Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2024-25

Class:	**SE**	**Semester:**	**IV**
Course Code:	**CSL404**	**Course Name:**	**Microprocessor Lab**

Name of Student:	**Shravani Sandeep Raut**
Roll No. :	**48**
Experiment No.:	**7**
Title of the Experiment:	**Program to find whether string is palindrome or not**
Date of Performance:	**06/03/2025**
Date of Submission:	**13/03/2025**

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Performance	5	
Understanding	5	
Journal work and timely submission	10	
Total	20	

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Performance	4-5	2-3	1
Understanding	4-5	2-3	1
Journal work and timely submission	8-10	5-8	1-4

Checked by

Name of Faculty : Ms. Sweety Patil

Signature :

Date:

Aim: Assembly Language Program to find given string is Palindrome or not.

Theory:

A palindrome string is a string when read in a forward or backward direction remains the same. One of the approach to check this is iterate through the string till middle of the string and compare the character from back and forth.

Algorithm:

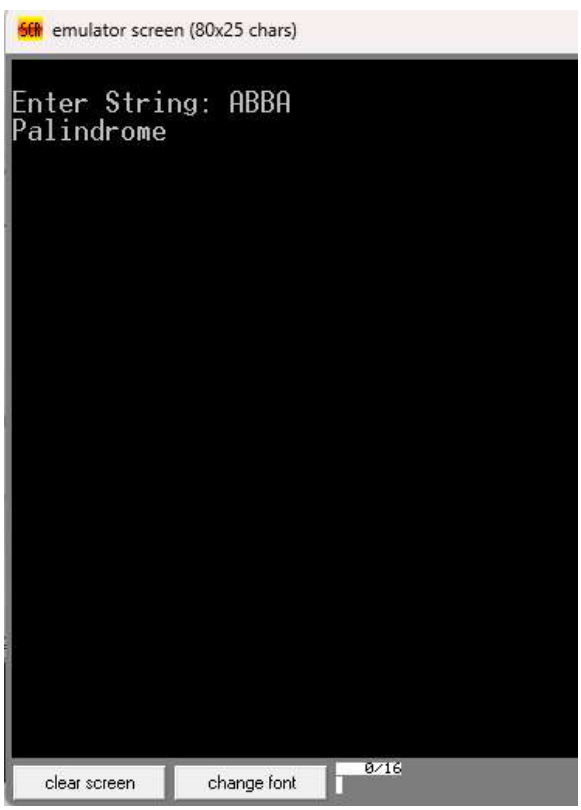
1. Initialize the data segment.
2. Display the message M1
3. Input the string
4. Get the string address of the string
5. Get the right most character
6. Get the left most character
7. Check for palindrome.
8. If not Goto step 14
9. Decrement the end pointer
10. Increment the starting pointer.
11. Decrement the counter
12. If count not equal to zero go to step 5
13. Display the message m2
14. Display the message m3
15. To terminate the program using DOS interrupt
    a. Initialize AH with 4ch
    b. Call interrupt INT 21h
16. Stop

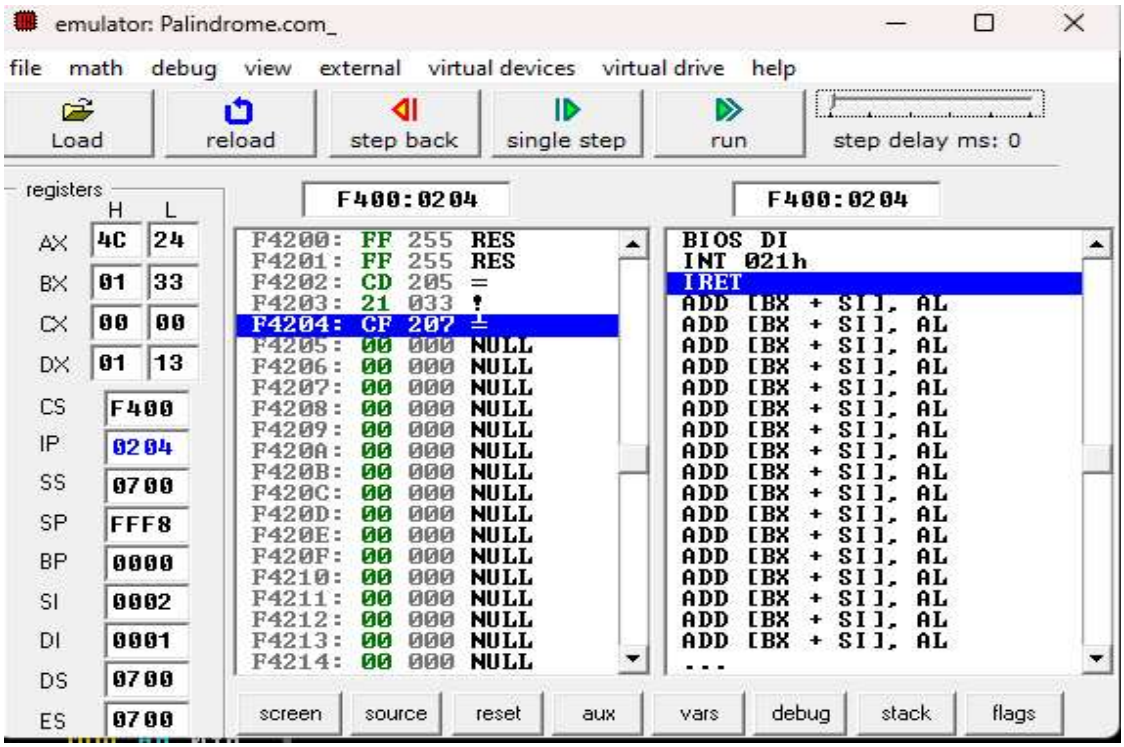
Code:

```
org 100h

.data
M1 db 10,13, "Enter String: $"
M2 db 10,13, "Palindrome$"
M3 db 10,13, "Not Palindrome$"
buff db 80


.code
LEA DX, M1
MOV AH, 09H          ;Prints the message
INT 21H

LEA DX, BUFF
MOV AH, 0AH          ;Input acceptance
INT 21H

LEA BX, BUFF +2
MOV CH, 00H
MOV CL, [BUFF+1]
MOV DI,CX
DEC DI

SAR CL,1             ;sar shift arithmetic right divides value by 2
MOV SI, 00H

LOOP:
   MOV AL,[BX+DI]
   MOV AH,[BX+SI]
   CMP AL,AH          ;Subtraction of ASCII values
   JNZ LAST
   DEC DI
   INC SI
   DEC CL
   JNZ LOOP

   LEA DX, M2
   MOV AH, 09H        ;Print M2 Palindrome
   INT 21H
   JMP L2
```

```
LAST:
   LEA DX, M3
   MOV AH,09H        ;Prints M3 Not Palindrome
   INT 21H

L2:
   MOV AH, 4CH       ;code termination (break statement)
   INT 21H

RET
```

Output:





Conclusion:

In conclusion, the assembly program to check whether a string is a palindrome demonstrates basic string manipulation and comparison in assembly language. By comparing characters from both ends of the string and moving inward, the program effectively checks for symmetry. This task highlights the importance of efficient memory handling and control flow in low-level programming.

1. Explain SAR INSTRUCTION

   The **SAR** (Shift Arithmetic Right) instruction shifts bits of a register or memory operand to the right while preserving the sign bit for signed values. It is commonly used for division by powers of 2, ensuring that the sign of the number remains intact during the shift.

2. Explain DAA instruction.

   The **DAA** (Decimal Adjust AL after Addition) instruction is used in assembly to adjust the value in the AL register after performing a BCD (Binary-Coded Decimal) addition. It ensures that the result is a valid BCD number by correcting the value in AL if the addition produces a non-BCD result.