AIDS MICROPROCESSOR LAB S21 BATCH (2023-24)

Experiment 1 Title: Assembly language programming for MOV instruction in various addressing modes using software tool TASM 1.4

Name of student: Meet Raut Class Roll Number: 2201084

Date of Performance: 11/03/2024

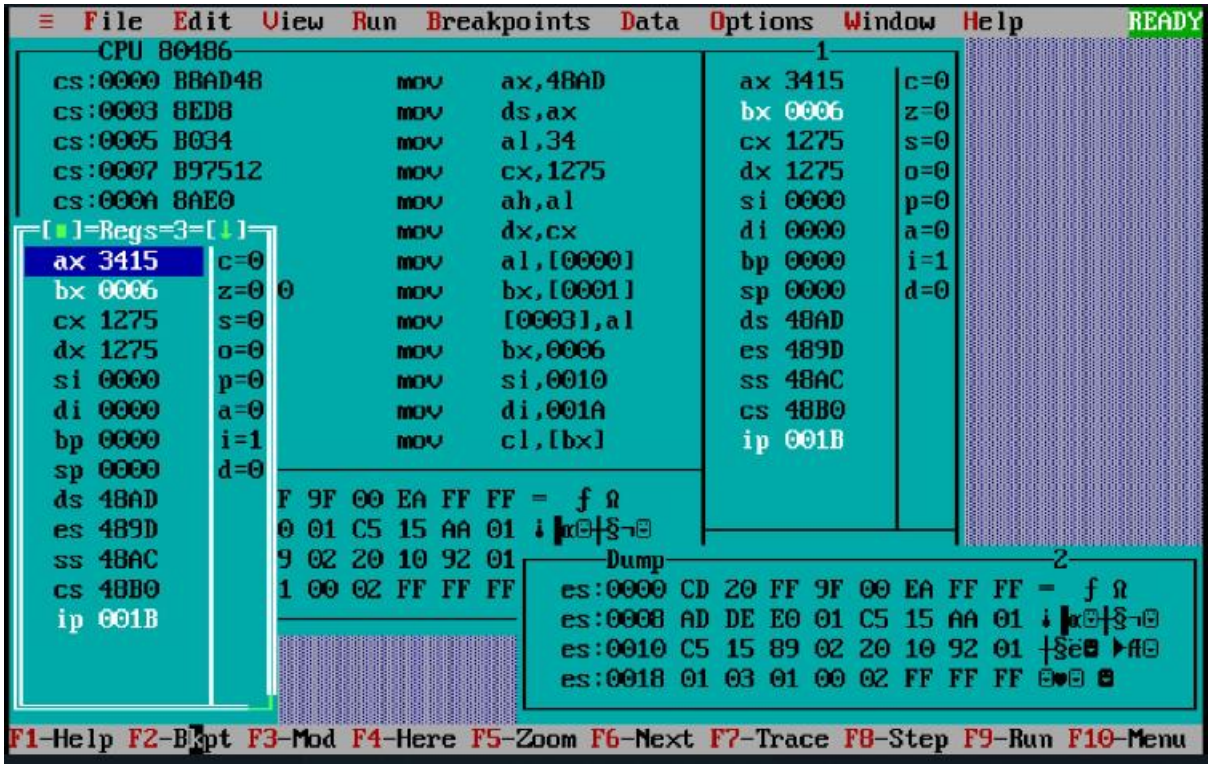
Batch: S2-1 Timing: 3:00-5:00 Date of Submission: 05/02/2024

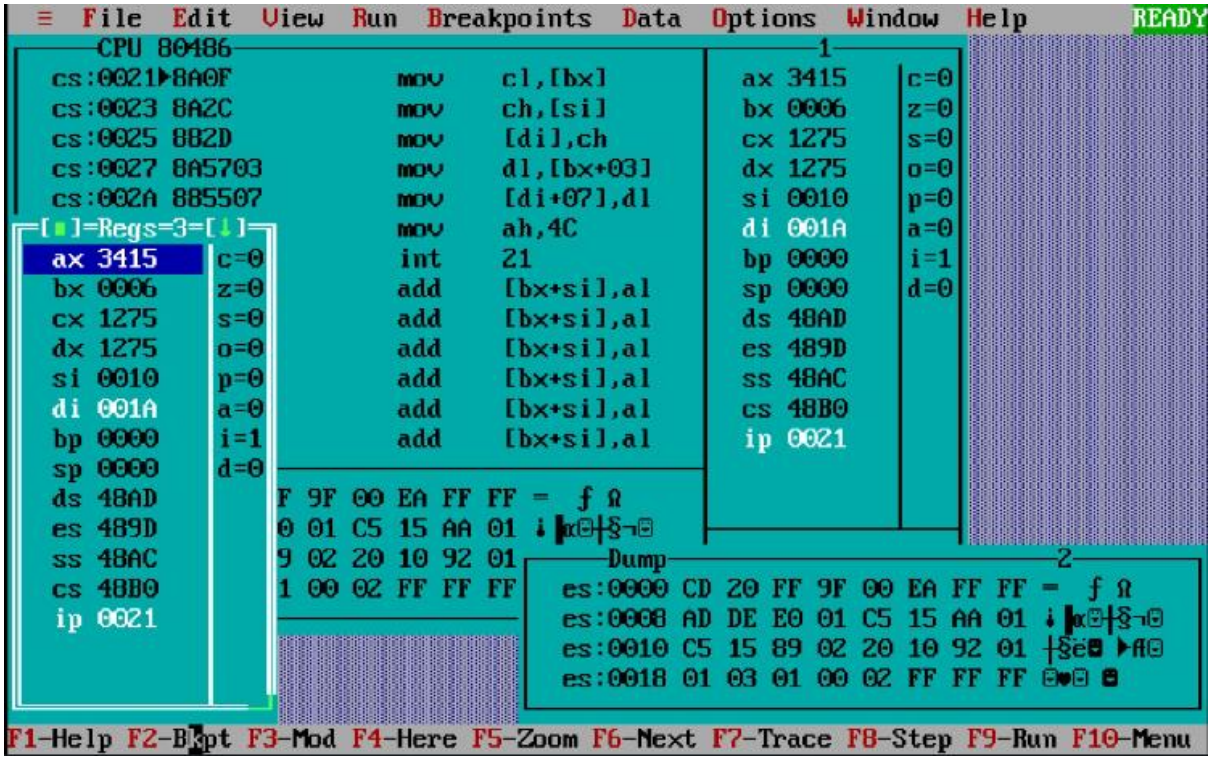
Assembly language code

```
data segment            # Data segment

n1 db 15h               # variable n1 define 8 bit number
n2 dw 1367h             # variable n2 define 16 bit number
n3 dw 0                 #Initialize n3 to 0
n4 dw 0                 #unused variable

arr1 db 00h,12h,23h,34h,
45h,56h,67h,78h,89h,92h         #Array arr1

arr2 db 20h,21h,22h,23h,
24h,25h,26h,27h,28h,29h         #Array arr2

arr3 db 10 DUP(0)               #Array arr3 with 10 elements initialized to 0
                .
data ends               # Assemble directives

code segment

assume cs:code, ds:data     # Assemble directives defining cs and ds
start:                      # start of code segment

mov ax,data             # moving data to ax register- initialization process
mov ds,ax               # moving ax to dx register -- initialization process

;IMMEDIATE ADDRESING MODE
mov al,34h              # Load immediate value 34h to al register
mov cx,1257h            # Load immediate value 1257h to cx register
```

```
;REGISTER ADDRESSING MODE
mov ah,al                    # Copy the value from al to ah register
mov dx,cx                  # Copy the value from cx to dx register

;DIRECT ADDRESSING MODE
mov al,n1              #Load the value of variable n1 into al register
mov bx,n2              #Load the value of variable n2 into bx register
mov n3,al              #Copy the value of al register to variable n3

mov bx,OFFSET arr1    #Load the offset address arr1 into bx register
mov si,OFFSET arr2    #Load the offset address arr2 into si register
mov di,OFFSET arr3   #Load the offset address arr3 into di register

;INDIRECT ADDRESSING MODE
mov cl,[bx]          #Load the value at the address stored in bx into cl register
mov ch,[si]         #Load the value at the address stored in si into ch register
mov [di],ch       #Store the value of ch in the address stored in di

;BASE ADDRESSING MODE
mov dl,3[bx]         #Load the value at the address (bx + 3) into dl register

;INDEXED ADDRESSING MODE
mov 7[di],dl       #Store the value of dl at the address (di + 7)
mov ah,4ch        #Set ah register for exit code

int 21h                      # breakpoint interrupt

code ends                  # Assembler directives to end code
end start                  # Assembler directives to end start
```

Result :


File Edit View Run Breakpoints Data Options Window Help READY
CPU 80486
cs:0000 BBAD48 mov ax,48AD
cs:0003 8ED8 mov ds,ax
cs:0005 B034 mov al,34
cs:0007 B97512 mov cx,1275
cs:000A 8AE0 mov ah,al
mov dx,cx
mov al,[0000]
mov bx,[0001]
mov [0003],al
mov bx,0006
mov si,0010
mov di,001A
mov cl,[bx]
[■]=Regs=3=[↓]
ax 3415 c=0
bx 0006 z=0
cx 1275 s=0
dx 1275 o=0
si 0000 p=0
di 0000 a=0
bp 0000 i=1
sp 0000 d=0
ds 48AD
es 489D
ss 48AC
cs 48B0
ip 001B
ax 3415 c=0
bx 0006 z=0
cx 1275 s=0
dx 1275 o=0
si 0000 p=0
di 0000 a=0
bp 0000 i=1
sp 0000 d=0
ds 48AD
es 489D
ss 48AC
cs 48B0
ip 001B
Dump
es:0000 CD 20 FF 9F 00 EA FF FF
es:0008 AD DE E0 01 C5 15 AA 01
es:0010 C5 15 89 02 20 10 92 01
es:0018 01 03 01 00 02 FF FF FF
F1-Help F2-Bkpt F3-Mod F4-Here F5-Zoom F6-Next F7-Trace F8-Step F9-Run F10-Menu


File Edit View Run Breakpoints Data Options Window Help READY
CPU 80486
cs:0021 8A0F mov cl,[bx]
cs:0023 8A2C mov ch,[si]
cs:0025 882D mov [di],ch
cs:0027 8A5703 mov dl,[bx+03]
cs:002A 885507 mov [di+07],dl
mov ah,4C
int 21
add [bx+si],al
add [bx+si],al
add [bx+si],al
add [bx+si],al
add [bx+si],al
[■]=Regs=3=[↓]
ax 3415 c=0
bx 0006 z=0
cx 1275 s=0
dx 1275 o=0
si 0010 p=0
di 001A a=0
bp 0000 i=1
sp 0000 d=0
ds 48AD
es 489D
ss 48AC
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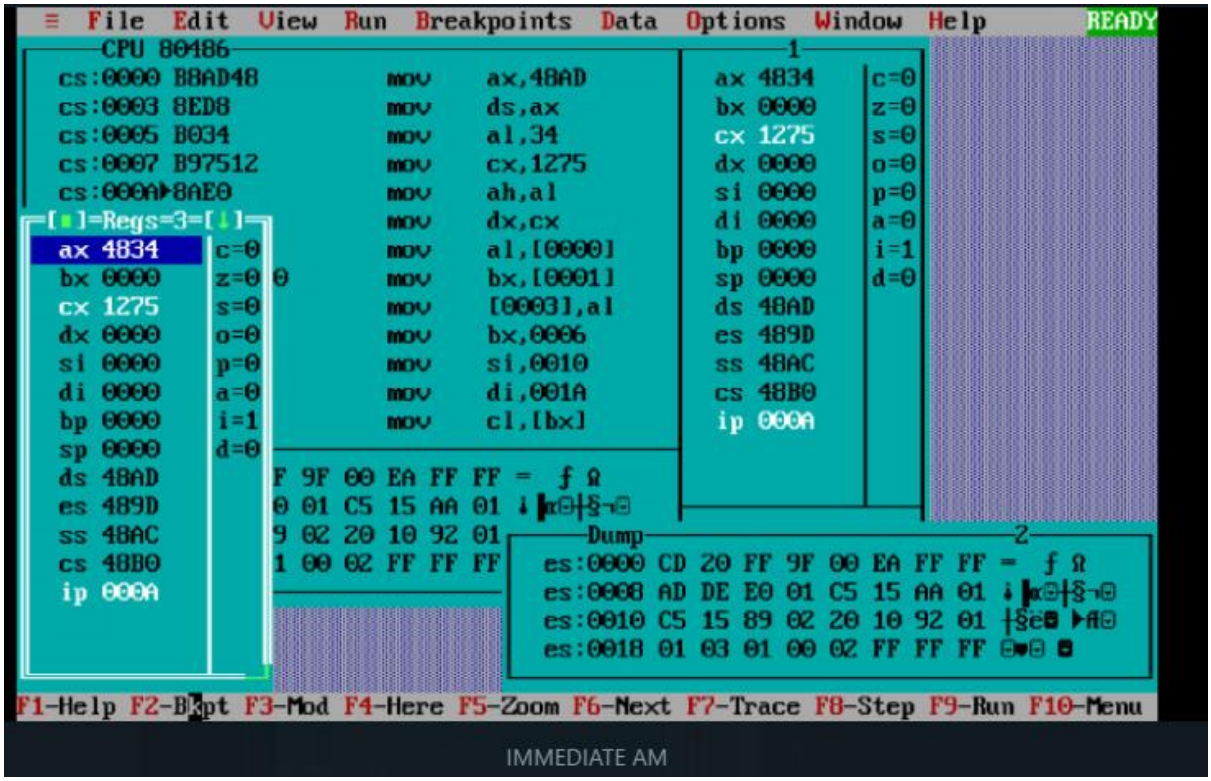
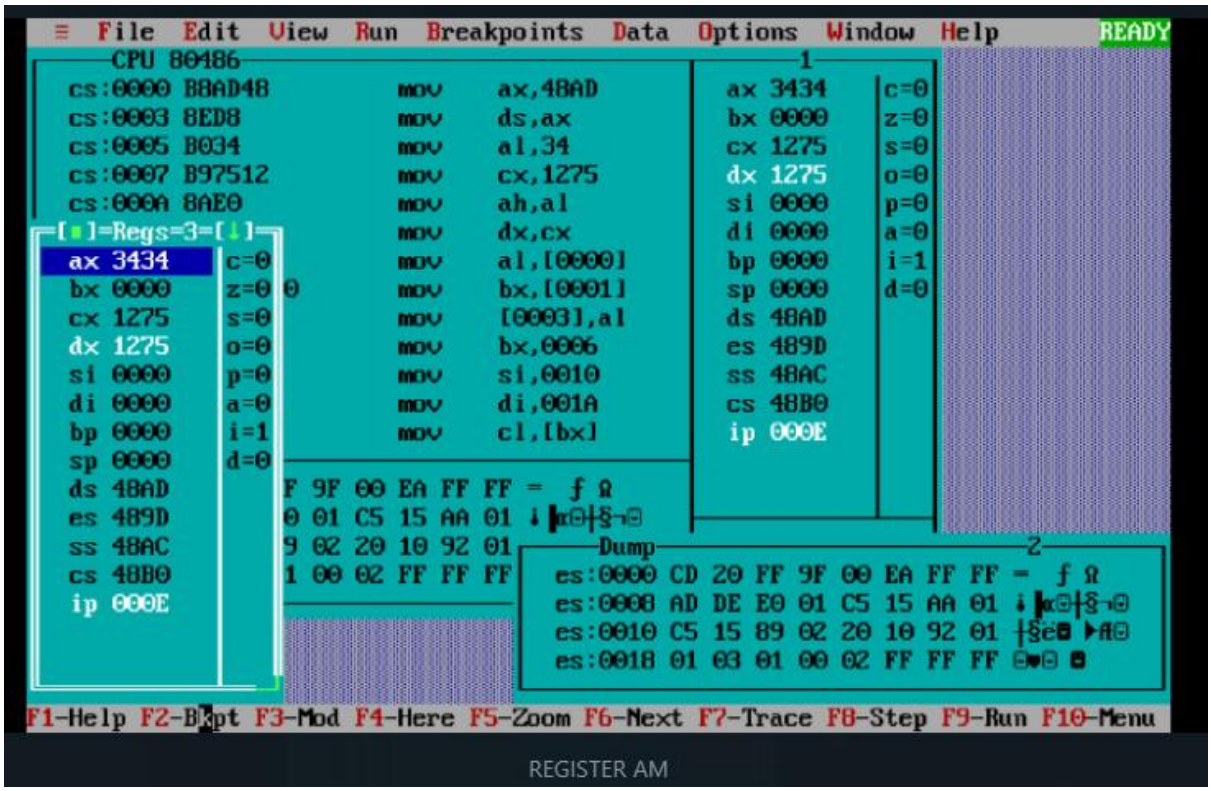
F1-Help F2-Bkpt F3-Mod F4-Here F5-Zoom F6-Next F7-Trace F8-Step F9-Run F10-Menu

(i) IMMEDIATE ADDRESSING MODE:



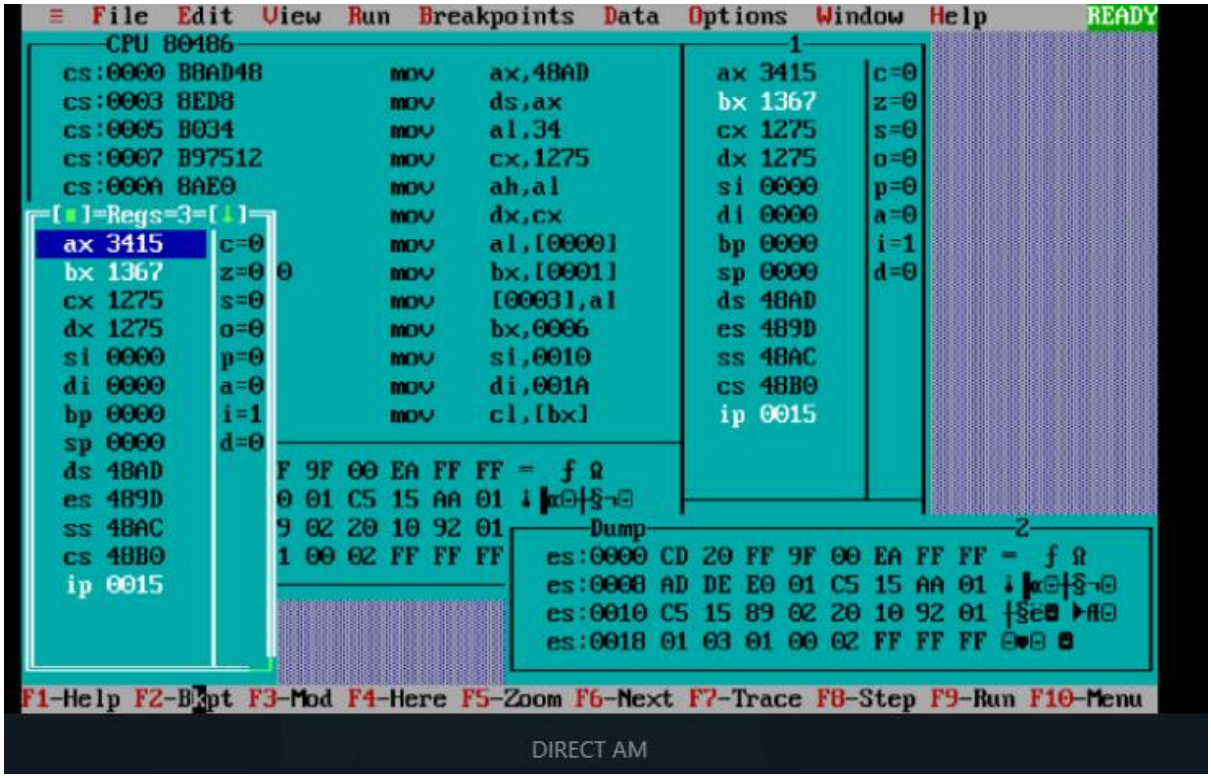
IMMEDIATE AM

(ii) REGISTER ADDRESSING MODE:



REGISTER AM

(iii) DIRECT ADDRESSING MODE:



CONCLUSION: ***LO 1, LO 3 mapped.***

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