Birla Institute of Technology and Science Pilani, Dubai Campus

Dubai International Academic City

CS/ECE/INSTR/EEE F241
MICROPROCESSORS AND INTERFACING
LABORATORY MANUAL
II Semester 2021-22

EXPERIMENT-5
String Instructions/ Working with Character Arrays

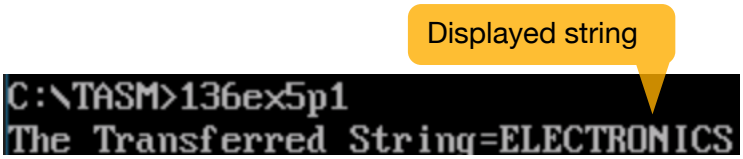
String Instructions

P1. Write a program to transfer the given string from source to destination using string instruction and also display the destination string.

Handwritten codes:

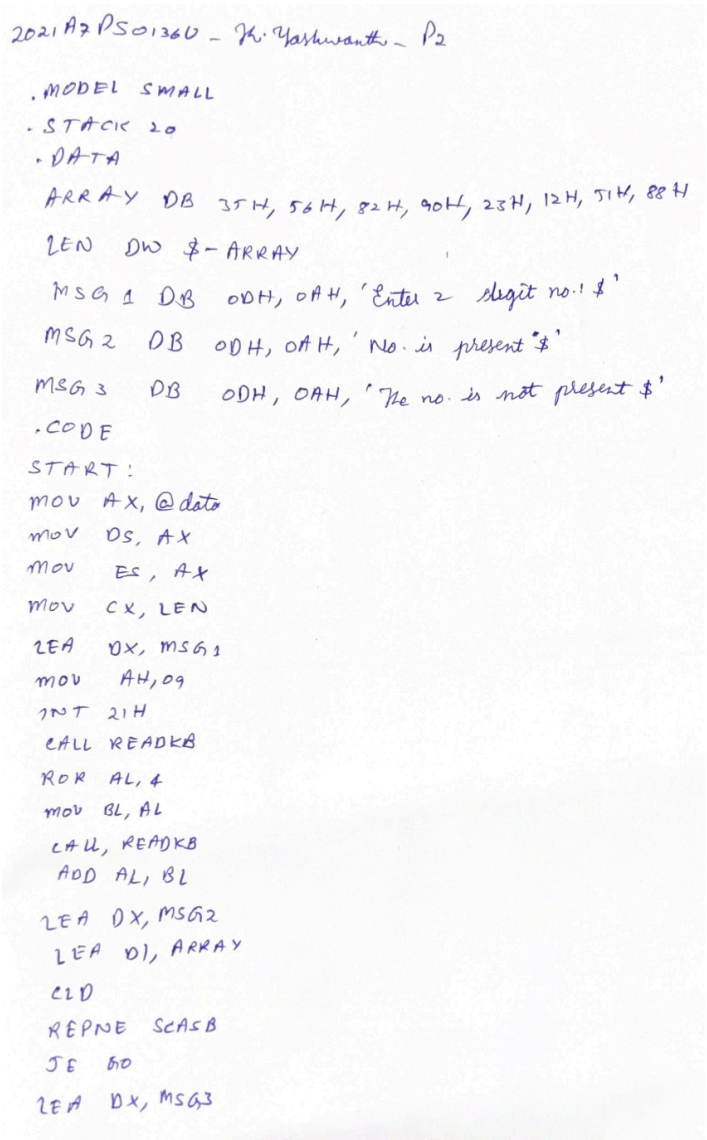
```
2021A7PS0136U - K. Yashwanth - Lab 5 - P1
.MODEL SMALL
.STACK 20
.DATA
SRCSTR DB 'ELECTRONICS'
LEN DW $-SRCSTR
MSG DB 'THE TRANSFERRED STRING='
DSTSTR DB 40 DUP ('$')
.CODE
START:
MOV AX, @DATA
MOV DS, AX
MOV ES, AX
MOV CX, LEN
LEA SI, SRCSTR
LEA DI, DSTSTR
CLD
REP MOVSB
LEA DX, MSG
MOV AH, 09
INT 21H
MOV AH, 4CH
INT 21H
END START
```

Solution Screenshot:



P2. Write a program to read two digit decimal number using keyboard and search whether the number is present in an array or not. Display suitable message.

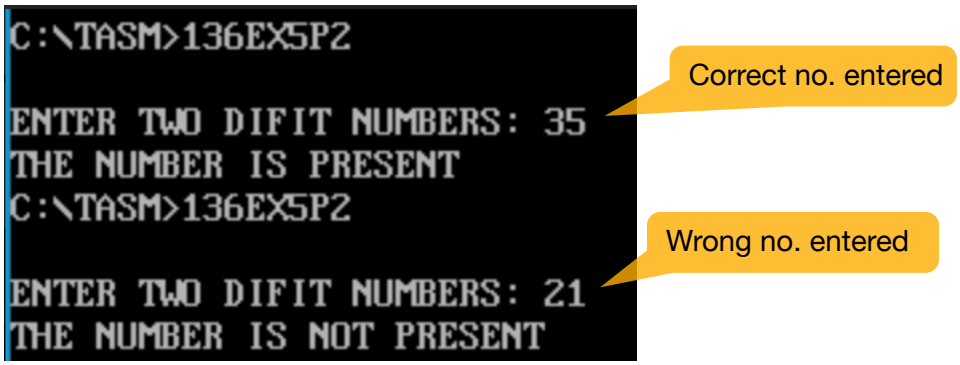
Handwritten codes:



```
2021A7PS0136U - K. Yashwanth - P2
.MODEL SMALL
.STACK 20
.DATA
ARRAY DB 37H, 56H, 82H, 90H, 23H, 12H, 51H, 88H
LEN DW $-ARRAY
MSG1 DB 0DH, 0AH, 'Enter 2 digit no.! $'
MSG2 DB 0DH, 0AH, 'No. is present $'
MSG3 DB 0DH, 0AH, 'The no. is not present $'
.CODE
START:
MOV AX, @data
MOV DS, AX
MOV ES, AX
MOV CX, LEN
LEA DX, MSG1
MOV AH, 09
INT 21H
CALL READKB
ROR AL, 4
MOV BL, AL
CALL READKB
ADD AL, BL
LEA DX, MSG2
LEA DI, ARRAY
CLD
REPNE SCASB
JE GO
LEA DX, MSG3
```

```
GO:
MOV AH,09
INT 21H
MOV AH,4CH
INT 21H
READKB PROC NEAR
MOV AH,01
INT 21H
CMP AL,3AH
JC SUB30
SUB AL,07H
SUB30:
SUB AL,30H
RET
READKB ENDP
END START
```

Solution Screenshot:



Working with Character Arrays

P3. Write a program to read a string using DOS interrupts, reverse the entered string and display the same on the screen. Use MACRO for display.

Handwritten codes:

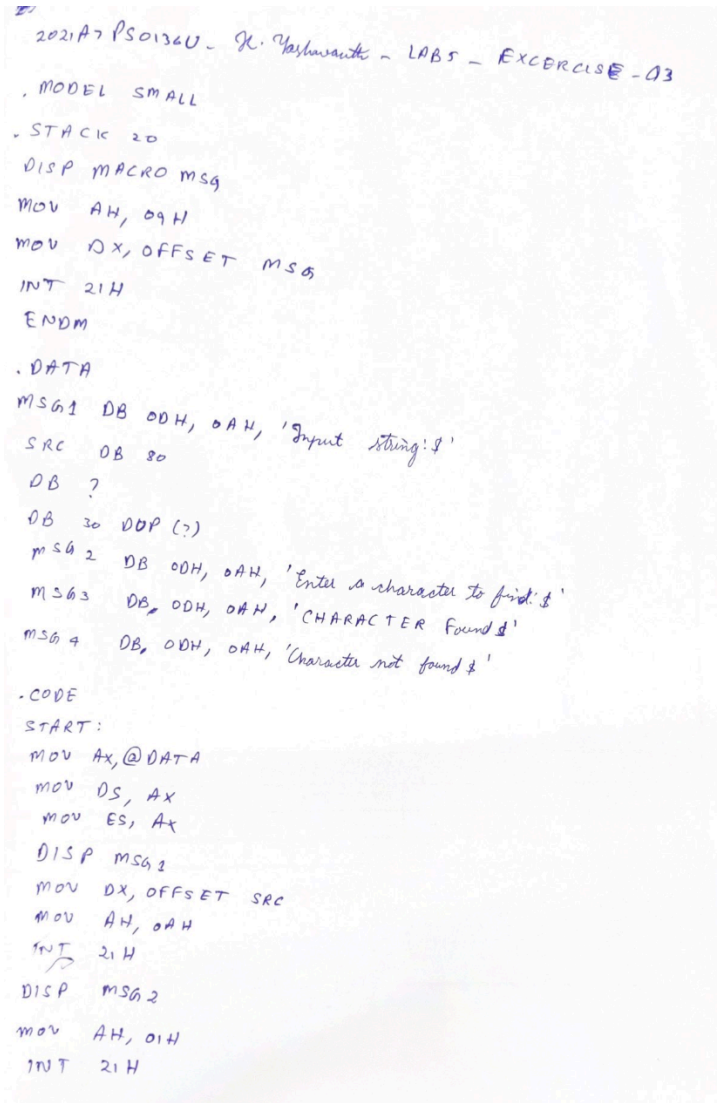
```
2021A7PS0136U,-
K. Yashwanth - P3

.MODEL SMALL
.STACK 20
DISP MACRO MSG
MOV AH, 09H
MOV DX, OFFSET MSG
INT 21H
ENDM
.DATA
MSG1 DB 0DH, 0AH, 'Input a string:$'
SRC DB 80
DB ?
DB 30 DUP (?)
MSG2 DB 0DH, 0AH, 'The rev. string is:$'
REV DB 30 DUP(?)

.CODE
START:
MOV AX, @DATA
MOV DS, AX
MOV ES, AX
DISP MSG1
MOV DX, OFFSET SRC
MOV AH, 0AH
INT 21H
MOV SI, OFFSET SRC+2
MOV DI, OFFSET REV-1
MOV CL, SRC+1
MOV CH, 00
ADD DI, CX
MOV BYTE PTR [DI+1], '$'
CLD
NEXT:
MOVSB
SUB DI, 0002
LOOP NEXT
DISP MSG2
MOV AH, 4CH
INT 21H
END START
```

Solution Screenshot:

Exercise Programs:

Q3. Write a program to search a character in the entered string. Display suitable messages on the screen. Read both string and searching character using DOS interrupts.

Handwritten codes:



```
2021A7PS0136U - K. Yashwanth - LABS - EXCERCISE-03
.MODEL SMALL
.STACK 20
DISP MACRO MSG
MOV AH, 09H
MOV DX, OFFSET MSG
INT 21H
ENDM
.DATA
MSG1 DB 0DH, 0AH, 'Input string:$'
SRC DB 80
DB ?
DB 30 DUP (?)
MSG2 DB 0DH, 0AH, 'Enter a character to find:$'
MSG3 DB, 0DH, 0AH, 'CHARACTER Found$'
MSG4 DB, 0DH, 0AH, 'Character not found$'
.CODE
START:
MOV AX, @DATA
MOV DS, AX
MOV ES, AX
DISP MSG1
MOV DX, OFFSET SRC
MOV AH, 0AH
INT 21H
DISP MSG2
MOV AH, 01H
INT 21H
```

2021A7PS0136U K.Yashwanth

```
MOV CL, SRC+1
MOV CH, 00
LEA DI, SRC
ADD DI, 0002
CLD
REPNE SCASB
JE FOUND
DISP MSG4
JMP EXIT
FOUND:
DISP MSG3
EXIT:
mov AH, 4CH
INT 21H
END START
```

Solution Screenshot: