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Roll No: 20CO24

Date – 20/03/2022

Experiment No. 2

AIM – To implement arithmetic operations (ADD, SUB, MUL, DIV) on 16-bit numbers.

Software required – emu8086

Programs-

1. Addition of two 16-bit numbers.

```
data segment
   n1  dw  1111h                ; add your data here!
   n2  dw  2222h
   result  dw  0000h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data                ; set segment registers
   mov  ds, ax
   mov  ax,n1
   mov  bx,n2
   add   ax, bx
   mov  result, ax
   INT 03H
ends
end start                       ; set entry point and stop the assembler.
```

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2. Subtraction of two 16-bit numbers.

```
data segment
   n1 dw  3333h                 ; add your data here!
   n2 dw  1111h
   result  dw  0000h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data                ; set segment registers
   mov  ds, ax
   mov  ax,n1
   mov  bx,n2
   sub   ax, bx
   mov  result, ax
   mov  ah, 4ch                 ; exit to operating system.
```

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

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3. Multiplication of two 16-bit numbers.

```
data segment
   n1 dw  1111h              ; add your data here!
   n2 dw  2222h
   result_low  dw  0000h
result_high  dw  0000h
ends
stack segment
   dw   128  dup(0)
ends
code segment
start:
   mov  ax, data             ; set segment registers
   mov  ds, ax
   mov  ax,n1
   mov  bx,n2
   mul   bx
   mov  result_l, ax
   mov  result_h, dx
   mov  ax, 4c00h            ; exit to operating system.
   int 21h
ends
end start                    ; set entry point and stop the assembler.
```

---

4. Division of two 16-bit numbers.

```
data segment
   n1 dw 2222h                ; add your data here!
   n2 db 1111h
   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,n1
   mov  bx,n2
   div     bx
   mov  quo, al
   mov  rem, ah
   mov  ax, 4c00h            ; exit to operating system.
   int 21h
ends
```

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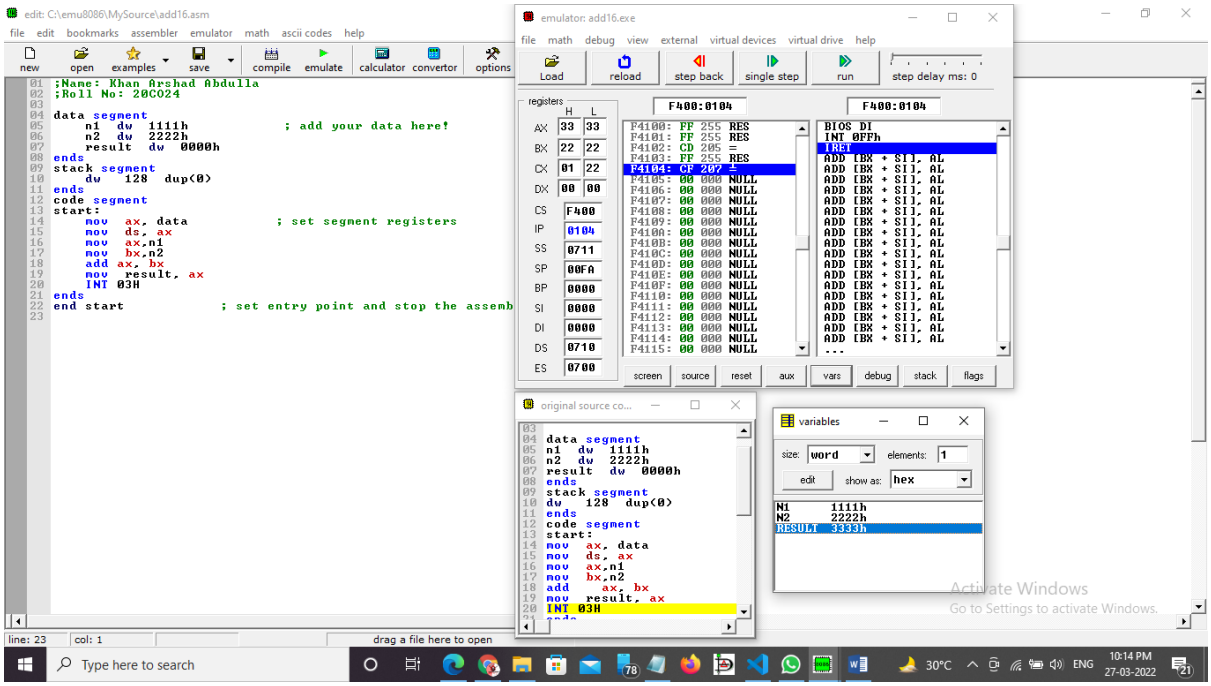
end start ; set entry point and stop the assembler.

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 16-bit numbers.



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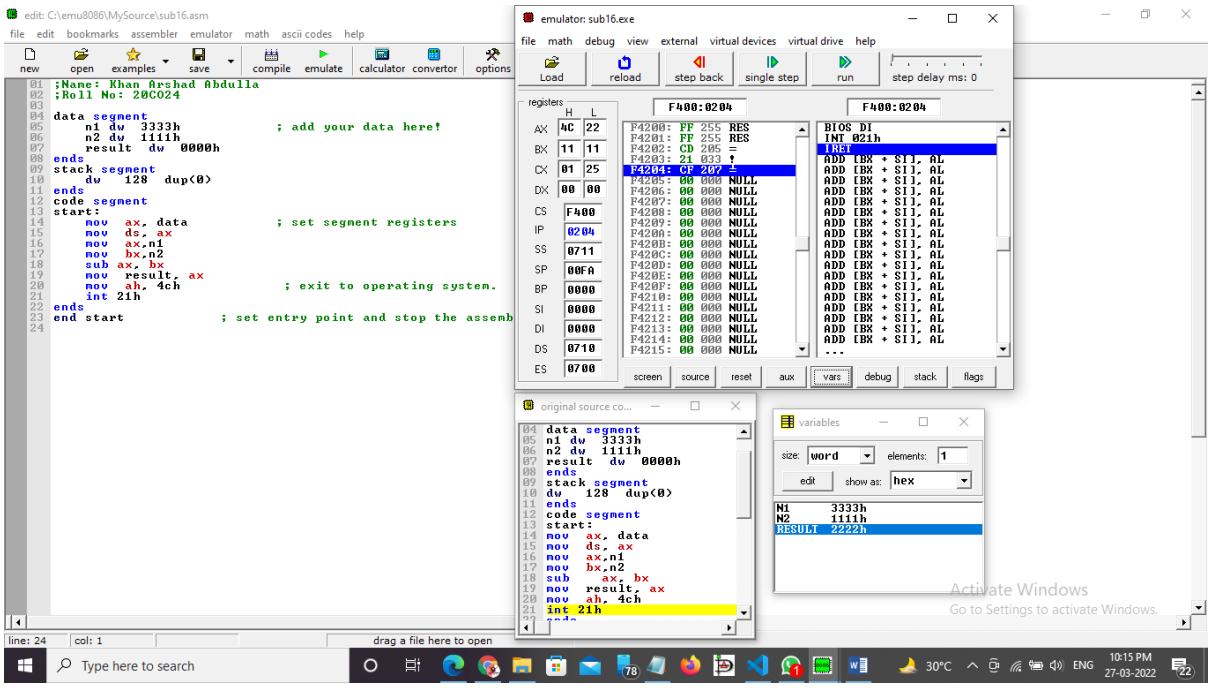
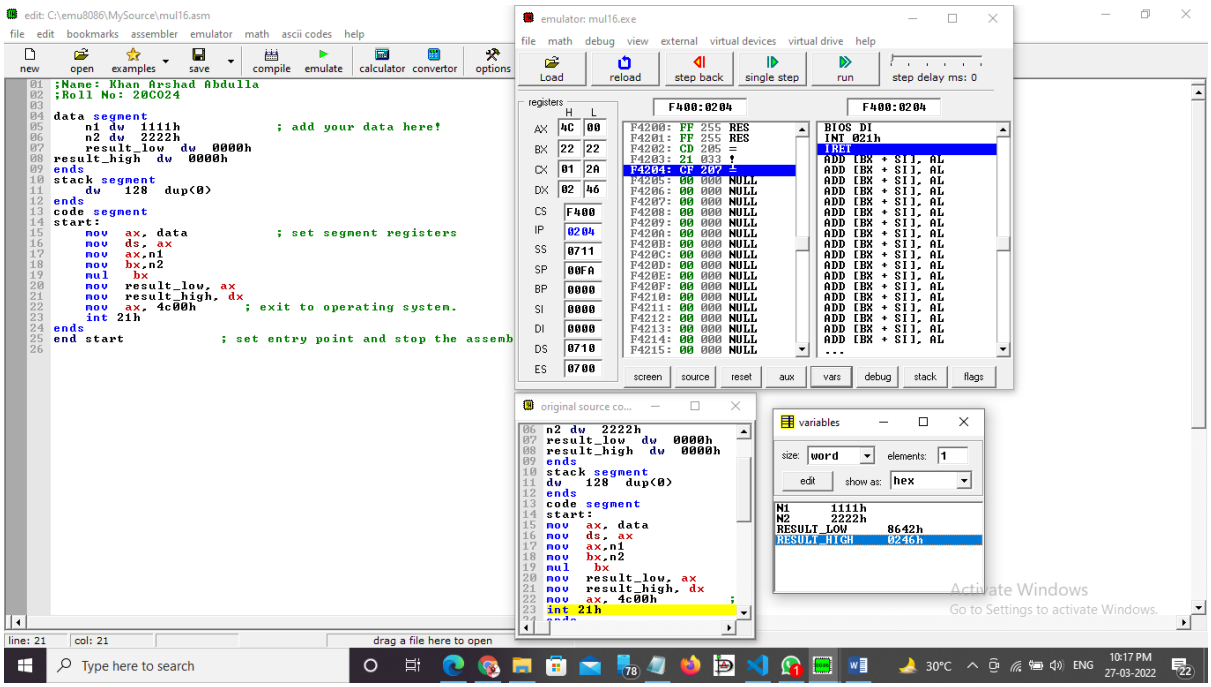
2. Subtraction of two 16-bit numbers.



3. Multiplication of two 16-bit numbers.



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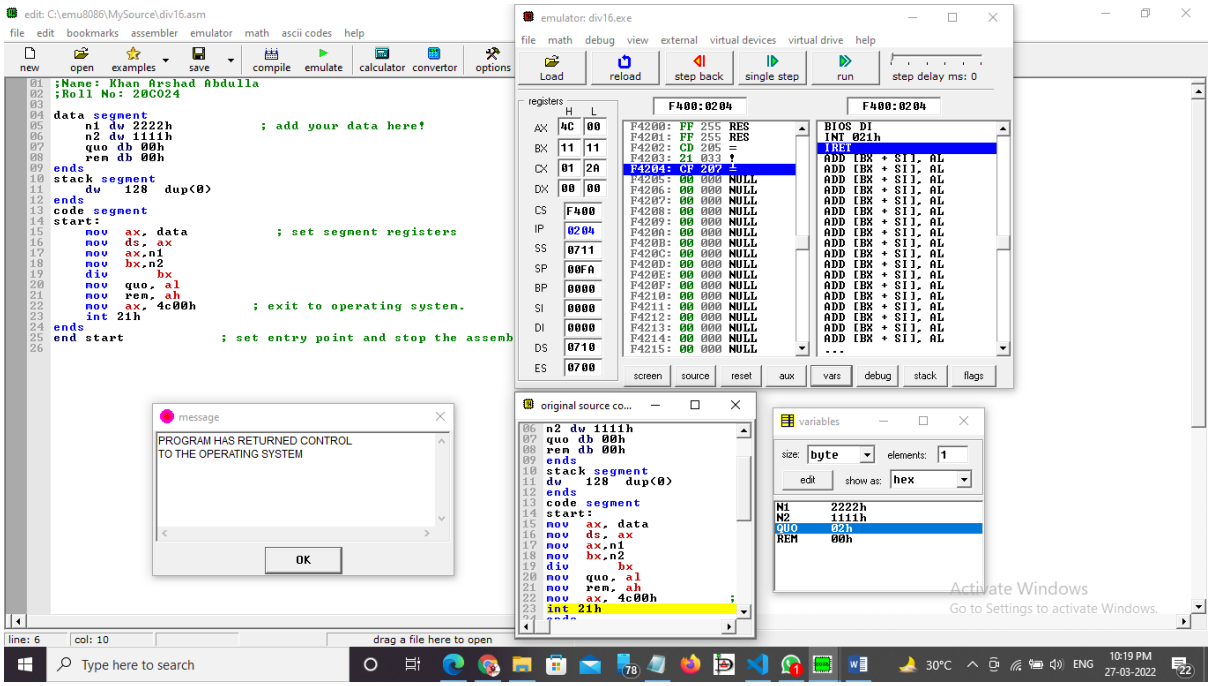
4. Division of two 16-bit numbers.



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

_____END_____