Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

Course No : CSE2214
Course Title : Assembly Language Programming Sessional
Assignment No : 08
Date of Performance :11.03.2021
Date of Submission :18.03.2021

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Question No: 01
Question: Write a program that (a) lets the user input a string, (b) prints it forward and backward without punctuation and blanks on successive lines, and (c) decides whether it is a palindrome and prints the conclusion.
Answer:

```
.MODEL SMALL
.STACK 100H
.DATA
MSG1 DB 0AH,0DH,'Enter a string : ','$'
MSG2 DB 0AH,0DH,'The reversed string is : ','$'
MSG3 DB 0AH,0DH,'The forward string is : ','$'
MSG4 DB 0AH,0DH,'The backward string is : ','$'
PRINT_PALINDROME DB 0AH,0DH,'The string is palindrome$'
PRINT_NOT_PALINDROME DB 0AH,0DH,'The string is not palindrome$'

TEXT1 DB 100 DUP('$')
TEXT2 DB 100 DUP('$')

.CODE
MAIN PROC
   MOV AX,@DATA
   MOV DS,AX
   MOV ES,AX

   CLD

   MOV AH,9
   LEA DX,MSG1
   INT 21H

   XOR CX,CX

   MOV AH,1


   LEA SI,TEXT1

   WHILE_:
   INT 21H
   CMP AL,0DH
   JE END_WHILE

   CMP AL,33D
```

```
JE WHILE_:

CMP AL,34D
JE WHILE_:

CMP AL,39D
JE WHILE_:

CMP AL,' '
JE WHILE_:

CMP AL,44D
JE WHILE_:


CMP AL,45D
JE WHILE_:

CMP AL,46D
JE WHILE_:

CMP AL,58D
JE WHILE_:


CMP AL,59D
JE WHILE_:


CMP AL,95D
JE WHILE_:

CMP AL,96D
JE WHILE_:

PUSH AX
INC CX
MOV [SI], AL
INC SI

JMP WHILE_

END_WHILE:
```

```
MOV AH,9
LEA DX,MSG2
INT 21H

JCXZ EXIT  ; if CX register is 0

LEA DI,TEXT2
MOV BX,CX

MOV AH,2
TOP:
POP DX
MOV [DI],DL
INC DI
INT 21H
LOOP TOP

MOV AH,9
LEA DX,MSG3
INT 21H

MOV AH,9
LEA DX,TEXT1
INT 21H

MOV AH,9
LEA DX,MSG4
INT 21H

MOV AH,9
LEA DX,TEXT2
INT 21H

CALL NEWLINE

LEA SI,TEXT1
LEA DI,TEXT2

MOV CX,BX
REPE CMPSW

JZ PALINDROME
```

```
    MOV AH,9
    LEA DX,PRINT_NOT_PALINDROME
    INT 21H

    JMP EXIT
    PALINDROME:

    MOV AH,9
    LEA DX,PRINT_PALINDROME
    INT 21H

    EXIT:

    MOV AH,4CH
    INT 21H
    MAIN ENDP

    NEWLINE PROC

    PUSH AX
    PUSH DX

    MOV AH,2
    MOV DL,0DH
    INT 21H

    MOV DL,0AH
    INT 21H

    POP DX
    POP AX

    RET
    NEWLINE ENDP
END MAIN
```

Question No: 02

Question: Write a program that reads a string STRING, a decimal integer S that represents a position in STRING, a decimal integer N that represents the number of bytes to be removed (both integers between 0 and 80), calls DELETE to remove N bytes at position S, and prints the resulting string.

Answer:

```
.MODEL SMALL
.STACK 100H
.DATA
MSG1 DB 0AH,0DH,'Enter the string : ','$'
MSG2 DB 0AH,0DH,'The resulting string is : ','$'
MSG3 DB 0AH,0DH,'Enter the decimal number S : ','$'
MSG4 DB 0AH,0DH,'Enter the decimal number N : ','$'


TEXT1 DB 100 DUP('$')

.CODE
MAIN PROC
   MOV AX,@DATA
   MOV DS,AX
   MOV ES,AX

   CLD

   MOV AH,9
   LEA DX,MSG1
   INT 21H

   XOR CX,CX

   MOV AH,1

   LEA SI,TEXT1

   WHILE_:
   INT 21H
   CMP AL,0DH
   JE END_WHILE

   MOV [SI], AL
   INC SI
   INC CX
```

```
JMP WHILE_

END_WHILE:

MOV AH,9
LEA DX,MSG3
INT 21H


CALL INDEC
MOV BX,AX
SUB BX,1

MOV AH,9
LEA DX,MSG4
INT 21H

CALL INDEC

CALL NEWLINE



LEA DI,TEXT1
ADD DI,BX

SUB CX,BX
SUB CX,AX

LEA SI,TEXT1
ADD SI,BX
ADD SI,AX

REP MOVSB

MOV [DI],'$'

MOV AH,9
LEA DX,TEXT1
INT 21H

MOV AH,4CH
```

```
INT 21H
MAIN ENDP

NEWLINE PROC

PUSH AX
PUSH DX

MOV AH,2
MOV DL,0DH
INT 21H

MOV DL,0AH
INT 21H

POP DX
POP AX

RET
NEWLINE ENDP


INDEC PROC
      PUSH BX
      PUSH CX
      PUSH DX

      BEGIN:



      XOR BX,BX
      XOR CX,CX
      MOV AH,1
      INT 21H

      REPEAT2:
      CMP AL,'0'
      JNGE NOT_DIGIT
      CMP AL,'9'
      JNLE NOT_DIGIT

      AND AX,000FH
      PUSH AX
```

```
        MOV AX,10

        MUL BX
        POP BX
        ADD BX,AX
        MOV AH,1
        INT 21H

        CMP AL,0DH
        JNE REPEAT2
        MOV AX,BX

        EXIT:
        POP DX
        POP CX
        POP BX

        RET

        NOT_DIGIT:
        MOV AH,2
        MOV DL,0DH
        INT 21H
        MOV DL,0AH
        INT 21H
        JMP BEGIN

        RET
INDEC ENDP
END MAIN
```