

## EXPERIMENT NO - 07

### Hamming Distance (Error Detecting Technique)

**AIM:-** Find Hamming Distance (error detecting technique) using SCILAB code.

#### Theory:-

##### Hamming Distance: -

Hamming distance is a metric for comparing two binary data strings. While comparing two binary strings of equal length, Hamming distance is the number of bit positions in which the two bits are different.

##### Calculation of Hamming Distance: -

In order to calculate the Hamming distance between two strings, and, we perform their XOR operation,  $(a \oplus b)$ , and then count the total number of 1s in the resultant string.

Hamming Distance (error detecting technique) using Scilab

*// Getting Code Words*

```
clear ;
```

```
clc ;
```

```
I = input ('Enter the data codeword one ');
```

```
Q = input ('Enter the data codeword two');
```

```
Hamming_Distance = 0;
```

```
for i = 1:length(I)
```

```
Hamming_Distance = Hamming_Distance + bitxor(I(i),Q(i)) ;
```

```
end
```

```
disp (Hamming_Distance);
```

Output:

Enter the data codeword one [1 1 1 0 0 0 1 0]

'Enter the data codeword two [0 0 1 0 1 0 0 1]

Hamming Distance