Data Communications

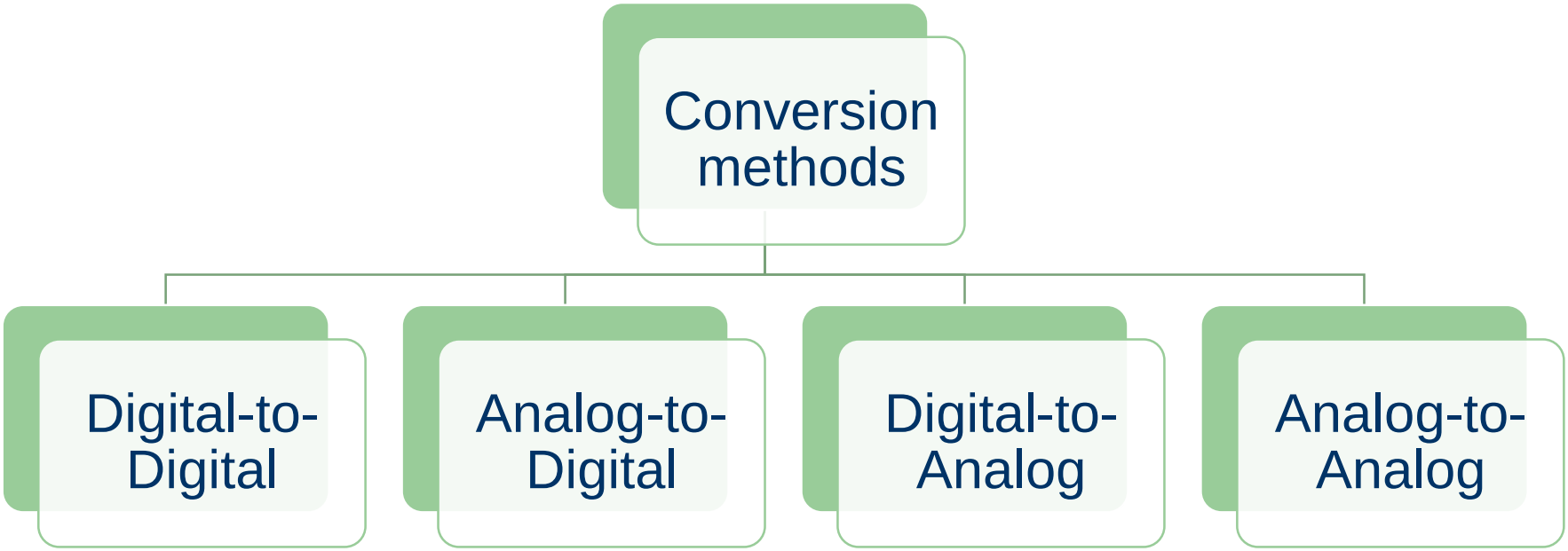
Lecture 7 contents

- Conversions
- Encoding and Modulation
- Digital-to-Digital Encoding

Conversion

- Information must be transformed into signals before it can be transformed across the communication media
- How this information is transformed depends upon its original format and on the format of the communication hardware

Conversion Methods



Encoding and Decoding

Encoding:

The process of converting data to digital signal

Decoding:

the conversion of a digital signal into a sequence of characters

Figure: Encoding and Decoding

Modulation and Demodulation

Modulation:

The process of converting data to analog signal

Demodulation:

The process of converting analog signal to data

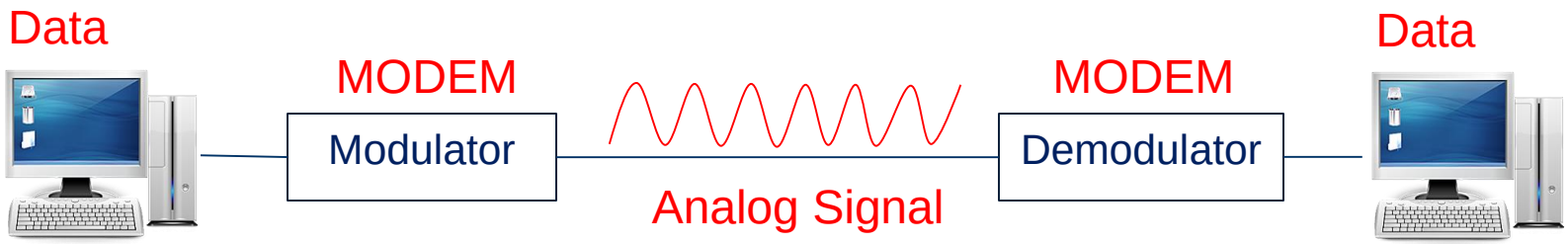
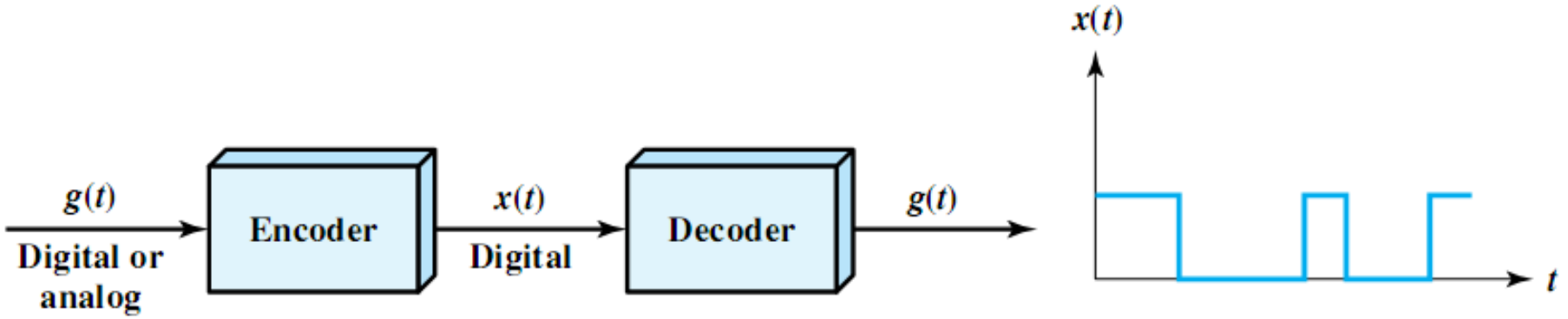
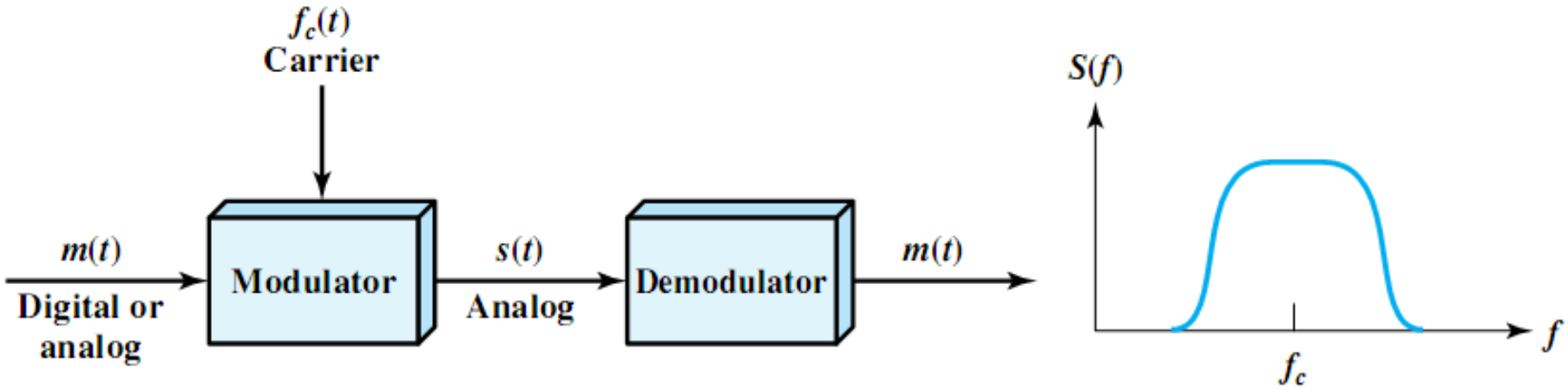


Figure: Modulation and Demodulation

Encoding and Modulation



(a) Encoding onto a digital signal



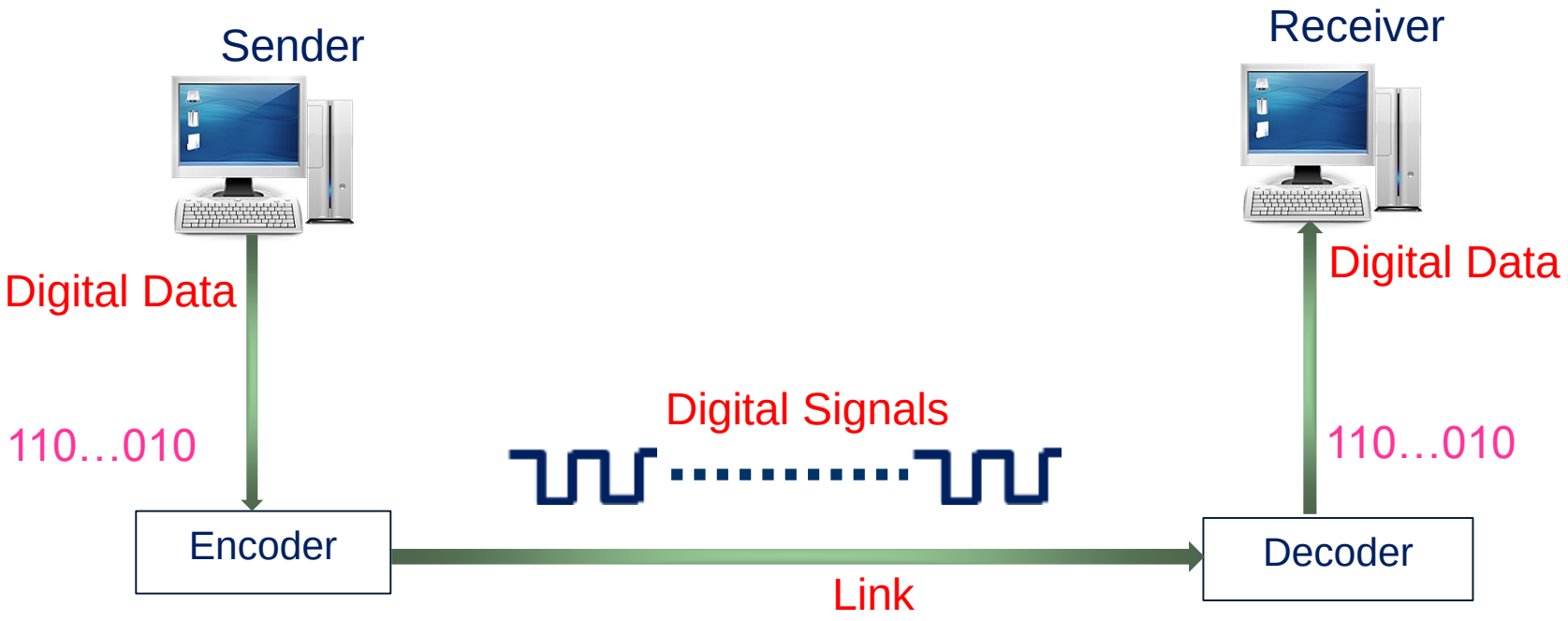
(b) Modulation onto an analog signal

Digital to Digital Encoding:

- Digital-to-Digital conversion/encoding is the representation of digital information by digital signal

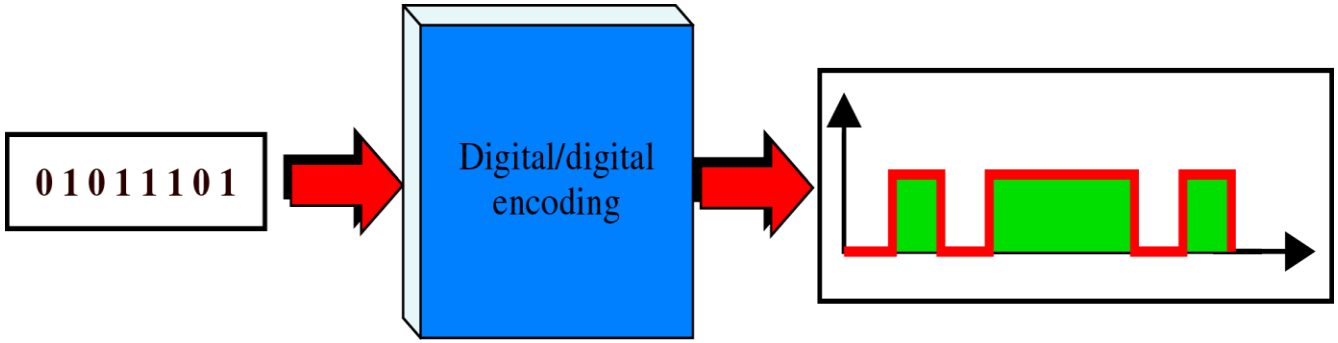
- For Example:
  - When you transmit data from Computer to the Printer, both original and transmitted data have to be digital

Digital to Digital Encoding:

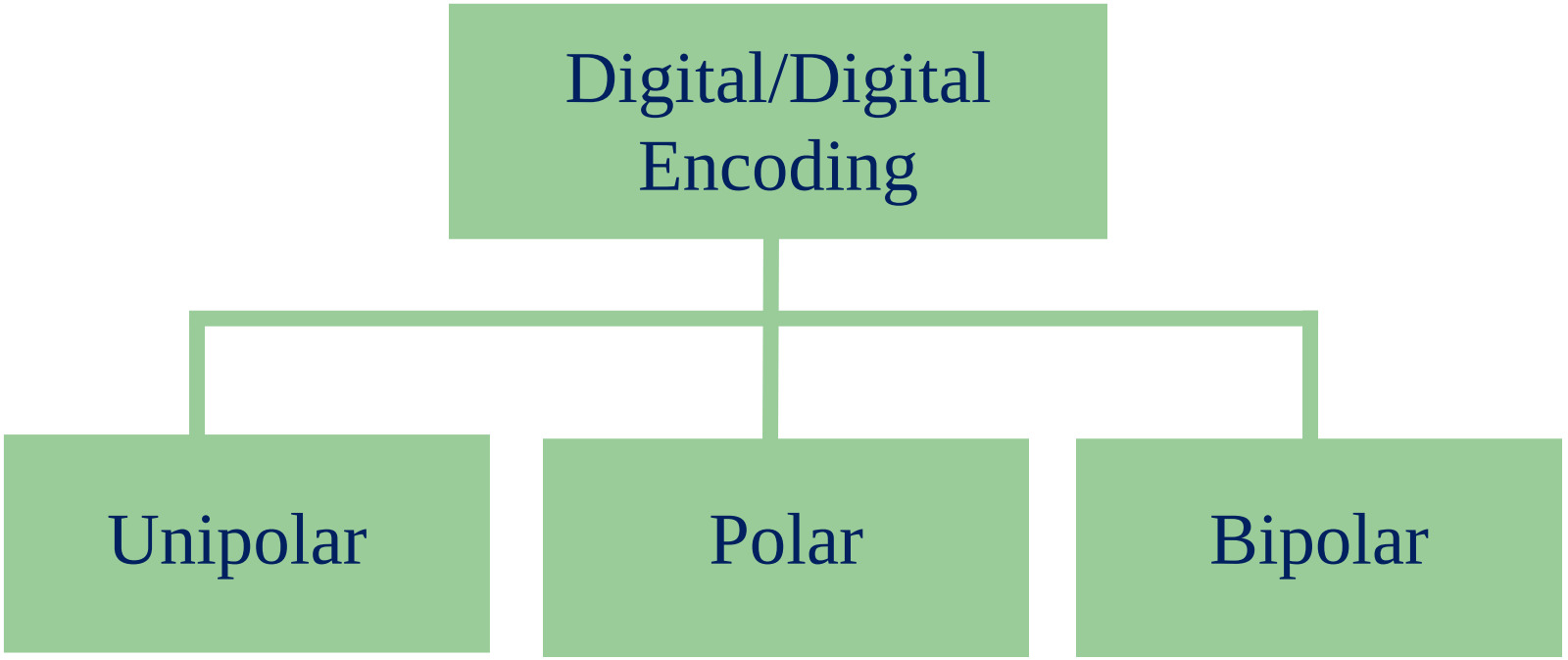


How Digital to Digital Encoding is done

In this type of encoding, 1's and 0's generated by the computer are translated into voltage pulses that can be propagated over the wire



Types of Digital-to-Digital Encoding



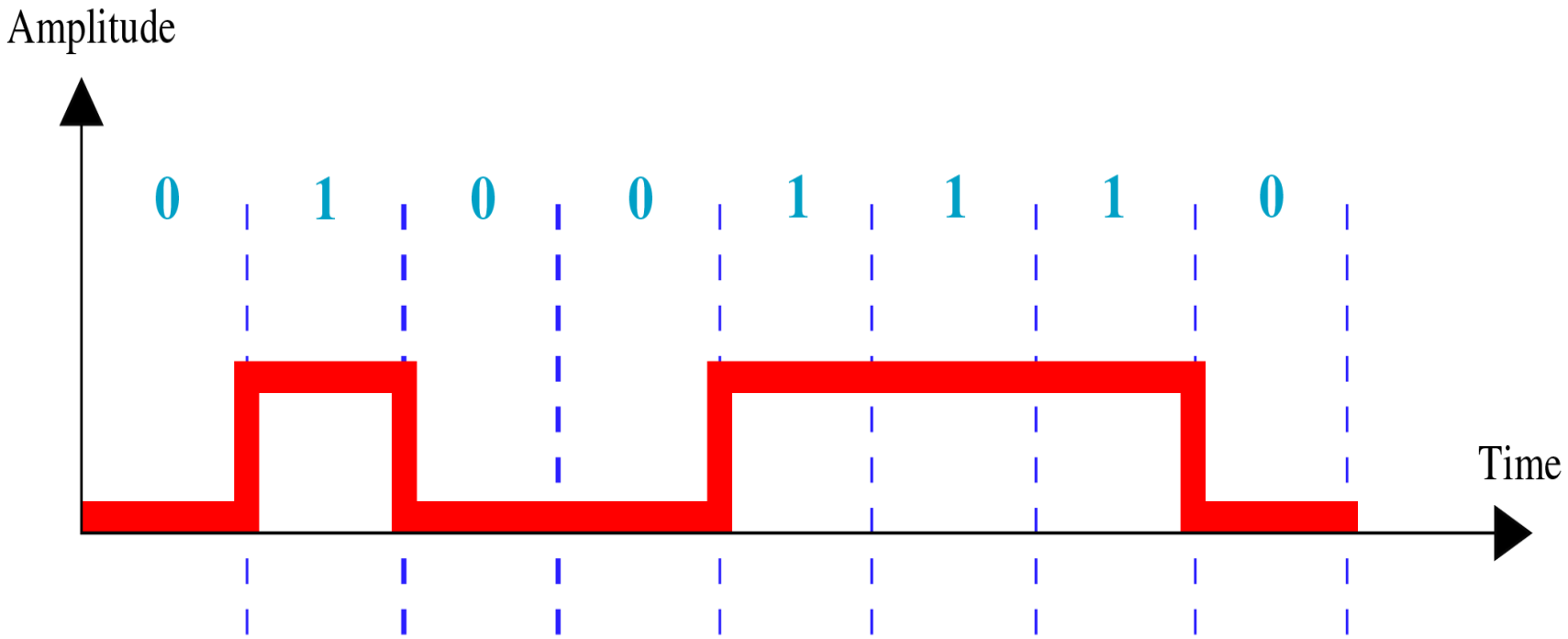
Unipolar Encoding

- Simple and Primitive
- Almost Obsolete Today
- Signal amplitude varies between a positive +V and 0 volts

Unipolar Encoding

- Digital transmission system works by sending **voltage pulses** on the transmission medium
- One voltage level stands for binary 0 while the other stands for binary 1
- It is called Unipolar because it uses only one polarity
- This polarity is assigned to one of the two binary states usually a ‘1’
- The other state usually a 0 is represented by zero voltage

Unipolar Encoding



Conclusion

- Introduction to Conversions
- Conversion methods
- Encoding
- Modulation
- Digital-To-Digital Encoding
- Types of Digital-To-Digital Encoding

Questions?