

Program

ASSUME CS:CODE, DS:DATA

DISPLAY MACRO MSG; Macro to display messages

LEA DX, MSG

MOV AH, 09H

INT 21H

ENDM

DATA SEGMENT

MSG1 DB 0AH, 0DH, "Enter the String: \$"

MSG2 DB 0AH, 0DH, "Reverse of String: \$"

PAL DB 0AH, 0DH, "The given string is a Palindrome \$"

NPAL DB 0AH, 0DH, "The given string is not a Palindrome \$"

P LABEL BYTE

M DB 0FFH

L DB ?

STR DB 0FFH DUP("\$")

REV DB 0FFH DUP("\$")

DATA ENDS

CODE SEGMENT

START: MOV AX, DATA

MOV DS, AX

DISPLAY MSG1; Call macro

LEA DX, P; Read string

MOV AH, 09H

INT 21H

DISPLAY MSG2; Call macro

MOV DL, L

ADD DL, 30H

LEA SI, STR

LEA DI, REV

MOV DL, L

DEC DL

MOV DH, 0

ADD SI, DX

MOV CL, L

MOV CH, 0

REVERSE: MOV AL, [SI]

MOV [DI], AL

INC DI

DEC SI

LOOP REVERSE

DISPLAY REV; Call macro

LEA SI, STR

LEA DI, REV

MOV CL, L

MOV CH, 0

CHECK: MOV AL, [SI]

CMP [DI], AL

JNE NOTPAL; Jump to NOTPAL if not equal

INC SI

INC DI

LOOP CHECK

DISPLAY PAL; Call macro

JMP EXIT; Jump to EXIT

NOTPAL: DISPLAY NPAL; Call macro

EXIT: MOV AH, 4CH; To terminate program
INT 21H

CODE ENDS

END START

Output

Enter the String: 685586

Reverse of String: 685586

The given string is a Palindrome

Aim

To check if a given number is a palindrome or not.

Logic

5 The input string is read into a variable STR. DL contains the length L of the string. The effective address of STR is loaded into SI & the effective address of REV (variable to store reverse of STR) is loaded into DI. The length of the string is added to SI so that it points to the last character of the input string. The string STR is read from the end & each character that is read is moved to REV traversed from the beginning. At the end of this process, REV contains the reverse of STR. The effective addresses of STR & REV are loaded into SI & DI respectively. Now both SI & DI points to the 1st character of STR & REV respectively. Compare STR & REV character-by-character by incrementing SI & DI. If any one of the corresponding characters do not match, then the message that it is not a palindrome is displayed. If both STR & REV are same i.e. they both have the same sequence of characters, then the message that it is a palindrome is displayed.

Result

Checked if a given number is a palindrome or not

Teacher's Signature: _____