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**ASSIGNMENT:** NETWORK SYSTEMS ASSIGNMENT 1

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**QUESTION** In 300 words write up on the difference between the 7-layer OSI reference model and the TCP/IP model and include the similarities.

**THE 7 LAYER OSI MODEL**

The Open Systems Interconnection (OSI) model is a conceptual model that describes how data is communicated over a network. It is divided into seven layers, each with a specific function.

* Physical: Transmits data over the network medium.
* Data link: Moves data frames between two directly connected devices.
* Network: Routes data packets across the network.
* Transport: Provides reliable end-to-end communication between applications.
* Session: Establishes, manages, and terminates communication sessions between applications.
* Presentation: Transforms data into a format that the receiving application can understand.
* Application: Provides network services to end users.

The OSI model is a valuable tool for understanding how networks work and troubleshooting network problems.

**THE TCP/IP MODEL**

The TCP/IP model is a four-layer model that describes how data is communicated over a network.

* Application layer: Provides network services to end users, such as web browsing, email, and file transfer.
* Transport layer: Provides reliable end-to-end communication between applications.
* Internet layer: Routes data packets across the network.
* Link layer: Moves data frames between two directly connected devices.

When you send data over a network using the TCP/IP model, the data is first divided into packets at the application layer. The packets are then passed down to the transport layer, where they are either given a sequence number and sent over the network using TCP or simply sent as datagrams using UDP.

**DIFFERENCES BETWEEN THE 7-LAYER OSI REFERENCE MODEL AND THE TCP/IP MODEL**

The Open Systems Interconnection (OSI) model and the Transmission Control Protocol/Internet Protocol (TCP/IP) model are two different conceptual frameworks for understanding and implementing network communication. The OSI model is a more theoretical model, while the TCP/IP model is a more practical model that is used in the real world.

The OSI model is divided into seven layers, each with a specific function. The TCP/IP model is divided into four layers, which combine some of the functionality of the OSI layers and add some new functionality.

**key differences between the two models:**

|  |  |  |
| --- | --- | --- |
| Characteristic | OSI model | TCP/IP model |
| Number of layers | It has 7 layers | It has 4 layers |
| Layers | Physical, Data link, Network, Transport, Session, Presentation, Application | Application, Transport, Internet, Link |
| Purpose | Conceptual framework for understanding network communication | Practical model used to design and implement networks |
| Adoption | Widely used in network education and research | Almost universally used in the real world |

The OSI model is a valuable tool for understanding the theoretical concepts of network communication. It is also used for troubleshooting network problems and for designing new network protocols.

The TCP/IP model is the basis for the Internet and is used by most networks today. It is a more practical model than the OSI model, and it is easier to implement.

The TCP/IP model is more widely used than the OSI model. However, the OSI model is still taught in many networking courses, and it is still used by some network professionals.

The OSI model is better for understanding the theoretical concepts of network communication, while the TCP/IP model is better for designing and implementing real-world networks.

**similarities between the OSI model and the TCP/IP model**

The OSI model and the TCP/IP model are two different conceptual frameworks for understanding and implementing network communication. However, they do share some similarities:

* Both models are layered models, meaning that they divide network communication into a series of layers, each of which performs a specific function.
* Both models use the concept of encapsulation, in which data is packaged into packets at each layer and additional information is added to the packets so that they can be routed and delivered correctly.
* Both models provide a framework for designing and implementing network protocols.
* The Physical and Data Link layers of the OSI model correspond to the Link layer of the TCP/IP model.
* The Network and Transport layers of the OSI model correspond to the Transport layer of the TCP/IP model.
* The Session, Presentation, and Application layers of the OSI model are combined into the Application layer of the TCP/IP model.