

ASSIGNMENT-2

Practice Questions:

1)	+	27 H	0	0	1	0	0	1	1	1	1
			0	0	1	1	1	0	0	0	1
			0	1	1	0	0	0	0	0	0

C_0, C_1, C_2, \dots
are the carries from lower bit to higher bit.

The flags are:

MSB = 0
Number is +ve.

0	1	0	0
CY	AC	OVR	P

Since, there is no carry out of MSB \therefore Carry flag = 0, There is a carry from lower nibble to higher nibble \therefore Auxiliary carry flag = 1, result is in the range of signed numbers \therefore overflow flag = 0, & the number of 1's in the result are even \therefore parity flag (P) = 0.

2) Add -42 & -43 & check all the flags. CY = ? AC = ? OVR = ? P = ?

	C ₆ C ₅ C ₄ C ₃ C ₂ C ₁ C ₀	
-42	1 0 1 1 1 1 1 0	— 2's complement of 42
-43	1 0 1 1 1 1 0 1	— 2's complement of 43
-85	0 1 1 1 1 0 1 1	

1 ← C₇
 MSB = 0, indicating +ve number, which is not the actual sign.

1	1	1	0
CY	AC	OVR	P

↓ we are out of range of signed numbers ∴ OVR = 1

Exercise :

1) 23 H + 31 H <hr/>	? / CY	? / AC	? / OVR	? / P
----------------------------	--------	--------	---------	-------

2) -23 H - 31 H <hr/>	? / CY	? / AC	? / OVR	? / P
-----------------------------	--------	--------	---------	-------

3) 42 + 43 <hr/>	? / CY	? / AC	? / OVR	? / P
------------------------	--------	--------	---------	-------

4) Add +60H, +46H & tell the values of CY, AC, OVR, P flags?

5) Add -55H, -30H & tell all the flags?

V-Impl Table: ^{8-bit} Range of signed numbers in
Decimal, binary & Hexa systems:

Decimal	Binary	Hex
-128	1000 0000	-80
-127	1000 0001	-7F
-126	1000 0010	-7E
⋮	⋮	⋮
-2	1111 1110	-02
-1	1111 1111	-01
0	0000 0000	00
+1	0000 0001	01
+2	0000 0010	02
⋮	⋮	⋮
+127	0111 1111	7F