8085 PROGRAMMING

ADD 2 8-BIT NUMBERS

Q1) Add 2 8-bit numbers stored at 2000H and 2001H. Store Sum at 2002H and carry at 2003H.

Solution: Without using M

```
        MVI C, 00H      ; Assume Carry = 0
        LDA 2000H       ; A = 1st number
        MOV B, A        ; B = 1st number
        LDA 2001H       ; A = 2nd number
        ADD B           ; A = Sum
        JNC SKIP        ; Check for carry
        INR C           ; Increment C register if Carry Flag = 1
SKIP:   STA 2002H       ; Store Sum at 2002
        MOV A, C        ; A = Carry from C Register
        STA 2003H       ; Store Carry at 2003H
        HLT             ; End of program
```

Solution: Using M

```
        MVI C, 00H      ; Assume Carry = 0
        LXI H, 2000H    ; HL = 2000H; M = 1st number
        MOV A, M        ; A = 1st number
        INX H           ; HL = 2001H; M = 2nd number
        ADD M           ; A = Sum
        JNC SKIP        ; Check for carry
        INR C           ; Increment C register if Carry Flag = 1
SKIP:   INX H           ; HL= 2002H
        MOV M, A        ; Store Sum at 200H
        INX H           ; HL = 2003H
        MOV M, C        ; Store Carry at 200H
        HLT             ; End of program
```

Special Note:
Please refer our videos for full explanation of the programs and the diagram of the logic.

BLOCK TRANSFER PROGRAM

Q2) Transfer a Block of 10 bytes form 2000H to 3000H.

Solution:

```
        LXI B, 2000H    ; Source pointer at 2000H
        LXI D, 3000H    ; Destination pointer at 3000H
        MVI L, 0AH      ; Count of 10d = 0AH

BACK:   LDAX B          ; A gets Source data
        STAX D          ; A stored at Destinatiom
        INX B           ; Increment Source pointer
        INX D           ; Increment Destination pointer
        DCR L           ; Decrement Count register
        JNZ BACK        ; Loop if count is not zero
        HLT             ; End of program
```

INVERTED BLOCK TRANSFER PROGRAM

Q3) Perform inverted block transfer of 10 bytes form 2000H to 3000H.

Solution:

```
        LXI B, 2000H    ; Source pointer at 2000H
        LXI D, 3009H    ; Destination pointer at 3009H
        MVI L, 0AH      ; Count of 10d = 0AH

BACK:   LDAX B          ; A gets Source data
        STAX D          ; A stored at Destinatiom
        INX B           ; Increment Source pointer
        DCX D           ; Decrement Destination pointer
        DCR L           ; Decrement Count register
        JNZ BACK        ; Loop if count is not zero
        HLT             ; End of program
```

BLOCK EXCHANGE PROGRAM

Q4) Exchange two blocks of 10 bytes stored at 2000H and 3000H

Solution:

```
        LXI B, 2000H    ; Pointer to 1st Block at 2000H
        LXI D, 3000H    ; Pointer to 2nd Block at 3000H
        MVI L, 0AH      ; Count of 10d = 0AH

BACK:   LDAX B          ; A = data from Block 1 (Eg: "p" from our video)
        MOV H, A        ; H = p
        LDAX D          ; A = data from Block 2 (Eg: "q" from our video)
        STAX B          ; 1st Block gets q
        MOV A, H        ; A = p
        STAX D          ; 2nd Block gets p

        INX B           ; Increment Source pointer
        INX D           ; Increment Destination pointer
        DCR L           ; Decrement Count register
        JNZ BACK        ; Loop if count is not zero
        HLT             ; End of program
```