BECE204P-Microprocessors & Microcontrollers Lab

LAB-5

BCD TO HEXA, BCD TO ASCII, 0's and 1's COUNT, DATA EXCHANGE

LAB TASK-1

BCD TO HEX

- Write 8086 Assembly language program to convert BCD to HEX.

```
MOV SI,1100H
MOV BL,[SI]
AND BL,0FH
MOV AL,[SI]
AND AL,0F0H
MOV CL,04
ROR AL,CL
MOV DL,0AH
MUL DL
ADD AL,BL
INC SI
MOV [SI],AL
HLT
```

BCD (Decimal): 45 = (4x10) + (5x1)

Hexadecimal: (4x0AH) + (5x01H) = 2DH

Input:

ADDRESS	VALUE
1100H	45

Output:

ADDRESS	VALUE
1101H	2DH

LAB TASK-2

BCD TO ASCII

- Write 8086 Assembly language program to convert BCD to ASCII.

```
MOV AL, [2000]      : loads contents of memory location 2000 in AL
MOV AH, AL          : copy contents of AL in AH
AND AL, 0F          : do AND operation on AL with 0F
MOV CL, 04          ; assign 04 to CL register
SHR AH, CL          : shift the content of AH register right by 4 bits
OR AX, 3030         : do OR operation on AX with 3030
MOV [3000], AX      : stores the content of AX  in 3000 memory address
HLT                 : stops executing the program
```

Input:

ADDRESS	VALUE
2000H	98

Output:

ADDRESS	VALUE
3000H	38H
3001H	39H

LAB TASK-3

0'S AND 1'S COUNT FOR THE GIVEN NUMBER

- Write 8086 Assembly language program to find the number of 1's and 0's present for the given number .

```
MOV SI,1100H
MOV AL,[SI]
MOV CL, 08H              ; SET COUNTER
BACK:   ROR AL, 1        ; MOVE MSB IN CARRY
JNC ZERINC               ; CHECK BYTE FOR 0 AND 1
INC BL                   ; IF 1, INCREMENT ONE COUNT
JMP NEXT
ZERINC:  INC DL          ; IF 0, INCREMENT ZERO COUNTER
NEXT:   DEC CL           ; REPEAT UNIT CX = 0
JNZ BACK
INC SI
MOV [SI],BL
INC SI
MOV [SI],DL
HLT
```

Input:

ADDRESS	VALUE
1100H	45

Output:

ADDRESS	VALUE
1101H	3
1102H	5

LAB TASK-4

EXCHANGE BLOCK OF DATA

- Write 8086 Assembly language program to exchange block of 10 data present in SI 1100H to DI location 1200H.

```
MOV SI,1100H
MOV DI,1200H
MOV CL, 0AH
BACK: MOV AL,[SI]
XCHG AL, [DI]
MOV [SI],AL
INC SI
INC DI
LOOP BACK
HLT
```