ANUSHKA GUPTA
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B.TECH CSE

LAB ASSIGNMENT 7

TASK : Write a program to check number of 1's and 0's in given number using 8085 & verify

Algorithm:

1) Initialize register C and D with 0. Register C will keep count of number of 0's in the given number and Regicster D will keep count of number of 1's in the number
2) Load H-L pair with the address where the number will be stored
3) Load accumulator with contents of memory pointed by H-L pair
4) Initialize register B with 8, because this algorithm is being written for an 8 bit number
5) Now till the time register B does not become zero do:
    a) Rotate accumulator contents right
    b) If carry flag is set, then increment contents of register D
    c) Else increment contents of register C

6) Finally store the contents of register C and D

Code:

```
;<Program title>
jmp start
;data
;code
start: nop
MVI C,00
MVI D,00
LXI H,000AH
MOV A,M
MVI B,08
up: RLC
JNC down
INR D
```

```
JMP shift
down: INR C
shift: DCR  B
JNZ up
INX H
MOV M,C
INX H
MOV M,D
hlt
```

Before execution:

Registers			Flag	
A	00		S	0
BC	00	00	Z	0
DE	00	00	AC	0
HL	00	00	P	0
PSW	00	00	C	0
PC	00	00		
SP	FF	FF		
Int-Reg	00			

Data | Stack | KeyPad | **Memory** | I/O Ports

Start OK

Address (Hex)	Address	Data
0005	5	0
0006	6	0
0007	7	0
0008	8	0
0009	9	0
000A	10	218
000B	11	0
000C	12	0
000D	13	0
000E	14	0
000F	15	0
0010	16	0

Line No	Assembler Message
0	Program assembled successfully

After execution:

Registers

A	DA	
BC	00	03
DE	05	00
HL	00	0C
PSW	00	00
PC	42	20
SP	FF	FF
Int-Reg	00	

Flag

S	0
Z	**1**
AC	0
P	**1**
C	0

Data | Stack | KeyPad | **Memory** | I/O Ports

Start OK

Address (Hex)	Address	Data
0004	4	0
0005	5	0
0006	6	0
0007	7	0
0008	8	0
0009	9	0
000A	10	218
000B	11	3
000C	12	5
000D	13	0
000E	14	0
000F	15	0

Line No	Assembler Message
0	Program assembled successfully

Input: (address in hex format)
Address -> values
000A -> 128

Output: (address in hex format)
Address -> values
000B -> 3 //number of zeros are stored here
000C -> 5 //number of ones are stored here

Verification: binary representation of 218 is given as : 11011010. Therefore the number of ones in the binary representation are 5 and the number of ones is 3. The same output is given by our program hence verifying that the program is able to successfully find the total number of ones and zeros in a given number.