ACTIVITY 8:

Task 1: List down the layer of the OSI model

7 Layers of OSI Model

Physical Layer

- This layer deals with the physical transmission of data over the network, including the electrical, mechanical, and functional aspects of the physical medium.

Data Link Layer

- This layer provides error-free transmission of data frames between two directly connected nodes. It also handles flow control and error detection.

Network Layer

- The network layer is responsible for routing packets across different networks. It determines the best path for data transmission and handles logical addressing.

Transport Layer

- This layer ensures reliable and error-free end-to-end data delivery. It segments and reassembles data into smaller units and provides mechanisms for flow control and error recovery.

Session Layer

- The session layer establishes, manages, and terminates communication sessions between applications. It also provides synchronization and checkpointing services.

Presentation Layer

- This layer is responsible for data representation and encryption. It translates data from the application layer into a format that can be understood by the network.

Application Layer:

- Application layer interacts directly with the end-user and provides services for network applications, such as email, file transfer, and remote login.

Task 2: List down the layers of the TCP/IP model.

- **Network Interface Layer**
  - This layer corresponds to the combination of the physical and data link layers in the OSI model. It handles the transmission of data packets over the physical network medium.
- **Internet Layer**
  - The internet layer is equivalent to the network layer in the OSI model. It is responsible for addressing, routing, and fragmenting data packets across different networks.
- **Transport Layer**
  - This layer corresponds to the transport layer in the OSI model. It provides reliable and connection-oriented data delivery services. The most common protocols used in this layer are TCP (Transmission Control Protocol) and UDP (User Datagram Protocol).
- **Application Layer**
  - The application layer in the TCP/IP model combines the functionality of the session, presentation, and application layers in the OSI model. It provides services for various network applications, such as HTTP, FTP, DNS, and SMTP.

Task 3: What is the difference between the OSI and TCP/IP model?

- OSI Layer model has seven layers while TCP/IP model has four layers.
- OSI Layer model is no longer used while TCP/IP is still used in computer networking.
- To define the functionality of upper layers, OSI uses three separate layers (application, presentation, and session) while TCP/IP uses a single layer (application).
- Just like upper layers, OSI uses two separate layers (Physical and Data link) to define the functionality of bottom layers while TCP/IP uses a single layer (Link) for the same.
- To define the routing protocols and standards, OSI uses Network layer while TCP/IP uses Internet layer.
- In comparison of TCP/IP model, OSI model is well documented and explains standards and protocols in more details.

Task 4: Explain the encapsulation process.

- In a networking model, the term encapsulation refers to a process in which protocol information is added to the data. The term de-encapsulation refers to **a process in which information added through the encapsulation process is removed**. Protocol information can be added before and after the data.