SSN College of Engineering Department of Computer Science and Engineering

III year - UCS1512 – Microprocessors Lab

Cube of a number using 8051

Exp No: 13

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Aim:

To design 8051-program for finding cube of a number (0 – F).

Algorithm:

1. Move the value in R0 to register A and B.
2. Multiply A and B using MUL AB with higher order bits in A and lower order bits in A.
3. Since the number is from 0 to F, higher order bits will be 00H.
4. Move the value in R0 to register B.
5. Multiply A and B using MUL AB with higher order bits in A and lower order bits in A.
6. Move the register B's value to R1 and register A's value to R2.
7. HERE: Infinite loop to HERE using SJMP HERE.

Program:

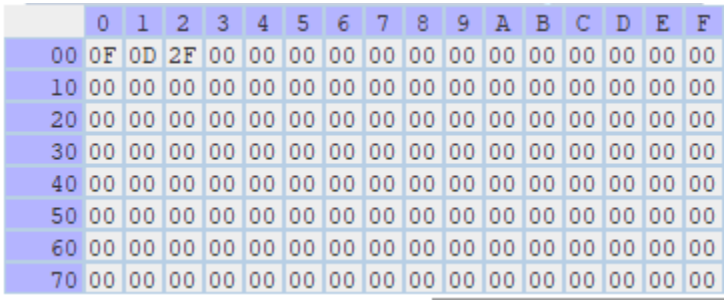
```
        MOV A, R0
        MOV B, R0
        MUL AB
        MOV B, R0
        MUL AB
        MOV R1, B
        MOV R2, A
HERE:   SJMP HERE
```

	Program	Comments
	MOV A, R0	A <- R0
	MOV B, R0	B <- R0
	MUL AB	BA <- A x B

	MOV B, R0	B <- R0
	MUL AB	BA <- A x B
	MOV R1, B	R1 <- B
	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	0F	0D	2F	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 for finding cube of a number (0 – F) is executed successfully.