SUBJECT: MICROPROCESSOR LAB (MPL)	
NAME:	
CLASS: SE COMP II	**ROLL NO.:**
SEMESTER: SEM-II	**YEAR: 2023-24**
DATE OF PERFORMANCE:	**DATE OF SUBMISSION:**
EXAMINED: Prof. G. B. Aochar	

Assignment No-02

Title:- String length calculation

Assignment Name: - Write an X86/64 ALP to accept a string and to display its length.

Objective-

- To study various string instruction
- To understand how to define string in data segment.
- To calculate str length.

Outcome-

- Students will be able to write code to accept str and display string length.

Prerequisite -

System call of Unix for Assembly language Program.

Hardware Requirement-

Desktop PC

Software Requirement-

Ubuntu 14.04,

Assembler: NASM version 2.10.07
Linker: ld

Guidelines for the algorithm:

- Initialize Data section.
- Declare string and other required variables.
- Accept string from user.
- Count of entered string including enter character is available with RAX register.

Input/ Read System Call

Accept input through keyboard and store at variable name for specified variable length

Function Read (fd, variable name, variable length)

Input/ Read System Call

mov rax,0 ;function to Read(function no compulsory inRAX)

mov rdi, 0 ; read through keyboard

mov rsi, Variable Name

mov rdx, variable length in bytes

syscall ;System call

Display/ Write System Call

Display variable_name contents of specified variable length on monitor

Function Write (fd, variable name, variable length)

Display/ Write System Call

mov rax,1 ;function to Display(function no compulsory in RAX)

mov rdi, 1 ; Display on monitor

mov rsi, Variable Name

mov rdx, variable length in bytes

syscall ;System call

Exit System Call

Function Exit (int Status)

Exit System Call

mov rax, 60 ;function to exit or terminate program (function no compulsory inRAX)

mov rdi, 1/0 ; with status either 0 or 1

syscall ;System call

Algorithm: Hex to Ascii conversion

1. Take cnt value as 16 into cnt variable; count for 16 digits to display
2. Move address of "result" variable into rdi.
3. Rotate left rbx register by 4 bits. ;rbx reg =16 digit number you want to display
4. Move bl into al.
5. And al with 0FH.
6. Compare al with 09H.
7. if greater Add 37H into al.
8. Else Add 30H into al.
9. Move al into memory location pointed by rdi.
10. Increment rdi.
11. Loop the statements till count value becomes zero.
12. Return from procedure.

Conclusion:- Hence we implemented an ALP to calculate string length.

Questions:-

- Explain string instruction of 80386?
- Explain direction flag?