



VIT[®]
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Computer Science & Engineering

CSE2006

Microprocessor and Interfacing

LAB ASSIGNMENT 4

Submitted to **Prof. SANJAY R**

TOPIC: ASSEMBLY LANGUAGE PROGRAMMING

NAME: PUNIT MIDDHA

REG.NO: 19BCE2060

SLOT: L43+L44

DATE: 11/11/2021

1. Assume the sentence of strings 'HOW ARE YOU?' is stored in the memory. Write the ALP to find out whether the following strings are in the memory or not. If the string is not found, find out the reason.

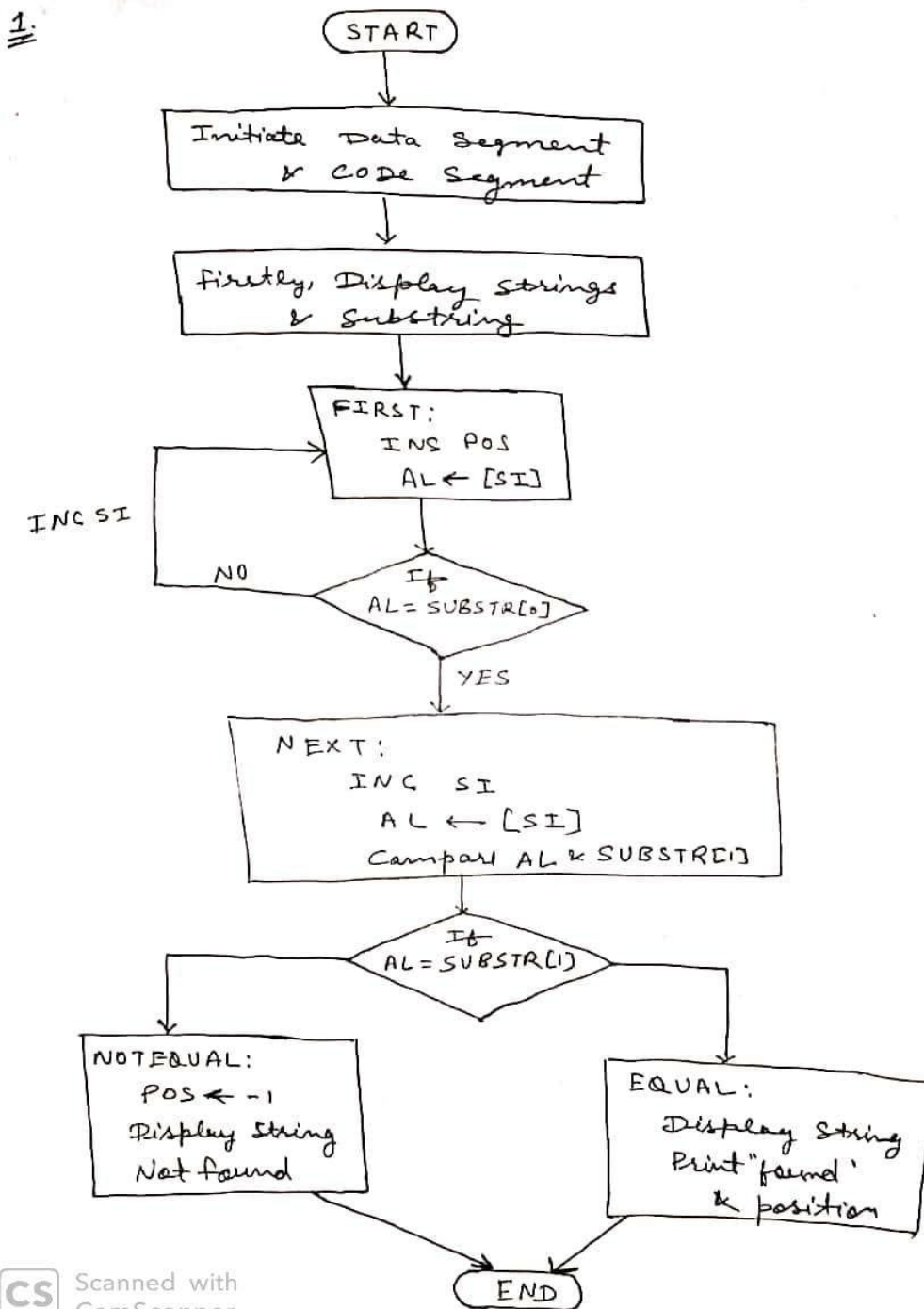
i) string-1: AR

ii) string-2: RE

Aim:

To find whether the given strings i) AR and ii) RE are stored in the memory or not.

Handwritten Flow Chart:



Handwritten Program:

1.

```
; NAME: PUNITMIDDA  
; REGNO: 19BCE2660
```

DATA SEGMENT

```
STRING DB 'HOW ARE YOU? $'
```

```
SUBSTR DB 'AR/RE $'
```

```
MSG1 DB 10, 13, 'STRING : $'
```

```
MSG2 DB 10, 13, 'SUBSTRING : $'
```

```
FOUND DB 10, 13, 'SUBSTRING IS FOUND AT POSITION  
: $'
```

```
NOTFOUND DB 10, 13, 'SUBSTRING IS NOT FOUND! $',  
POS DB 0
```

DATA ENDS

DISPLAY MACRO MSG

MOV AH, 9

LEA DX, MSG

INT 21H.

ENDM

CODE SEGMENT

ASSUME CS:CODE, DS:DATA

START:

MOV AX, DATA

MOV DS, AX

DISPLAY MSG1

DISPLAY STRING

DISPLAY MSG2

DISPLAY SUBSTR

LEA SI, STRING.



FIRST:

```
INC POS
MOV AL, [SI]
CMP AL, SUBSTR[0]
JE NEXT
INC SI
LOOP FIRST
```

NEXT:

```
INC SI
MOV AL, [SI]
CMP AL, SUBSTR[1]
JE EQUAL
```

NOT EQUAL:

```
MOV POS, -1
DISPLAY NOT FOUND
JMP EXIT
```

EQUAL:

```
DISPLAY FOUND
MOV DL, POS
ADD DL, 30H
MOV AH, 2
INT 21H
```

```
EXIT: MOV AH, 4CH
      INT 21H
```

CODE ENDS

END START



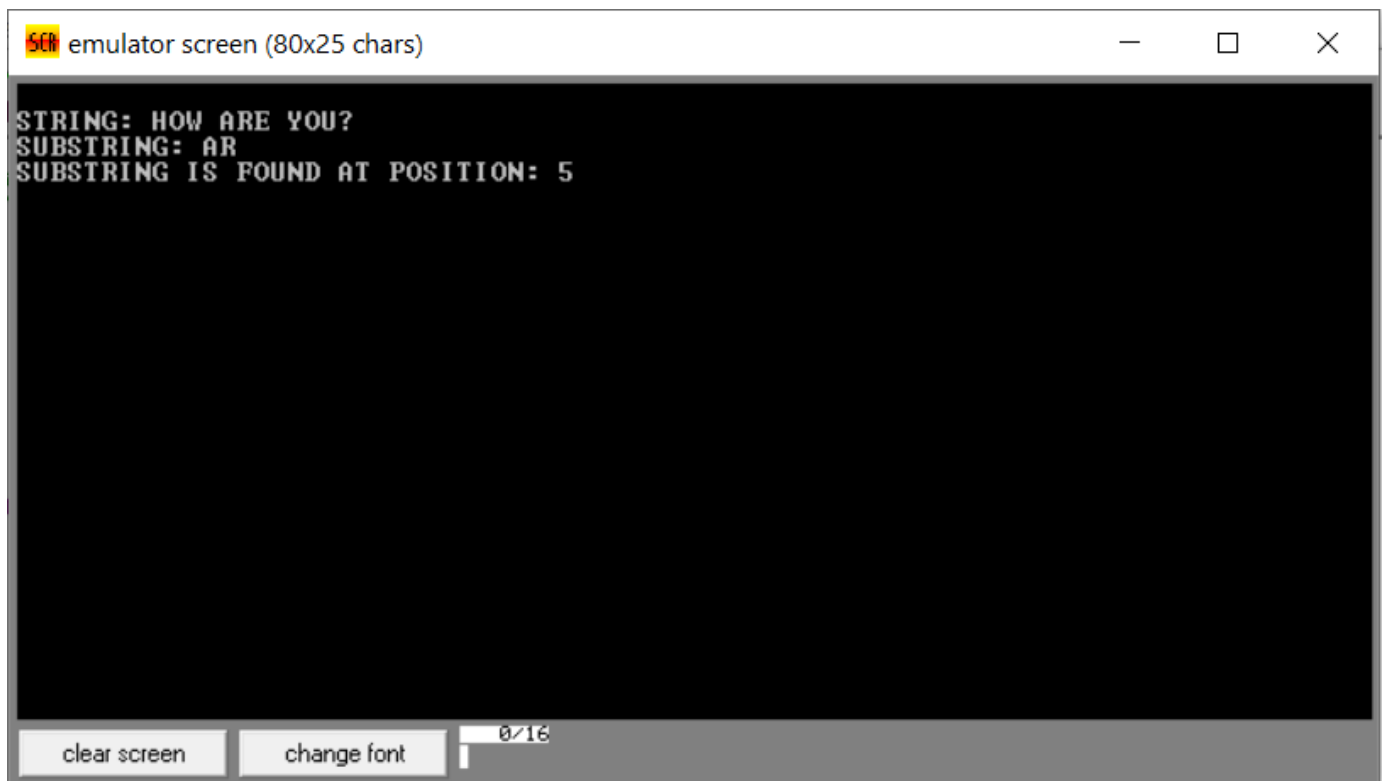
Snapshots of typed program and Output:

1.

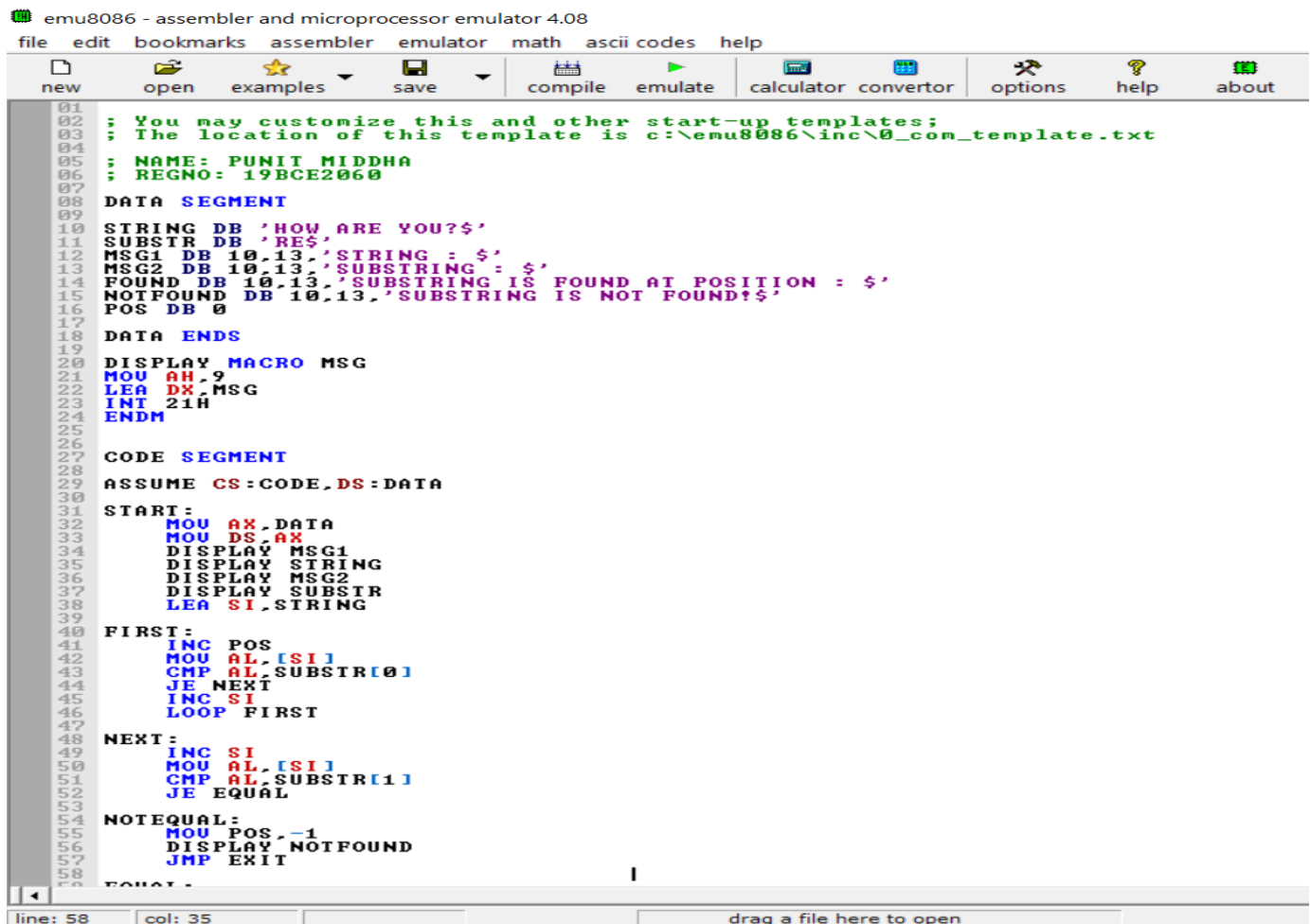
emu8086 - assembler and microprocessor emulator 4.08

```
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01
02 ; You may customize this and other start-up templates;
03 ; The location of this template is c:\emu8086\inc\0_com_template.txt
04
05 ; NAME: PUNIT MIDDHA
06 ; REGNO: 19BCE2060
07
08 DATA SEGMENT
09
10 STRING DB 'HOW ARE YOU?$'
11 SUBSTR DB 'AR$'
12 MSG1 DB 10,13,'STRING : $'
13 MSG2 DB 10,13,'SUBSTRING : $'
14 FOUND DB 10,13,'SUBSTRING IS FOUND AT POSITION : $'
15 NOTFOUND DB 10,13,'SUBSTRING IS NOT FOUND!$'
16 POS DB 0
17
18 DATA ENDS
19
20 DISPLAY MACRO MSG
21 MOV AH,9
22 LEA DX,MSG
23 INT 21H
24 ENDM
25
26
27 CODE SEGMENT
28
29 ASSUME CS:CODE,DS:DATA
30
31 START:
32 MOV AX,DATA
33 MOV DS,AX
34 DISPLAY MSG1
35 DISPLAY STRING
36 DISPLAY MSG2
37 DISPLAY SUBSTR
38 LEA SI,STRING
39
40 FIRST:
41 INC POS
42 MOV AL,[SI]
43 CMP AL,SUBSTR[0]
44 JE NEXT
45 INC SI
46 LOOP FIRST
47
48 NEXT:
49 INC SI
50 MOV AL,[SI]
51 CMP AL,SUBSTR[1]
52 JE EQUAL
53
54 NOTEQUAL:
55 MOV POS,-1
56 DISPLAY NOTFOUND
57 JMP EXIT
58
59 EQUAL:
```

line: 11 col: 14 drag a file here to open



2.





Inference:

- In the first example, the outcome is that the string specified, i.e., 'AR', is found at position 5. As a result, it is saved in memory.
- Similarly, the result in the second example is that the string specified, i.e., 'RE' is discovered at position 6 in the string and is thus saved in memory.