AP22110010351 K NIKITHA SRI CSE-F COA LAB ASSIGNMENT-4 1. Write an assembly language program to perform multiplication of 8-bit data. org

```
org 100h        ; Set starting address mov al, 03h      ;
Load AL with 03h mov bl, 04h      ; Load BL with 04h
mul bl          ; Multiply AL by BL, result in AX (AL * BL)
mov bl, al      ; Move result (AL) to BL for later use mov
ah, al      ; Move AL to AH ; Convert upper nibble to
ASCII and ah, 0F0h     ; Mask lower nibble, keep upper
shr ah, 4       ; Shift upper nibble to lower position add
ah, 30h      ; Convert to ASCII '0'-'9' cmp ah, 39h      ;
Compare with '9' jle print_first_digit ; If less or equal to
'9', skip next step add ah, 7       ; Convert to ASCII 'A'-'F'
print_first_digit:
mov dl, ah      ; Move first digit to DL
mov ah, 02h      ; Prepare for output
int 21h         ; Print first digit ; Convert lower nibble to
ASCII mov ah, bl       ; Move result (BL) back to AH and
ah, 0Fh      ; Mask upper nibble, keep lower add ah,
30h      ; Convert to ASCII '0'-'9' cmp ah, 39h      ;
Compare with '9' jle print_sec_digit ; If less or equal to
'9', skip next step add ah, 7       ; Convert to ASCII 'A'-
'F' print_sec_digit:
mov dl, ah      ; Move second digit to DL
mov ah, 02h      ; Prepare for output
int 21h         ; Print second digit
mov ah, 4Ch      ; Prepare for program termination
int 21h         ; Terminate program Output:
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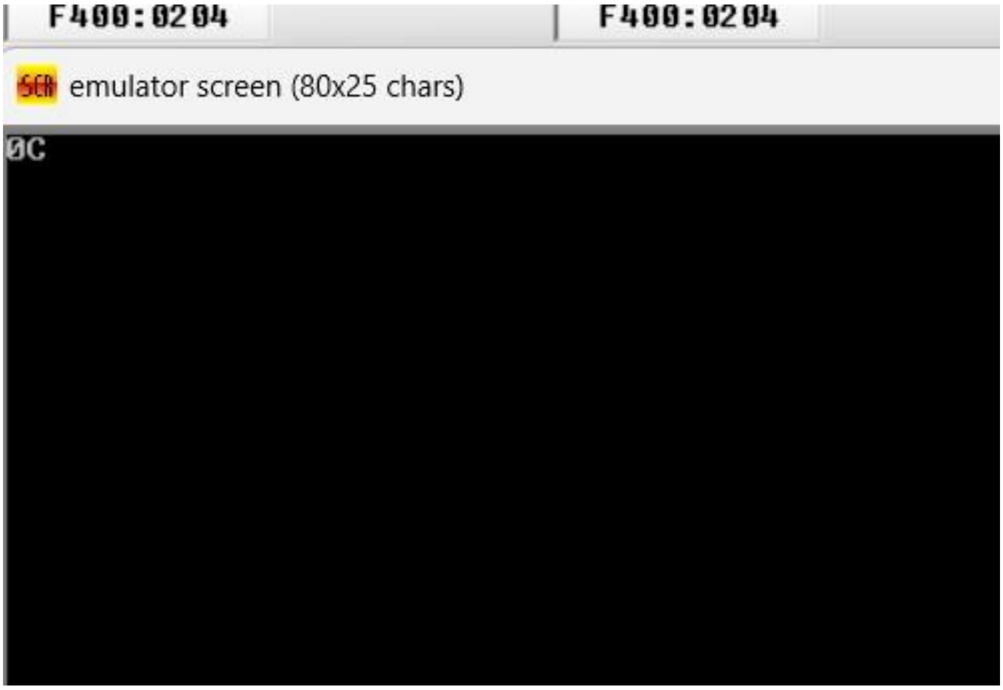

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2. Write a program in assembly language to perform multiplication of 16-bit data.

```
org 100h            ; Set starting address
mov ax,0012h ;Load AX with 0012h mov
bx,0012h    ; Load BX with 0012h
mul bx              ; Multiply AX by BX, result in DX:AX mov bx, ax
; Move the lower 16 bits of the result (AX) into BX
; Convert and print the high nibble of BH mov ah, bh
; Move BH (high byte of BX) to AH shr ah, 4           ; Shift
right to isolate the high nibble add ah, 30h         ; Convert
to ASCII '0'-'9' cmp ah, 39h         ; Compare with '9' jle
print_high_nibble ; If less than or equal, skip next step
add ah, 7           ; Adjust to ASCII 'A'-'F'

print_high_nibble:
mov dl, ah          ; Move the ASCII value to DL mov ah, 02h
; Set up for printing int 21h             ; Print the high nibble of
BH ; Convert and print the low nibble of BH mov ah, bh
; Move BH back to AH and ah, 0fh         ; Mask the high
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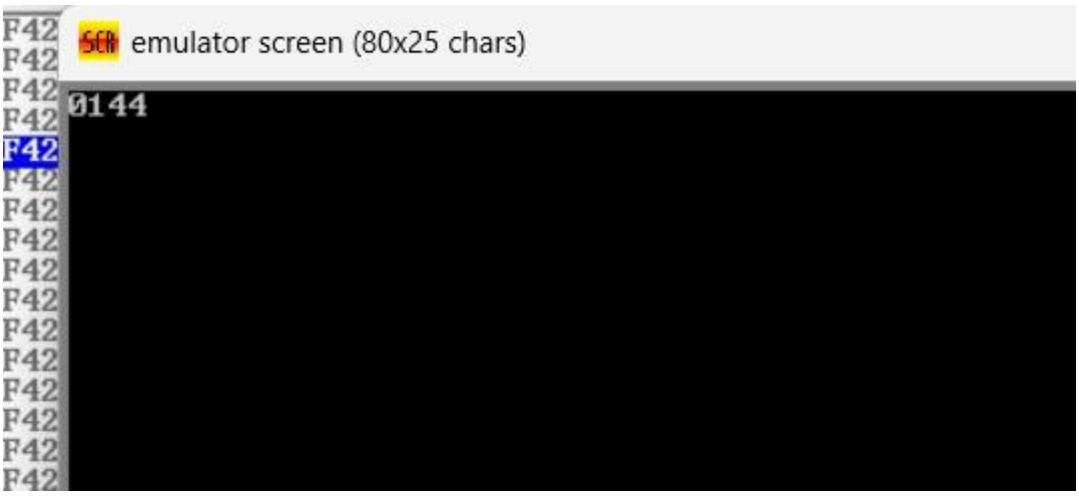
nibble, keep the low nibble add ah, 30h        ; Convert to
ASCII '0'-'9' cmp ah, 39h        ; Compare with '9' jle
print_low_nibble ; If less than or equal, skip next step
add ah, 7          ; Adjust to ASCII 'A'-'F'
print_low_nibble:
mov dl, ah         ; Move the ASCII value to DL mov ah, 02h
; Set up for printing int 21h          ; Print the low nibble of
BH ; Convert and print the high nibble of BL mov ah, bl
; Move BL (low byte of BX) to AH shr ah, 4          ; Shift
right to isolate the high nibble add ah, 30h        ; Convert
to ASCII '0'-'9' cmp ah, 39h        ; Compare with '9' jle
print_high_nibble2 ; If less than or equal, skip next step
add ah, 7          ; Adjust to ASCII 'A'-'F'
print_high_nibble2:
mov dl, ah         ; Move the ASCII value to DL mov ah, 02h
; Set up for printing int 21h          ; Print the high nibble of
BL ; Convert and print the low nibble of BL mov ah, bl          ;
Move BL back to AH and ah, 0fh        ; Mask the high
nibble, keep the low nibble add ah, 30h        ; Convert to
ASCII '0'-'9'
cmp ah, 39h        ; Compare with '9' jle
print_low_nibble2 ; If less than or equal, skip next step
add ah, 7          ; Adjust to ASCII 'A'-'F'
print_low_nibble2:
mov dl, ah         ; Move the ASCII value to
DL mov ah, 02h        ; Set up for printing int
21h           ; Print the low nibble of BL
; Terminate the program mov ah, 4ch        ; Set up
for program termination
int 21h           ; Terminate the program
```

output:



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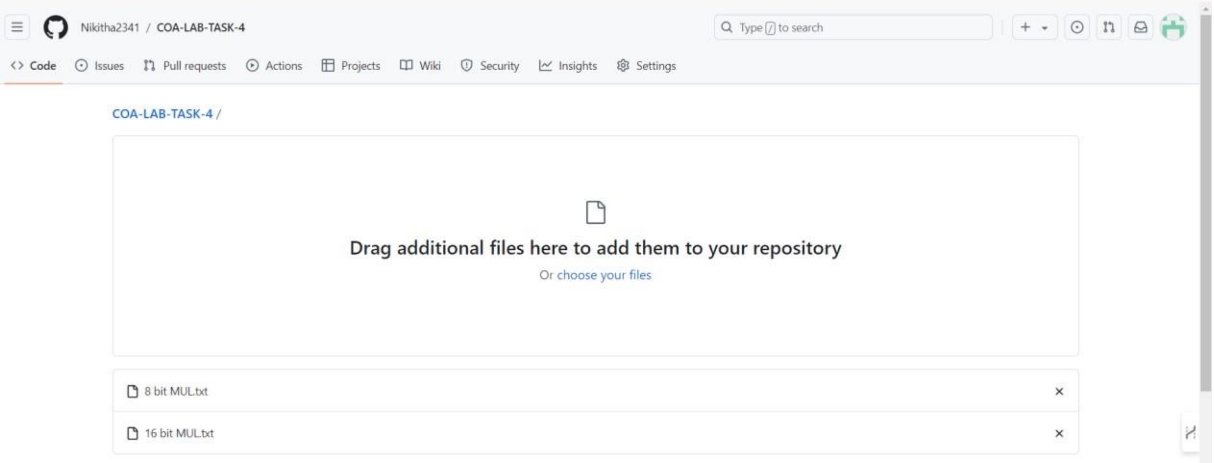

Drag additional files here to add them to your repository

Or choose your files

8 bit MUL.txt

16 bit MUL.txt

GITHUB LINK:

https://github.com/Nikitha2341/COA-LAB-TASK-4/upload