University of Duhok

Computer Skills
Department of Biology
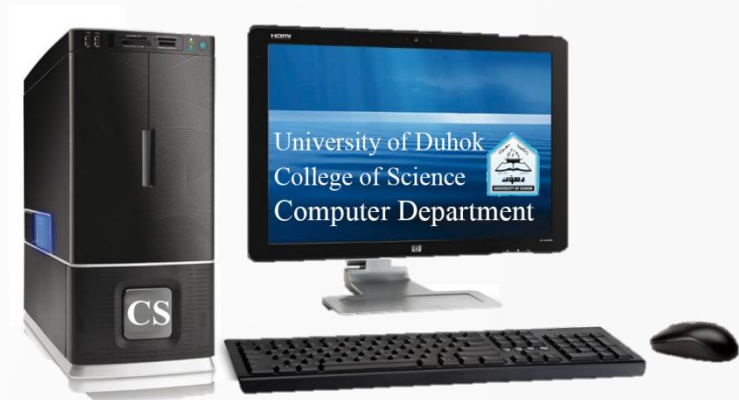## First Year

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2020

IT Lecture 4
Data communication

Introduction to Data Communication

➤ **Data communication** the term telecommunication means communication at a distance.

➤ It is the exchange of data between two devices via some form of transmission medium such as a wire cable.

➤ The purpose of data communication is to exchange information between two agents.

➤ The word data refers to information presented in whatever form is agreed upon by the parties creating and using the data.
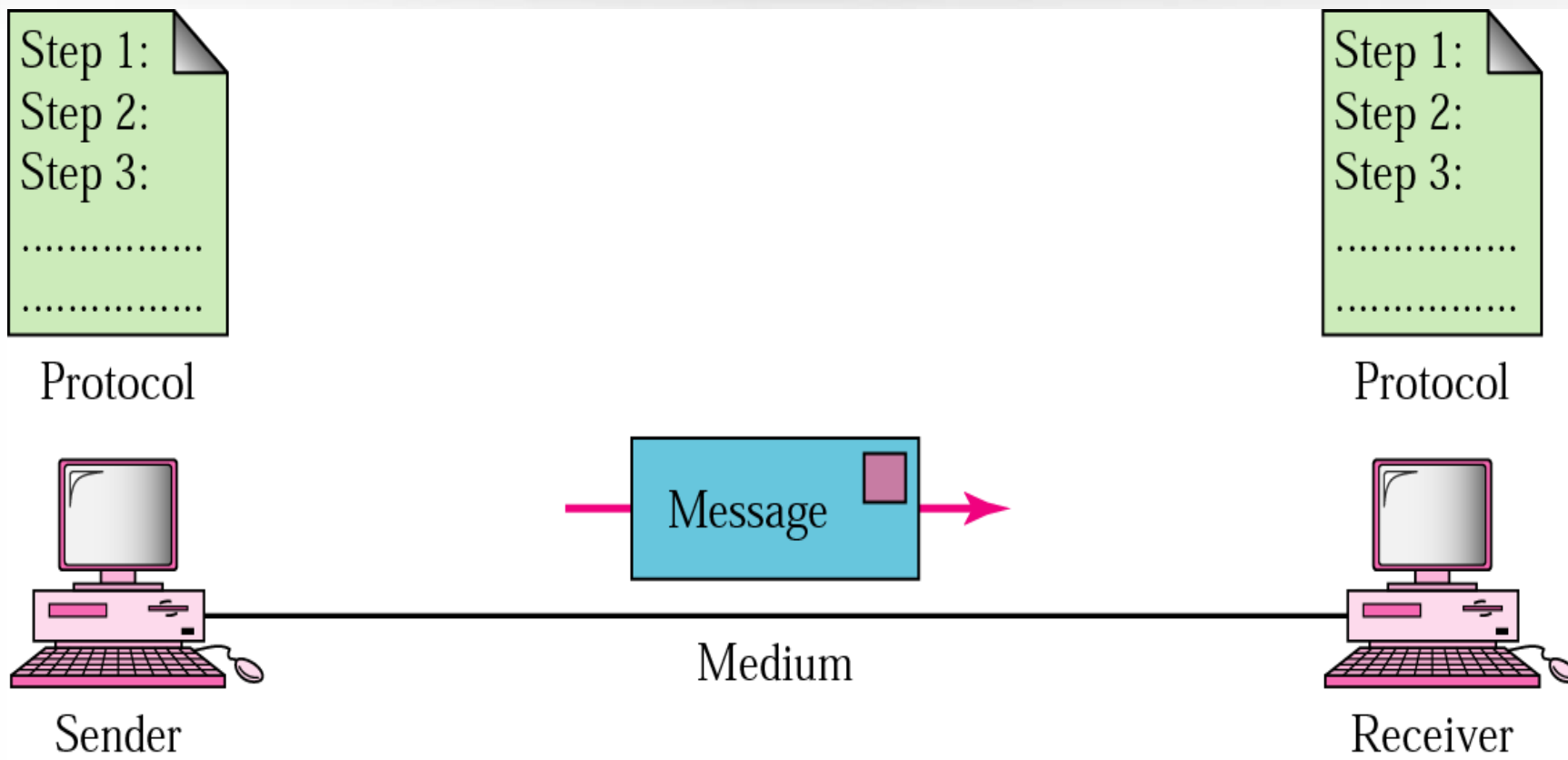
Data Communications

➤The effectiveness of a data communication system depend on three fundamental:

1. **Delivery**: The system must deliver data to the correct destination.

2. **Accuracy**: The system must deliver data accurately.

3. **Timeliness**: The system must deliver data in a timely manner.

Five Components of Data Communication System

1- Message, 2- Sender, 3- Receiver, 4- Protocols and

5- Transmission Medium

Five Components of Data Communication System

1. **Message**:-it is the information to be communicated. Popular forms of information include text, pictures, audio ,video etc.

2. **Sender:-**it is the device that sends the data message. It can be a computer, workstation, telephone handset etc.

3. **Receiver**:-it is the device that receives the data message. It can be a computer, workstation, telephone handset etc.

4. Protocols:- set of instructions and procedures that maintain and control transmission in networks.

➤ It decides the number of computers that can be connected,

➤ how errors can be fixed and

➤ how the transmission will be occurred.

➤ Transmission Control Protocol /Internet Protocol (TCP/IP)

➤ Address Resolution Protocol (ARP), FTP: File Transfer Protocol, HTTP: Hypertext Transfer Protocol and so.

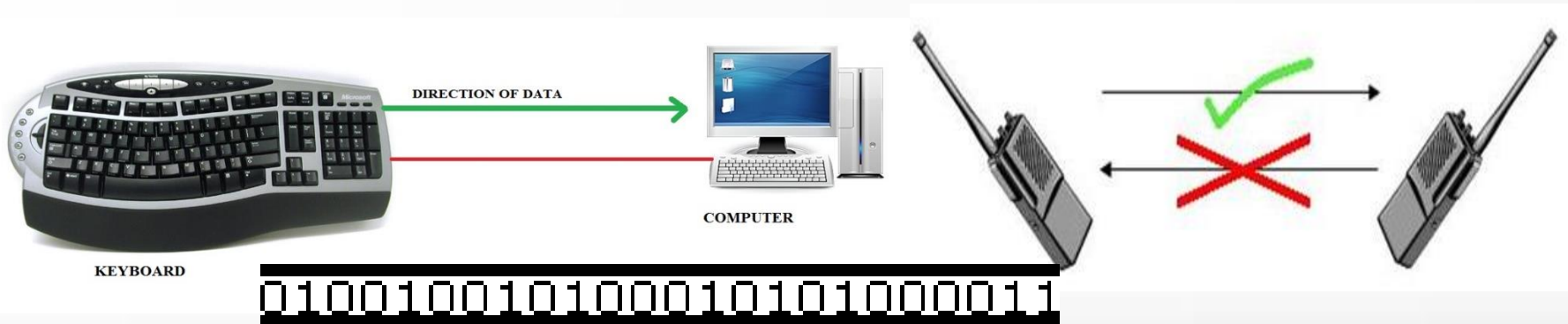Without protocol, two devices may be connected, but not communicated.

5. **Transmission Medium:-** it is the physical path by which a message travels from sender to receiver. There are two types of transmission media:

➤ Wired Media :twisted pairs, coaxial cables, fiber optics.

➤ Wireless Media: radio waves, microwaves, satellite

Direction of data flow

➤ the path taken by a message from origination to **Si**destination that includes all nodes through which the data travels.

1. **Simplex** : in simplex mode, the communication is unidirectional. Only one of the devices on a link can transmit, the other can only receive. E.g. keyboards, monitors, remote control, etc.
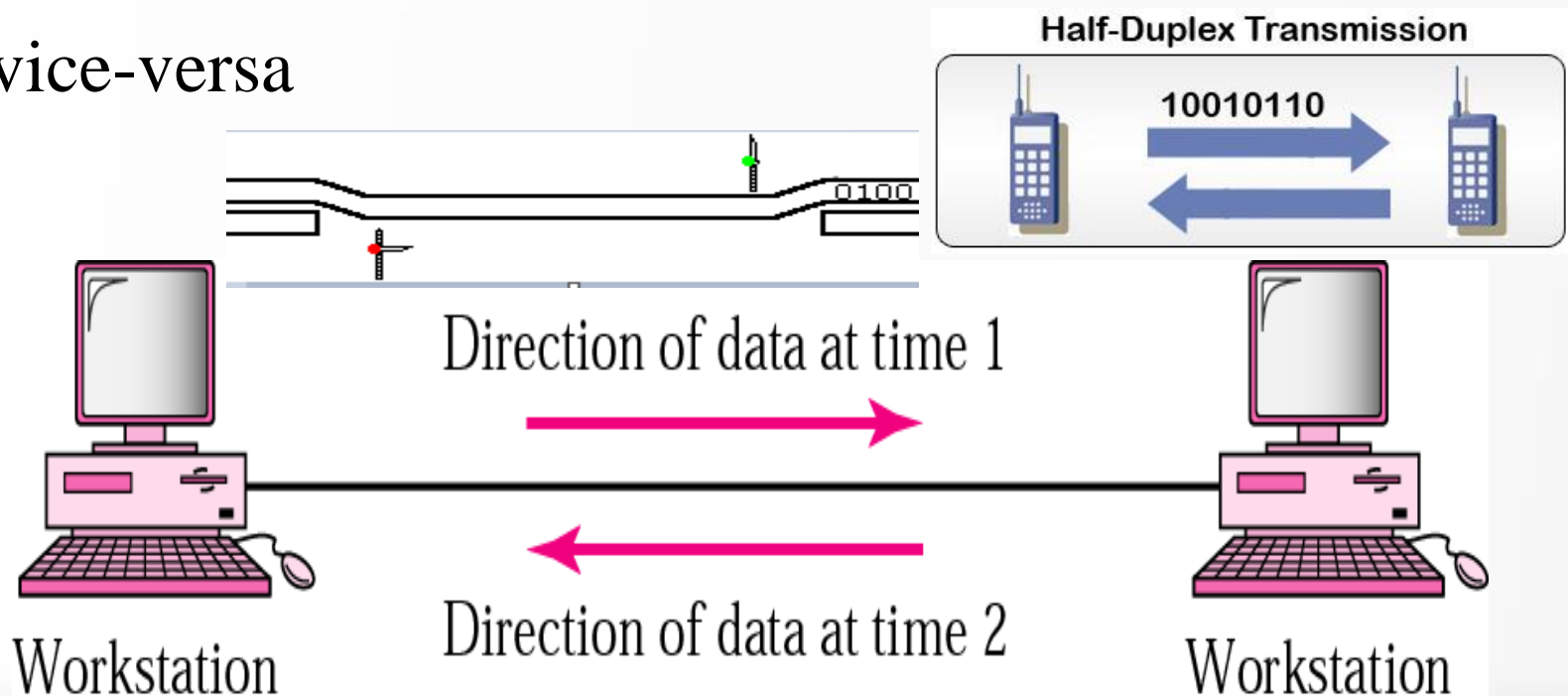

DIRECTION OF DATA

COMPUTER

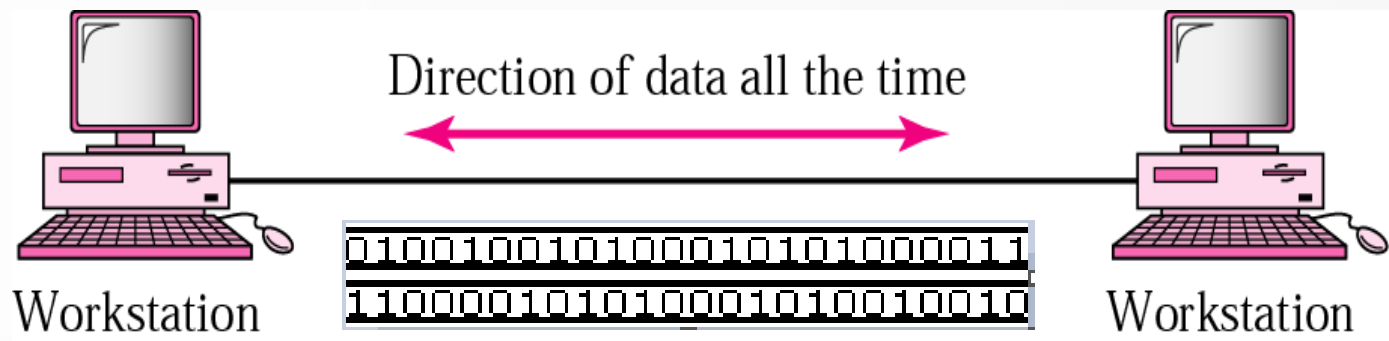KEYBOARD

2. **Half- duplex**: in this mode, each station can both

    transmit and receive, but not at the same time. When

    one device is sending, the other can only receive, and

    vice-versa

Half-Duplex Transmission

10010110

Direction of data at time 1

Direction of data at time 2

Workstation   Workstation

Direction of data flow – Cont.

➤ **Full duplex**: in full duplex mode, both stations can transmit and receive simultaneously.

➤ One common example is the telephone network. When two people are communicate by a telephone line, both can talk and listen at the same time.

➤ The full-duplex mode is used when communication in both directions is required all the time.

Direction of data all the time

Workstation   0100100101000101010000011
1100001010100010100100010   Workstation

➤ **Any question**

THANK YOU

next

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