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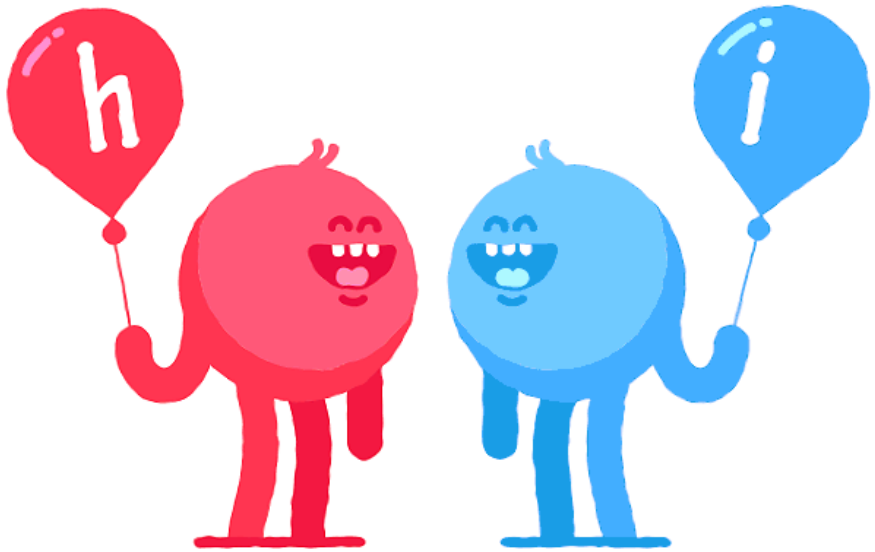

Let's study IIT!!

B.Sc.CSIT 1st Semester

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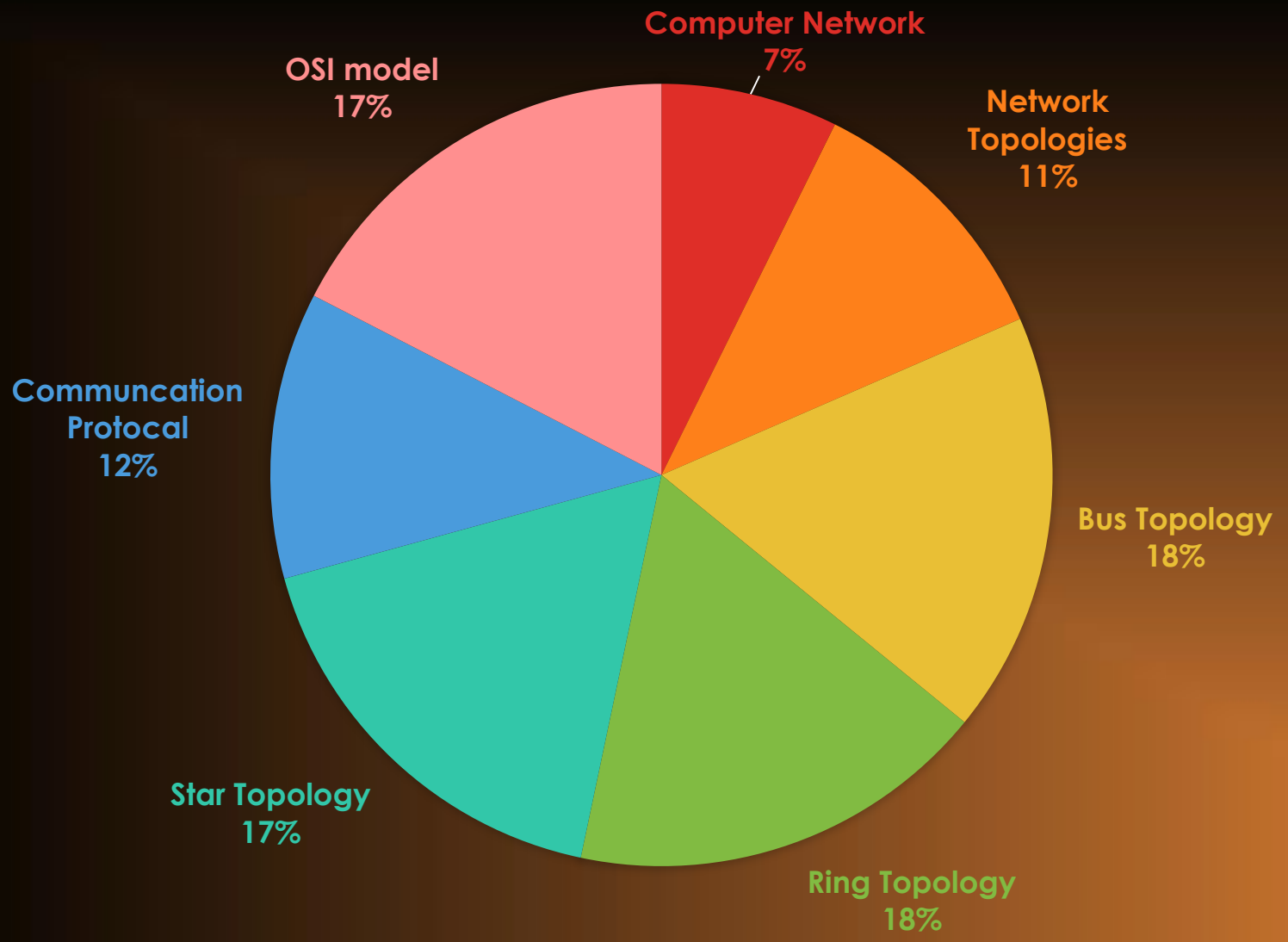
Profile

What are we studying today?

PRESENTATION PRIORITY PIE-CHART



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Computer Network

- an **interconnection** of two or more computers.
- able to **exchange information**.
- connected **copper wires, optical fibers**.
- located in a **room** and **anywhere**.

Thank you

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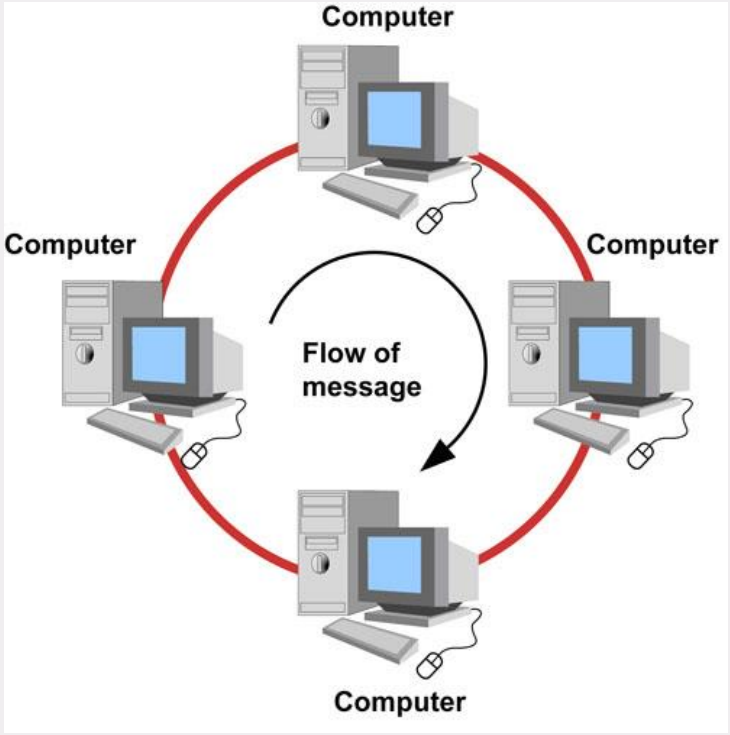
Network Topology



- **Network:-** arrangement where two or more computers/nodes **communicate** with each other.
- **Topology:-** an **arrangement** of how these **nodes will interact**.
- Hence, it is an **arrangement of two or more nodes communicating** with each other over the **internet** through a particular medium.

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01

Table of Content

Network Topologies
or
LAN topologies

❑ Arrangement of

BUS
1

Bus Topology

- ✓ Features
- ✓ Advantages
- ✓ Disadvantages

RING
2

Ring Topology

- ✓ Features
- ✓ Advantages
- ✓ Disadvantages

STAR
3

Star Topology

- ✓ Features
- ✓ Advantages
- ✓ Disadvantages

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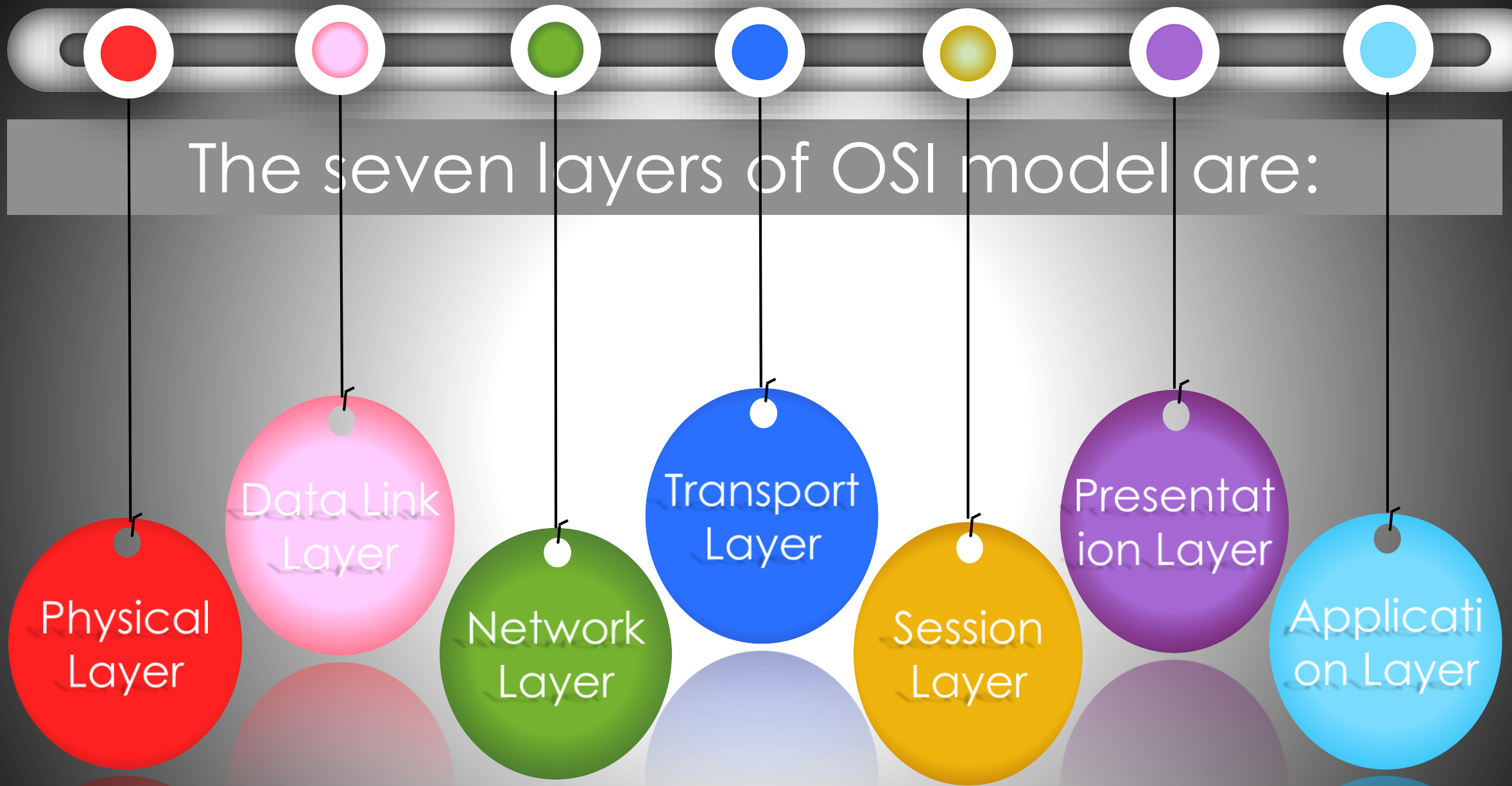
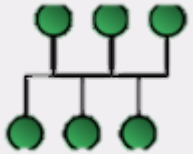
The seven layers of OSI model are:





BUS TOPOLOGY

Features

- Each node present for communication is connected to a wire.
- This wire is known as “Backbone.”
- Carries address.

Q. How are nodes connected?
A. With the help of a Bus.

OPEN

Advantages

- It is easy to use and understand.
- **Cost-effective**.
- Easy to extend the network by simply adding a repeater.

Q. What does a repeater do?
A. Boots the signal and helps for transmission to longer distance

OPEN

Disadvantages

- A single cable break will bring down the bus topology.
- Too many participants nodes results network slower.

Q. What happens if the nodes get damaged?
A. Whole network goes down.

OPEN

RING TOPOLOGY

Features

- forms a ring by connecting participants' nodes.
- uses the token concept.
- data signals travel in a circular path.

Q. What is a token concept?
A. token is transmitted along message for its correct delivery.

OPEN

Advantages

- each node has its own share of responsibility.
- high transmission speed.
- data flows in a ring structure.

Q. How faster is it in data transfer?
A. Data transfer between workstations are super high

OPEN

Disadvantages

- a single node failure bring down the whole complete network.
- very hard to find out the errors.

Q. What happens if the workstation shuts down?
A. Entire network goes down.

OPEN

STAR TOPOLOGY

Features

- forms a **star** like structure.
- each **node is directly** connected to this hub.
- has **no direct connection** between nodes.

Q. How are computer connected?

A. Connected to the central hub using twisted pair cables or optical fibrers.

OPEN

Advantages

- the single node failure does not affect the complete network.
- **higher security.**
- **work-effective.**

Q. Does single computer failure affect this network?

A.No, the central hub will continue

OPEN

Disadvantages

- failure of the central hub will disrupt the whole topology.
- very costly when compared to bus topology.

Q. What happens if the central hub shuts down?

A. Entire network goes down.

OPEN

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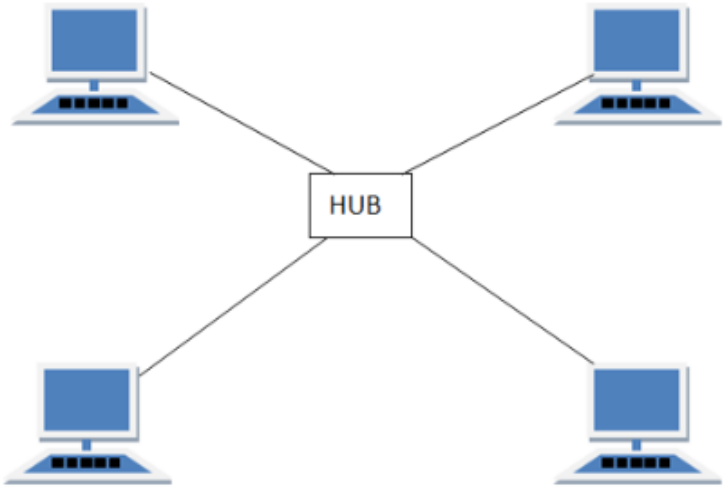
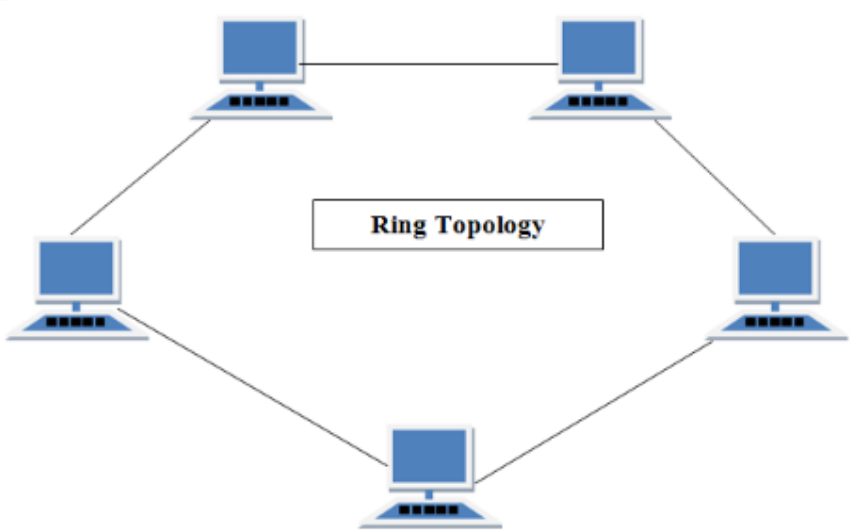
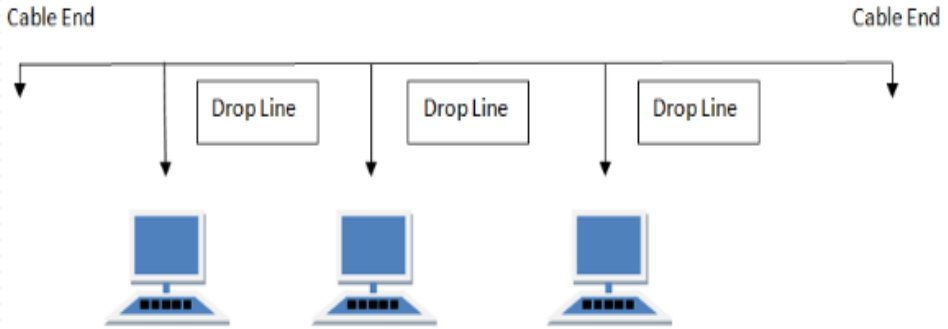


STAR TOPOLOGY



RING TOPOLOGY



BUS TOPOLOGY

What is Communication Protocol?

Fig. Communication Protocol

Communication:

Exchange of information from **one** system to **another** system.

Protocol:

A **set** of **rules** and **regulations.**

Communication Protocol:

A **set** of **rules and regulations** that allow **two or more electronic devices** to connect to **exchange the data** with **one and another**.

What is OSI Model?

-ISO (International Standards Organizations) developed 7 layers for data networks known as, OSI (Open System Interconnection) model.

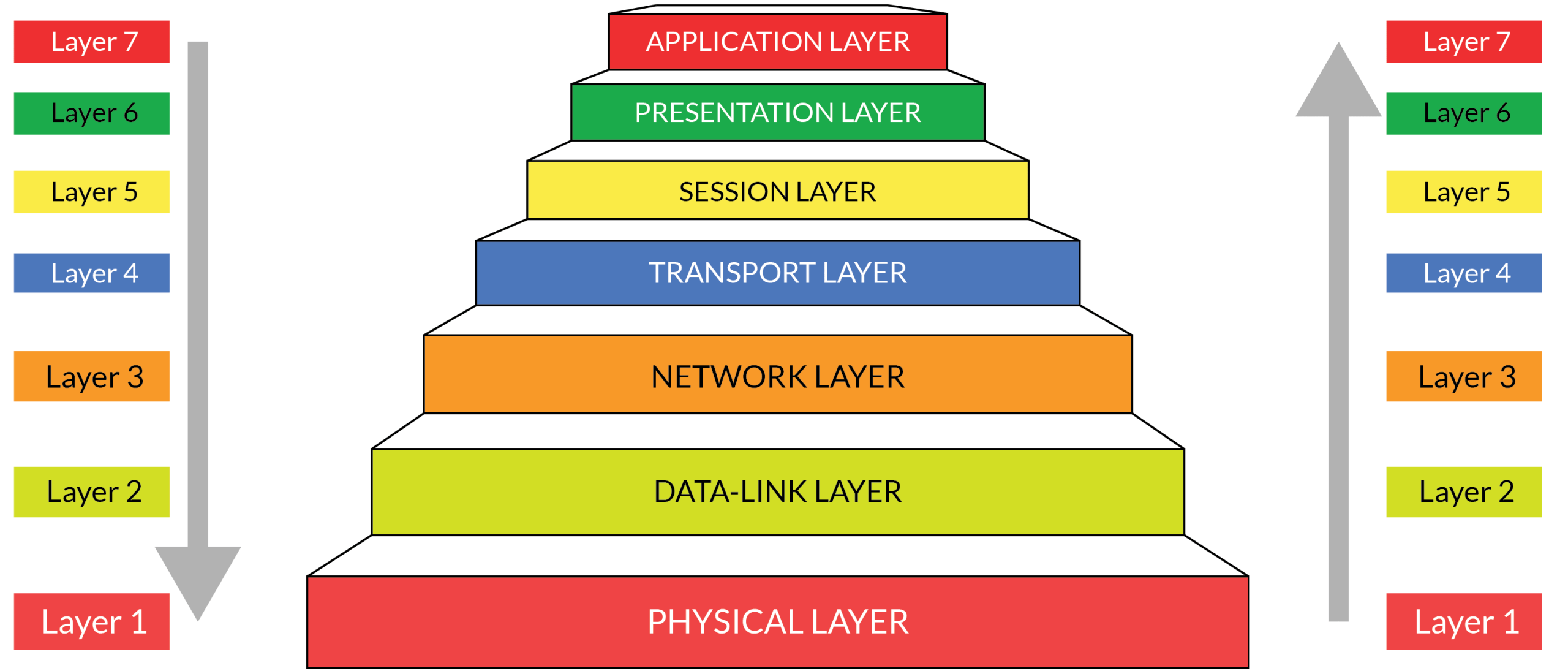
Like its name it deals with the connecting open system-open for communication with other systems.

Describes how information from a software application in one computer (source/sender/server) moves through a network medium to a software application in another computer (destination/receiver/client) .

OSI MODEL

Client Side

Server Side



OSI MODEL

1. Physical Layer

- ❑ Converts digital data to the physical medium.
- ❑ Moves data between two hosts.

2. Data Link Layer

- ❑ Provides media access and physical addressing.

3. Network Layers

- ❑ Provides logical addressing and path determination.

7. Application Layer.

- ❑ Provides a user interface.

4. Transport Layer

- ❑ Provides end-to-end connections.
- ❑ Provides reliable or unreliable delivery using logical addressing.

5. Session Layer

- ❑ Maintains distinction between data of separate applications.
- ❑ Provides dialog control between hosts.

6. Presentation Layer

- ❑ Presents data
- ❑ Translated and compresses data.

1,2,3 are called: **Hardware/Lower Layers**

4 is called: **Heart of OSI**

5,6,7 are called: **Software/Upper Layers**

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Computer Network

Network/ LAN Topologies

Communication Protocol & OSI Model

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Bus Topology — Connected using bus

Ring Topology — Ring like structure

Star Topology — Star like structure

Along with their

- ✓ Features
- ✓ Advantages
- ✓ Disadvantages

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Communication Protocol

OSI model

7 layers of OSI model

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ANY QUERIES ?

THANK YOU!!!!