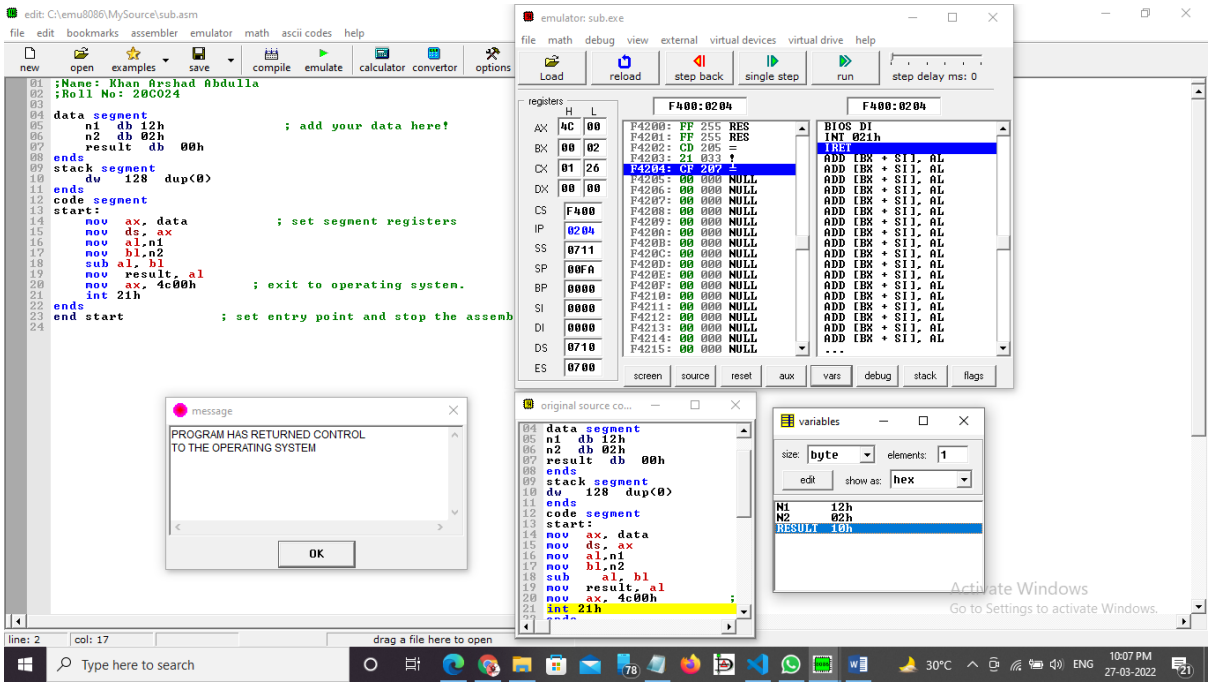
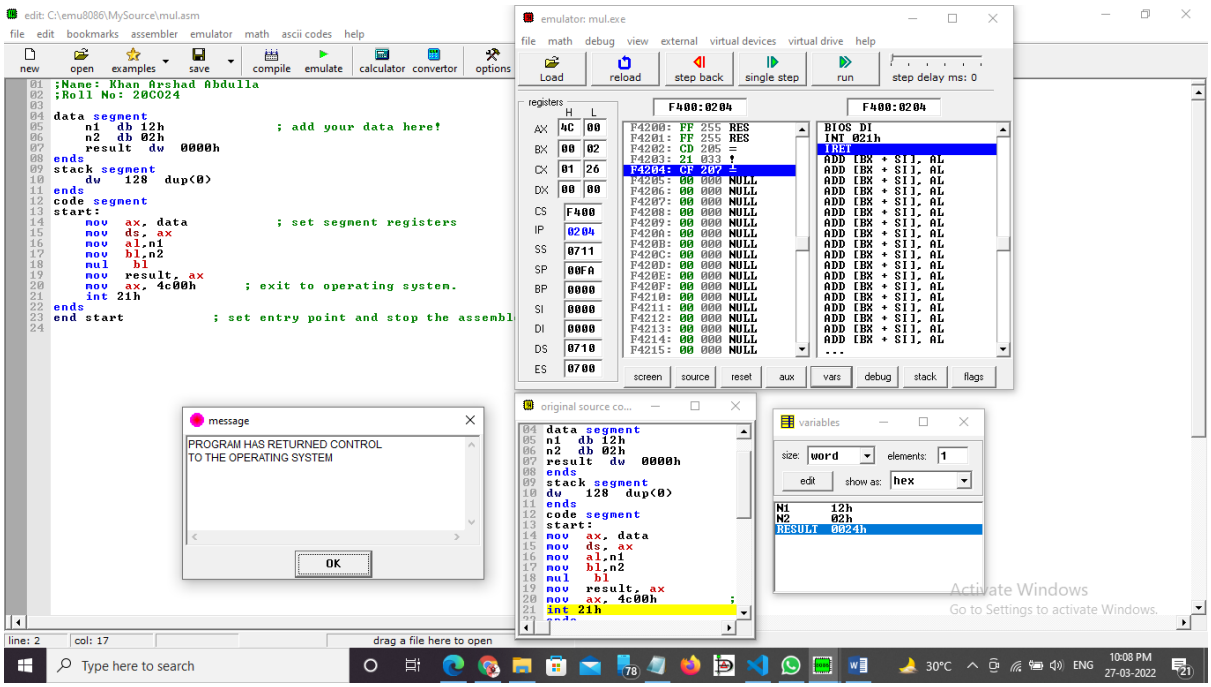
2. Subtraction of two 8-bit numbers.



3. Multiplication of two 8-bit numbers.



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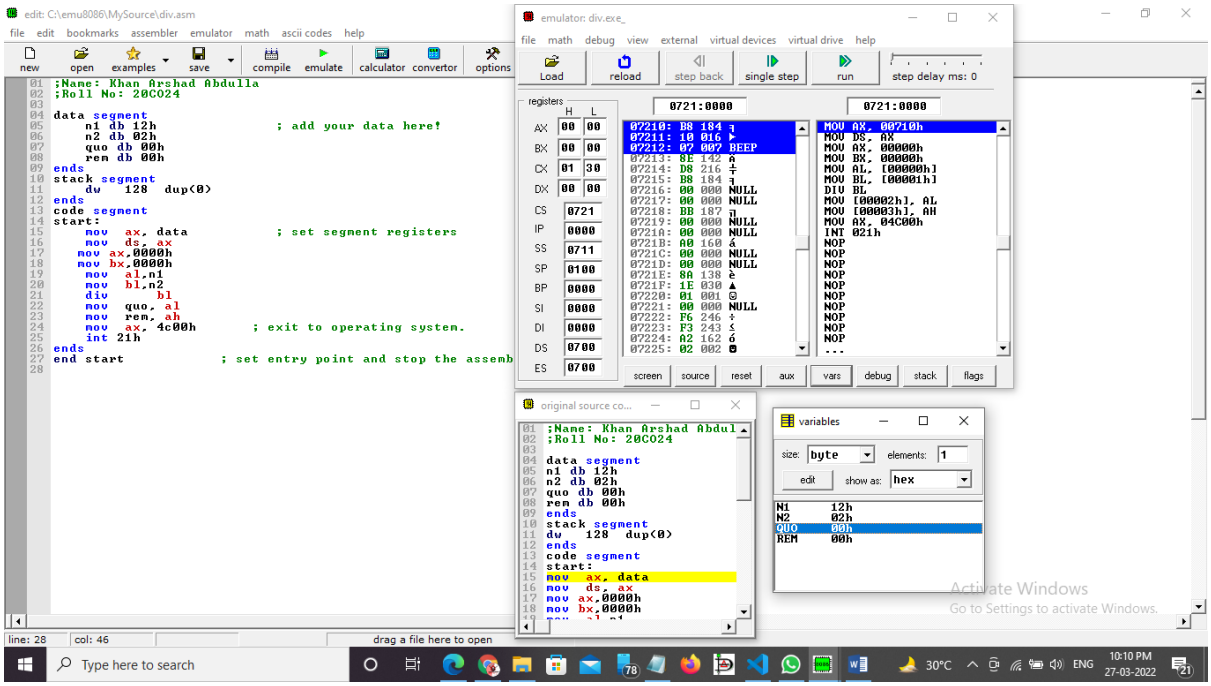
4. **Division of two 8-bit numbers.**



Conclusion - To perform arithmetic operations we have to use ADD , SUB , MUL , DIV instructions.

_____END_____