# Computer Networks Assignment II

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# Question 1

### 1. What is a computer network?

A computer network is a group of interconnected computing devices (e.g., computers, servers, mobile devices) that can exchange data and share resources.

### 2. Usages of computer networks:

- Communication: Email, instant messaging, video conferencing, social networking.
- Resource Sharing: Printers, files, storage devices.
- Information Access: World Wide Web, databases.
- Distributed Computing: Grid computing, cloud computing.
- Entertainment: Online gaming, streaming media.

### 3. Layers of the OSI model and their functions:

The Open Systems Interconnection (OSI) model is a conceptual framework that divides network communication into seven layers:

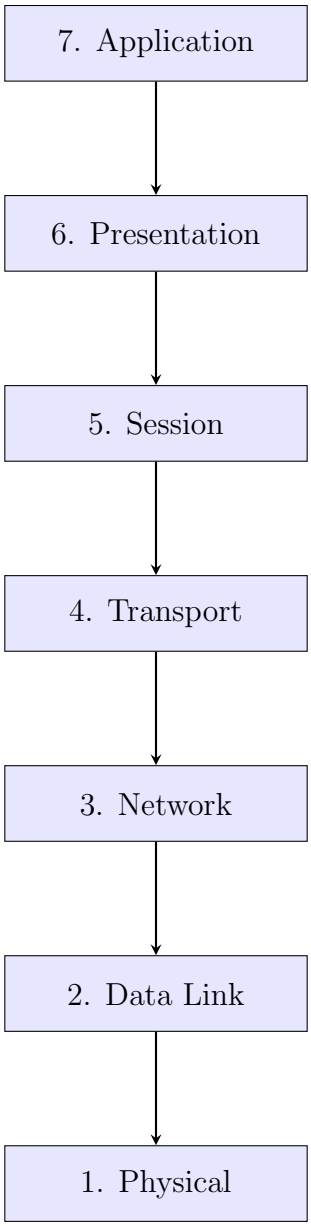


Figure 1: OSI Model Layers

- **Application Layer:** Interfaces with user applications (e.g., web browsers, email clients), providing network services.
- **Presentation Layer:** Handles data formatting, encryption, and compression for compatibility between systems.
- **Session Layer:** Manages and controls connections (sessions) between applications.
- **Transport Layer:** Ensures reliable and efficient end-to-end data delivery between applications.
- **Network Layer:** Responsible for routing data packets across multiple networks.

- **Data Link Layer:** Provides error-free transmission of data frames between nodes within a network segment.
- **Physical Layer:** Transmits raw bits over the physical medium (e.g., cables, wireless signals).

**4. Difference between OSI and TCP/IP models:**

| lightorange **OSI Model** | **TCP/IP Model** |
|---|---|
| Theoretical model | Practical implementation |
| 7 layers | 4 layers |
| Clear distinction between services, interfaces, and protocols | Overlaps between layers |
| Rarely used in real-world implementations | Widely used for Internet protocols |