**EXPERIMENT 3**
**Multiplication of 16 bit numbers**

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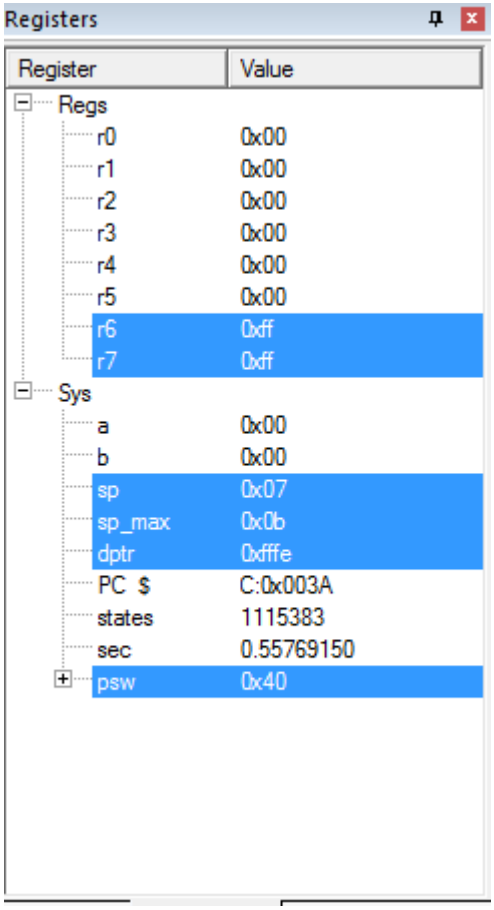
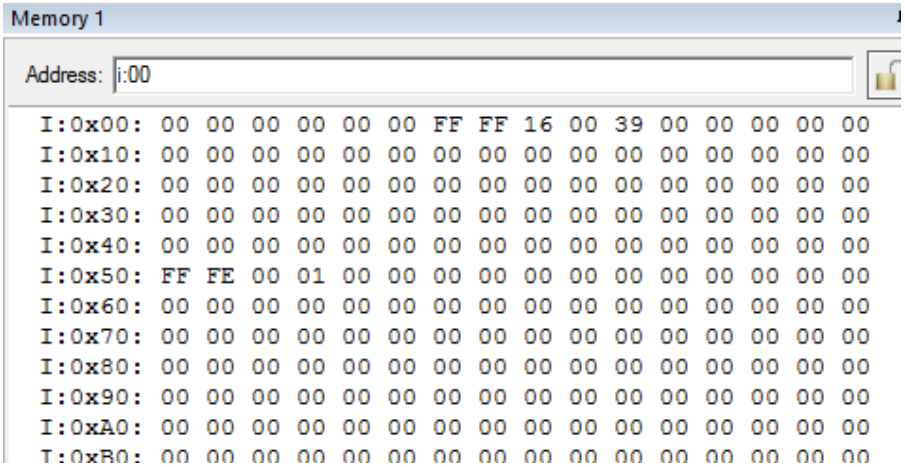
Code:

16mul.asm

```
; multipling 16 bit number
;1ST NUMBER IS 1234
;2ND NUMBER IS 5678

        MOV R7, #0FFH ; LOWER BYTE OF NUMBER 1
        MOV R6, #0FFH ; UPPER BYTE OF NUMBER 1
        MOV R5, #0FFH ; LOWER BYTE OF NUMBER 2
        MOV R4, #0FFH ; UPPER BYTE OF NUMBER 2

;multipling lower byte of 1st operand

        MOV A,R5
        JZ L8      ; checks if R5 is zero
    L4: LCALL L1   ; repeated addition loop
        DJNZ R5,L4

;multipling higher byte of 1st operand

    L8: MOV A,R4
        JZ  L5     ; checks if R4 is zero
    L6: LCALL L3   ; repeated addition loop
        DJNZ R4,L6

    L5: MOV 51H, DPL ;moves value of DPTR to these registers
        MOV 50H, DPH
        SJMP  L9      ; jumps to last line

;1st SUBROUTINE

    L1: MOV A,53H
        ADD A,R7   ; adds lower byte of 2nd operand
        MOV 53H,A
        MOV A,52H ; 4th byte of result
        ADDC A,R6 ; adds higher byte of 2nd operand
        MOV 52H,A ; 3rd byte of result
        JNC L2
        INC DPTR   ; 1st and 2nd byte of results
        CLR C
    L2: RET

; 2ND SUBROUTINE ( multiplying higher byte by 100H)

    L3: MOV R3, #0FFH
    L7: LCALL L1    ; calls subroutine 255 times
        DJNZ R3,L7
        LCALL L1    ; calls subroutine for 256th time
        RET         ; this sub routine has been executed 100H times

    L9:             ; result is seen at 50H 51H 52H and 53H registers
        END
```

OUTPUT:




The outputs are found at 50H to 53H registers