FR. Conceicao Rodrigues College of Engineering
Department of Computer Engineering

6. Matrix Addition/ Multiplication.

1. Course, Subject & Experiment Details

Academic Year	**2023-24**	**Estimated Time**	**Experiment No. 6– 02 Hours**
Course & Semester	**S.E. (Comps) – Sem. IV**	**Subject Name**	**Microprocessor**
Chapter No.	**2**	**Chapter Title**	**Instruction Set and Programming**
Experiment Type	**Software**	**Subject Code**	**CSC405**

Rubrics

Timeline (2)	**Practical Skill & Applied Knowledge** (2)	**Output** (3)	**Postlab** (3)	**Total** (10)	**Sign**

2. Aim & Objective of Experiment

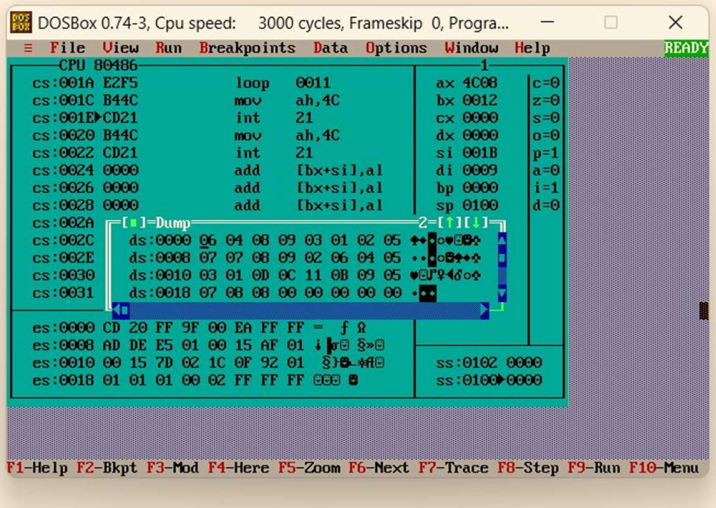
Perform Addition & Multiplication of 3 X 3 Matrix

Objective : The objective is to Add & multiply 3 X 3 matrix

addm.asm

File Edit View

```
.model small
.stack 100h
.data
    matrix1 db 6, 4, 8, 9, 3, 1, 2, 5, 7
    matrix2 db 7, 8, 9, 2, 6, 4, 5, 3, 1
    result_add db 0, 0, 0, 0, 0, 0, 0, 0, 0
.code
main proc
    mov ax, @data
    mov ds, ax
    mov cx, 9
    lea di, matrix1
    lea bx, matrix2
    lea si, result_add
addition_loop:
    mov al, [di]
    add al, [bx]
    mov [si], al
    inc di
    inc bx
    inc si
    loop addition_loop
    mov ah, 4ch
    int 21h
    mov ah, 4ch ;
    int 21h

main endp
end main
```



Ln 25, Col 18 483 characters

3. Software Required

TASM Assembler

4 . Brief Theoretical Description

Pre-Requisites: 1. Knowledge of TASM directives.
2. Knowledge of DOS interrupts.
3. Knowledge of string instruction and MACRO

5. Algorithm:

1. Initialize the data segment.
2.Initialize counter = 9
3. Initialize pointer DI to matrix 1.
4. Initialize pointer BX to matrix 2.
5. Initialize pointer SI to result matrix 3.
6. Get the number from matrix 1.
7. Add number from matrix 1 with matrix 2 number.
8. Save the carry if any.
9. Save the result in result matrix 3.
10. Increment DI, BX, and SI to point to next element.
11. Decrement count.
12.Check if count = 0,if not go to step VI else go to step XIII
13. Display the result.
14. **Stop.**

Postlab:

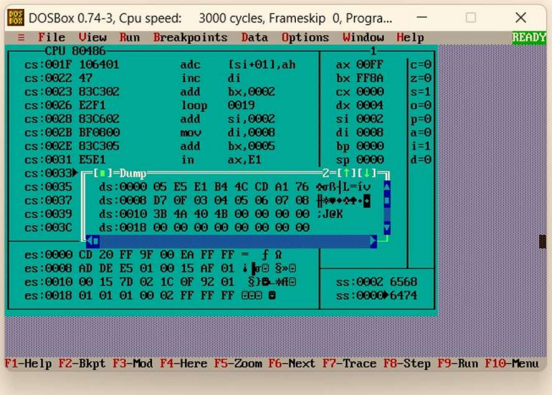
1. **Write a program to Multiply 3 X 3 Matrix.**

mulm.asm

File Edit View

```
.model small
.data
    matrix1 db 1, 2, 3, 4, 5
    matrix2 db 6, 7, 8, 9, 10
    result_mult db 9 dup(?)

.code
main proc
    mov ax, @data
    mov ds, ax

    mov cx, 3
    mov dx, 4

    mov di, offset matrix1
    mov bx, offset matrix2
    mov si, offset result_mult

multiplication_loop:
    xor ax, ax
    mov cx, 4
inner_loop:
    mov al, [di]
    mul byte ptr [bx]
    add [si], al
    adc [si + 1], ah

    inc di
    add bx, 2
    loop inner_loop

    add si, 2
    mov di, offset matrix1
    add bx, 8
    loop multiplication_loop

    mov ah, 4Ch
    int 21h
main endp
end main
```

Ln 22, Col 1 592 characters



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