

# OSI Reference Model

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# OSI Reference Model

- ▶ OSI stands for Open System Interconnection is a reference model that describes how information from a software application in one computer moves through a physical medium to the software application in another computer.
- ▶ OSI consists of seven layers, and each layer performs a particular network function.
- ▶ OSI model was developed by the International Organization for Standardization (ISO) in 1984.

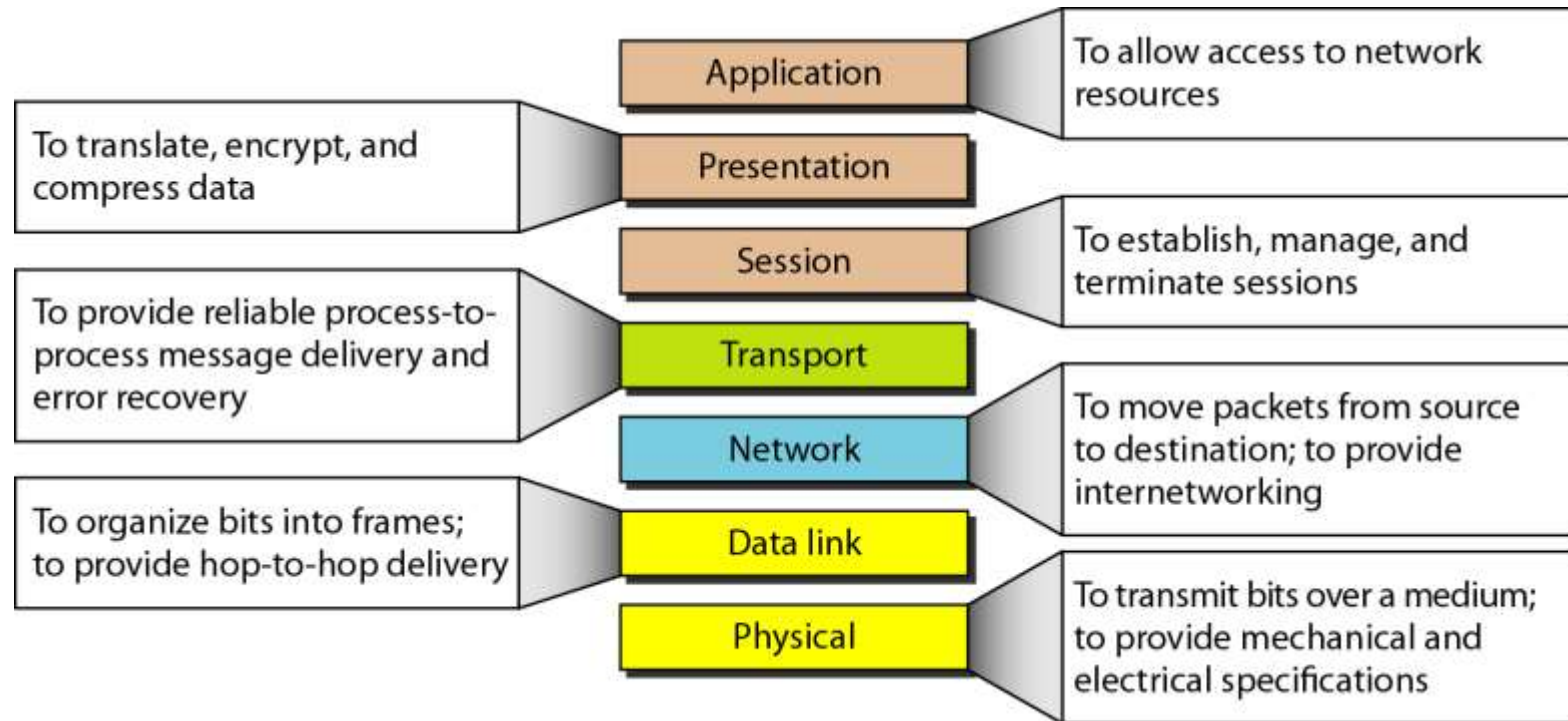
# OSI Reference Model

- ▶ OSI model divides the whole task into seven smaller and manageable tasks.
- ▶ Each layer is assigned a particular task.
- ▶ Each layer is self-contained, so that task assigned to each layer can be performed independently
- ▶ The OSI model is divided into two layers: upper layers and lower layers.

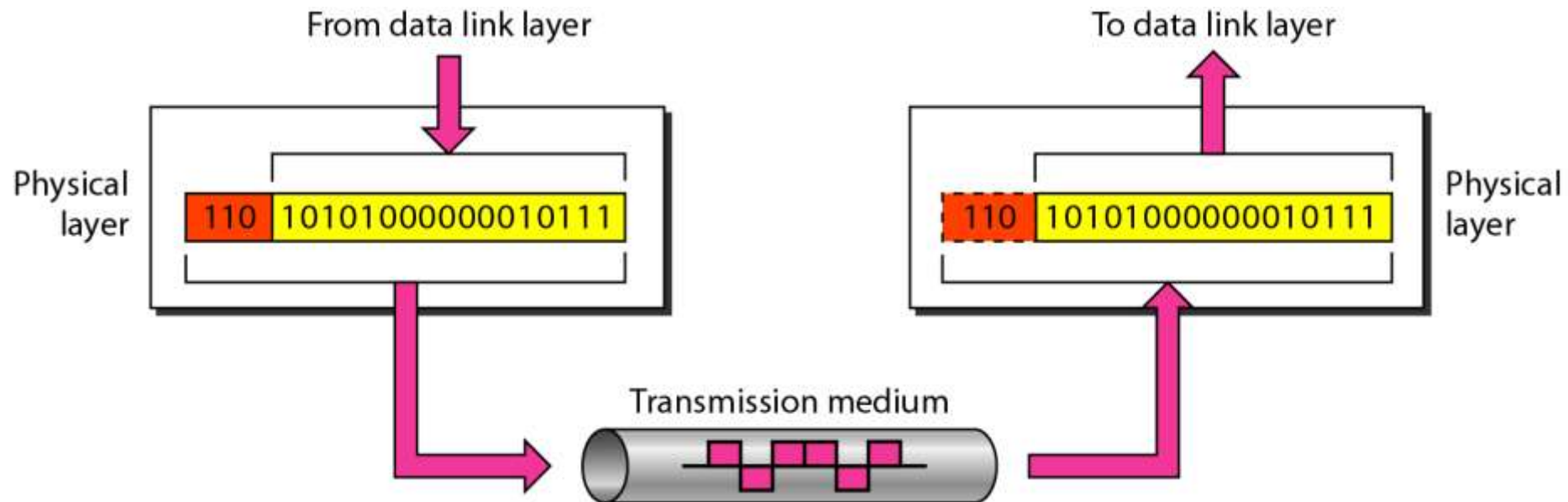
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- ▶ The upper layer of the OSI model mainly deals with the application related issues, and they are implemented only in the software.

# *Summary of layers*



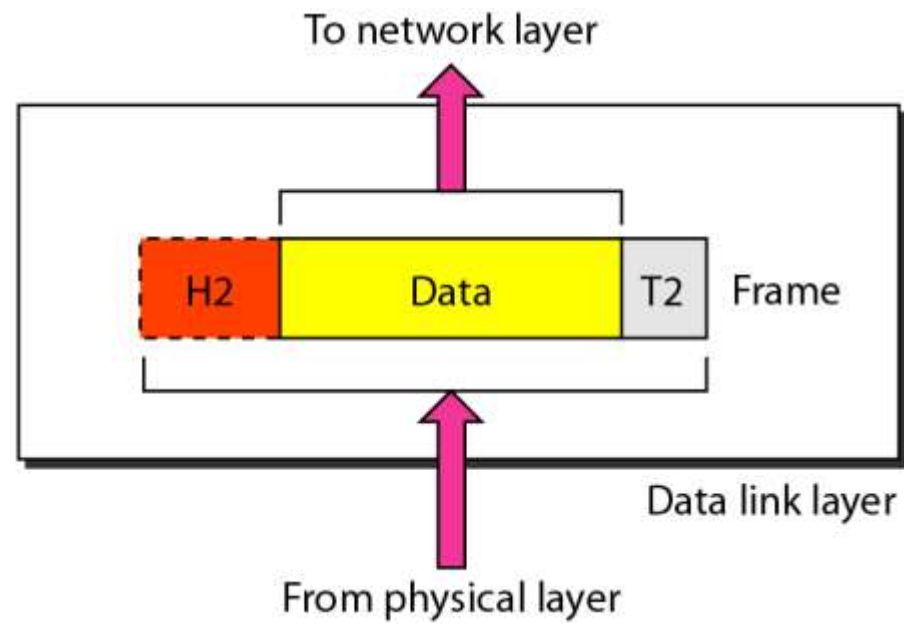
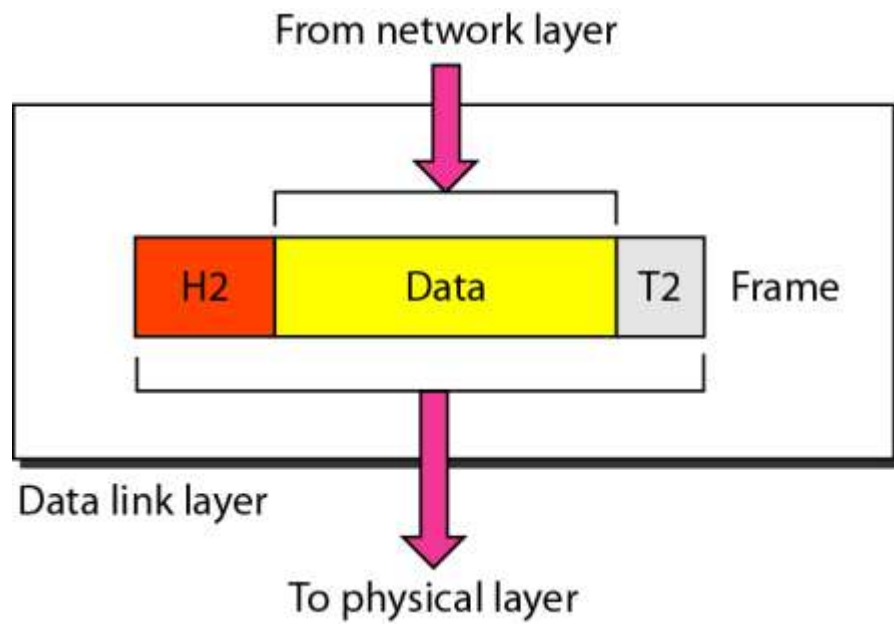
# *Physical layer*



# *Physical layer*

- ▶ The physical layer is responsible for movements of individual bits from one hop (node) to the next.
- ▶ Defines rules by which bits are passed from one system to another on a physical communication medium.
- ▶ Covers all - mechanical, electrical, functional and procedural - aspects for physical communication.

# *Data link layer*

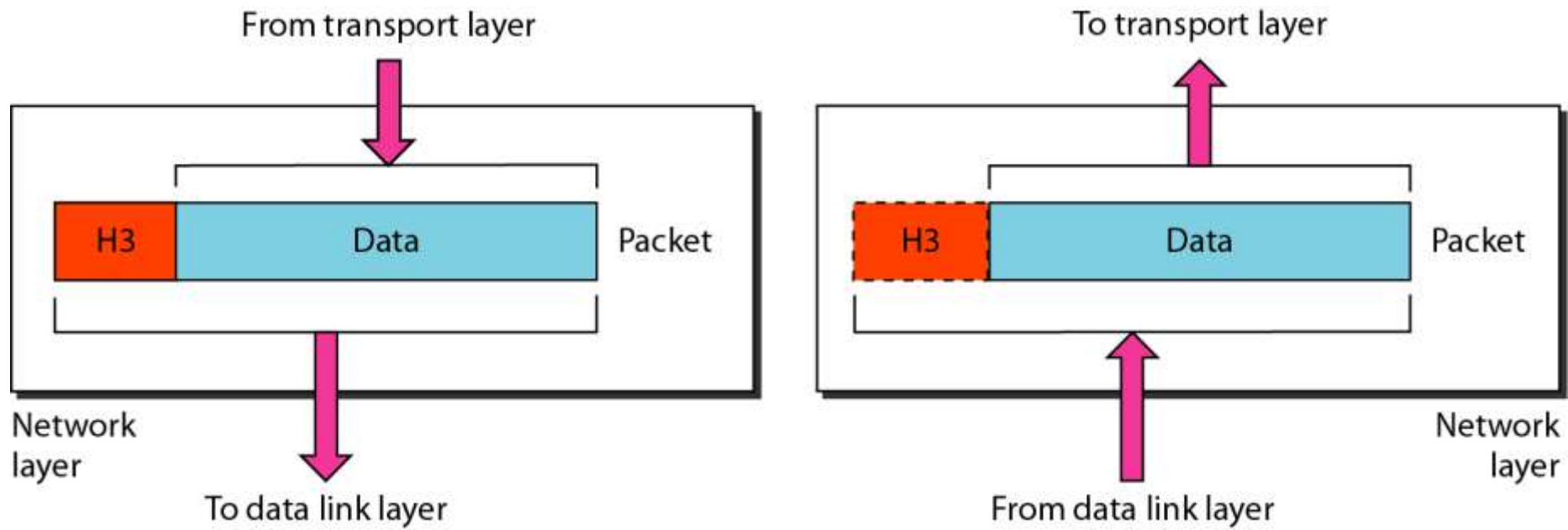




## *Data link layer*

- ▶ The data link layer is responsible for moving frames from one hop (node) to the next.
- ▶ Data link layer attempts to provide reliable communication over the physical layer interface.
- ▶ Breaks the outgoing data into frames and reassemble the received frames.
- ▶ Create and detect frame boundaries.

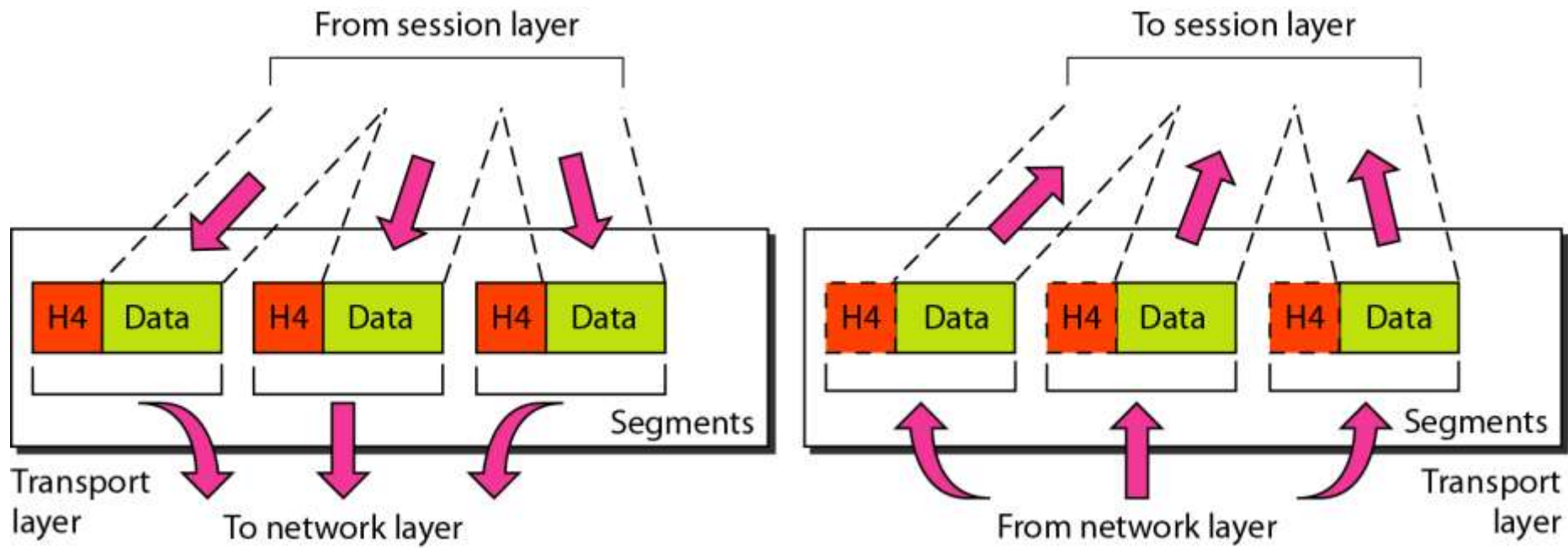
# *Network layer*



# *Network layer*

- ▶ The network layer is responsible for the delivery of individual packets from the source host to the destination host.
- ▶ Implements routing of frames (packets) through the network.
- ▶ Defines the most optimum path the packet should take from the source to the destination

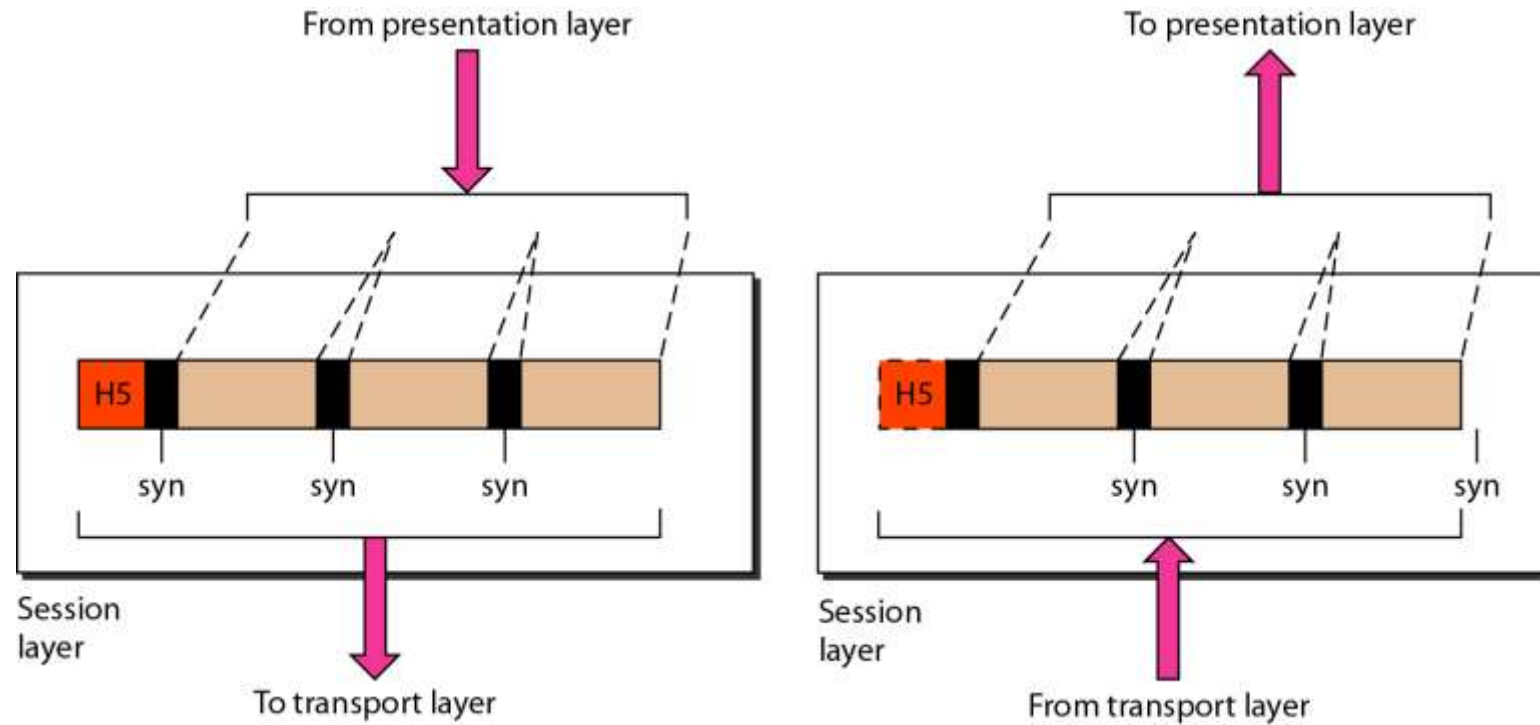
# *Transport layer*



# *Transport layer*

- ▶ The transport layer is responsible for the delivery of a message from one process to another.
- ▶ Purpose of this layer is to provide a reliable mechanism for the exchange of data between two processes in different computers.
- ▶ Ensures that the data units are delivered error free.
- ▶ Ensures that data units are delivered in sequence.
- ▶ Provides for the connection management.

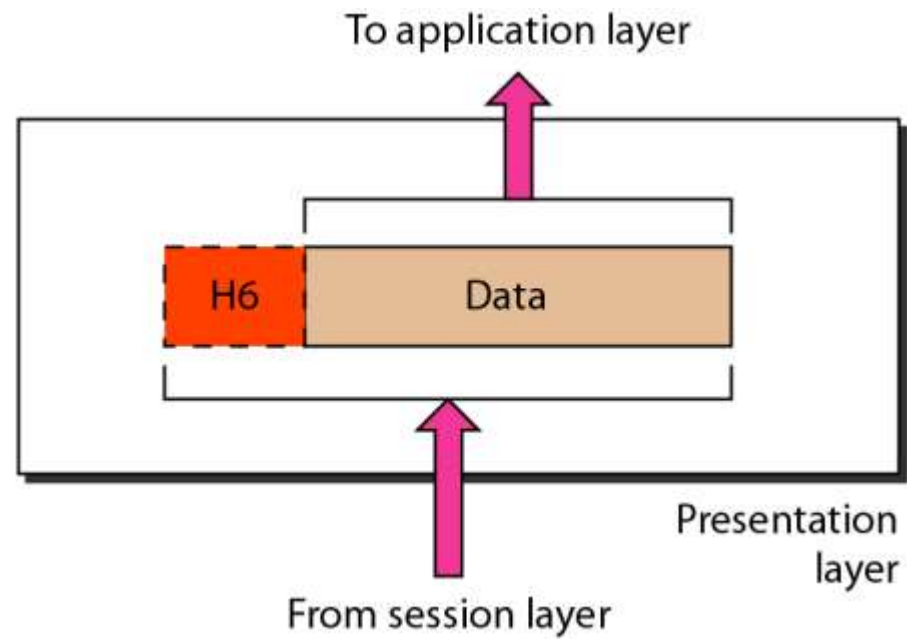
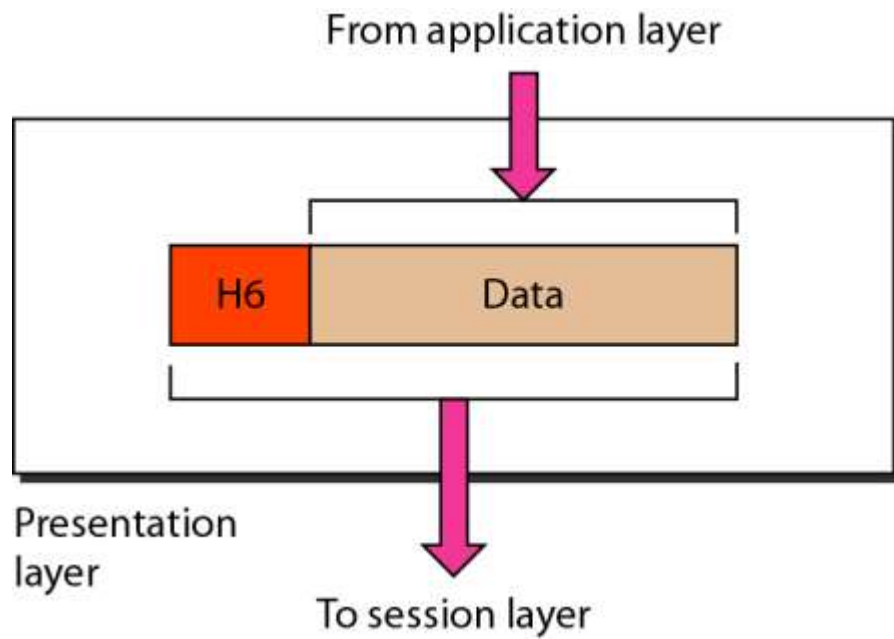
# *Session layer*



## *Session layer*

- ▶ The session layer is responsible for dialog control and synchronization.
- ▶ Session layer provides mechanism for controlling the dialogue between the two end systems. It defines how to start, control and end conversations (called sessions) between applications.
- ▶ Session layer is also responsible for terminating the connection.

# *Presentation layer*

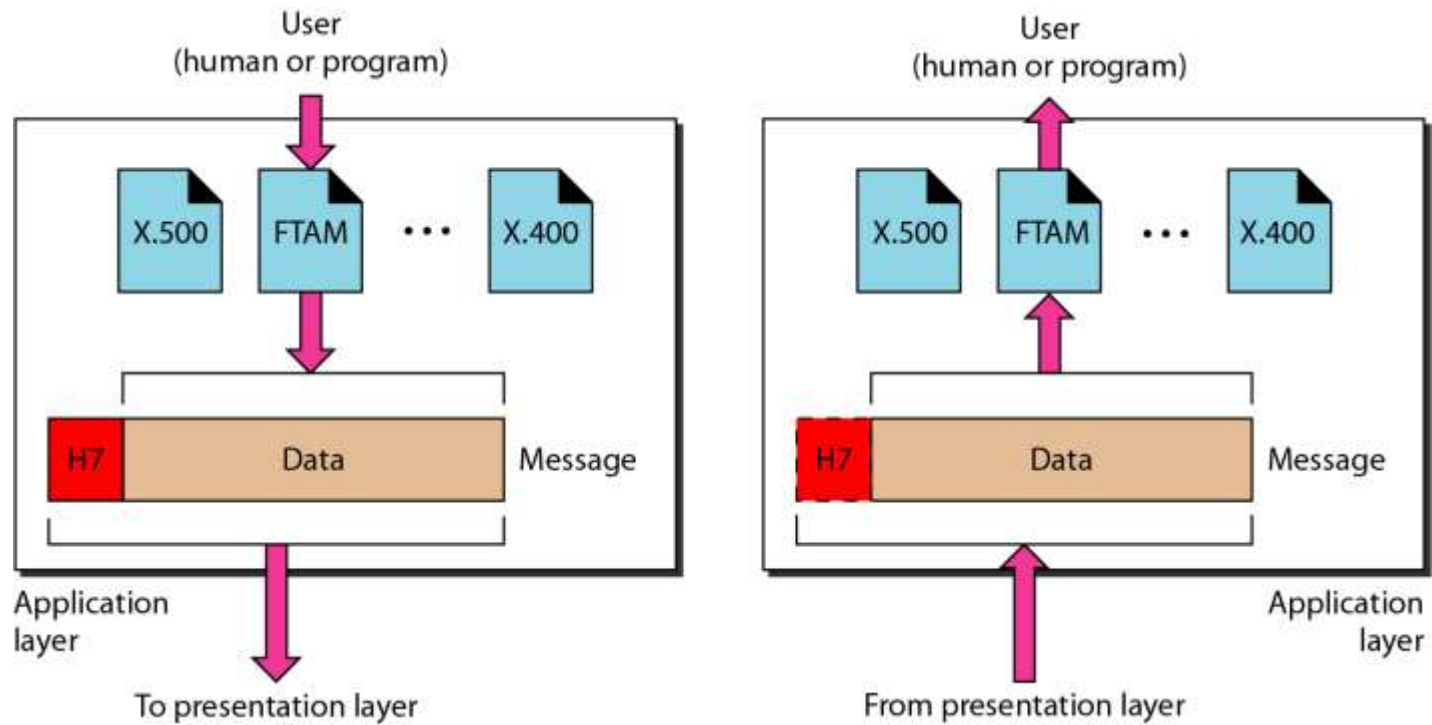




# *Presentation layer*

- ▶ The presentation layer is responsible for translation, compression, and encryption.
- ▶ Presentation layer defines the format in which the data is to be exchanged between the two communicating entities.
- ▶ Also handles data compression and data encryption (cryptography).

# *Application layer*



# *Application layer*

- ▶ The application layer is responsible for providing services to the user.
- ▶ Application layer interacts with application programs and is the highest level of OSI model.
- ▶ Application layer contains management functions to support distributed applications.
- ▶ Examples of application layer are applications such as file transfer, electronic mail, remote login etc.