



GREEN UNIVERSITY OF BANGLADESH

Department of Computer Science and Engineering (CSE)

Faculty of Sciences and Engineering

Semester: (Fall 2025), B.Sc. in CSE (Day)

Lab Report #1

Course Title: Microprocessors and microcontrollers

Course Code: CSE 304 Section: 232_D4

Lab Experiment Name: Take an input from user in Celsius. Convert it to Fahrenheit using the following expression and store in a F variable:
 $^{\circ}\text{F} = ^{\circ}\text{C} \times 9/5 + 32 - 1$

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[For Teachers use only: **Don't Write Anything inside this box**]

Project Report Status

Marks: Signature:.....
Comments:..... Date:.....

1. TITLE OF THE LAB REPORT EXPERIMENT:

Take an input from user in Celsius. Convert it to Fahrenheit using the following expression and store in a F variable: $^{\circ}\text{F} = ^{\circ}\text{C} \times 9/5 + 32 - 1$

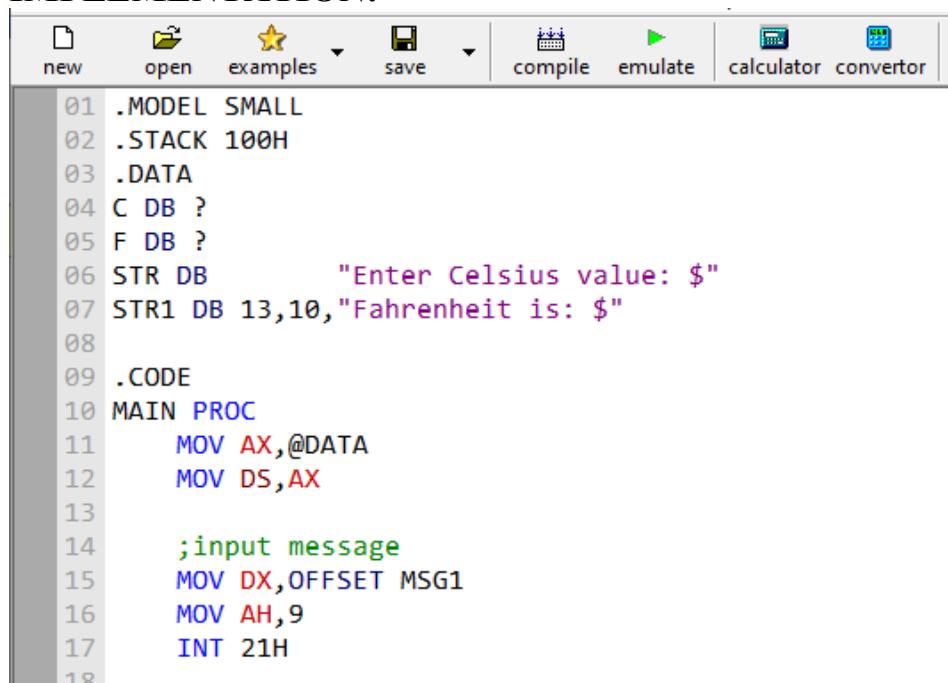
2. OBJECTIVES/AIM:

- To understand how to take input from the user in assembly language using EMU8086.
- To learn arithmetic operation in assembly, including multiplication, division, addition, and subtraction.
- To implement the conversion formula $^{\circ}\text{F} = ^{\circ}\text{C} \times 9/5 + 32 - 1$ in assembly language.
- To practice displaying output on the screen and handling multi-digit numbers using ASCII conversion.
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3. IMPLEMENTATION PLAN & SYSTEM DEVELOPMENT :

The program is developed using EMU8086 assembly language with a small memory model. User input is taken from the keyboard using DOS interrupt 21H and stored in memory variables. The Celsius to Fahrenheit conversion is carried out using arithmetic operations on the CPU registers, including multiplication, division, addition, and subtraction. To display the result correctly, the Fahrenheit value is split into tens and units and converted to ASCII codes. DOS interrupts are used to display both messages and the final output on the screen, ensuring proper interaction with the user.

3. IMPLEMENTATION:

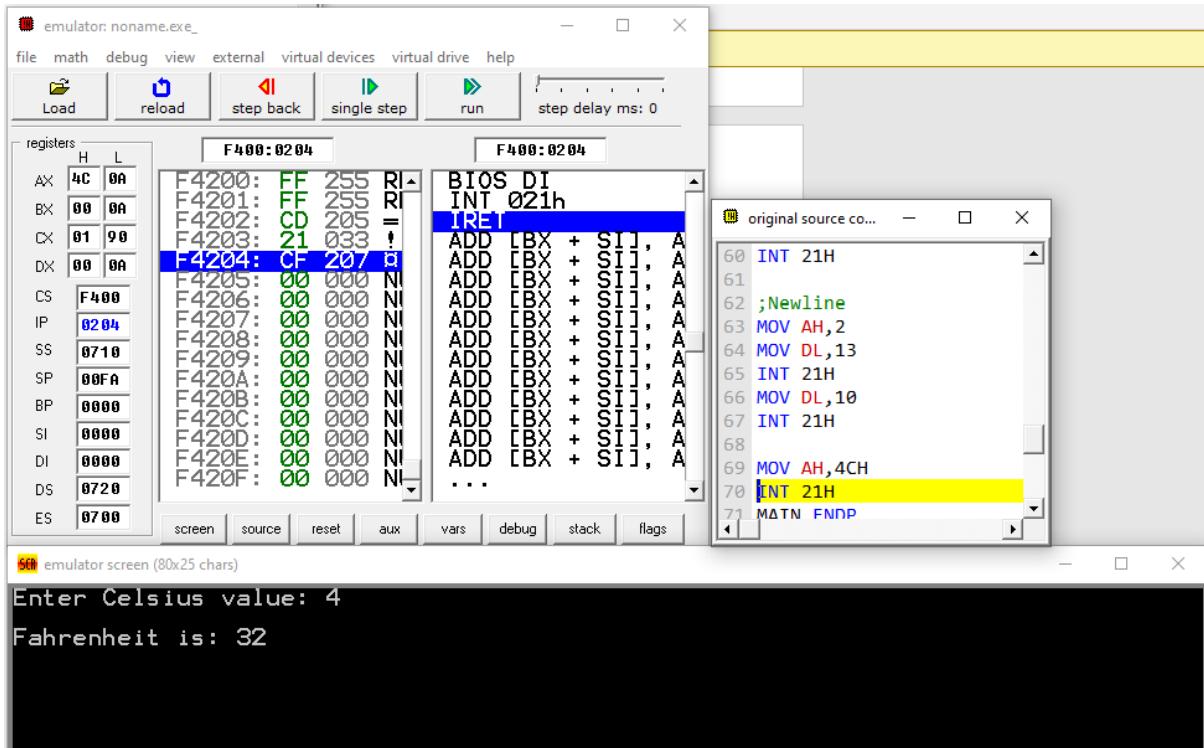


The screenshot shows the EMU8086 assembly editor interface. The menu bar includes 'new', 'open', 'examples', 'save', 'compile', 'emulate', 'calculator', and 'convertor'. The code window displays the following assembly code:

```
01 .MODEL SMALL
02 .STACK 100H
03 .DATA
04 C DB ?
05 F DB ?
06 STR DB      "Enter Celsius value: $"
07 STR1 DB 13,10,"Fahrenheit is: $"
08
09 .CODE
10 MAIN PROC
11     MOV AX,@DATA
12     MOV DS,AX
13
14 ;input message
15     MOV DX,OFFSET MSG1
16     MOV AH,9
17     INT 21H
18
```

```
17     INT 21H
18
19     MOV AH,1
20     INT 21H
21     SUB AL,30H
22     MOV C,AL
23
24 ;Celsius to Fahrenheit
25     MOV AL,C
26     MOV BL,9
27     MUL BL
28     MOV BL,5
29     DIV BL
30     ADD AL,32
31     DEC AL
32     MOV F,AL
33
34 ;Newline
35     MOV AH,2
36     MOV DL,13
37     INT 21H
38     MOV DL,10
39     INT 21H
40
41 ;output message
42     MOV DX,OFFSET MSG2
43     MOV AH,9
44     INT 21H
45
46 ;Fahrenheit value
47     MOV AL,F
48     MOV AH,0
49     MOV BL,10
50     DIV BL
51
52     ADD AL,30H
53     MOV DL,AL
54     MOV AH,2
55     INT 21H
56
57     ADD AH,30H
58     MOV DL,AH
59     MOV AH,2
60     INT 21H
61
62 ;Newline
63     MOV AH,2
64     MOV DL,13
65     INT 21H
66     MOV DL,10
67     INT 21H
68
69     MOV AH,4CH
70     INT 21H
71 MAIN ENDP
72 END MAIN
73
```

4. OUTPUT:



5. ANALYSIS AND DISCUSSION:

The program successfully demonstrates how assembly language can be used to perform arithmetic operations and interact with the user. It shows how integer values can be taken as input, manipulated using registers, and displayed on the screen using DOS interrupts. The conversion from Celsius to Fahrenheit highlights the importance of correct order of operations and handling integer division in assembly. Splitting the result into tens and units ensures that numbers greater than nine are displayed correctly. The program reinforces the use of memory variables for storing input and output values. Overall, it provides practical experience in combining computation, data handling, and user interaction in 8086 assembly language.

6. SUMMARY :

The experiment demonstrated how to take input from the user and perform arithmetic operations in EMU8086 assembly language. It successfully converted Celsius values to Fahrenheit using integer calculations. The program highlighted the importance of handling multi-digit results and displaying them correctly on the screen. Overall, it reinforced the practical understanding of registers, memory storage, and DOS interrupts in 8086 programming. The lab provided hands-on experience in combining computation, data handling, and user interaction effectively.

