

Data Communication

ITNT311

By:

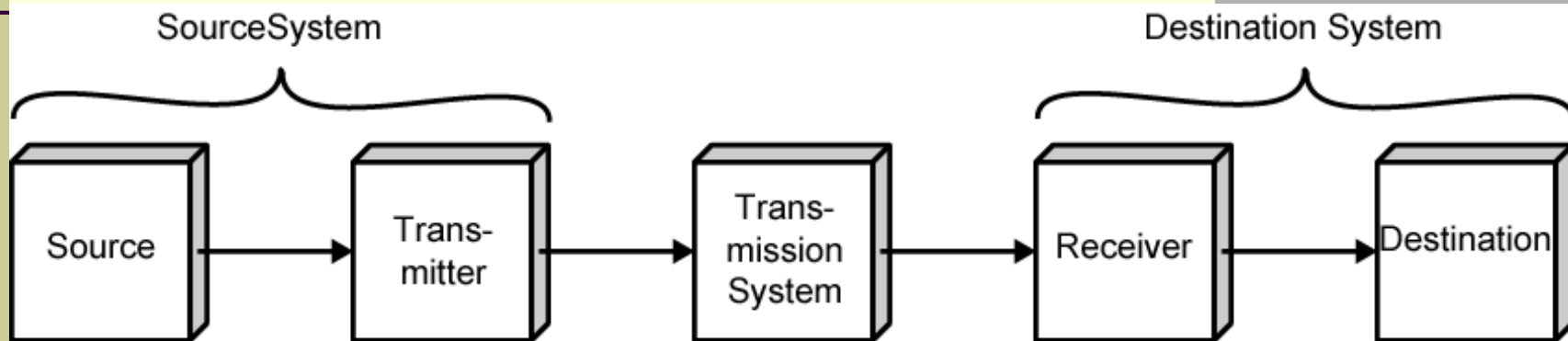
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■ **Data Communication Models**

Data Communications and Networks,

- ***The fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point - The Mathematical Theory of Communication, Claude Shannon***
- ***Data communications deals with the transmission of signals in a reliable and efficient manner.***
- ***Networking deals with the technology and architecture of the communications networks used to interconnect communicating devices.***

A Communications Model



(a) General block diagram



(b) Example

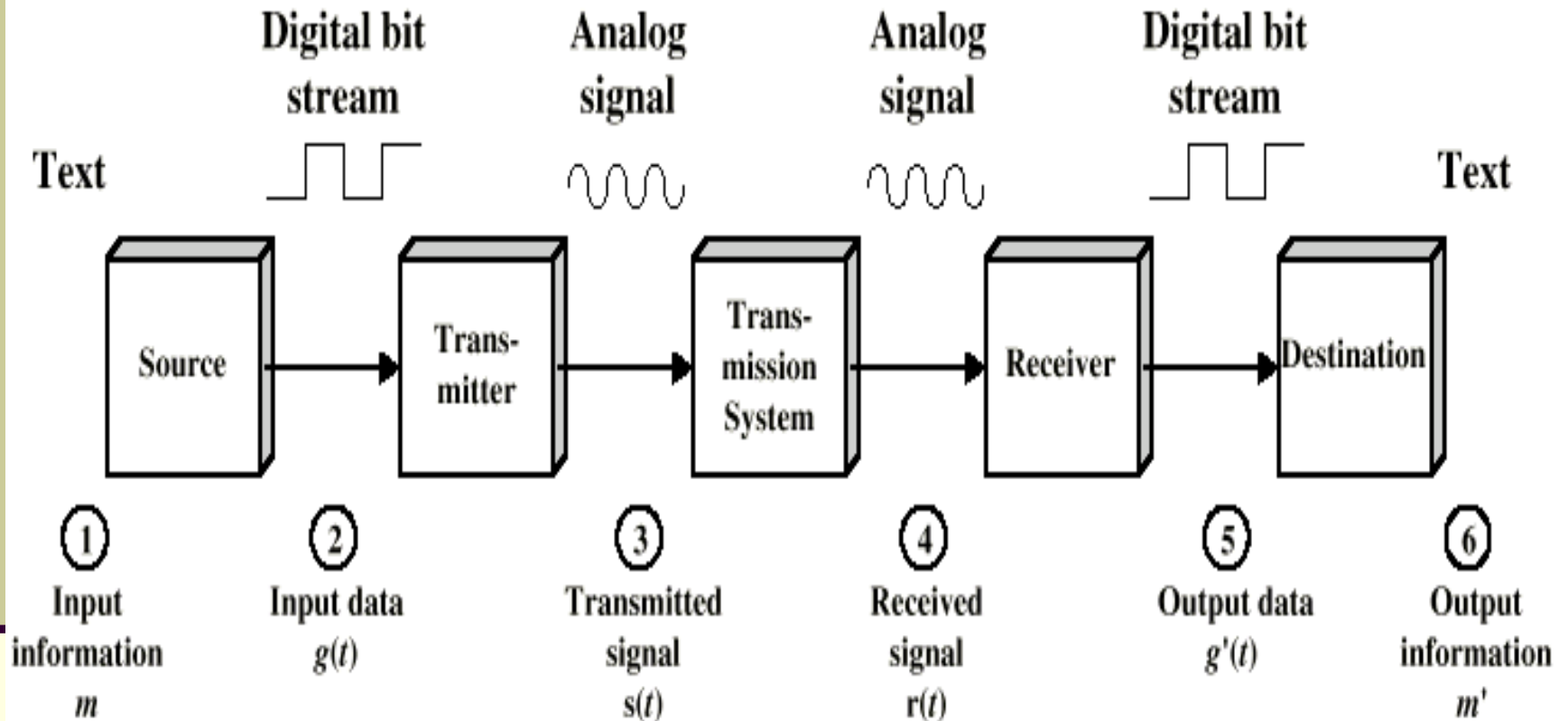
A Communication Model

مخطط منظومة الاتصالات

The fundamental purpose of a communications system is the exchange of data between two parties. This section introduces a simple model of communication.

- *Source* المصدر
 - *Generates data to be transmitted*
- *Transmitter* المرسل
 - *Converts data into transmittable signals*
- *Transmission system* نظام الارسال
 - *Carries data*
- *Receiver* المستقبل
 - *Converts received signal into data*
- *Destination* المقصد
 - *Takes incoming data*

Data Communication Model



The next section of the text on "Data Communications", deals with the most fundamental aspects of the communications function, focusing on the transmission of signals in a reliable and efficient manner.

We trace the details of this figure using electronic mail as an example. Assume a PC user wants to send an email message m to another user.

The process is modeled as follows:

user keys in message m comprising bits g buffered in source PC memory
input data is transferred to I/O device (transmitter) as sequence of bits $g(t)$
using voltage shifts

transmitter converts these into a signal $s(t)$ suitable for transmission media
being used

whilst transiting media signal may be impaired so received signal $r(t)$ may differ
from $s(t)$

receiver decodes signal recovering $g'(t)$ as estimate of original $g(t)$

which is buffered in destination PC memory as bits g' being the received
message m'

Communication Model

- Data communications are exchange of data between **two devices via some transmission medium.**
- **It should be done in two ways**
 - i) Local**
It takes LAN Connection.
 - i) Remote**
It takes Long distance like MAN & WAN.
- Data should be Transferred in the form of **'0s and '1s**

Block Diagram for Communication Model:



Characteristics of Communication Model :

- 1) **Delivery** - The System must deliver the data to the correct Destination.
- 2) **Accuracy** - The System must deliver the data at an Accurate way.

3) Timeline - The System must deliver the data at **Exact Time**.

4) Jitter - It refers to the variable in the **Perfect Arrival Time**.

Components of Communication Model :

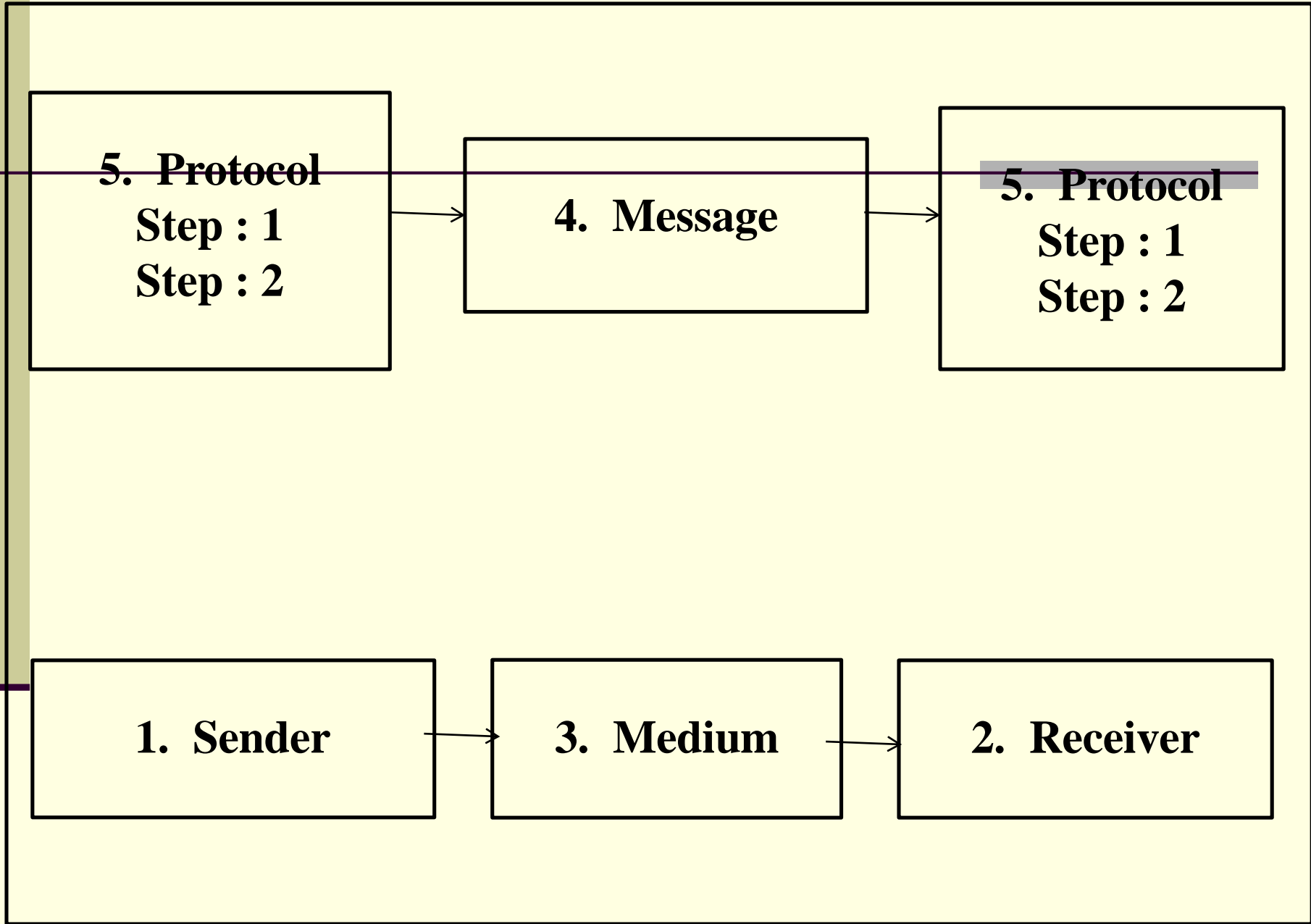
i) Sender

iv) Message

ii) Receiver

v) Protocol

iii) Medium



1. Sender : It is a device , that Sends the information to the Receiver.

2. Receiver :It is a device , that Receives the information from the Sender.

3. Medium : It is the physical path between Sender to Receiver.

4. Message :This is the passing Informations.

5. Protocol :It is a set of rules and regulations that “Governed “from data communication.

Protocol

- Protocol is a set of rules that govern data communication
- It represents **what** is communicated, **when** it is communicated and **how** it is communicated.