

## **LAB ASSIGNMENT – 10**

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CSE – F

**1. (a) Write a program in assembly language to print the numbers from 0 to 9.**

**Code:**

```
ORG 100h          ; Origin for COM file format

; Print numbers from 0 to 9

MOV CX, 10        ; Loop counter set to 10 (for numbers 0 to 9)
MOV AL, 0          ; Start with the number 0

print_loop:
    ; Convert number in AL to ASCII character
    ADD AL, '0'     ; Convert number to ASCII

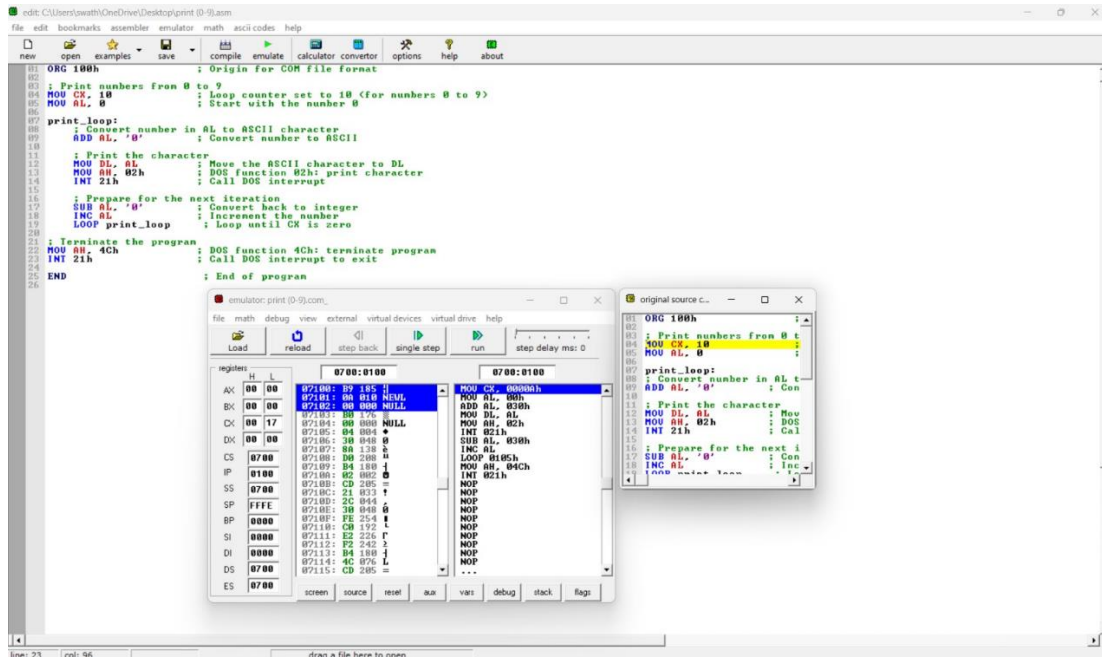
    ; Print the character
    MOV DL, AL      ; Move the ASCII character to DL
    MOV AH, 02h     ; DOS function 02h: print character
    INT 21h         ; Call DOS interrupt

    ; Prepare for the next iteration
    SUB AL, '0'     ; Convert back to integer
    INC AL          ; Increment the number
    LOOP print_loop ; Loop until CX is zero

; Terminate the program
MOV AH, 4Ch        ; DOS function 4Ch: terminate program
INT 21h            ; Call DOS interrupt to exit
```

END ; End of program

## Output:



**1. (b) Write an assembly language program to print the characters from A to Z in reverse order.**

**Code:**

```
ORG 100h          ; Origin for COM file format

; Print characters from 'Z' to 'A'

MOV CX, 26        ; Loop counter set to 26 (for letters A to Z)
MOV AL, 'Z'       ; Start with the character 'Z'

print_loop:
    ; Print the character
    MOV DL, AL     ; Move the character to DL
    MOV AH, 02h    ; DOS function 02h: print character
    INT 21h        ; Call DOS interrupt

    ; Prepare for the next iteration
    DEC AL         ; Move to the previous character
    LOOP print_loop ; Loop until CX is zero

; Terminate the program
MOV AH, 4Ch        ; DOS function 4Ch: terminate program
INT 21h            ; Call DOS interrupt to exit

END                ; End of program
```

## Output:

The screenshot shows an x86-64 assembler and emulator interface. The main window displays assembly code for a program that prints characters from 'Z' to 'A'. The code is as follows:

```
ORG 100h
; Origin for COM file format

; Print characters from 'Z' to 'A'
MOV CX, 26
MOV AL, 'Z'

print_loop:
; Print the character
MOV DL, AL
MOV AH, 02h
INT 21h

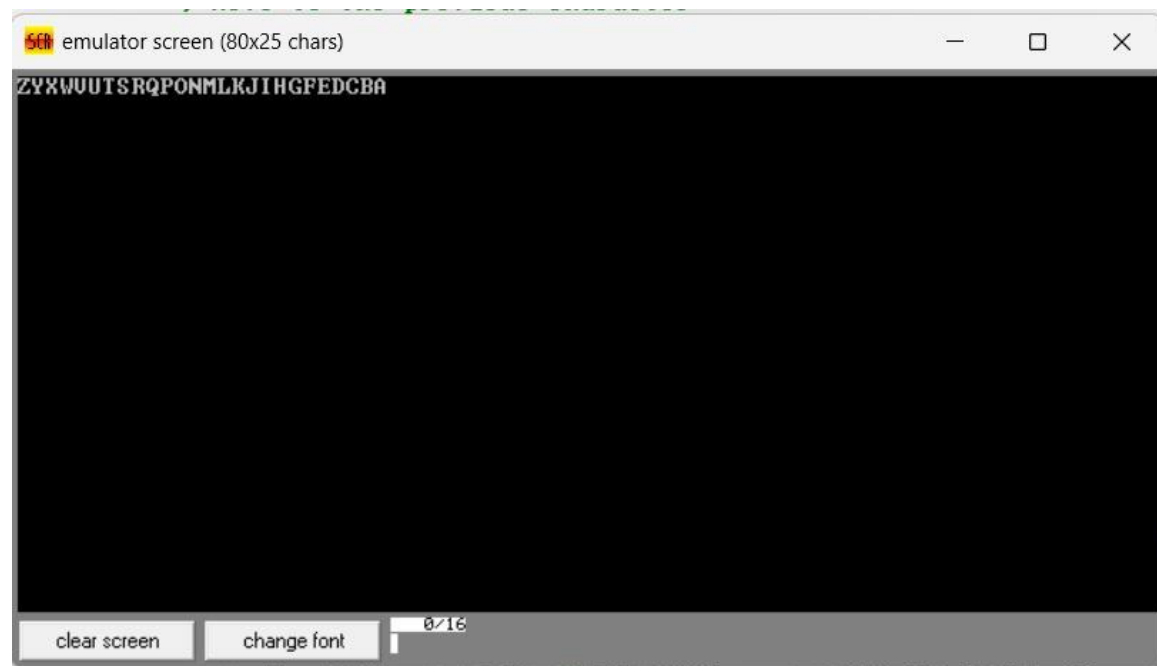
; Prepare for the next iteration
DEC AL
LOOP print_loop

; Terminate the program
MOV AH, 4Ch
INT 21h
END
```

Below the code is a register window showing the state of various registers. The registers are listed in a table with their names, values, and addresses. The registers are:

Register	Value	Address
AX	00 00	07100: 00 185 1
BC	00 00	07101: 10 056 2
CD	00 00	07102: 00 000 NULL
DE	00 13	07103: 58 090 Z
EF	00 00	07104: 88 138 3
FG	00 00	07105: 00 208 4
GH	00 00	07106: 04 180 5
HI	0700	07107: 02 002 6
JK	0100	07108: CD 205 =
LM	0700	07109: 21 033 7
NO	0700	0710A: FE 254 8
PS	FFFE	0710B: C0 200 9
QR	0700	0710C: E2 226 10
ST	0700	0710D: F6 246 11
UV	0700	0710E: 04 180 12
WX	0700	0710F: 4C 076 13
YZ	0700	07110: CD 205 =
AA	0700	07111: 21 033 14
BB	0700	07112: 90 144 15
CC	0700	07113: 90 144 16
DD	0700	07114: 90 144 17
EE	0700	07115: 90 144 18

To the right of the register window is a window showing the original source code, which is the same as the assembly code in the main window.



### Practise Set:

**2. (a) Write a program in assembly language to print the numbers from 0 to 9 in reverse order.**

#### Code:

```
ORG 100h          ; Origin for COM file format

; Print numbers from 9 to 0

MOV CX, 10        ; Loop counter set to 10 (for numbers 0 to 9)
MOV AL, 9         ; Start with the number 9

print_loop:
    ; Convert number in AL to ASCII character
    ADD AL, '0'    ; Convert number to ASCII

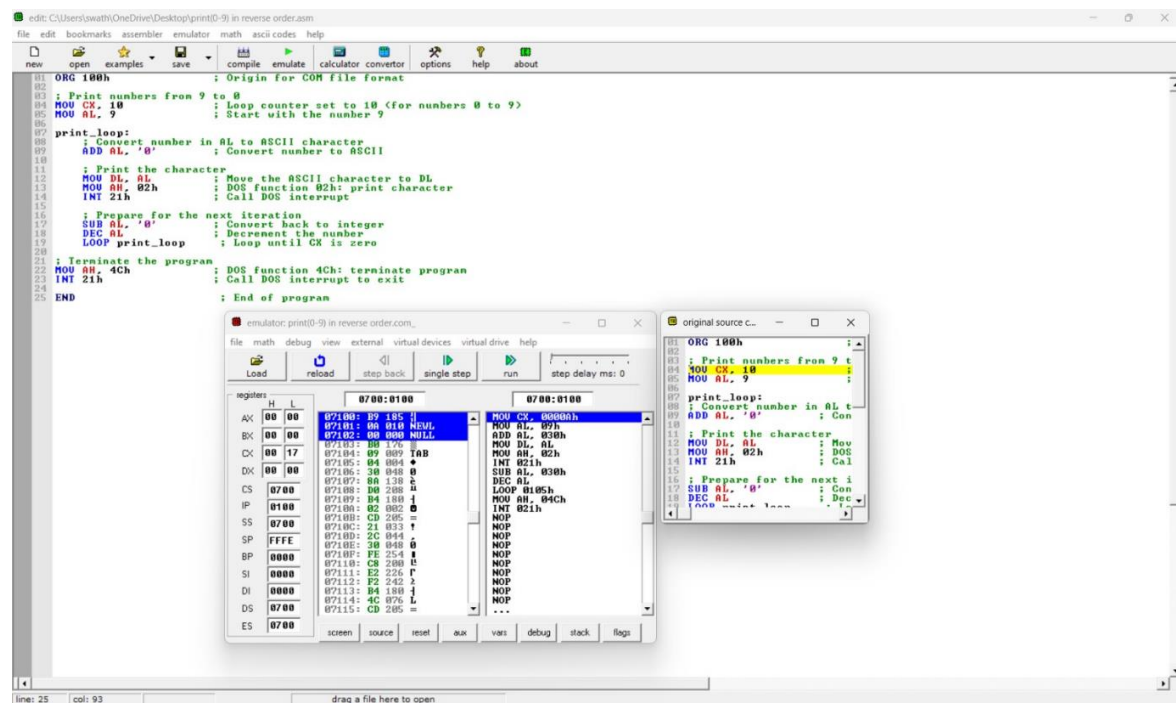
    ; Print the character
    MOV DL, AL     ; Move the ASCII character to DL
    MOV AH, 02h    ; DOS function 02h: print character
    INT 21h        ; Call DOS interrupt

    ; Prepare for the next iteration
    SUB AL, '0'    ; Convert back to integer
    DEC AL         ; Decrement the number
    LOOP print_loop ; Loop until CX is zero

; Terminate the program
MOV AH, 4Ch        ; DOS function 4Ch: terminate program
INT 21h            ; Call DOS interrupt to exit

END                ; End of program
```

## Output:



## 2. (b) Write an assembly language program to print the characters from A to Z.

### Code:

```
ORG 100h          ; Origin for COM file format

; Print characters from 'A' to 'Z'

MOV CX, 26        ; Loop counter set to 26 (for letters A to Z)
MOV AL, 'A'       ; Start with the character 'A'

print_loop:
    ; Print the character
    MOV DL, AL     ; Move the character to DL
    MOV AH, 02h    ; DOS function 02h: print character
    INT 21h        ; Call DOS interrupt

    ; Prepare for the next iteration
    INC AL         ; Move to the next character
    LOOP print_loop ; Loop until CX is zero

; Terminate the program
MOV AH, 4Ch        ; DOS function 4Ch: terminate program
INT 21h           ; Call DOS interrupt to exit

END               ; End of program
```

## Output:

