

## EXPERIMENT 1.5

### Multiplication of two eight-bit hexadecimal numbers using MUL command and division of two eight-bit hexadecimal numbers

Code:

```
1      ORG 00H
2      MOV 40H, #32H
3      MOV 41H, #42H
4      MOV 60H, #0A0H
5      MOV 61H, #0FH
6      MOV R0, #40H ; pointer for inputs
7      MOV R1, #44H ; pointer for outputs
8      MOV A, @R0    ; move 1st value to A
9      INC R0        ; inc R0
10     MOV B, @R0    ; mov 2nd value to b
11     MUL AB        ; MULTIPLY
12     MOV @R1, A    ; store result
13     DEC R1        ; dec R1
14     MOV @R1, B    ; store result
15     MOV R0, #60H
16     MOV R1, #64H
17     MOV A, @R0    ; move 3rd value to A
18     INC R0        ; inc R0
19     MOV B, @R0    ; move 4th value to B
20     DIV AB        ; DIVIDE
21     MOV @R1, A    ; store remainder
22     DEC R1        ; dec R1
23     MOV @R1, B    ; store quotient
24     END
```

#### MULTIPLICATION:

inputs: 40H , 41H

outputs: 43H , 44H

#### DIVISION:

inputs: 40H , 41H

outputs: 43H , 44H

Output:

| Regs   |         |
|--------|---------|
| r0     | 0x61    |
| r1     | 0x63    |
| r2     | 0x00    |
| r3     | 0x00    |
| r4     | 0x00    |
| r5     | 0x00    |
| r6     | 0x00    |
| r7     | 0x00    |
| Sys    |         |
| a      | 0x0a    |
| b      | 0x0a    |
| sp     | 0x07    |
| sp_max | 0x07    |
| dptr   | 0x0000  |
| PC     | 0x0002  |
| states | 36      |
| sec    | 0.00001 |
| psw    | 0x00    |

|         |    |    |    |    |    |   |
|---------|----|----|----|----|----|---|
| I:0x00: | 61 | 63 | 00 | 00 | 00 | 0 |
| I:0x10: | 00 | 00 | 00 | 00 | 00 | 0 |
| I:0x20: | 00 | 00 | 00 | 00 | 00 | 0 |
| I:0x30: | 00 | 00 | 00 | 00 | 00 | 0 |
| I:0x40: | 32 | 42 | 00 | 0C | E4 | 0 |
| I:0x50: | 00 | 00 | 00 | 00 | 00 | 0 |
| I:0x60: | A0 | 0F | 00 | 0A | 0A | 0 |
| I:0x70: | 00 | 00 | 00 | 00 | 00 | 0 |