1. Write an ALP in 8051 to compare two eight bit numbers NUM1 and NUM2 stored in external memory locations 8000h and 8001h respectively. Reflect your result as: If NUM1<NUM2, SET LSB of data RAM location 2FH (bit address 78H). If NUM1>NUM2, SET MSB of location 2FH (bit address 7FH). If NUM1 = NUM2, then Clear both LSB & MSB of bit addressable memory location 2FH.

ANS:-

```
        Mov dptr, #8000h
        Movx a,@dptr
        Mov r0,a
        Mov dptr, #8001h
        Movx a,@dptr
        Clear c
        Subb a,r0 //a-r0 i.e. 8001h-8000h result In accumulator
        JZ EQ //If a is zero then Jump NUM1=NUM2
        JC N1 // If Carry is set then JUMP 8000h>8001h i.e. NUM1>NUM2
        SETB 78h  // if a is not zero and Carry is not set then NUM1<NUM2
        JMP EXIT
N1      SETB 77h
        JMP EXIT
EQ      CLR 78h
        CLR 7Fh
EXIT    End
```

2. Write an ALP in 8051 to find whether given eight bit number is odd or even. If odd store 00h in accumulator. If even store FFh in accumulator.

ANS:- Assume the Number is in External Memory Location 8500h

```
        Mov dptr,#8500h
        Movx a,@dptr
        RRC a
        JC Odd
        Mov a,#FFh
        JMP EXIT
Odd     Mov a,#00h
EXIT    End
```

3. Write an ALP in 8051 to perform logical operations AND, OR, XOR on two eight bit numbers stored in internal RAM locations 21h, and 22h.
ANS

```
Mov a,21h
Mov r0,a
Mov a,22h
Mov r1,a
ANL a,r0
Mov r2,a
Mov a,r1
ORL a,r0
Mov r3,a
Mov a,r1
XRL a,r0
Mov r4,a
End
```

4. Write a Program to check whether given number is palindrome or not. If palindrome store FFh in accumulator else store 00h in accumulator.

Let's assume the number is in r1.

```
        Mov a,r1
        Mov r0,#0007h
LOOP    RR a
        DJNZ r0,LOOP // 7-6-5-4-3-2-1-0
        CLR C
        Subb a,r1
        JZ LOOP2
        Mov a,#00h
        JMP EXIT
LOOP2   Mov a,#FFh
EXIT    End
```

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