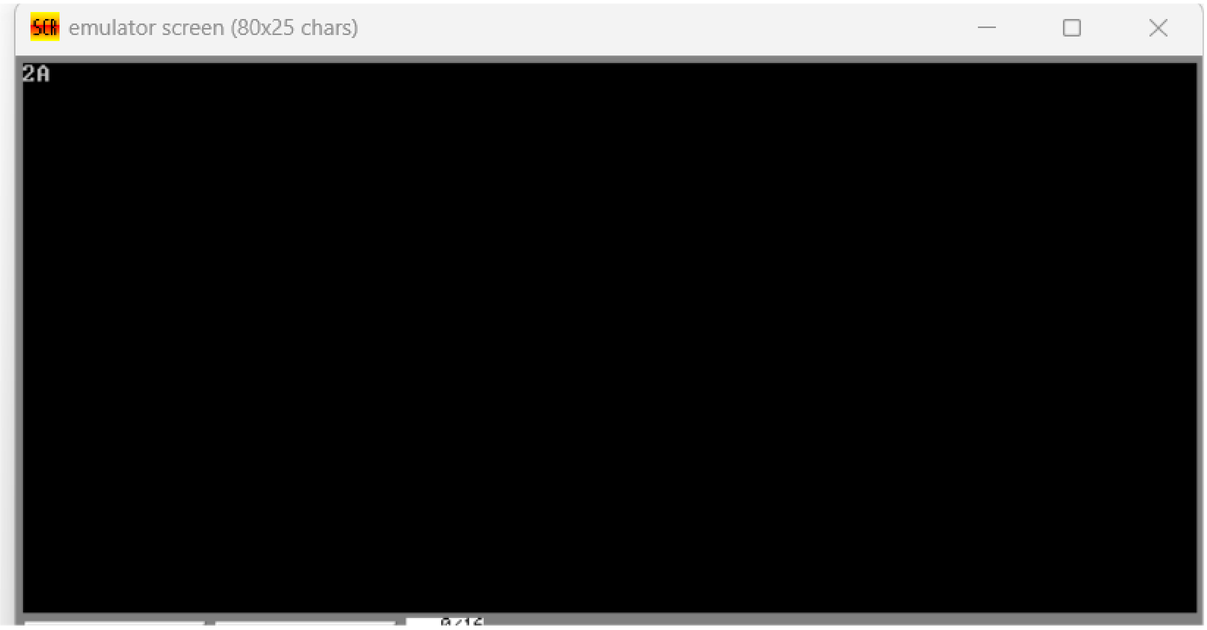
Lab Task – 2

1. **Write an assembly language program to perform addition of 8-bit data.**

```
org 100h
num1 db 14h
num2 db 16h
start:
  mov al, num1      ; Move num1 value to AL register
  add al, num2      ; Add num2 value to AL register
  mov bl, al        ; Store result in BL for later use
; Convert upper nibble of AL to a character
  mov ah, al
  and ah, 0F0h      ; Mask the lower nibble (all lower bits become 0's)
  shr ah, 4         ; Shift right by 4 to get upper nibble
  add ah, 30h       ; Convert to ASCII digits (0-9)
  cmp ah, 39h       ; Compare AH value if AH is less than 39h
  jle print_first_digit
  add ah, 7         ; Convert to ASCII letter (A-F) if AH > 39h
print_first_digit:
  mov dl, ah        ; Move first digit to DL for printing
  mov ah, 02h       ; BIOS interrupt to display character
  int 21h
 ; Convert lower nibble of AL to a character
  mov ah, bl
  and ah, 0Fh       ; Mask the upper nibble (all upper bits become 0's)
  add ah, 30h
  cmp ah, 39h
  jle print_second_digit
  add ah, 7         ; Convert to ASCII letter (A-F) if AH > 39h
print_second_digit:
  mov dl, ah        ; Move second digit to DL for printing
  mov ah, 02h       ; BIOS interrupt to display character
  int 21h
  ; End the program
  mov ah, 4Ch       ; Terminate the program
  int 21h
```

OUTPUT:



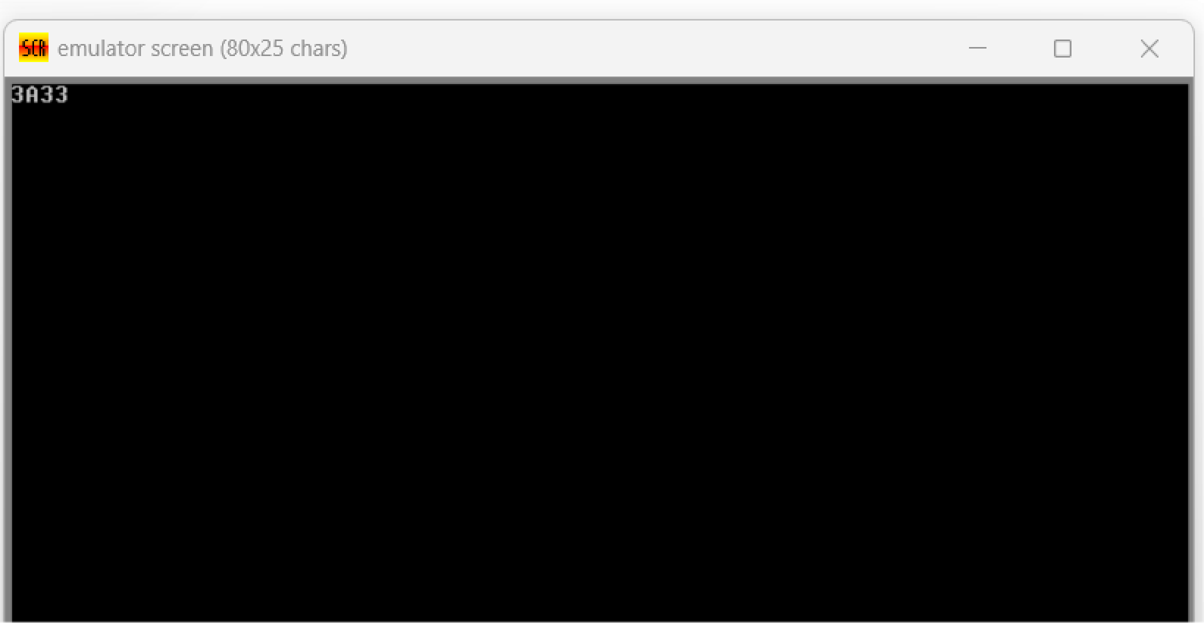
```
2A
```

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

```
org 100h
num1 dw 1005h  ; First 16-bit number
num2 dw 1223h  ; Second 16-bit number
start:
   mov ax, num1        ; Load num1 into AX register (16-bit register)
   add ax, num2        ; Add num2 to AX
   mov bx, ax          ; Store the result in BX
   ; Convert and print the upper byte (higher 8 bits)
   mov ah, bh          ; Move upper byte of BX to AH
   call convert_to_hex  ; Convert upper nibble to hex
```

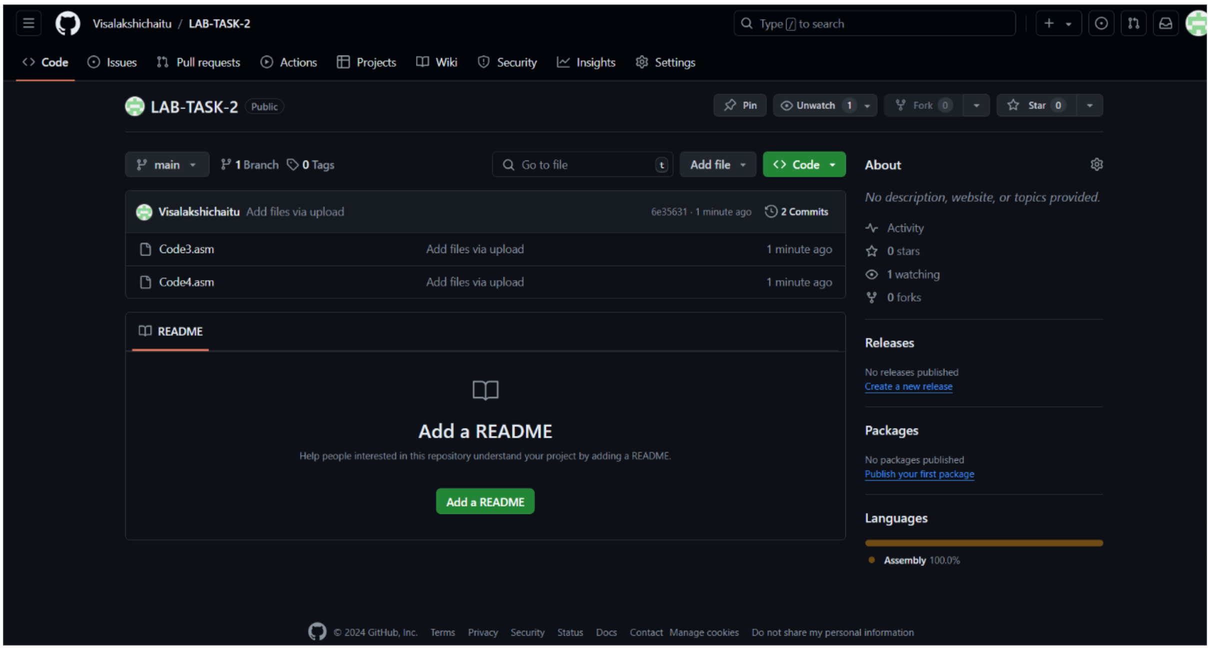
```
    mov dl, ah          ; Move first character to DL for printing
    mov ah, 02h          ; BIOS interrupt to display character
    int 21h

    mov ah, bh           ; Move upper byte of BX to AH again
    call convert_lower_nibble  ; Convert lower nibble to hex
    mov dl, ah          ; Move second character to DL for printing
    mov ah, 02h          ; BIOS interrupt to display character
    int 21h
    ; Convert and print the lower byte (lower 8 bits)
    mov ah, bl          ; Move lower byte of BX to AH
    call convert_to_hex  ; Convert upper nibble to hex
    mov dl, ah          ; Move third character to DL for printing
    mov ah, 02h          ; BIOS interrupt to display character
    int 21h
    mov ah, bl          ; Move lower byte of BX to AH again
    call convert_lower_nibble  ; Convert lower nibble to hex
    mov dl, ah          ; Move fourth character to DL for printing
    mov ah, 02h          ; BIOS interrupt to display character
    int 21h
    ; End the program
    mov ah, 4Ch          ; Terminate the program
    int 21h
convert_to_hex:
    ; Mask the upper nibble and convert it to a character
    and ah, 0F0h         ; Mask the lower nibble (all lower bits become 0's)
    shr ah, 4           ; Shift the upper nibble to the lower nibble
    add ah, 30h          ; Convert to ASCII digit
    cmp ah, 39h          ; Compare if the value is less than or equal to '9'
    jle skip_conversion
    add ah, 7           ; Convert to ASCII letter (A-F)
skip_conversion:
    ret                 ; Return from the procedure
convert_lower_nibble:
    ; Mask the lower nibble and convert it to a character
    and ah, 0Fh         ; Mask upper nibble, keep lower nibble
    add ah, 30h         ; Convert to ASCII digit
    cmp ah, 39h         ; Compare if the value is less than or equal to '9'
    jle skip_lower_conversion
    add ah, 7           ; Convert to ASCII letter (A-F)
skip_lower_conversion:
    ret                 ; Return from the procedure
```

OUTPUT:



```
3A33
```

GITHUB:



Visalakshichaitu Add files via upload 6e35631 · 1 minute ago 2 Commits

Code3.asm	Add files via upload	1 minute ago
Code4.asm	Add files via upload	1 minute ago

No description, website, or topics provided.

No releases published
Create a new release

No packages published
Publish your first package

Add a README

Help people interested in this repository understand your project by adding a README.

© 2024 GitHub, Inc. Terms Privacy Security Status Docs Contact Manage cookies Do not share my personal information

https://github.com/Visalakshichaitu/LAB-TASK-2