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Roll No: 20CO24

Date – 20/03/2022

Experiment No. 3

Aim- To perform arithmetic operations on 32-bit numbers.

32-bit operations

	N1	(32-bits)	12345678h	=	1234h	5678h
+			+		+	+
	N2	(32-bits)	11112222h	=	1111h	2222h
	Result	(32-bit)	2345789Ah	=	2345h (16-bits)	789Ah (16-bits)

1. Program for addition of two 32-bit numbers

```
data segment
n1      dd      12345678h
n2      dd      11112222h
result  dd      00000000h
ends
code segment
start:
        mov     ax , data
        mov     ds , ax
        mov     es , ax
        mov     si , offset[n1]
        mov     di , offset[n2]
        mov     ax , [si]
        mov     cx , [di]
        add     ax , cx
        mov     bx , offset[result]
        mov     [bx] , ax
        mov     ax , [si+2]
        mov     cx , [di+2]
        adc     ax , cx
        mov     [bx+2] , ax
        mov     ax , 4c00h              ; exit to operating system.
        int     21h
        ends
        end     start                   ; set entry point and stop the assembler.
```

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2. Program for subtraction of two 32-bit numbers

```
data segment
n1          dd  12345678h
n2          dd  11112222h
result      dd  00000000h
ends
code segment
```

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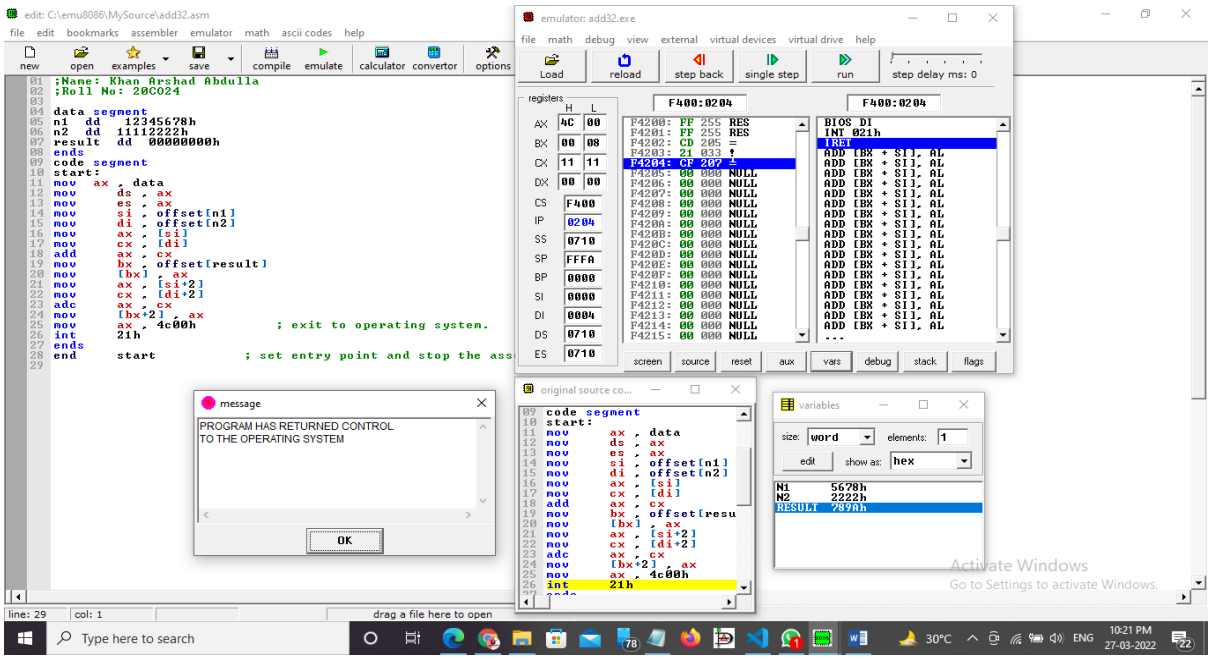
```
start:
    mov     ax , data
    mov     ds , ax
    mov     es , ax
    mov     si , offset[n1]
    mov     di , offset[n2]
    mov     ax , [si]
    mov     cx , [di]
    sub     ax , cx
    mov     bx , offset[result]
    mov     [bx] , ax
    mov     ax , [si+2]
    mov     cx , [di+2]
    sbb     ax , cx
    mov     [bx+2] , ax
    mov     ax , 4c00h                  ; exit to operating system.
    int     21h
    ends
    end     start
```

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. Program for addition of two 32-bit numbers



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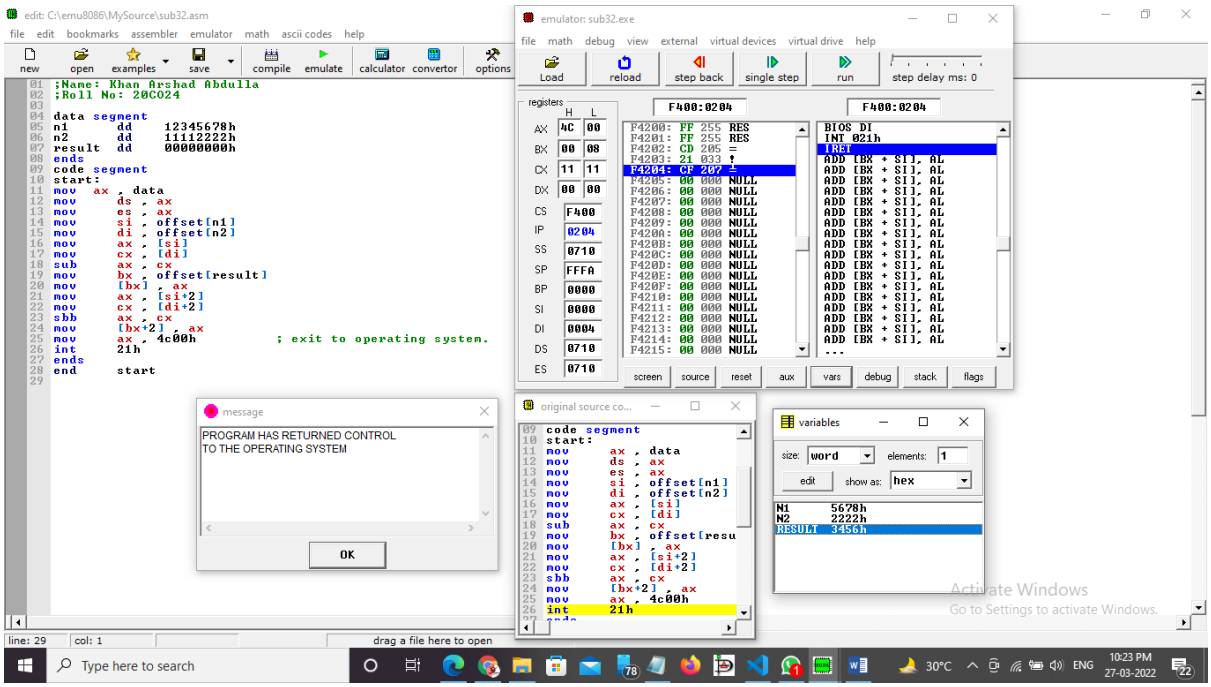
2. Program for subtraction of two 32-bit numbers



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

_____END_____