Course: Computer and Communication Networks

THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

Topic: Error and Flow Control

Presentation by

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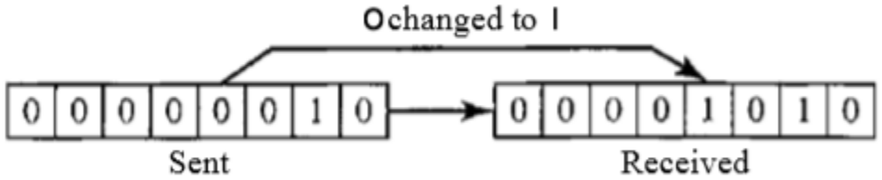
www.thapar.edu

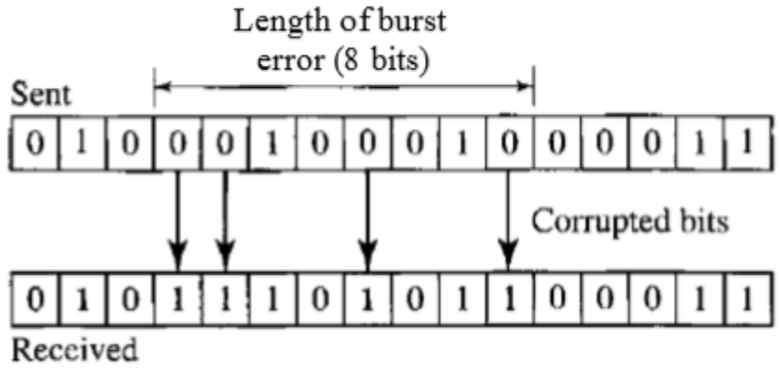
Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking, 2. Stallings William, Data and Computer Communication

Type of Errors

Single bit error



Multiple bit error



Longitudinal/vertical redundancy checks (LRC/VRC)

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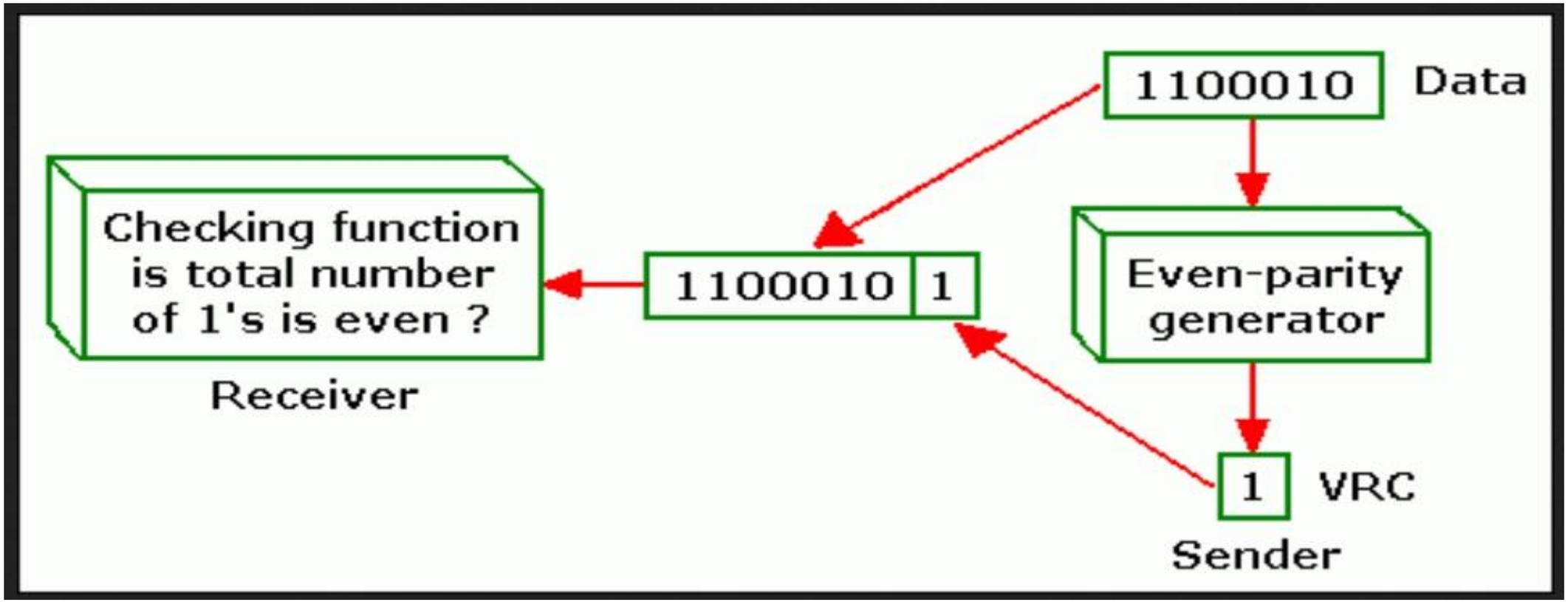

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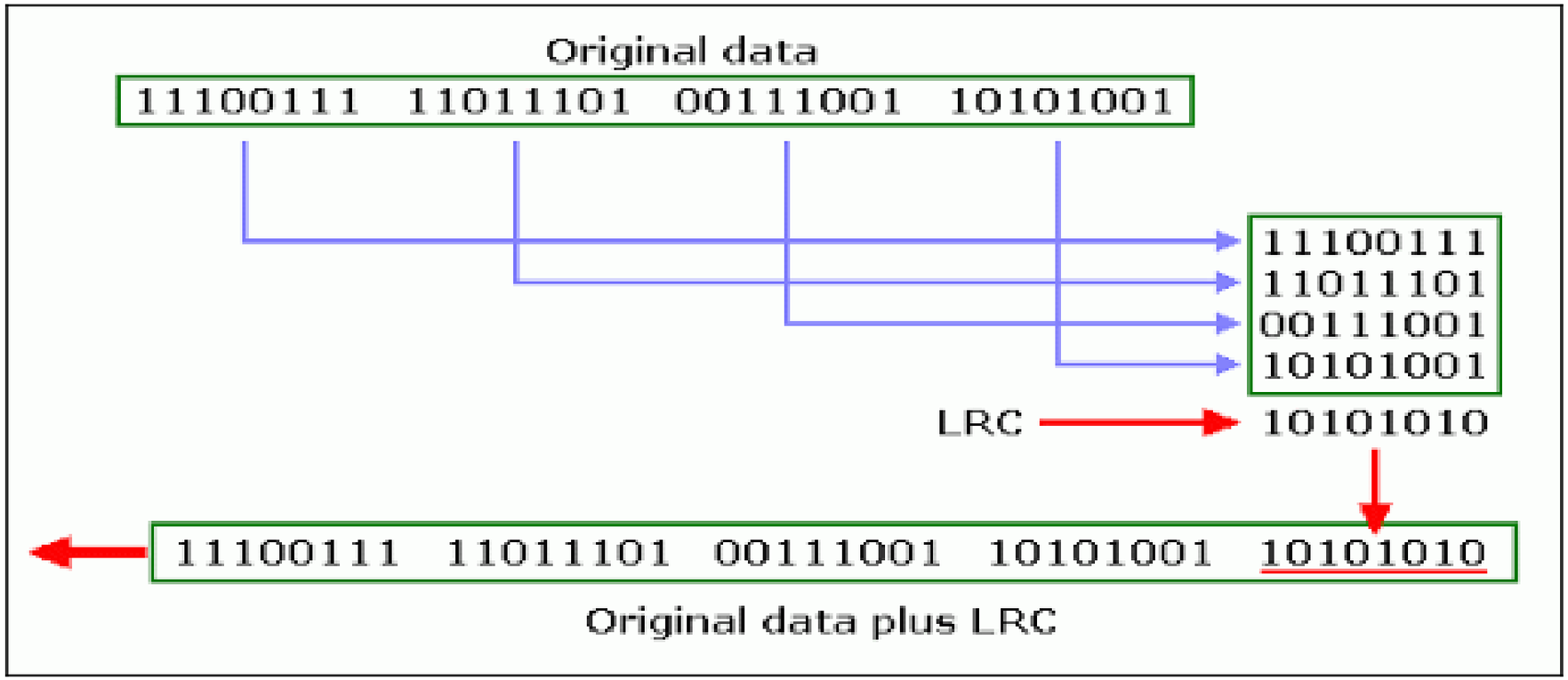
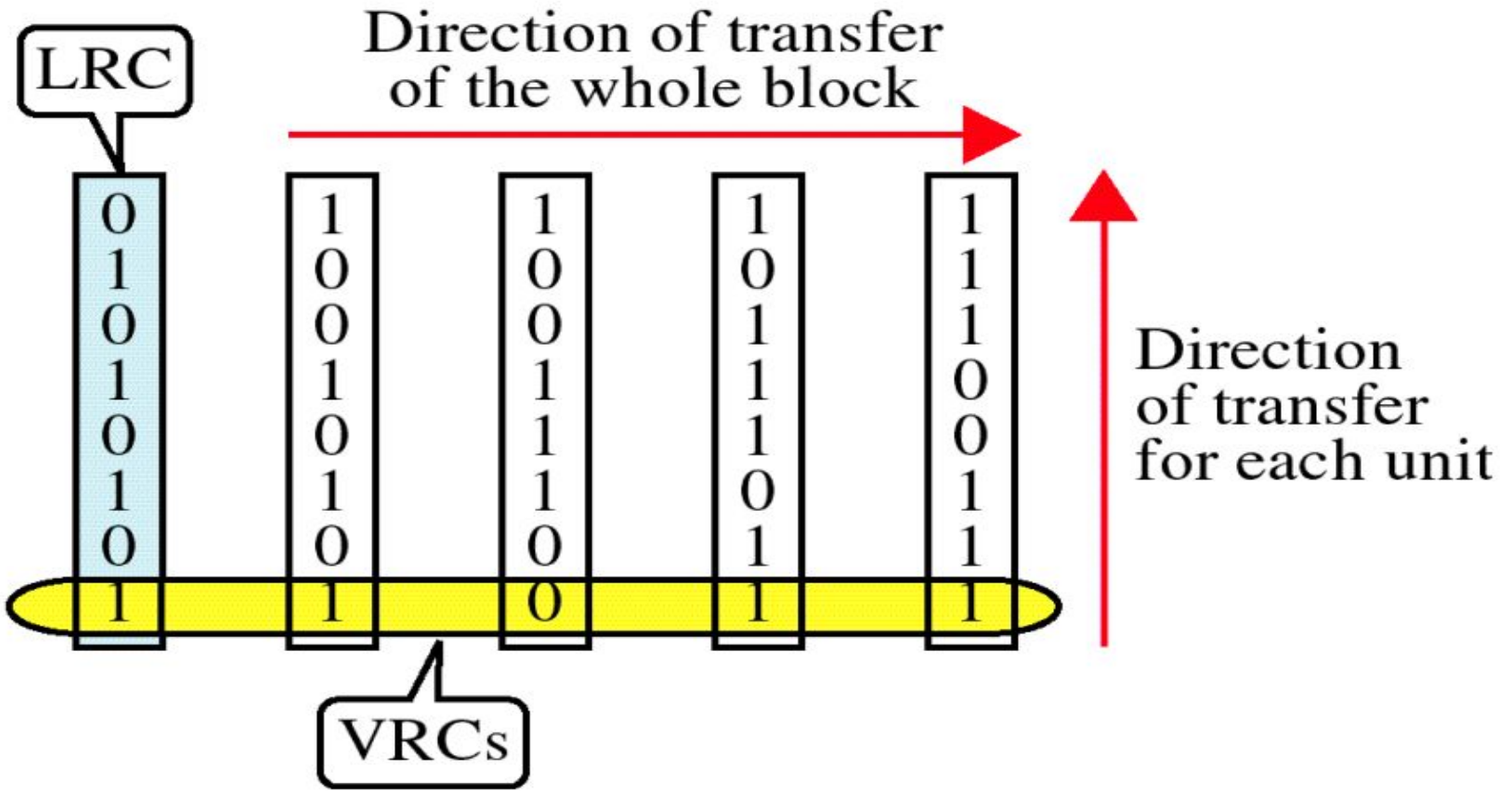
Longitudinal/vertical redundancy checks (LRC/VRC)



Longitudinal/vertical redundancy checks (LRC/VRC)

VRC and LRC



Cyclic redundancy Check (CRC)

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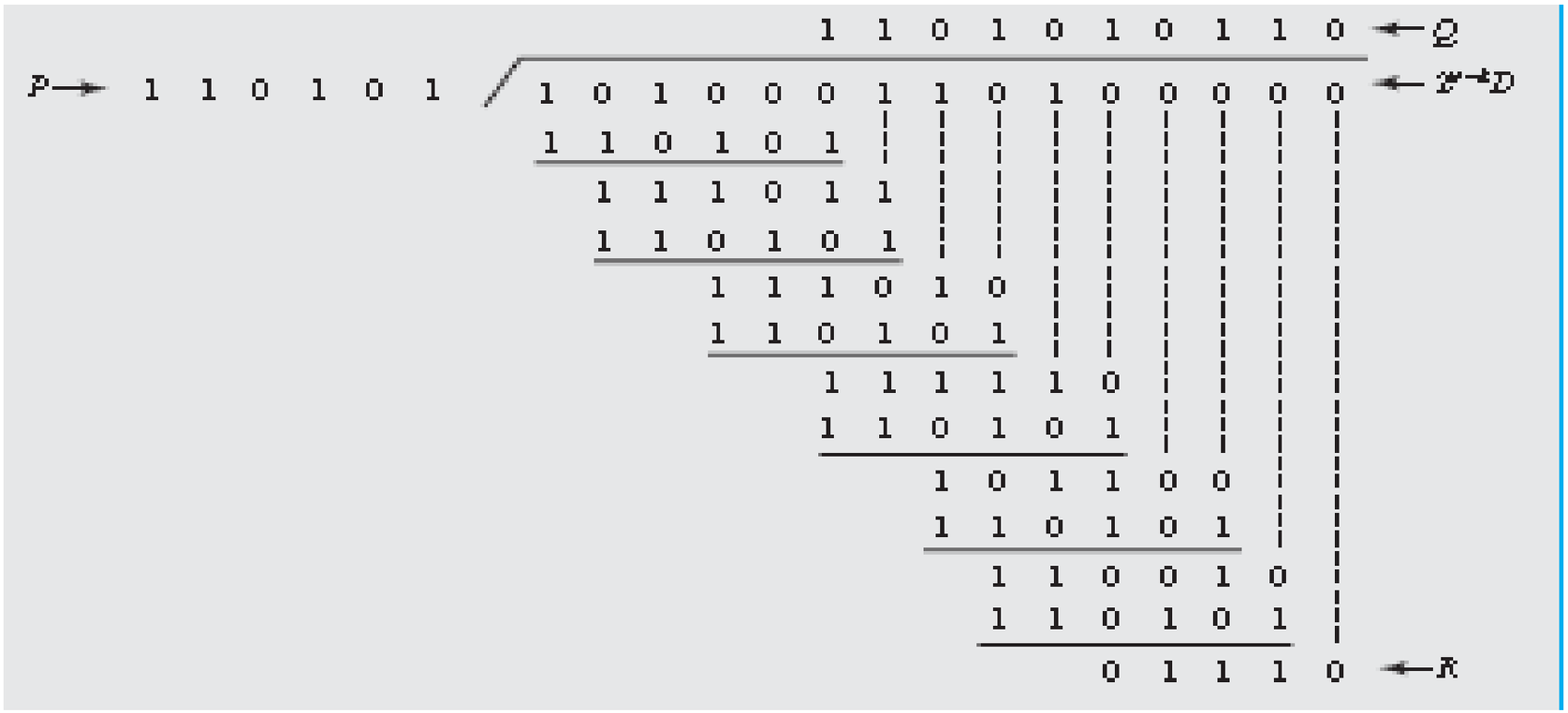
Given

Message D = 1010001101 (10 bits)
Pattern P = 110101 (6 bits)
FCS R = to be calculated (5 bits)



Cyclic redundancy Check (CRC)

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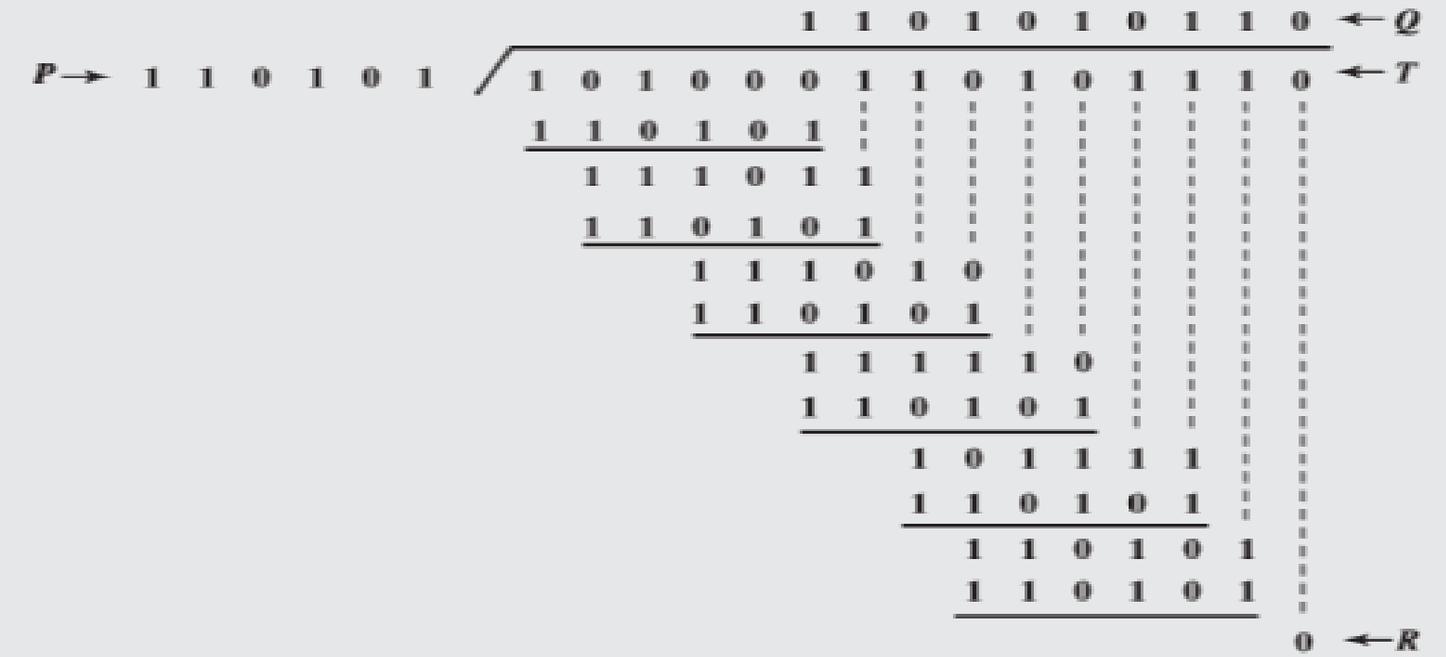
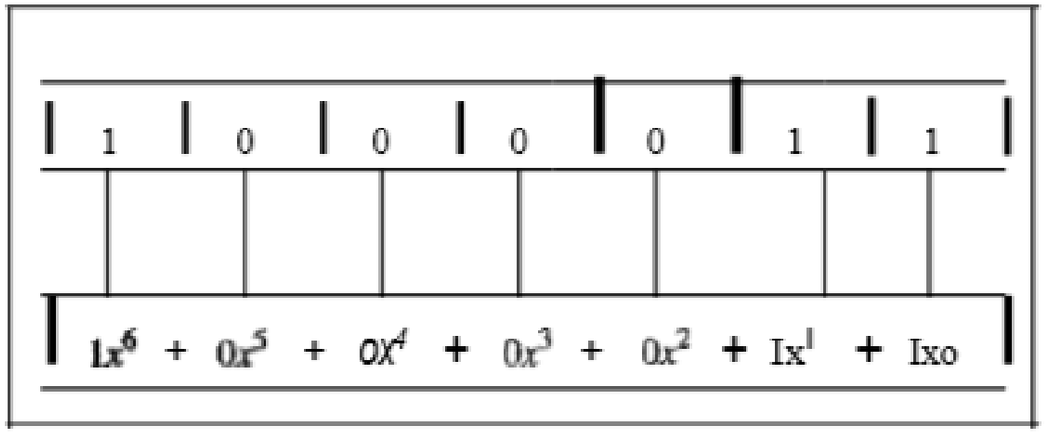
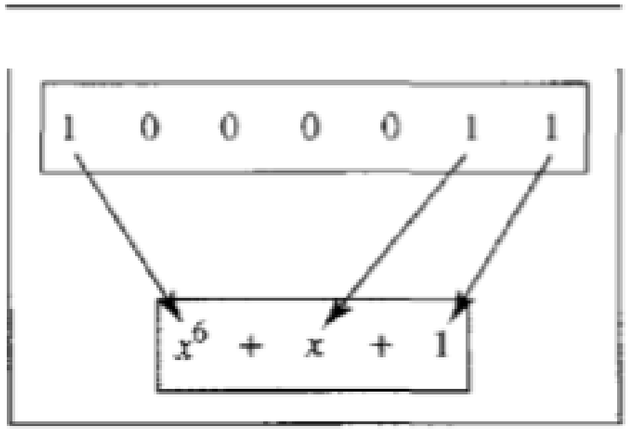


Because there is no remainder, it is assumed that there have been no errors.

Polynomial





Degree of a Polynomial

The degree of a polynomial is the highest power in the polynomial.

Polynomial

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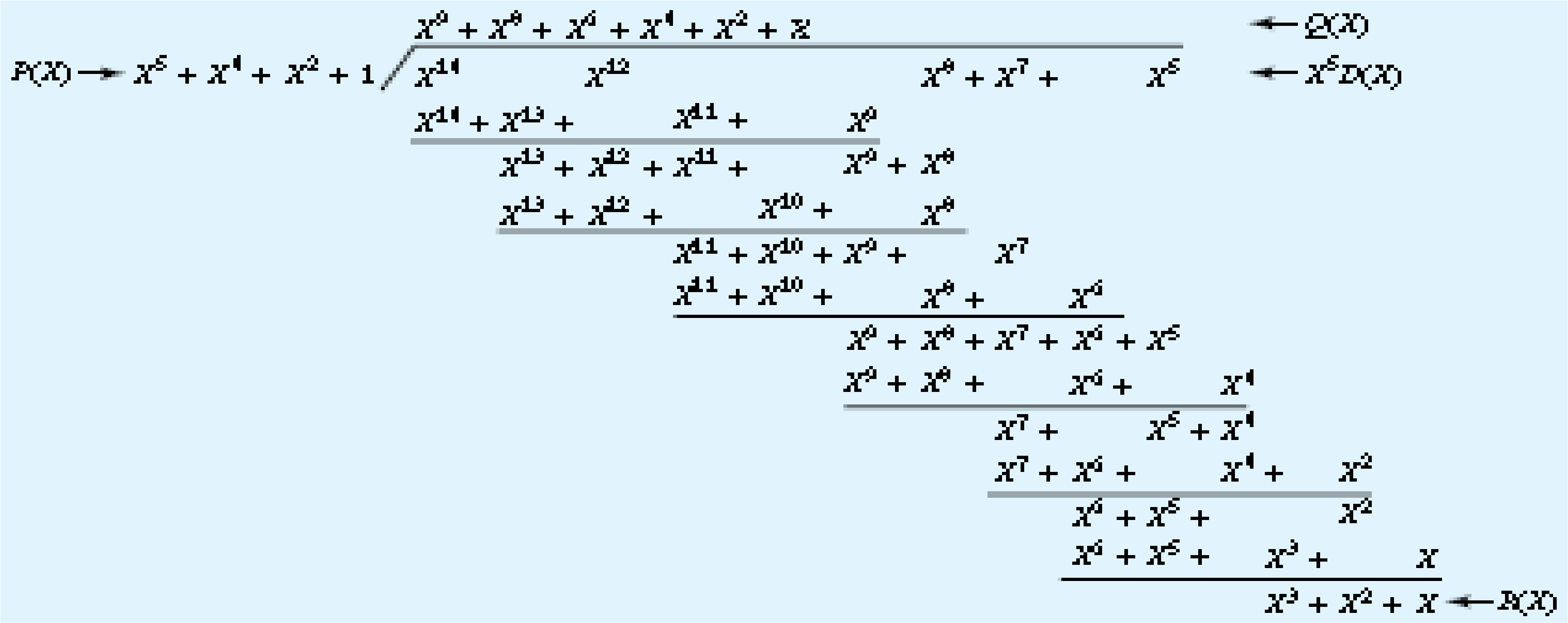
$D = 1010001101$ $\quad D(X) = X^9 + X^7 + X^3 + X^2 + 1$

$P = 110101$ $\quad P(X) = X^5 + X^4 + X^2 + 1$

$R = 01110$ $\quad R(X) = X^3 + X^2 + X$



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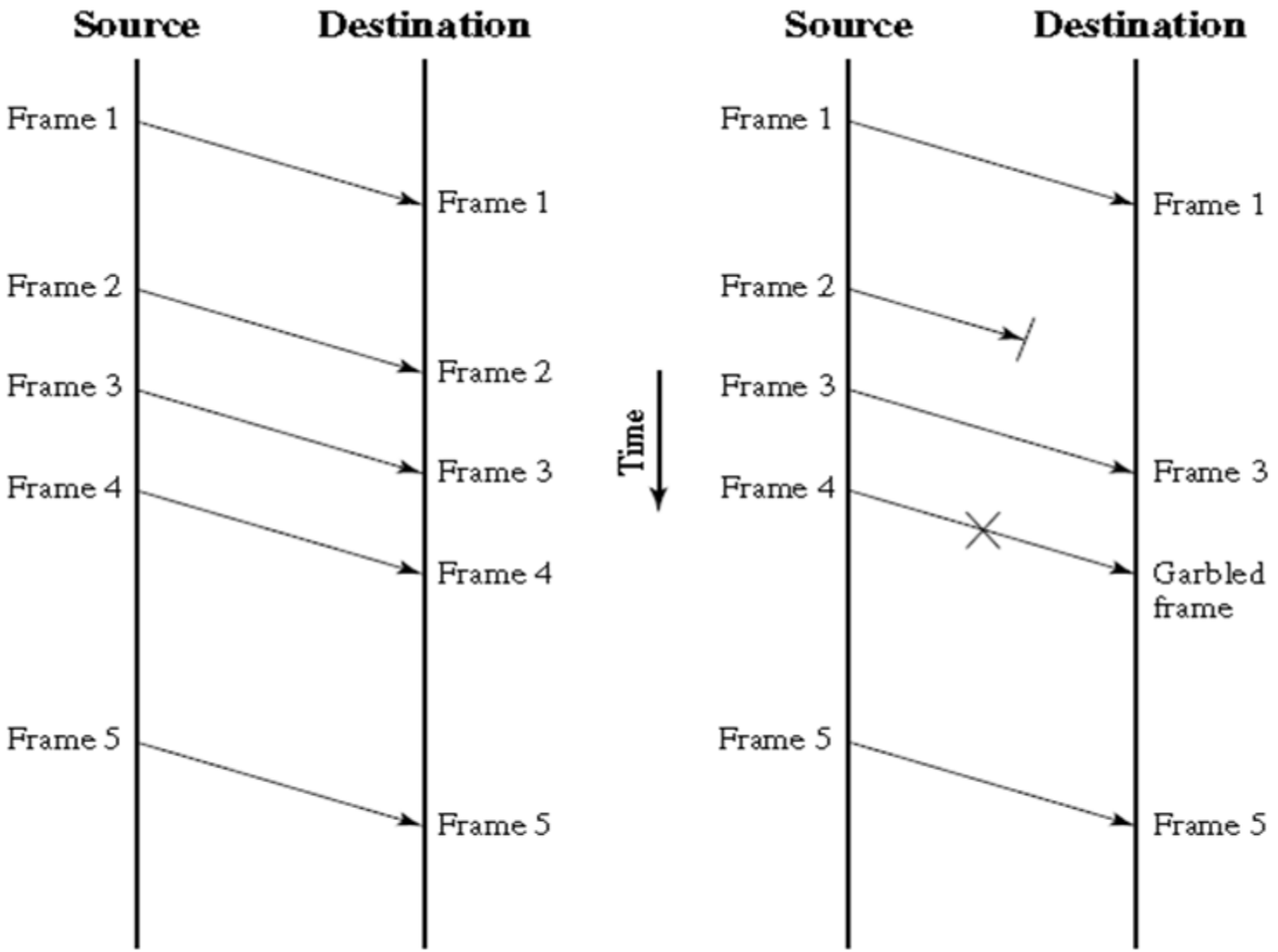
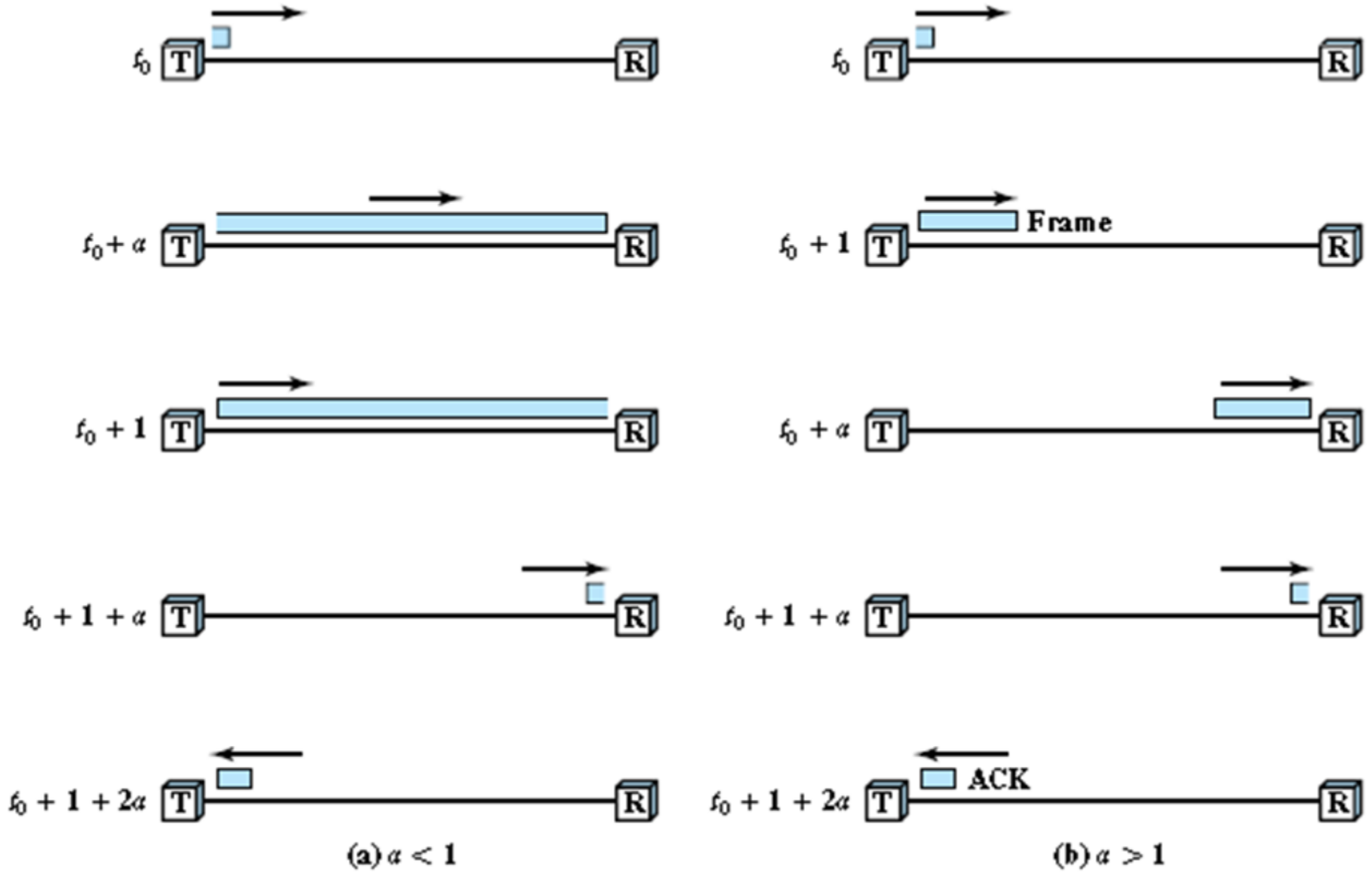
Frame Transmission



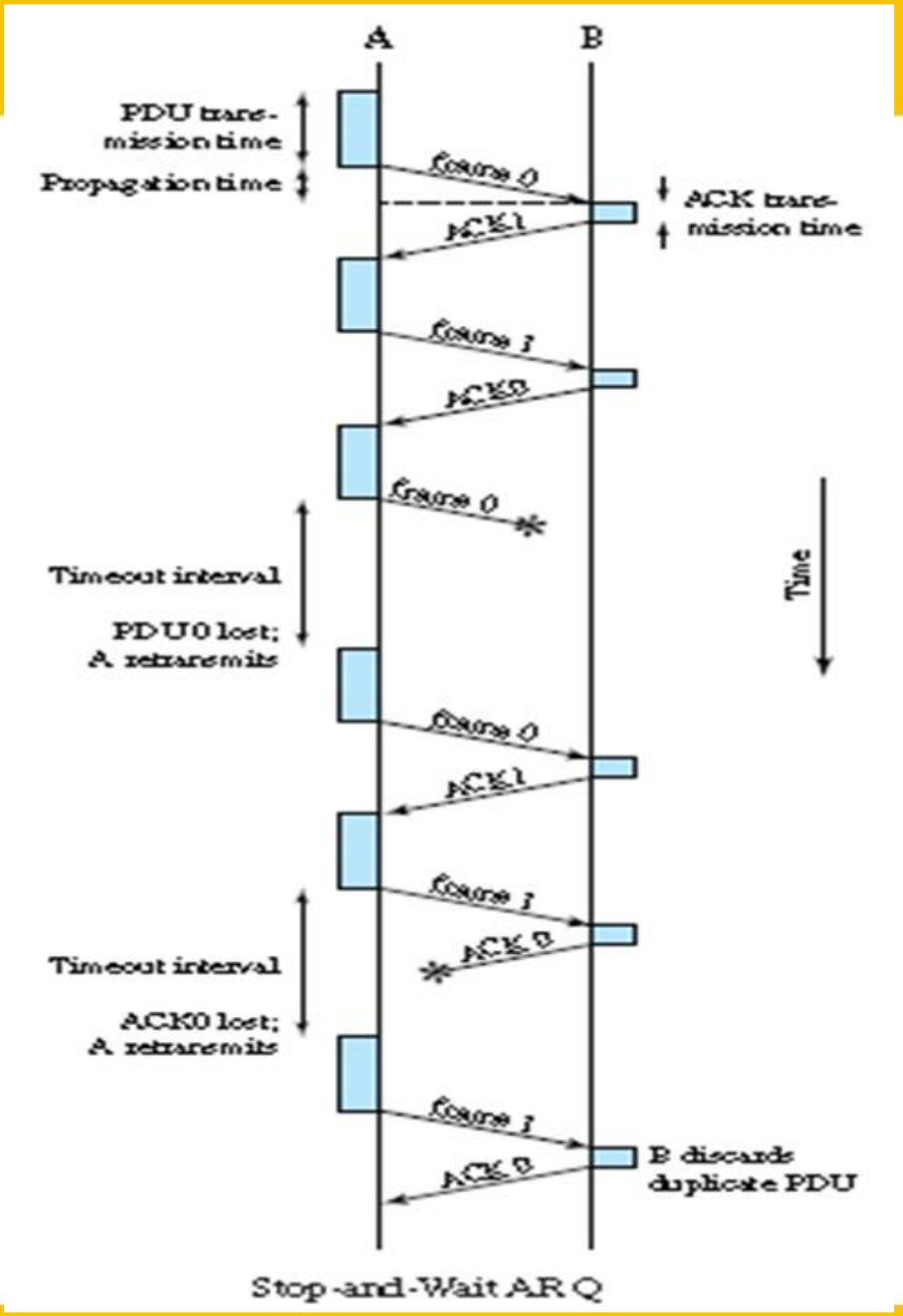
Model of Frame Transmission

Reference: 1. Ferouzan, Behrouz A., Data Communications and Networking, 2. Stallings William, Data and Computer Communication

Stop and Wait



Stop-and-Wait Link Utilization (transmission time = 1; propagation time = α)



Stop-and-Wait ARQ

Thank You

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