NON-WEIGHTED CODES

Non-weighted codes are not assigned with any weight to each digit position. Excess-3, Gray codes are non-weighted codes.

EXCESS-3 CODE.

Decimal	8421 BCD code	Excess-3 code
0	0000	0011
1	0001	0100
2	0010	0101
3	0011	0110
4	0100	0111
5	0101	1000
6	0110	1001
7	0111	1010
8	1000	1011
9	1001	1100

Example.

1.) Convert 643_{10} into its Excess-3 code.

Solu:

	6	4	3
	+3	+3	+3
Sum	9	7	6
	↓	↓	↓
BCD	1001	0111	0110

$\therefore 643_{10} = 1001\ 0111\ 0110$

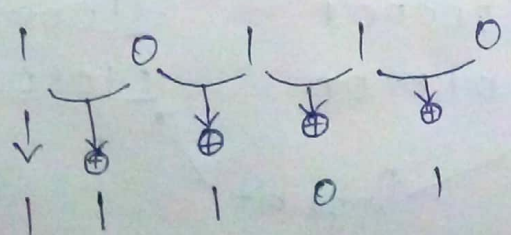
GRAY CODE

Decimal	BCD Binary	Gray
0	0000	0000
1	0001	0001
2	0010	0011
3	0011	0010
4	0100	0110
5	0101	0111
6	0110	0101
7	0111	0100
8	1000	1100
9	1001	1101
10	1010	1111
11	1011	1110
12	1100	1010
13	1101	1011
14	1110	1001
15	1111	1000

Gray code is a special case of unit-distance code. In unit-distance code, bit patterns for two consecutive numbers differ in only one bit position. These codes are also called cyclic codes.

Example:

1.) Convert 10110_2 to gray code



10110_2 is 11101_2

Ex-OR

0 0	0
0 1	1
1 0	1
1 1	0

ALPHANUMERIC CODES

The codes which consist of both numbers and alphabetic characters are called Alphanumeric codes. The most commonly used alphanumeric codes are

1.) ASCII code.
2.) EBCDIC code.

Error Detecting & Correcting Codes.

The Parity check method is classified into.

i.) Odd Parity method
ii.) Even Parity method.

In even parity method the total number of 1's in the code group including the parity bit must be an even number. Similarly in the odd Parity method the total number of 1's including the Parity bit must be an odd number.

The Parity bit can be placed at either end of the code word such that the receiver should be able to understand the parity bit and the actual data.

Message	Even Parity code	Odd Parity code
1000001	01000001	11000001
1010100	11010100	01010100

Parity bit