



*"Heaven's light is our guide"*

# Rajshahi University of Engineering & Technology

*Department of  
Computer Science & Engineering*

Course No: CSE 3110

Course Title: Microprocessors and Assembly Language Sessional

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## Lab Report (Lab 2)

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*Submitted By:*

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**Section: '17-A**

**Class: 3rd year (Odd Semester)**

*Submitted To:*

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**RUET.**

***Date of Experiment: 26<sup>th</sup> January, 2021***

***Date of Submission: 2<sup>nd</sup> February, 2021***

EXPERIMENT NO: 01

NAME OF THE EXPERIMENT:

Write an assembly language program to read one of the hex digits (A-F) and display it on next line in decimal.

OBJECTIVES:

Writing an assembly program to

- Prompt the user for a character input
- Convert it to decimal
- Display the output

CODE:

```

1. .MODEL SMALL
2. .STACK 100H
3.
4. .DATA
5.     CR EQU 0DH
6.     LF EQU 0AH
7. MSG1 DB 'Enter a hex digit: $'
8. MSG2 DB 0DH, 0AH, 'In decimal it is: $'
9.
10.
11.     .CODE
12.     MAIN PROC
13.
14.         ;initialize DS
15.         MOV AX, @DATA    ;get data segment
16.         MOV DS, AX       ;initialize DS
17.
18.         ;print user prompt
19.         LEA DX, MSG1     ;get first message
20.         MOV AH, 9        ;display string function
21.         INT 21H          ;display string
22.
23.         ;take input
24.         MOV AH, 1        ;read character function
25.         INT 21H          ;read character
26.         MOV BL, AL       ;store character's ASCII value
27.         SUB BL, 17D      ;subtract 17 to match the ASCII value
28.                         ;with 0 - 5 of decimal digit
29.         ;print it
30.         LEA DX, MSG2     ;get second message
31.         MOV AH, 9        ;display string function
32.         INT 21H          ;display string

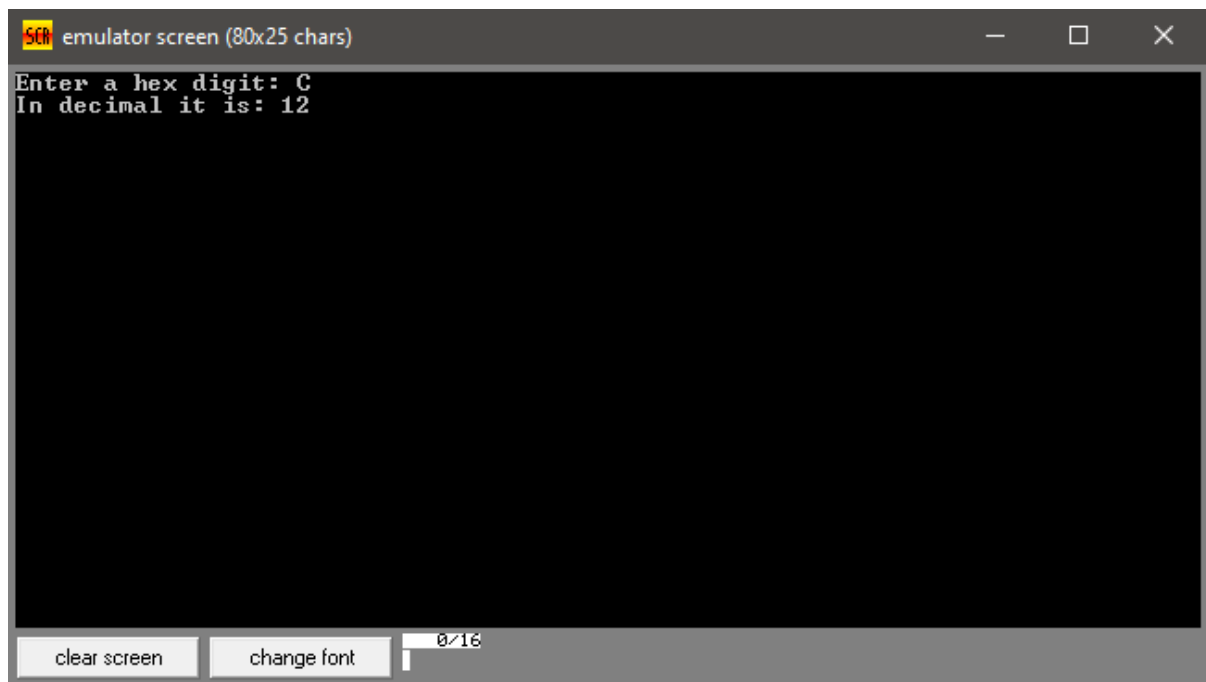
```

```

33.
34.      MOV DL, 49D      ;display 1 at the first
35.      MOV AH, 2        ;display character function
36.      INT 21H          ;display character
37.
38.      MOV DL, BL        ;display the stored character
39.      MOV AH, 2        ;display character function
40.      INT 21H          ;display character
41.
42.      ;DOS exit
43.      MOV AH, 4CH
44.      INT 21H
45.
46.      MAIN ENDP
47.      END MAIN

```

## OUTPUT:



## DISCUSSION:

To convert a hex digit, at first the input is taken as a character. Then its ASCII value is stored. The ASCII value of A-F is just 17 value forward from 0-5, In decimal these values are 10-15. So, to show the output an extra '1' (decimal value 49) needs to be shown at first then the subtraction value of characters ASCII value and 17.