Definition Of Error Correction

Error Correction is the detection of errors and reconstruction of the original, error-free data.

Definition Of Error Detection

Error Detection is the detection of errors caused by noise or other impairments during transmission from the transmitter to the receiver.

Types Of Error Detection
? vertical redundancy check (VRC)
? longitudinal redundancy check (LRC)
? cyclic redundancy check (CRC)
? checksum

Types Of Error Correction
* Single bit error correction
* Burst bit error correction

Method Of Error Detection:

? In VRC a parity bit is added to every data unit so that the total number of 1s become even. It can detect burst error only if total number of errors in the data unit is odd.

? In LRC, block of bits are divided into rows and a redundant rows of bits is then added to the whole block.

? It detects all errors involving an odd number of bits as well as most errors involving an even number of bits.

? Basically the error detection method used by the higher layer protocols is called checksum.

? The fourth and most efficient method of error detection is CRC that is cyclic redundancy check.

? A CRC i.e. cyclic redundancy check is a non secure hash function designed to detect accidental changes to raw computer data and is commnly used in digital networks and storage devices such as hard disk.

Method Of Error Correction:

Two methods of error correction are-
? 1. reverse error correction (REC).
? 2. Forward error correction(FEC)

? In the first method the receiver requests for the retransmission of the code word whenever it detects an error after that the receiver locates the error by analyzing the received code and revers the erroneous bits.

? In the second approach the code set is so designed that it is possible for the receiver to detect and correct error as well by itself.