1.What is a LAN?

Local area networks (LANs) allow computers and devices that are near each other — and usually making use of the same switch or router — to connect to share files and complete tasks.

What is a WAN?

A wide area network (WAN) is used to connect computers that are not close to one another. It is possible — and almost always the case — that LANs are connected to WANs. This enables small home or office networks to connect to wider networks, such as those across state or country lines. Most WANs connect through public networks, like the telephone system, or via leased lines. The Internet, which connects computers all around the world, can be considered the largest WAN in existence.

1. 2 or more computers connected

I assume that these computers are near each other and 2 or more computer is a small amount so it must be LAN.

2. Internet

Internet connects computers all around the world, it can be considered the largest WAN existence.

3. VPN

Virtual Private Network allows administrators to take advantage of the Internet to help provide the functionality and security of private WAN connections. It is WAN.

4. Small office or a internet cafe

It is again a small place which consist of near computers connected to each other. It is obvioslu LAN.

2.The 7 Layers of the OSI

Physical (Layer 1)

OSI Model, Layer 1 conveys the bit stream - electrical impulse, light or radio signal through the network at the electrical and mechanical level. It provides the hardware means of sending and receiving data on a carrier, including defining cables, cards and physical aspects. Fast Ethernet, RS232, and ATM are protocols with physical layer components.

Data Link (Layer 2)

At OSI Model, Layer 2, data packets are encoded and decoded into bits. It furnishes transmission protocol knowledge and management and handles errors in the physical layer, flow control and frame synchronization. The data link layer is divided into two sub layers: The Media Access Control (MAC) layer and the Logical Link Control (LLC) layer. The MAC sub layer controls how a computer on the network gains access to the data and permission to transmit it. The LLC layer controls frame synchronization, flow control and error checking.

Network (Layer 3)

Layer 3 provides switching and routing technologies, creating logical paths, known as virtual circuits, for transmitting data from node to node. Routing and forwarding are functions of this layer, as well as addressing, internetworking, error handling, congestion control and packet sequencing.

Transport (Layer 4)
OSI Model, Layer 4, provides transparent transfer of data between end systems, or hosts, and is responsible for end-to-end error recovery and flow control. It ensures complete data transfer.

Session (Layer 5)
This layer establishes, manages and terminates connections between applications. The session layer sets up, coordinates, and terminates conversations, exchanges, and dialogues between the applications at each end. It deals with session and connection coordination.

Presentation (Layer 6)
This layer provides independence from differences in data representation (e.g., encryption) by translating from application to network format, and vice versa. The presentation layer works to transform data into the form that the application layer can accept. This layer formats and encrypts data to be sent across a network, providing freedom from compatibility problems. It is sometimes called the syntax layer.

Application (Layer 7)
OSI Model, Layer 7, supports application and end-user processes. Communication partners are identified, quality of service is identified, user authentication and privacy are considered, and any constraints on data syntax are identified. Everything at this layer is application-specific. This layer provides application services for file transfers, e-mail, and other network software services. Telnet and FTP are applications that exist entirely in the application level. Tiered application architectures are part of this layer.

3.Differences between TCP/ IP and UDP protocols
There are two types of Internet Protocol (IP) traffic. They are TCP or Transmission Control Protocol and UDP or User Datagram Protocol. TCP is connection oriented once a connection is established, data can be sent bidirectional. UDP is a simpler, connectionless Internet protocol. Multiple messages are sent as packets in chunks using UDP.

When we download videos from YouTube, We use TCP protocol. First, video streaming adopts pre-fetching and buffering to achieve smooth play-out. TCP provides such (network) buffer, as well as the reliable transmission guarantee for no loss of frame.

Second, TCP's bandwidth probing and congestion control will attempt to use all of the available bandwidth between server and client, fetching content as quick as possible while being friendly to other (TCP) traffic on the same links.

4.

A)If we look at table A first, we see that E goes D table. In D table E goes E. In the end, in table E, it is finished.

B)When we look at table C, it is obvious that D goes E. In the table E, D goes D and in the D table it is finished.