

Network Models: OSI Model

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INTRODUCTION

*We use the concept of **layers** in our daily life. As an example, let us consider two friends who communicate through postal mail. The process of sending a letter to a friend would be complex if there were no services available from the post office.*

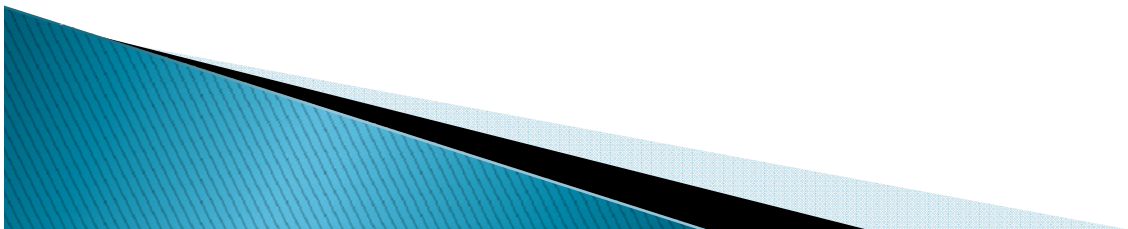
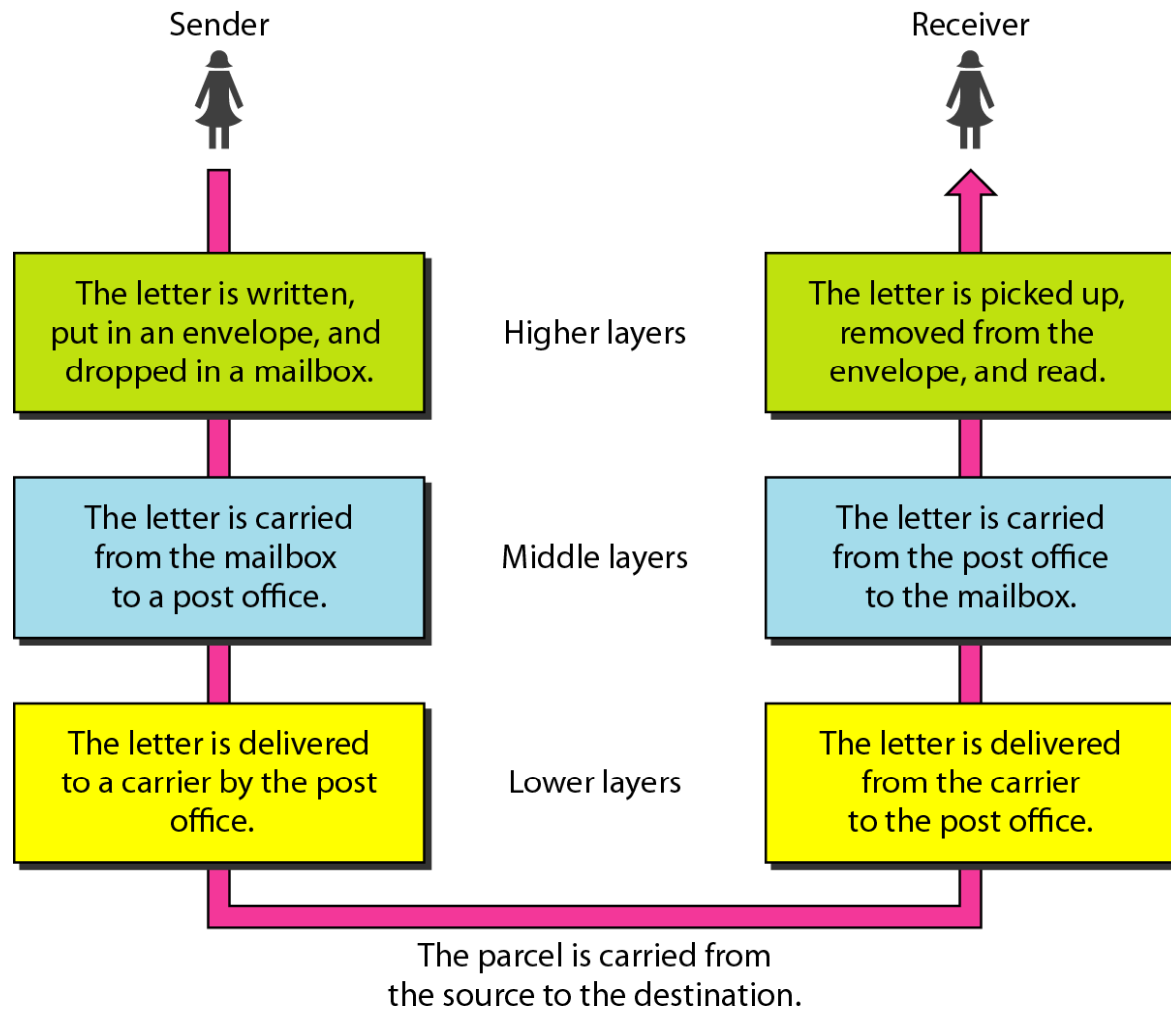
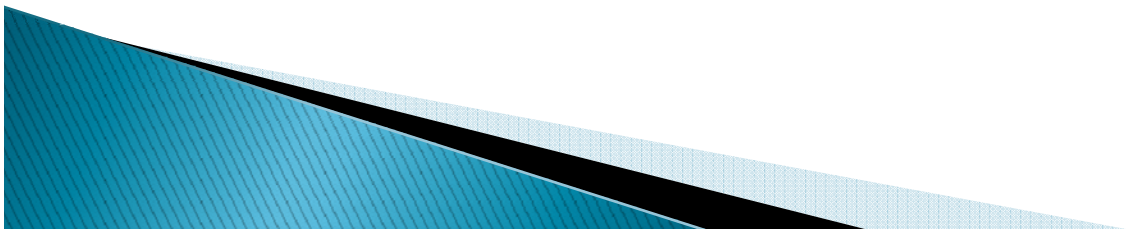


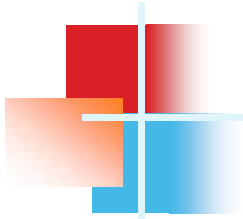
Figure 2.1 Tasks involved in sending a letter



THE OSI MODEL

*An ISO standard that covers all aspects of network communications is the Open Systems Interconnection (**OSI**) model. It was first introduced in the late 1970s.*





Note

**ISO is International Standards Organization.
OSI is the Open System Interconnection model.**

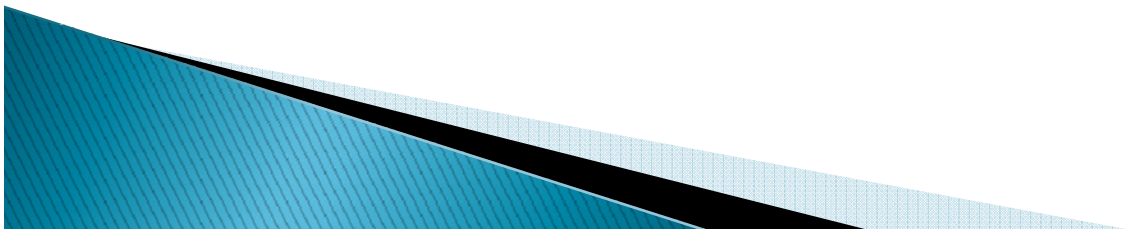


Figure 2.2 *Seven layers of the OSI model*

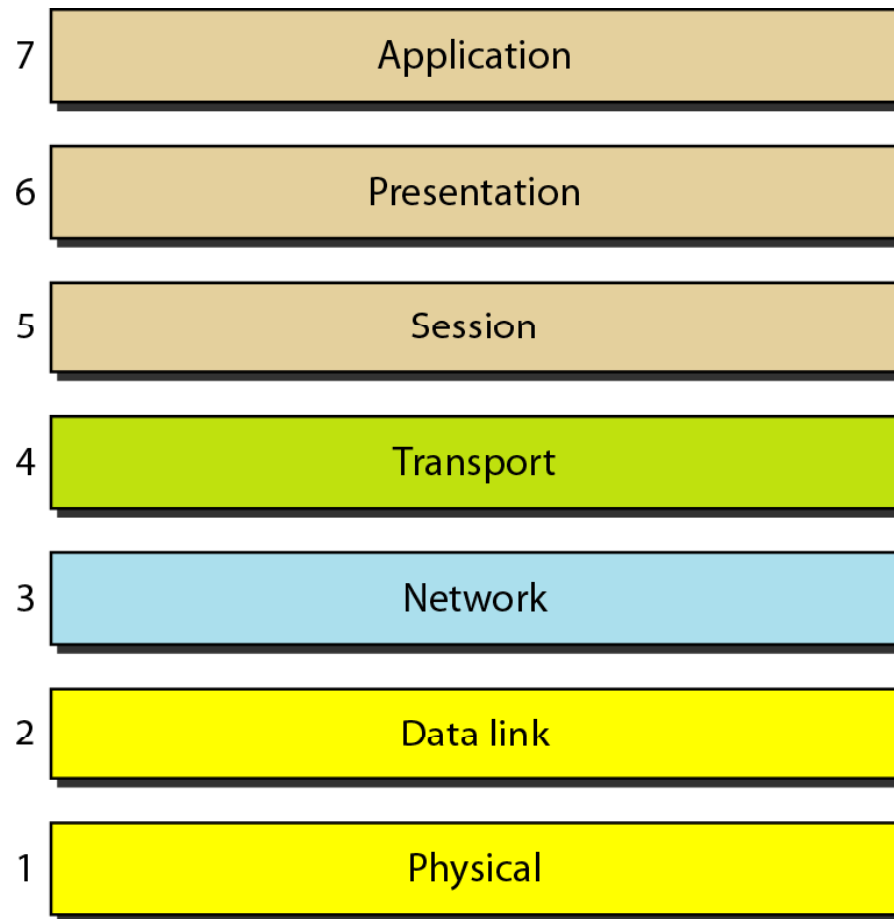


Figure 2.3 *The interaction between layers in the OSI model*

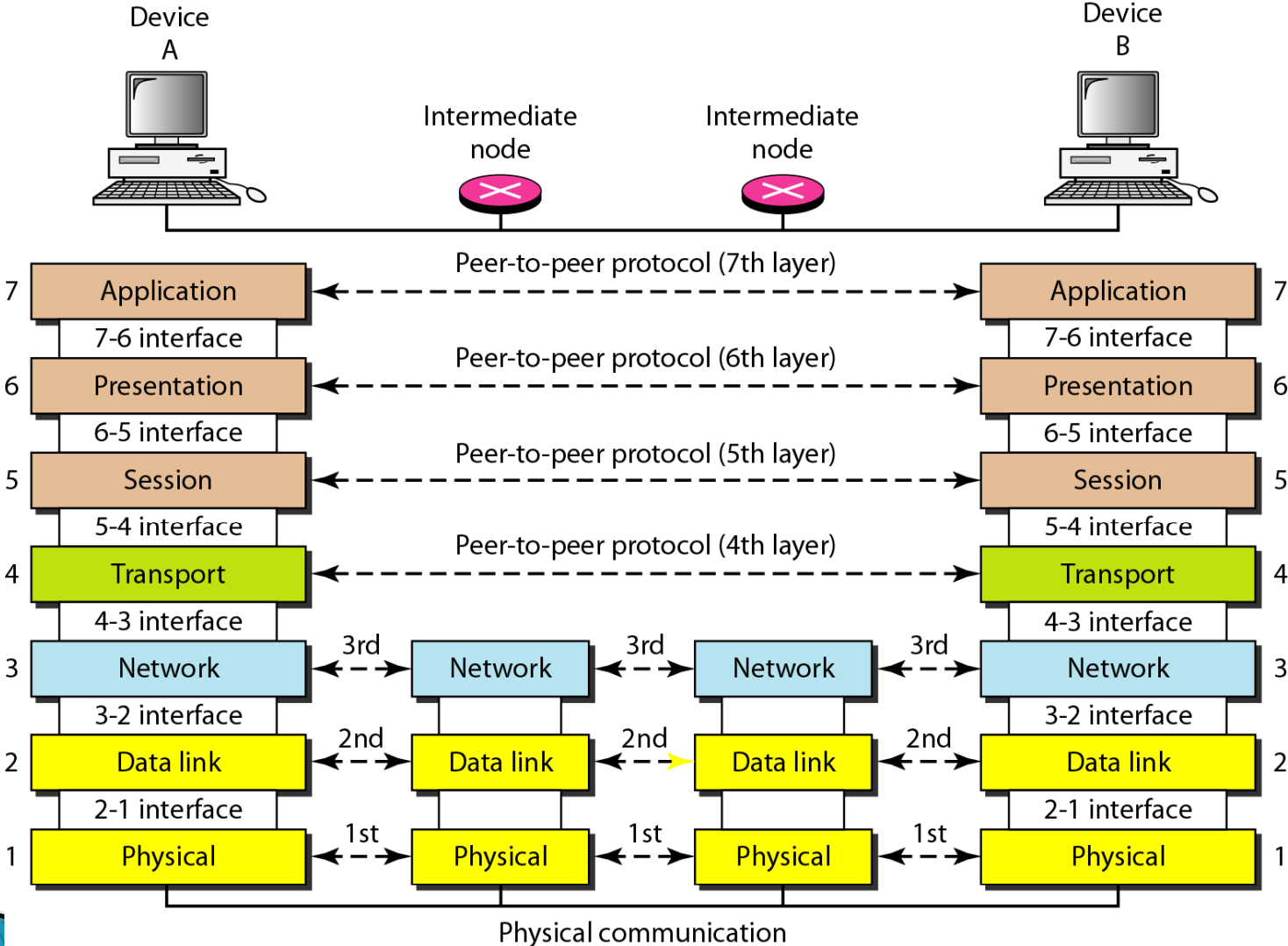
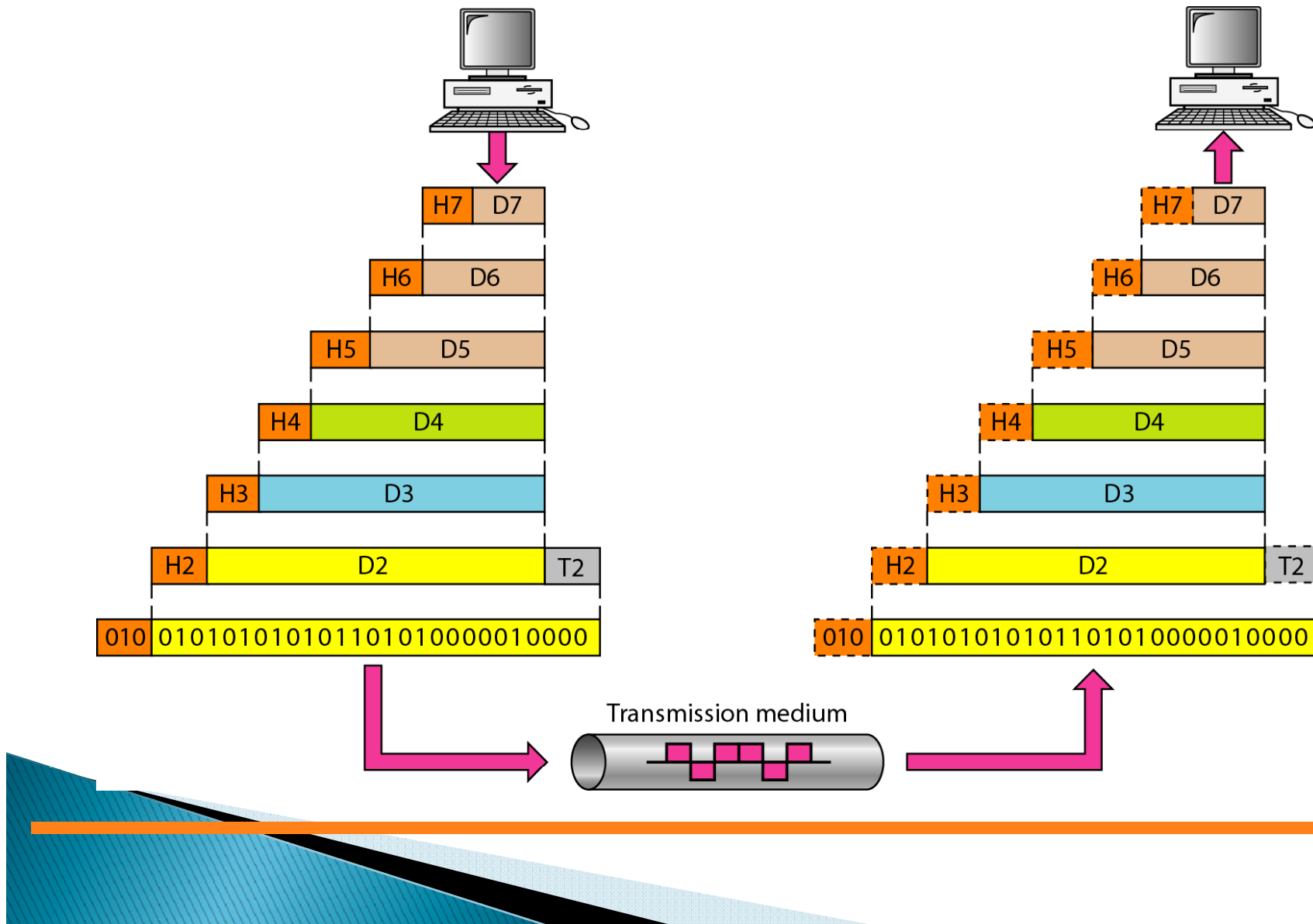


Figure 2.4 *An exchange using the OSI model*



LAYERS IN THE OSI MODEL

In this section we briefly describe the functions of each layer in the OSI model.

- ✓ Physical Layer
- ✓ Data Link Layer
- ✓ Network Layer
- ✓ Transport Layer
- ✓ Session Layer
- ✓ Presentation Layer
- ✓ Application Layer

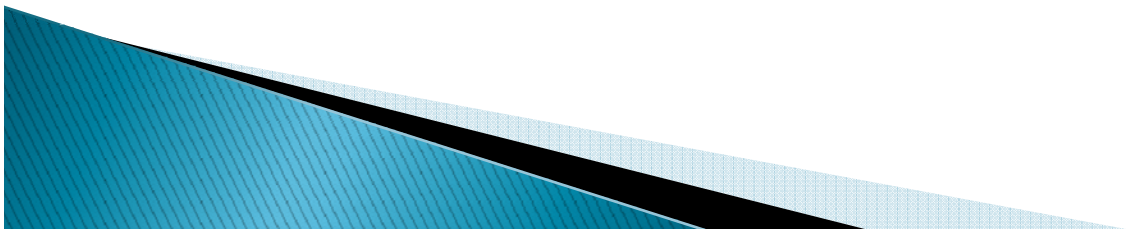
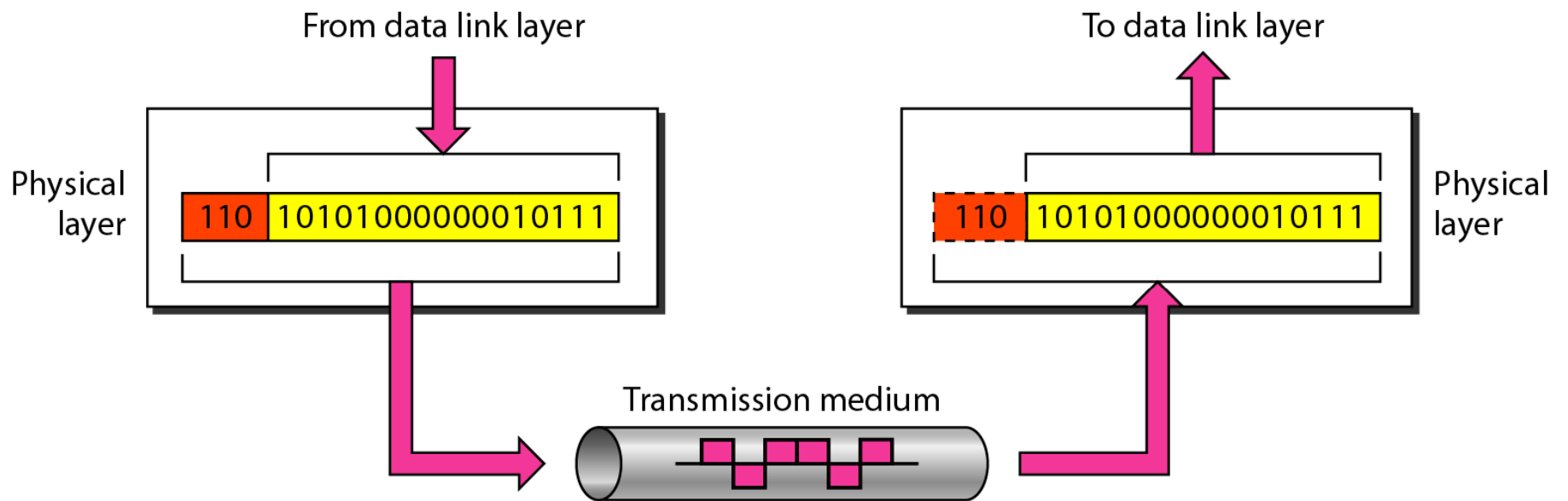


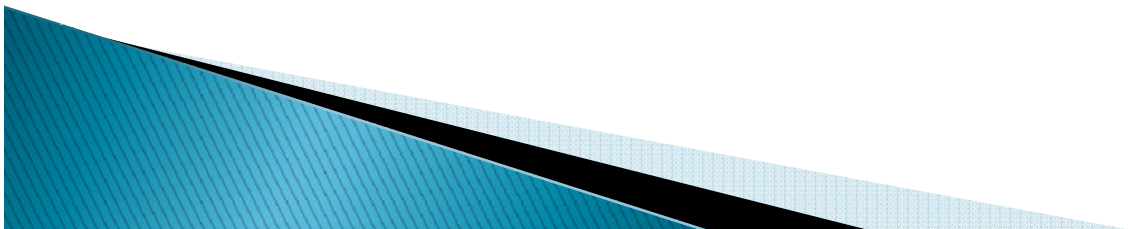
Figure 2.5 *Physical layer*





Note

The physical layer is responsible for movements of individual bits from one hop (node) to the next.



Responsibilities of Physical Layer ?

- ▶ Physical transmission media & devices
- ▶ Transmission rate
- ▶ Encoding/ Decoding
- ▶ Simplex, half-duplex or full-duplex transmission
- ▶ Type of link is: **Point-to-Point or Multipoint**
- ▶ Topology to be used

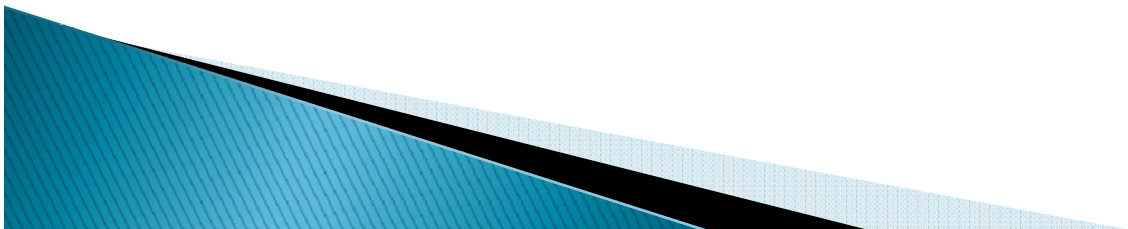
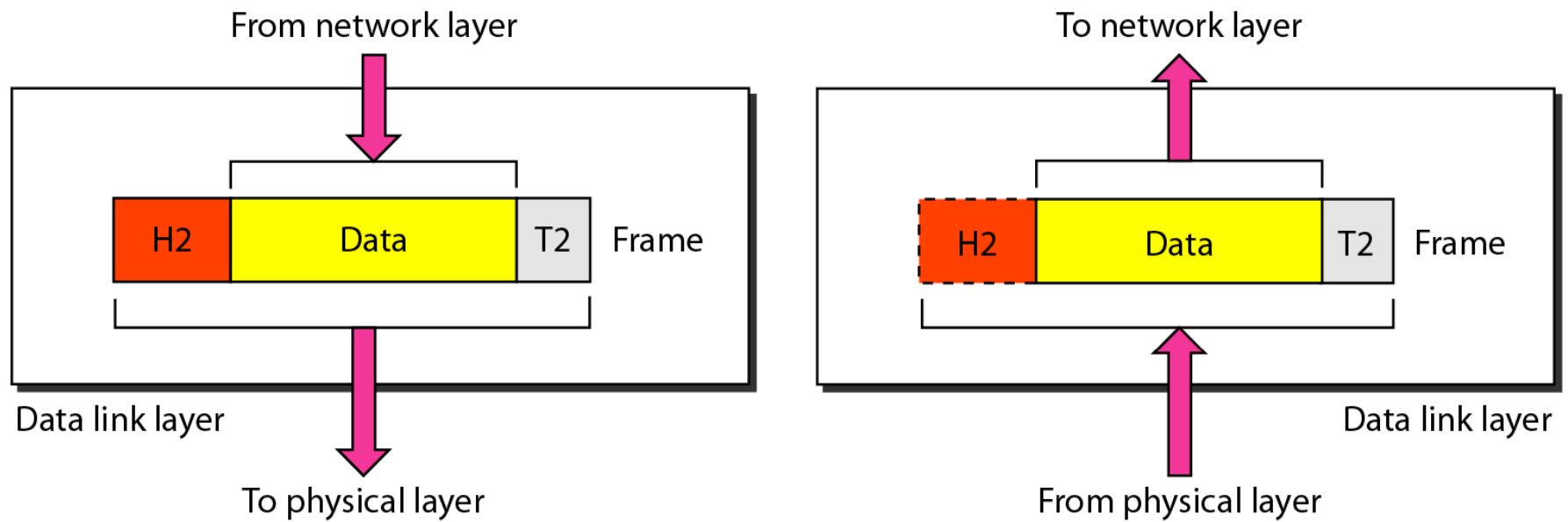
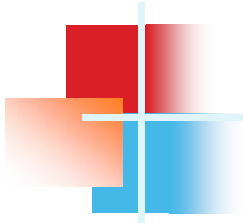


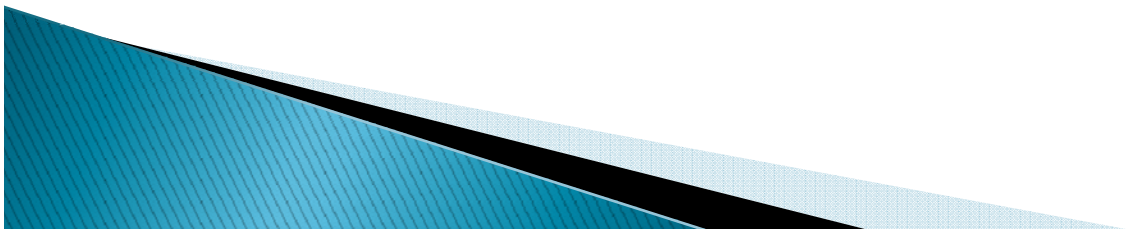
Figure 2.6 *Data link layer*





Note

The data link layer is responsible for moving frames from one hop (node) to the next.



Responsibilities of Data Link Layer ?

- ▶ Framing
- ▶ Error Control
- ▶ Flow Control
- ▶ Access Control

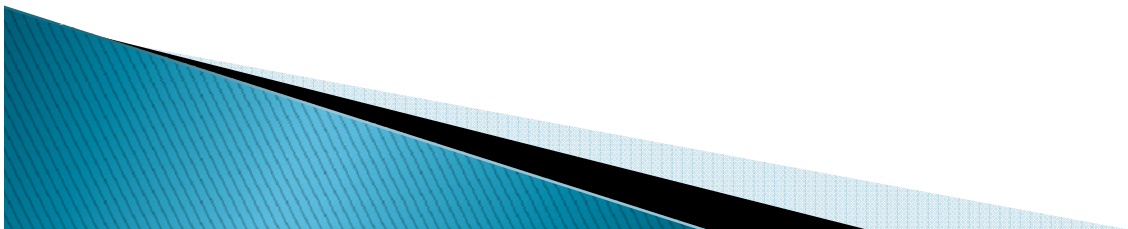


Figure 2.7 Hop-to-hop delivery

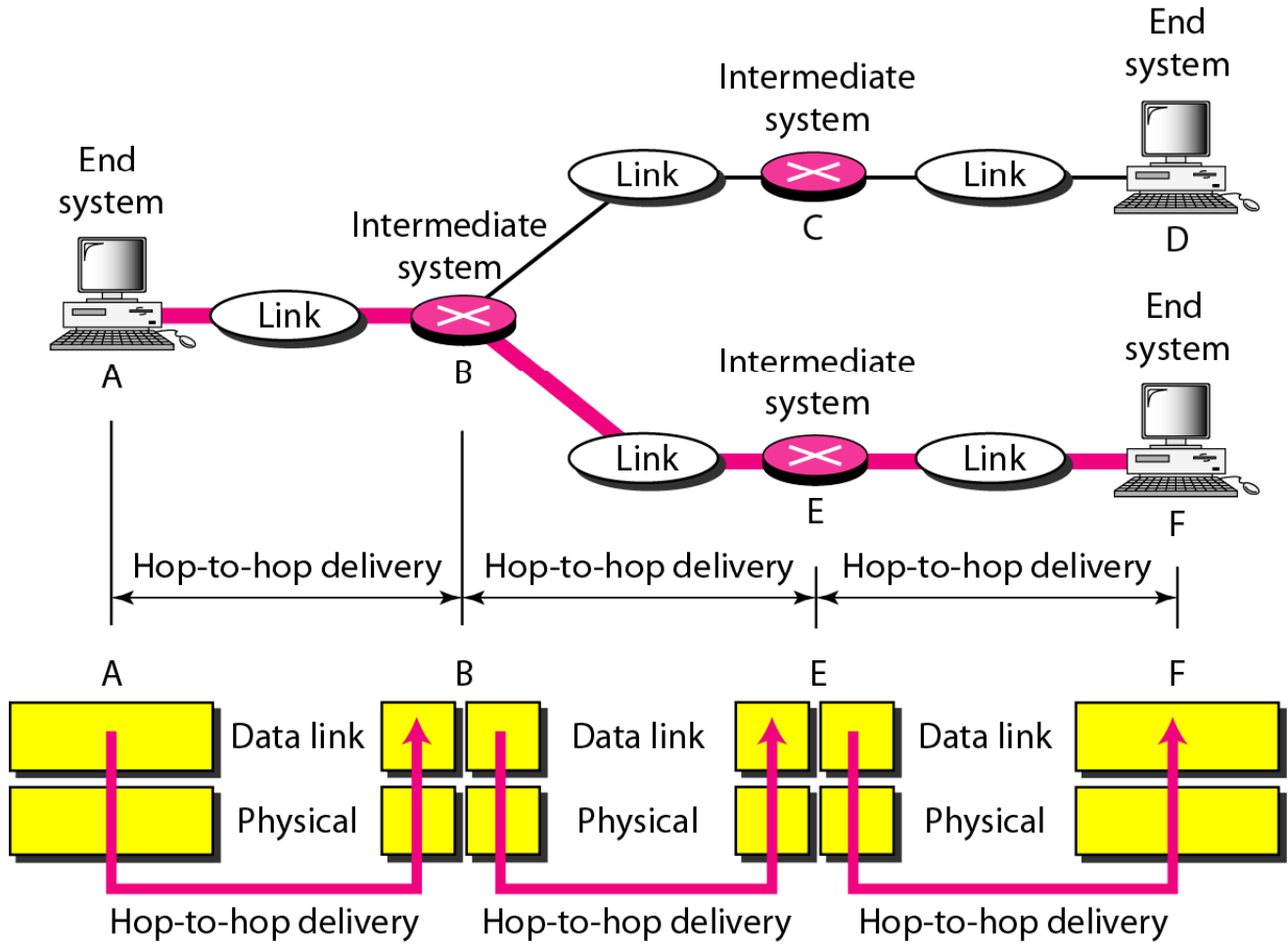
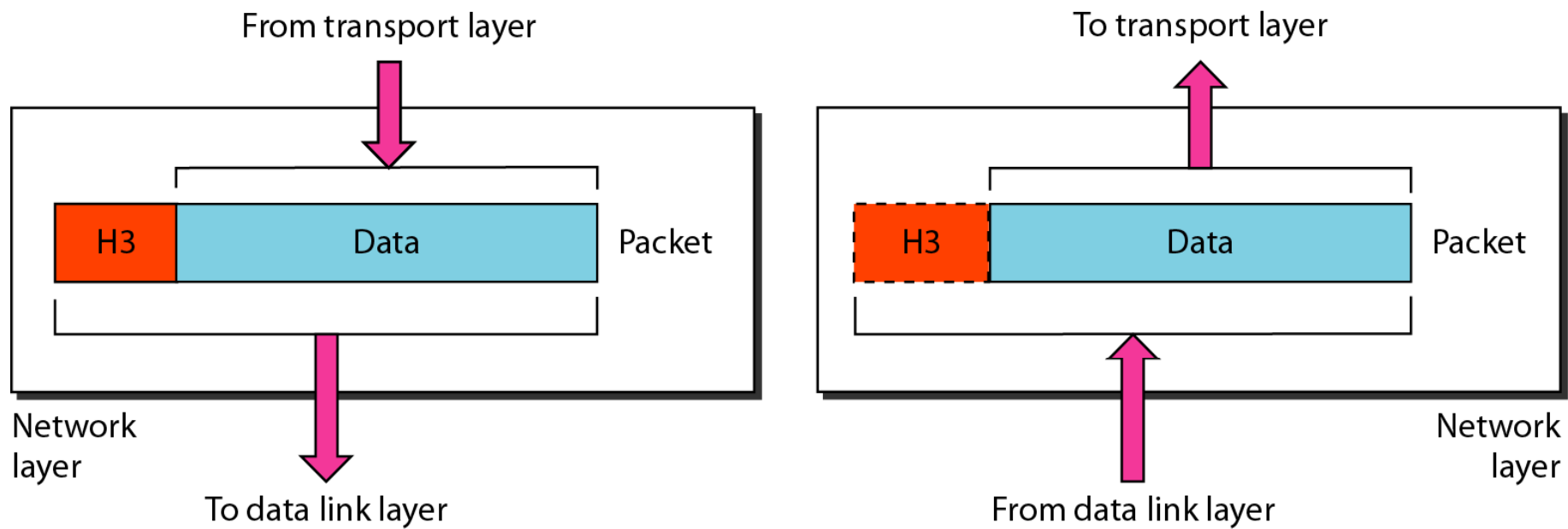
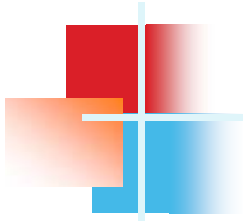


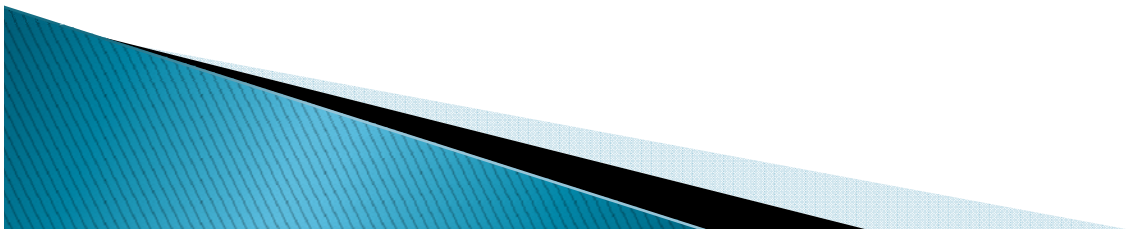
Figure 2.8 *Network layer*





Note

The network layer is responsible for the delivery of individual packets from the source host to the destination host.



Responsibilities of Network Layer

- ▶ Logical Addressing
- ▶ Routing

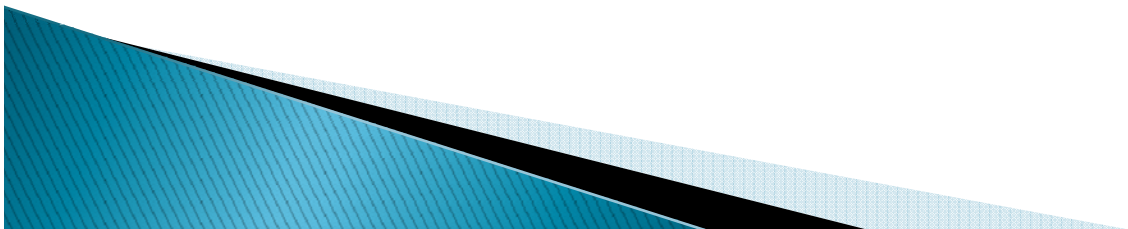
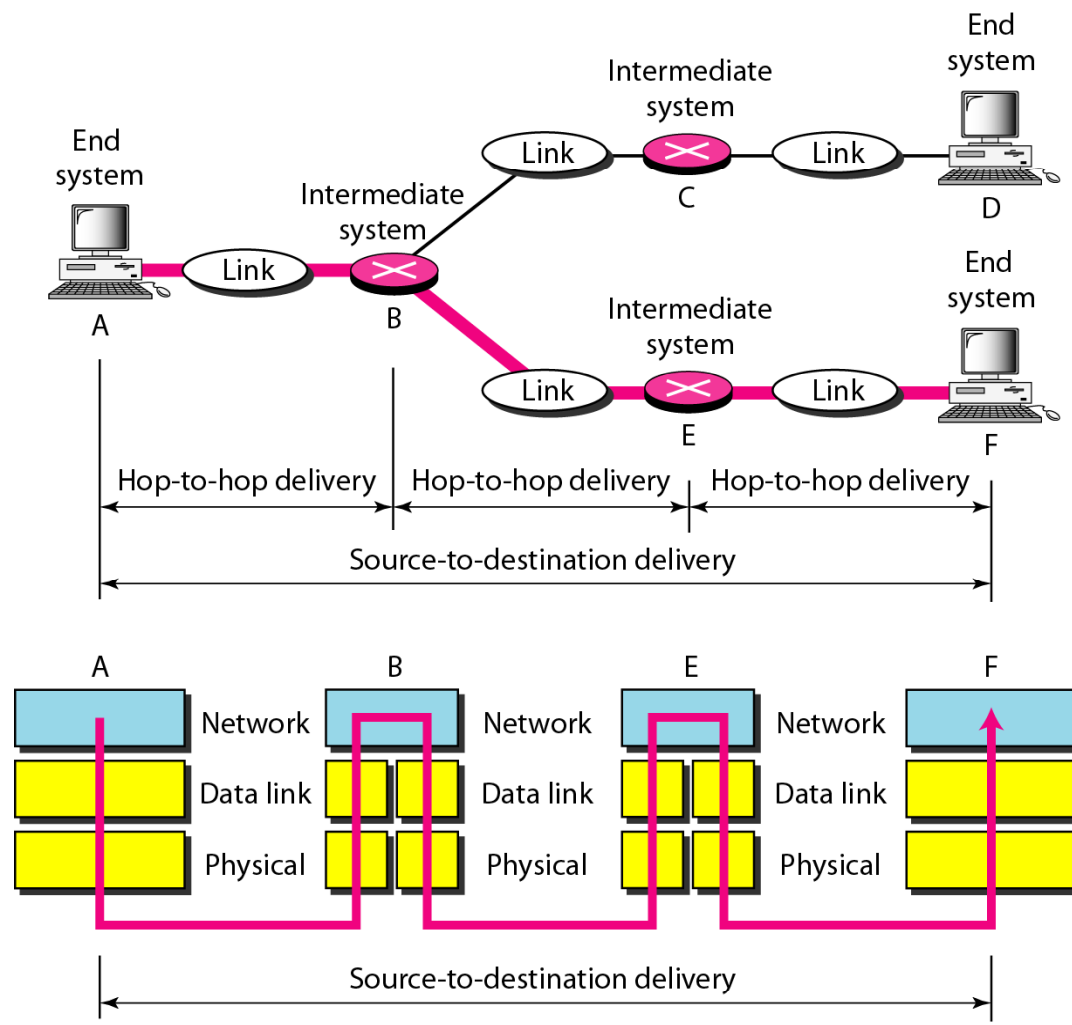


Figure 2.9 *Source-to-destination delivery*



Assignment 2

- ▶ How data is transmitted at network layer? Describe the whole process of communication from network layer at source to network layer at destination.

Topic to be continued for next lecture....

