

Computer Organization and Architecture Lab

Lab ASSIGNMENT- 4

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CSE-F

1. Write a program in assembly language to perform multiplication of 8-bit data.

Code:

```
org 100h
```

```
jmp start
```

```
msg: db "Multiplication of two 8-bit numbers is:",  
0Dh,0Ah,24h
```

```
start:
```

```
    mov dx,msg
```

```
    mov ah,09h
```

```
    int 21h
```

```
num1 db 30h
```

```
num2 db 39h
```

```
    mov al,num1
```

```
    mul num2
```

```
    mov bx,ax
```

```
and ax, 0F000h
```

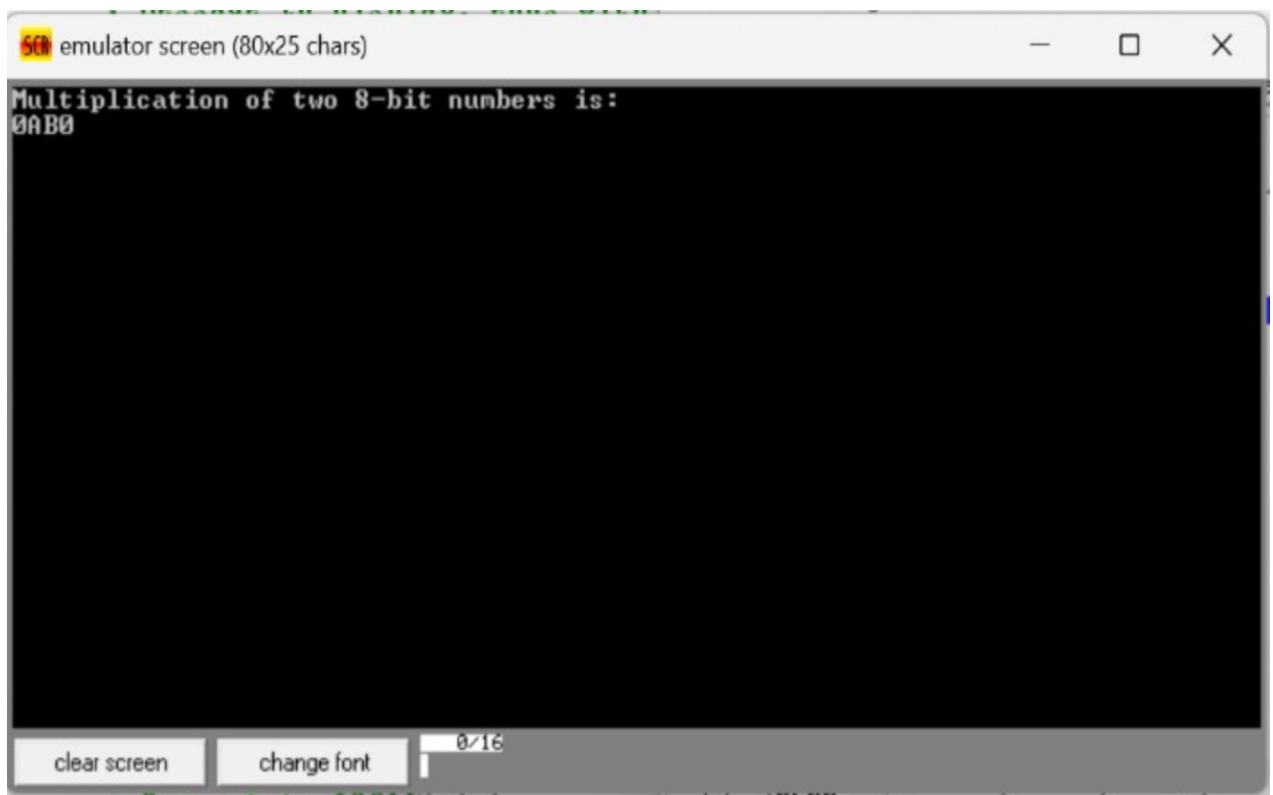
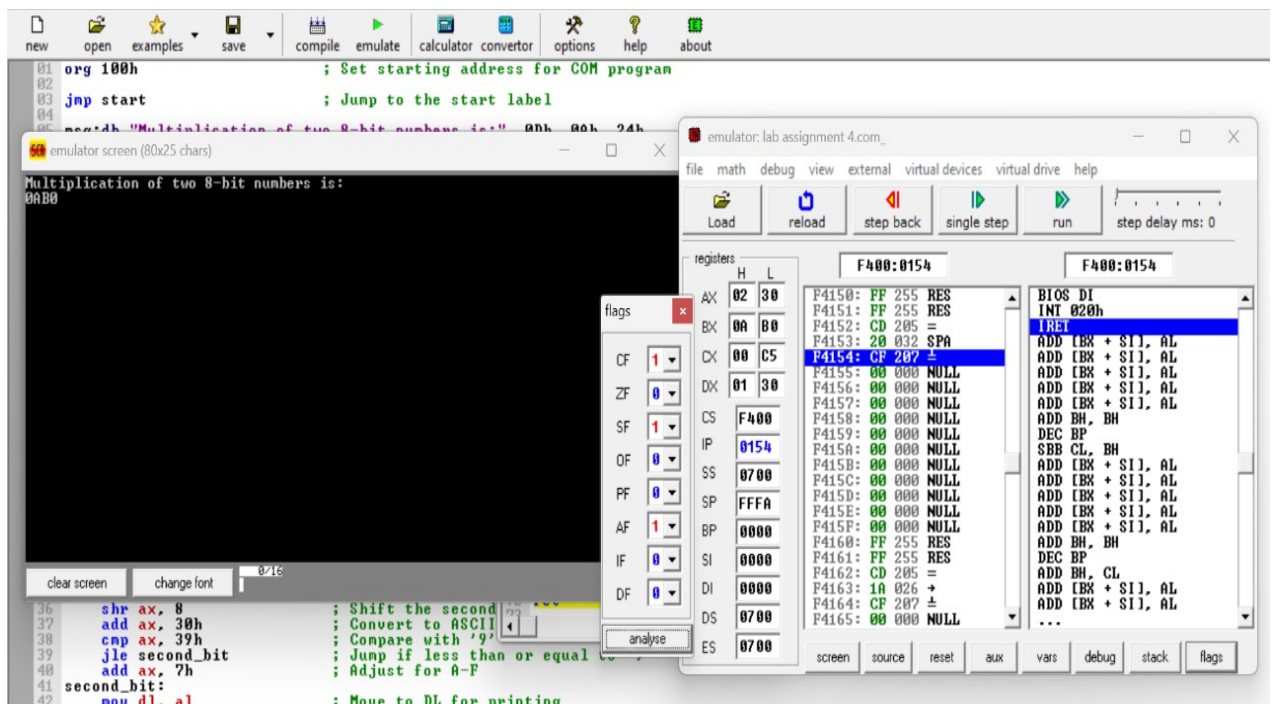
```
shr ax, 12
add ax, 30h
cmp ax, 39h
jle print_first_bit
add ax, 7h
print_first_bit:
    mov dl, al
    mov ah, 02h
    int 21h
```

```
mov ax, bx
and ax, 0F00h
shr ax, 8
add ax, 30h
cmp ax, 39h
jle print_second_bit
add ax, 7h
print_second_bit:
    mov dl, al
    mov ah, 02h
    int 21h
mov ax, bx
```

```
and ax, 00F0h
shr ax, 4
add ax, 30h
cmp ax, 39h
jle print_third_bit
add ax, 7h
print_third_bit:
    mov dl, al
    mov ah, 02h
    int 21h
```

```
mov ax, bx
and ax, 000Fh
add ax, 30h
cmp ax, 39h
jle print_fourth_bit
add ax, 7h
print_fourth_bit:
    mov dl, al
    mov ah, 02h
    int 21h
ret
```

Output: 0AB0



Practice set:

2. Write an assembly language program to perform subtraction of 16-bit data.

Code:

```
org 100h

; Load two 16-bit values into AX and BX, then multiply them
mov ax, 24h
mov bx, 12h
mul bx
mov bx, ax

; Convert and print the high and low nibbles of the result in
hexadecimal
mov ah, bh
shr ah, 4
add ah, 30h
cmp ah, 39h
jle print_high_nibble
add ah, 7

print_high_nibble:
    mov dl, ah
    mov ah, 02h
    int 21h
```

```
mov ah, bh
and ah, 0fh
add ah, 30h
cmp ah, 39h
jle print_low_nibble
add ah, 7
print_low_nibble:
    mov dl, ah
    mov ah, 02h
    int 21h
mov ah, bl
shr ah, 4
add ah, 30h
cmp ah, 39h
jle print_high_nibble2
add ah, 7
print_high_nibble2:
    mov dl, ah
    mov ah, 02h
    int 21h
mov ah, bl
and ah, 0fh
```

add ah, 30h

cmp ah, 39h

jle print_low_nibble2

add ah, 7

print_low_nibble2:

mov dl, ah

mov ah, 02h

int 21h

;Terminate the program

mov ah, 4Ch

int 21h

Output: 0288

