

**Course Title:** Microprocessors and Assembly Language Lab (CSE-4504)  
Department of Computer Science and Engineering (CSE)  
**Islamic University of Technology (IUT), Gazipur**

**Lab # 03**

*8086 String Display and Loop Instructions using Assembly Language in EMU8086.*

**Objective:**

Understand 8086 string display and loop instructions using Assembly Language Program.

**Theory:**

- **String Display Instruction**

At first define the string to be displayed under DATA SEGMENT:

**.DATA**

**test\_string DB 'My first string', 0Dh, 0Ah, '\$'**

Then, display the string in the command prompt as:

**MOV AH, 9**

**LEA DX, test\_string**

**INT 21h**

- **Loop:** LOOP instruction is a combination of a decrement of CX (i.e., count register). In 8086, LOOP decrements CX and if CX is not equal to zero, it jumps to the address indicated by the label. If CX becomes a 0, the next sequential instruction executes.

**Assembly Language Program Example for Loop:**

*Count-controlled LOOP to display a row of 50 stars (\*).*

org 100h

.DATA ; Data segment starts

.CODE ; Code segment starts

MAIN PROC

mov ax, @DATA

mov ds, ax

xor cx, cx ; reset the CX register

mov cx, 50

mov ah, 2

mov dl, '\*'

top: int 21h

loop top

mov ah, 4ch ; equivalent function number of RETURN

int 21h ; Input-Output Interrupt

MAIN ENDP

END MAIN

RET

**Tasks to do:**

1. Write an assembly language program that stores a string in a variable. Now, display the string and using loop calculate number of characters in that string and store that number in DL part of Data Register DX.

**Sample Input / Output:**

**Input in a String:** *input\_string DB 'We are IUT Students', 0Dh, 0Ah, '\$'*

**Output at DL:** *We are IUT Students*

**15h** (Equivalent of Decimal 21 or Binary 00010101 B)