

## Page 3 : 3 Annotations



# Topics discussed in this section



- ✓ Components
- ✓ Data Representation
- ✓ Data Flow

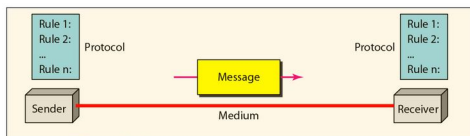


Figure 1.1 The components of data communication

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# Components



## Message:



The message is the information (data) to be communicated. Popular forms of information include text, numbers, pictures, audio, and video.



## Sender:



The sender is the device that sends the data message. It can be a computer, workstation, telephone handset,

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**Receiver:**



The receiver is the device that receives the message. It can be a computer, workstation, telephone handset,



**Transmission medium:**



The transmission medium is the physical path by which a message travels from sender to receiver. Some



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a message travels from sender to receiver. Some examples of transmission media include twisted-pair wire, coaxial cable, fiber-optic cable, and radio waves.

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## Protocol:



A protocol is a set of rules that govern data communications. It represents an agreement between

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## Data Representation



Information today comes in different forms such as text, numbers, images, audio, and video.



## Text



In data communications, text is represented as a bit pattern, a sequence of bits (0s or 1s). Different sets of

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## Numbers



Numbers are also represented by bit patterns. However, a code such as ASCII is not used to represent numbers; the number is directly converted to a binary number to simplify mathematical operations.



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## Images



Images are also represented by bit patterns. In its simplest form, an image is composed of a matrix of pixels (picture elements), where each pixel is a small



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## Audio



or music. Audio is by nature different from text, numbers, or images. It is continuous, not discrete. Even



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numbers, or images. It is continuous, not discrete. Even when we use a microphone to change voice or music to an electric signal, we create a continuous signal.

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# Video

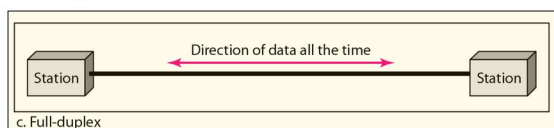
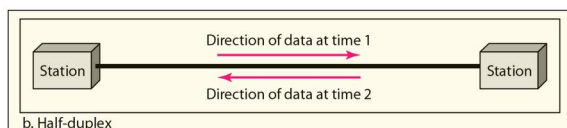
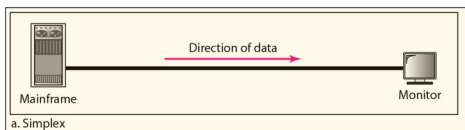


picture or movie. Video can either be produced as a continuous entity (e.g., by a TV camera), or it can be a combination of images, each a discrete entity, arranged to convey the idea of motion.

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# Direction of data flow



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# ANALOG AND DIGITAL



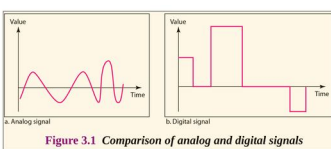
Data can be analog or digital.



Signals can be analog or digital.

▲ ■ • ■ ■ • ■ ■

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PERIODIC ANALOG SIGNALS