Experiment No 4

Objective:

Write a menu driven assembly language program to accept ,display the string, find the length of string, reverse the string, check the string is palindrome or not and scan the string to check whether a accepted letter is present or not.

Prerequisite:

TASM assembler

Description:

There are several string instructions, used to move large blocks of data or stings and perform operations on strings.

- Memory string source - DS:SI

- Memory string destination - ES:DI

- String can be processed in forward and reverse direction.

- If DF=1 auto decrement for SI and DI

- If DF=0 auto increment for SI and DI

Algorithm:

1. Start

2. Initialize data segment through AX register in the DS register.

3. If choice =1 then goto step no.4 (accept the string)else goto the step no.14

4. Display the message "Enter the string"

5. Initialize the SI with 1000h(source index)

6. Initialize the DI with 2000h(destination index)

7. Accept the character through keyboard(AL=52h i.e ASCII hex value of 'm')

8. Move the AL contents to a location pointed by SI and DI.

9. Increment the CL register contents by 1

10.   Increment SI and DI by 1

11.   Repeat the step 7 to 10 till Enter key get pressed(i.e AL=0Dh ASCII hex value for enter key used to detect the end of the string.)

12.   Decrement the CL by 1 (to avoid the enter key as a part of the string to obtain correct length value)

13.   Preserve the length in temporary variable say count from CL

14.   If choice = 2 then goto step no.15 (display the string)else goto step no. 21

15.   Initialize SI again with 1000h (string source)

16.   Move the content of location pointed by SI to DL

17.   Display the character on the screen

18.   Increment SI by 1and decrement the CL by 1

19.   Repeat the step from 15 to 18 till Zero flag will come set (i.e CL reaches to zero).

20.   Load the String length from count to CL register back.

21.   If choice=3 (display the length of string) then goto step no. 22 else goto step no. 24

22.   Move the contents of CL to AL and add 30h to AL

23.   Move the AL contents to DL and display the length of string.

24.   If choice=4 (Reverse the string) then goto step no. 25 else goto step no.30

25.   Add CX (e.g CX=0005)to SI to make SI to point to the last letter of String.

26.   Decrement to SI by 1 as SI will start from 0 index (e.x 1000 to 1004 are the locations if string is of 5 letters)

27.   Move the letter pointed by SI to DL and display it on the screen

28.   Decrement the SI by 1 and decrement the CL by 1

29. Repeat step 25 to 29 till CL reaches to zero if zero flag get set.

30. If choice = 5 then goto step no. 31 else goto the step no.43

31. Initialize SI with 1000h again

32. Initialize DI with 2000h again

33. Load CL with original length of string from count

34. Add DI with CX (e.x CX=0005)so DI will point to the last letter of string

35. Move the letter from location pointed by SI to AL

36. Move the letter from location pointed by DI to BL

37. Compare the AL and BL if zero flag is not set then goto step no. 38 else goto step no 39

38. Display the string is not palindrome.

39. Increment the SI by 1 and Decrement DI by 1

40. Decrement CL by 1.

41. Repeat step no. 34 to 38 till CL reaches to zero

42. If zero flag is set then display the string is palindrome.

43. If choice=6 then goto step no. 44 else goto step no 49

44. Accept the letter to be searched in AL.

45. Load CL with original length of string from count

46. Initialize the DI with 2000h

47. Use REPNE SCASB instruction. This instruction scans the string for a letter, stops when it finds the first occurrence of a letter. It decrements CX also by 1 for every scan. When this instruction stops CX will contain value as position-1 value.

48. Obtain the position of a letter by subtracting total length-CX value and display it on the screen.

49. Stop.