Microprocessor Lab Assessment-1

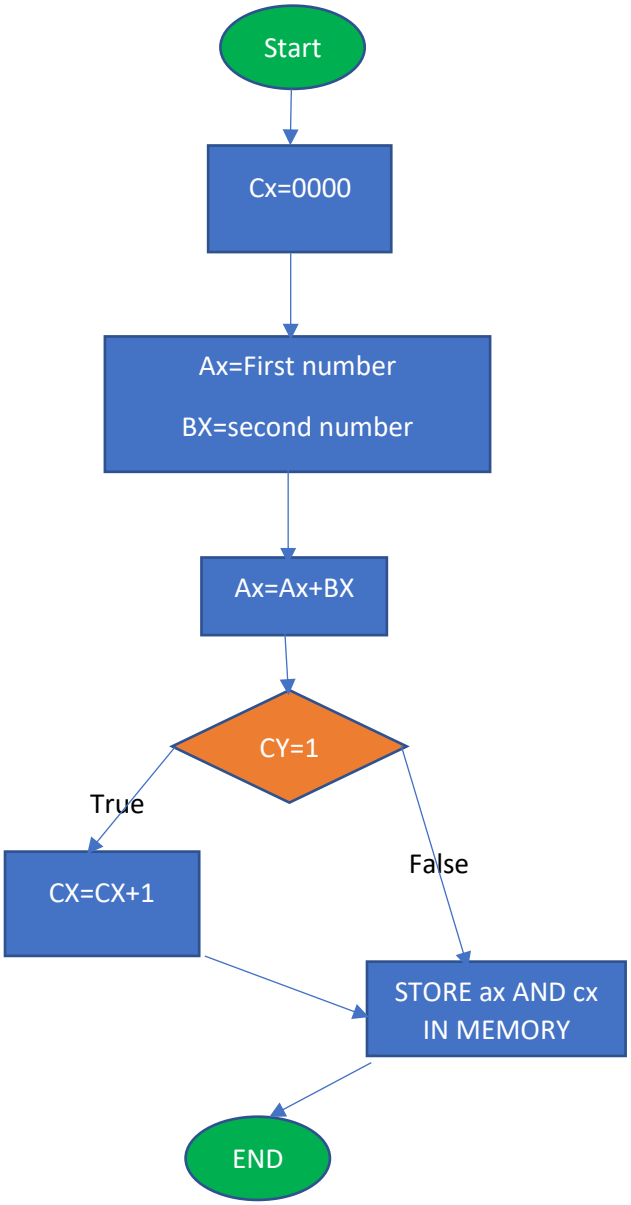
Done By Arshdeep Singh (19BCB0086)

Task Assigned

1 Perform 16-bit addition subtraction multiplication and division in emu8086

Aim: To perform 16bit addition in emu8086

Flowchart:



Code:

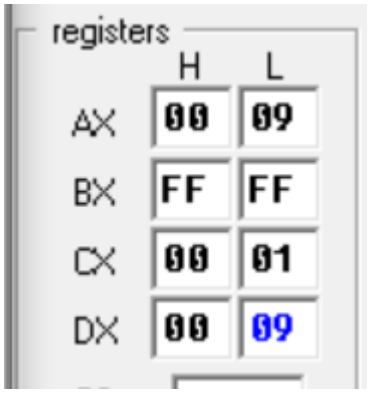
```
    ;ADDITION OF 2 NUMBERS
    MOV CX,0000     ;COUNT INITIALIZED WITH 0000H
    MOV AX,0000AH   ;LOAD FIRST NUMBER INTO AX
    MOV BX,0FFFFH   ;LOAD SECOND NUMBER INTO BX
    ADD AX,BX       ;ADD AX AND BX AND STORE TO BX
    JNC STORE       ;IF CY=0 JUMP TO STORE
    INC CX          ;INCREASE COUNT BY 1
STORE: MOV DX,AX    ;STORE AX TO MEMORY
    HLT             ;HALT
```

Output:

FFFF + A =10009

Carry in cx

sum in dx

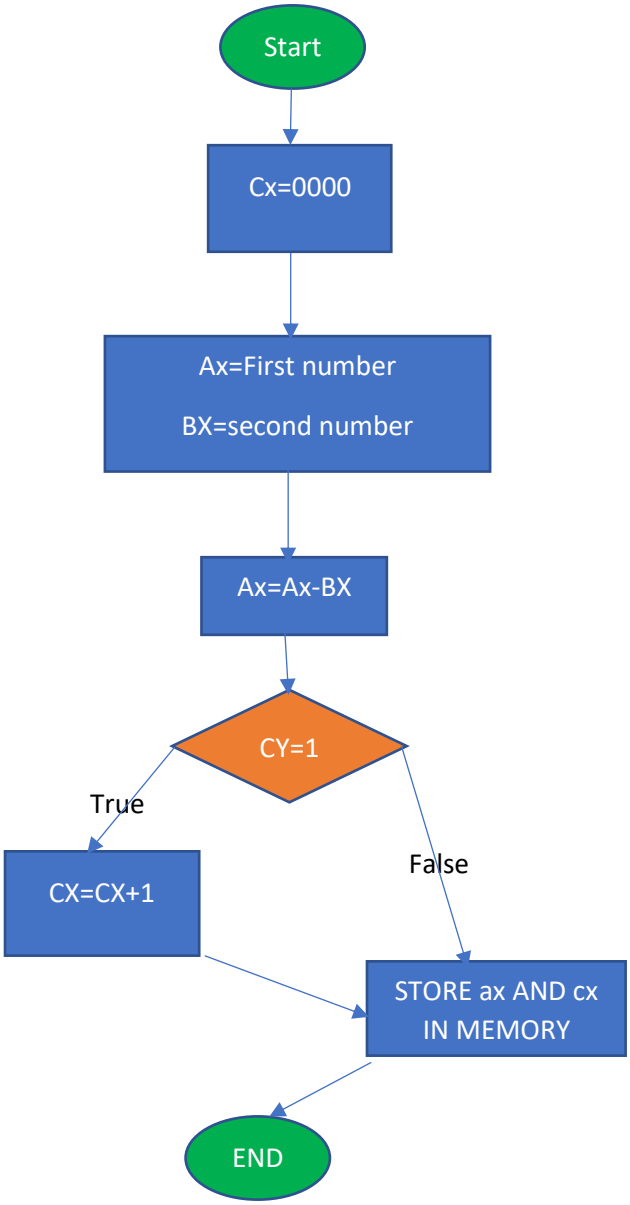


Results/Inference:

16-bit addition has been performed

Aim: To perform 16bit subtraction in emu8086

Flowchart:



Code:

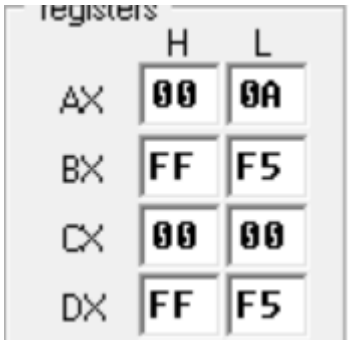
```
    ;SUBTRACTION OF 2 NUMBERS
    MOV CX,0000     ;COUNT INITIALIZED WITH 0000H
    MOV AX,0000AH   ;LOAD FIRST NUMBER INTO AX
    MOV BX,0FFFFH   ;LOAD SECOND NUMBER INTO BX
    SUB BX,AX       ;ADD AX AND BX AND STORE TO BX
    JNC STORE       ;IF CY=0 JUMP TO STORE
    INC CX          ;INCREASE COUNT BY 1
STORE: MOV DX,BX    ;STORE AX TO MEMORY
    HLT             ;HALT
```

Output:

FFFF - A =FFF5

BORROW IN CX

DIFFERENCE IN DX

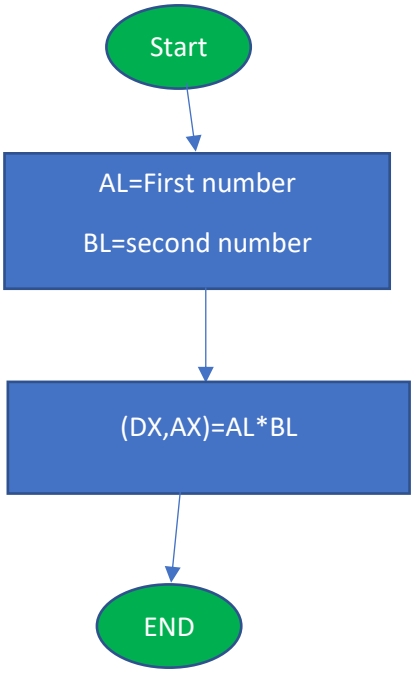


Results/Inference:

16-bit SUBTRACTION has been performed

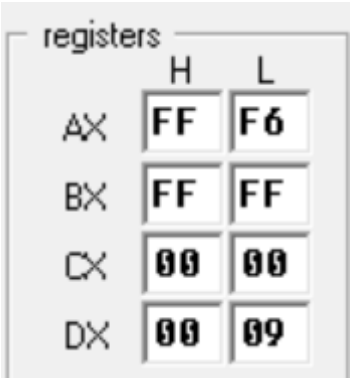
Aim: To perform 16bit MULTIPLICATION in emu8086

Flowchart:



Code:

```
;MULTIPLICATION OF 2 NUMBERS
MOV AX,0000AH    ;LOAD FIRST NUMBER INTO AX
MOV BX,0FFFFH    ;LOAD SECOND NUMBER INTO BX
MUL BX           ;MUL AX AND BX
HLT              ;HALT
```



Output:

FFFF * A =9FFF6

HIGHER BITS IN DX

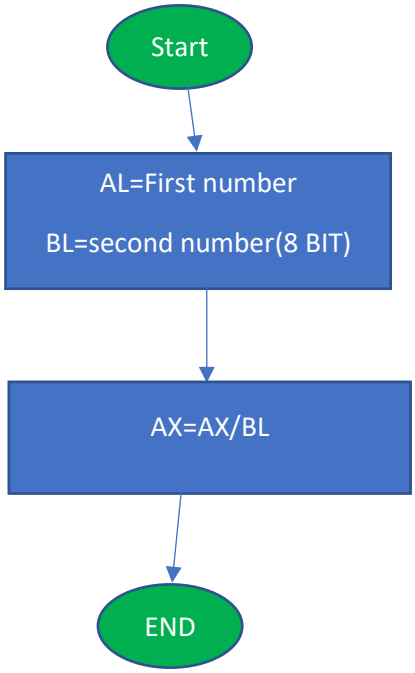
LOWER BITS IN AX

Results/Inference:

16-bit MULTIPLICATION has been performed

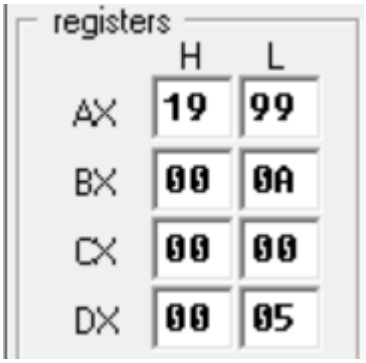
Aim: To perform 16bit DIVISION in emu8086

Flowchart:



Code:

```
;DIVISION OF 2 NUMBERS
MOV AX,0FFFFH    ;LOAD FIRST NUMBER INTO AX
MOV BX,0AH    ;LOAD SECOND NUMBER INTO BX
DIV BX              ;MUL AX AND BX
HLT          ;HALT
```



Output:

FFFF / A =1999

REMAINDER IN DX

QUOTIENT IN AX

Results/Inference:

16-bit DIVISION has been performed