MICROPROCESSOR – EXPT 2

WARREN FERNANDES **8940**

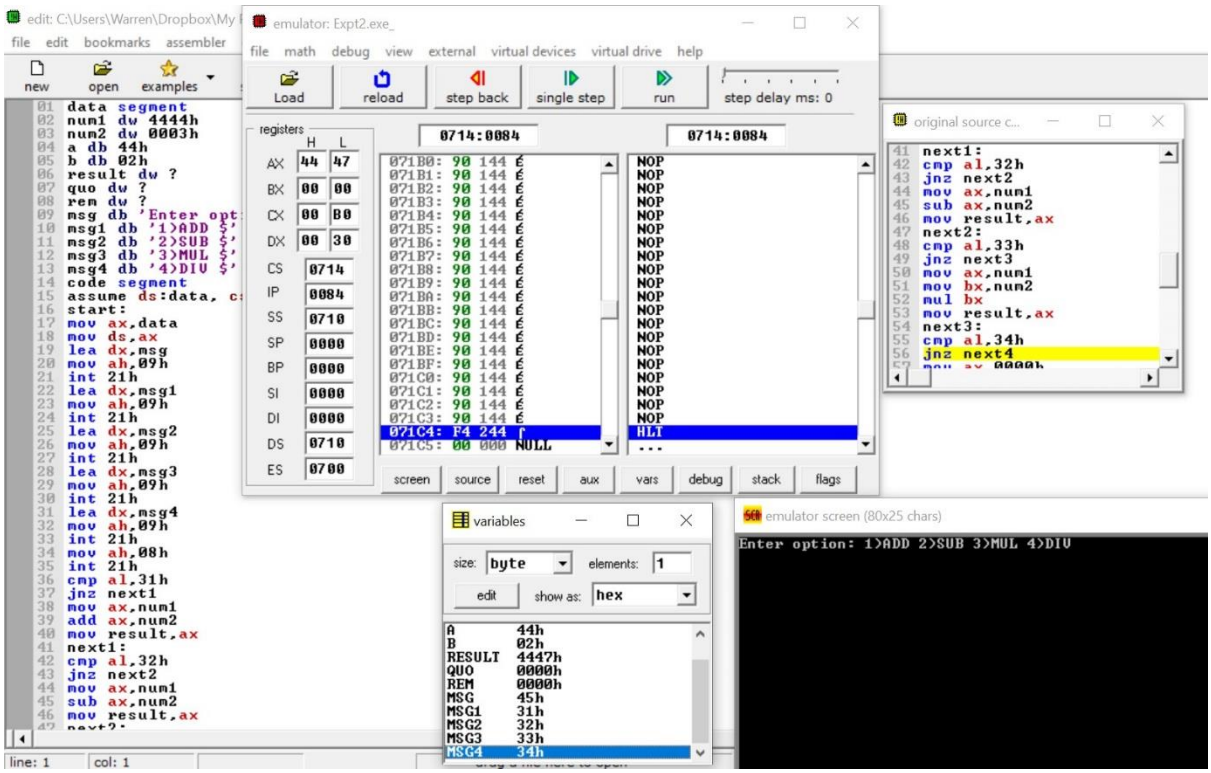
CODE:

```
data segment
num1 dw 4444h
num2 dw 0002h
result dw ?
quo dw ?
rem dw ?
msg db 'Enter option: $'
msg1 db '1)ADD $'
msg2 db '2)SUB $'
msg3 db '3)MUL $'
msg4 db '4)DIV $'
code segment
assume ds:data, cs:code
start:
mov ax,data
mov ds,ax
lea dx,msg
mov ah,09h
int 21h
lea dx,msg1
mov ah,09h
int 21h
lea dx,msg2
mov ah,09h
int 21h
```

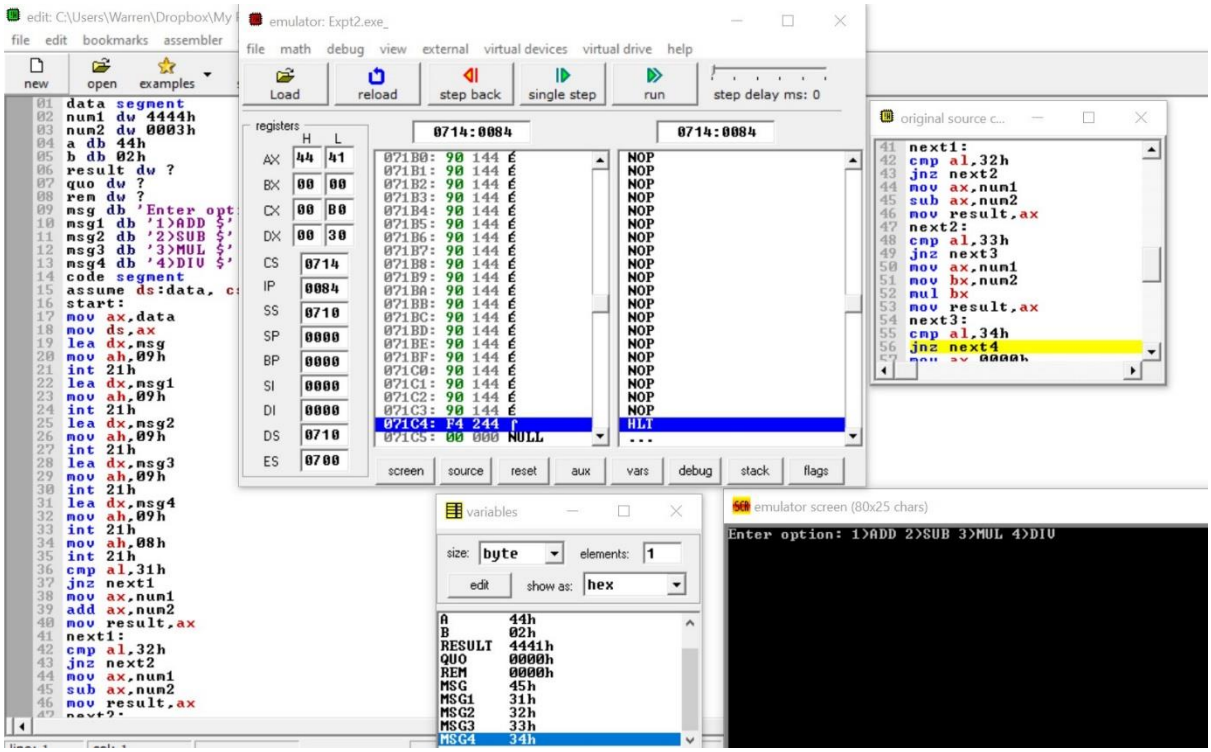
```
lea dx,msg3
mov ah,09h
int 21h
lea dx,msg4
mov ah,09h
int 21h
mov ah,08h
int 21h
cmp al,31h
jnz next1
mov ax,num1
add ax,num2
mov result,ax
next1:
cmp al,32h
jnz next2
mov ax,num1
sub ax,num2
mov result,ax
next2:
cmp al,33h
jnz next3
mov ax,num1
mov bx,num2
mul bx
mov result,ax
next3:
cmp al,34h
jnz next4
```

```
mov ax,0000h
mov dx,0000h
mov ax,num1
div num2
mov quo,ax
mov rem,dx
next4:
end start
```

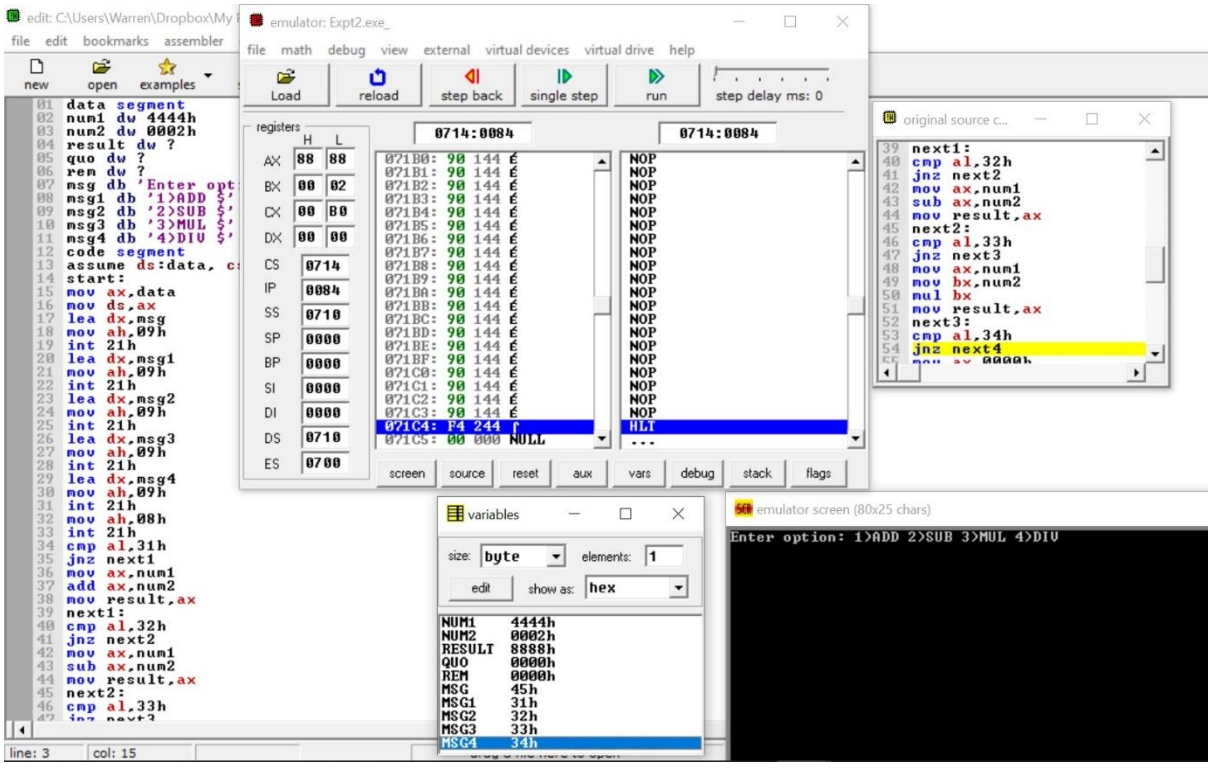
16 Bit Addition



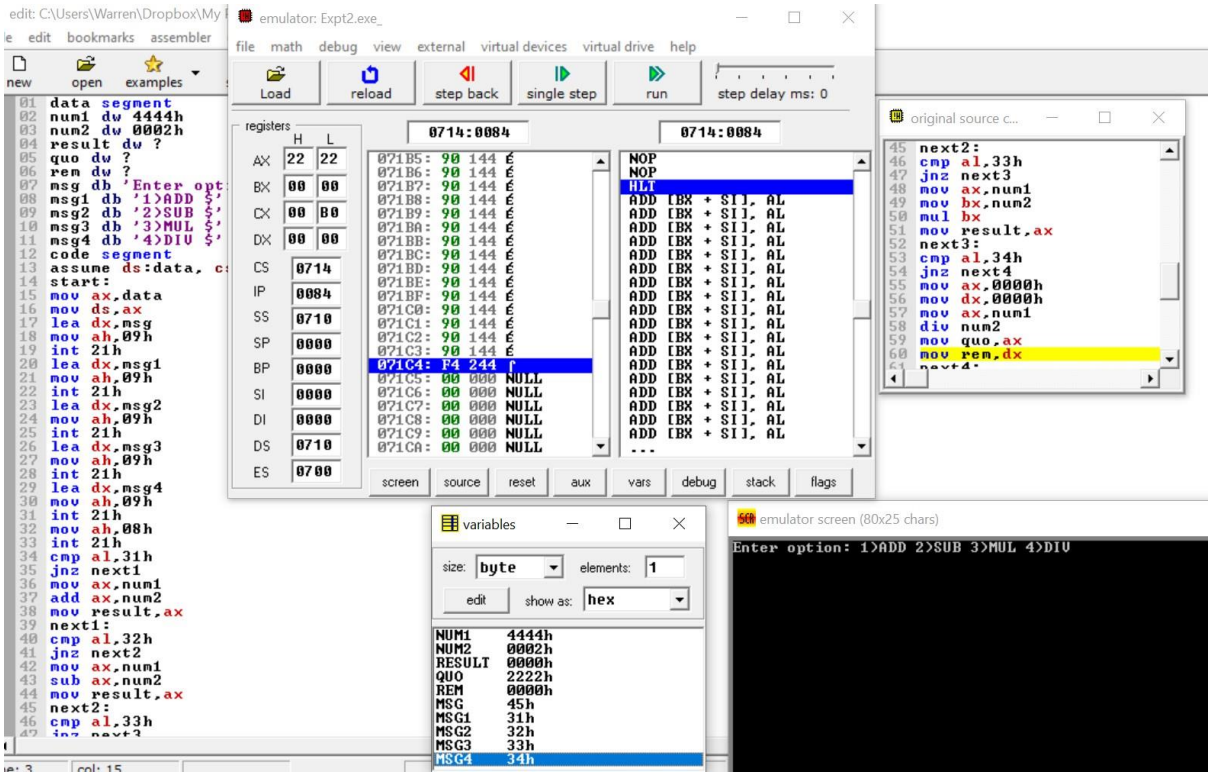
16 Bit Subtraction



16 Bit Multiplication



16 Bit Division



POSTLAB:

Q1. Registers of 8086.

In 8086 Microprocessor, the registors are categorized into mainly four types.

1) General Purpose Registers.
The use of general purpose registers is to store temperory data. while the instructions are executed in the control unit they may work on some numeric value or some operands.
1) AX 2) BX 3) CX 4) DX

2) Segment Registers.
1) Code Segment.
Users cannot modify the content
2) Data Segment
User can modify the content
3) Stack Segment
SS is used to store the information about the memory segment.
4) Extra Segment.
If there is less space in DS segment then ES is used

3) Point & Index Registers.
1) Instruction Pointer
2) Base Pointer
3) Stack Pointer
4) Source Index
5) Destination Index.

4) Flag OR Status Registers.
The flag or status register which contains 9 flags. and the remaining 7 bits are idle. in this register. These flags tell about the status of the process after any arithmetic or logical operation.

2. Logical Address

It is generated by CPU while a program is running. The logical address is virtual address as it does not exist physically therefore, It is also known as Virtual Address. This address is used as a reference to access the physical memory location by CPU. The term logical address space is used for the set of all logical addresses The hardware device called Memory Management Unit is used for mapping logical address.

Physical Address

It identifies a physical location of required data in a memory the user never directly deals with the physical addres but can access by it corresponding logical address must be mapped to the physical address by MMU before they are used.