

Experiment No. 12: 8-bit arithmetic operations using 8051

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A.AIM:

Program to add 2 8-bit numbers using 8051.

PROGRAM:

PROGRAM	COMMENTS
MOV R0, #00 MOV A, r1 ADD A, r2 JNC LABEL INC R0 LABEL: MOV R4, A MOV 03, R0 HERE: SJMP HERE	Loading R0 with 00 Move data from R1 to A A=A+R2 Jump if no carry to Label Increment R0 Load value of A to R4 Move data from R0 to 03 Continuous loop

SAMPLE INPUT/OUTPUT:

Data Memory															
addr								value							
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	01	5F	D8	01	37	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
20	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
40	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
60	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

RESULT:

Thus addition of 2 8-bit numbers has been performed.

B.AIM:

Program to subtract 2 8-bit numbers using 8051.

PROGRAM:

PROGRAM	COMMENTS
MOV R0, #00	Loading R0 with 00
MOV R3, #00	Loading R3 with 00
MOV A, R1	Move data from R1 to A
SUBB A, R2	A=A-R5 Subtract with borrow
JNC LABEL	Jump if no carry to Label
INC R3	Increment R3
MOV B, R3	Move data from R3 to B
MOV R3, B	Load value of B to R3
LABEL:	
MOV R4, A	Move data from A to R4
HERE:	
SJMP HERE	Continuous loop

SAMPLE INPUT/OUTPUT:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	73	BD	01	B6	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 subtraction of 2 8-bit numbers has been performed.

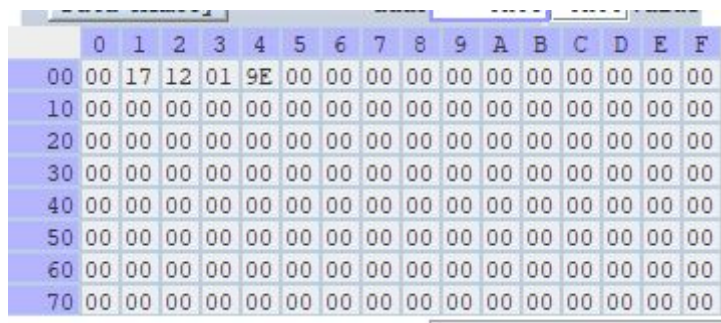
C.AIM:

Program to multiply 2 8-bit numbers using 8051.

PROGRAM:

PROGRAM	COMMENTS
MOV R0, #00 MOV A, R1 MOV B, R2 MUL AB MOV R3, B MOV R4, A HERE: SJMP HERE	Loading R0 with 00 Move data from R1 to A Move data from R2 to B BA=AxB Load value of B to R3 Load value of A to R4 Continuous loop

SAMPLE INPUT/OUTPUT:



	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	17	12	01	9E	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 multiplication of 2 8-bit numbers has been performed.

D.AIM:

Program to divide 2 8-bit numbers using 8051.

PROGRAM:

PROGRAM	COMMENTS
MOV R0, #00 MOV A, R1 MOV B, R2 DIV AB MOV R3, B MOV R4, A HERE: SJMP HERE	Loading R0 with 00 Move data from R1 to A Move data from R2 to B A=A/B Load value of B to R3 Load value of A to R4 Continuous loop

SAMPLE INPUT/OUTPUT:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	17	12	05	01	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 division of 2 8-bit numbers has been performed.

Experiment No. 13: Cube of a number using 8051

AIM:

Program to find the cube of a number (0 - F) using 8051.

PROGRAM:

PROGRAM	COMMENTS
MOV R0, #00	Loading R0 with 00
MOV A, R1	Load value of R1 to A
MOV B, R1	Load value of R1 to B
MUL AB	BA=AxB
MOV B, R1	Load value of R1 to B
MUL AB	BA=BxA
MOV R2,B	Load value of B to R2
MOV R3,A	Load value of A to R3
HERE:	
SJMP HERE	Continuous loop

SAMPLE INPUT/OUTPUT:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	0A	03	E8	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 cube of the number has been found.

Experiment No. 14: BCD to ASCII conversion using 8051

AIM:

Program to perform BCD to ASCII conversion using 8051.

PROGRAM:

PROGRAM	COMMENTS
MOV A, R1 ANL A, #0FH ADD A, #30H MOV R3, A MOV A, R1 SWAP A ANL A, #0FH ADD A, #30H MOV R2, A HERE: SJMP HERE	Move data from R1 to A Bitwise logical AND with 0F A=A+30H Move data from A to R3 Move data from R1 to A Exchange lower-order and higher-order digits Bitwise logical AND with 0F A=A+30H Move data from A to R2 Continuous loop

SAMPLE INPUT/OUTPUT:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
00	00	00	23	32	33	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 ASCII equivalent of each BCD digit has been found.