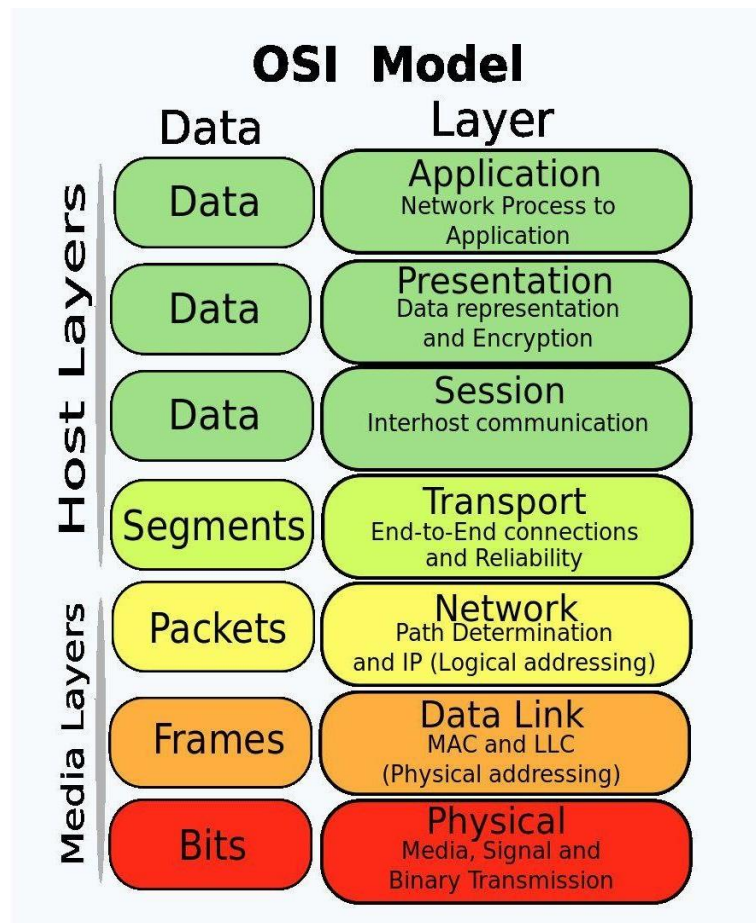


OSI Model

- OSI stands for **Open Systems Interconnection**.
- It is a 7 layer architecture with each layer having specific functionality to perform.
- All these 7 layers work collaboratively to transmit the data from one person to another across the globe.



- **Physical Layer (Layer 1):**
 - This layer is responsible for the actual physical connection between the devices.
 - The physical layer contains information in the form of **bits**.
 - It is responsible for transmitting individual bits from one node to the next.
 - When receiving data, this layer will get the signal received and convert it into 0s and 1s and send them to the Data Link layer, which will put the frame back together.

1100 0111 0011

- **Data Link Layer (Layer 2):**

- The data link layer is responsible for the node to node delivery of the message.
- The main function of this layer is to make sure data transfer is error-free from one node to another, over the physical layer.
- When a packet arrives in a network, it is the responsibility of DLL to transmit it to the Host using its MAC address.
- Data Link Layer is divided into two sub layers:
 - Logical Link Control (LLC)
 - Media Access Control (MAC)

- **Network Layer (Layer 3):**

- Network layer works for the transmission of data from one host to the other located in different networks.
- It also takes care of packet routing i.e. selection of the shortest path to transmit the packet, from the number of routes available.
- In order to identify each device on internetwork uniquely, network layer defines an addressing scheme.
- The sender & receiver's IP address distinguishes each device uniquely and universally.

- **Transport Layer (Layer 4):**

- Transport layer provides services to application layer and takes services from network layer.
- The data in the transport layer is referred to as *Segments*.
- It is responsible for the End to End Delivery of the complete message.
- The transport layer also provides the acknowledgement of the successful data transmission and re-transmits the data if an error is found.

- **Session Layer (Layer 5):**

- This layer is responsible for establishment of connection, maintenance of sessions, authentication and also ensures security.
- The layer allows the two processes to establish, use and terminate a connection.
- The session layer allows two systems to start communication with each other in half-duplex or full duplex.

- **Presentation Layer (Layer 6):**

- Presentation layer is also called the Translation layer.
- The data from the application layer is extracted here and manipulated as per the required format to transmit over the network.
- Presentation layer is responsible for the Encryption and Decryption of data.
- Data encryption translates the data into another form or code. The encrypted data is known as the cipher text and the decrypted data is known as plain text. A key value is used for encrypting as well as decrypting data.

- **Application Layer (Layer 7):**

- These applications produce the data, which has to be transferred over the network.
- This layer also serves as a window for the application services to access the network and for displaying the received information to the user.
- Application Layer is also called as Desktop Layer.
- Ex: Application - Browsers, Skype Messenger etc.