SSN College of Engineering Department of Computer Science and Engineering

III year - UCS1512 – Microprocessors Lab

BCD to ASCII conversion using 8051

Exp No: 14

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Aim:

      To design 8051-program to covert BCD to ASCII.

Algorithm:

1. Move the value in R0 to register A.
2. Extract the first digit of the given number by performing AND on A and F0H. Only the first digit will be present in the register A.
3. Swap A interchanges the lower order and higher order nibbles of register A.
4. Now add 30H to A to get the ASCII value and move the value to R1.
5. Now extract the second digit of the given number by performing AND on A and 0FH. Only the second digit will be present in the register A.
6. Now add 30H to A to get the ASCII value and move the value to R2.
7. HERE: Infinite loop to HERE using SJMP HERE.

Program:

```
        MOV A, R0        ; ASCII equivalent of first digit.
        ANL A, #0F0H
        SWAP A
        ADD A, #30H
        MOV R1, A
        MOV A, R0        ; ASCII equivalent of second digit.
        ANL A, #0FH
        ADD A, #30H
        MOV R2, A
HERE:   SJMP HERE
```

	Program	Comments

	MOV A, R0	A <- R0
	ANL A, #0F0H	A <- A ^ F0H
	SWAP A	Swap higher and lower order nibbles of A.
	ADD A, #30H	A <- A + 30H
	MOV R1, A	R1 <- A
	MOV A, R0	A <- R0
	ANL A, #0FH	A <- A ^ 0FH
	ADD A, #30H	A <- A + 30H
	MOV R2, A	R2 <- A
HERE:	SJMP HERE	Transfers execution to HERE.

Snapshot of sample output:

R0 – 0FH.

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	23	32	33	00	00	00	00	00	00	00	00	00	00	00	00	00
10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
30	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
40	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Result:

Thus the 8051-program to covert BCD to ASCII is executed successfully.