

# Cisco Ideathon Previous Year Networking Questions

1. You are developing a client-server application that requires communication between the client and server using a custom protocol. The server listens on port 8080 for incoming connections, and the client needs to establish a connection and send a request to the server.

Which programming language or framework would you recommend for implementing the application layer communication in this scenario?

Select the correct option from the given choices:

1. Python's socket module
2. Java's java.net package
3. JavaScript's fetch API
4. C++'s boost::asio library

Solution:

For implementing the application layer communication in the scenario described

(client-server communication using a custom protocol on port 8080), the most appropriate option among the given choices would be:

Python's socket module

Python's socket module provides a simple and straightforward way to handle sockets, making it well-suited for network communication tasks. It allows you to create sockets, establish connections, and exchange data between the client and server easily. Python is known for its ease of use and readability, which can be beneficial for developing network applications.

While the other options (Java's java.net package, JavaScript's fetch API, and C++'s boost::asio library) can also be used for network communication, Python's socket module is often considered more beginner-friendly and has good support for network programming, making it a popular choice for developing simple client-server applications like the one described.

So, the correct option is: Python's socket module.

2. Consider that John is a software engineer working on a client-server application. He needs to ensure that the client can successfully establish a TCP connection with the server for data exchange.

During the testing phase, he observes the given sequence of events:

- The client application sends a SYN packet to the server.
- The server receives the SYN packet and sends back an ACK packet with the SYN flag set.
- The client receives the SYN-ACK packet and sends an ACK packet to the server, completing the three-way handshake.

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Based on this scenario, which statement is NOT true regarding the TCP connection establishment process?

Select the correct option from the given choices:

- SYN and ACK flags are used in the TCP header.
- The client application sends a SYN packet to the server.
- The server application initiates the connection.
- Three-way handshake is used.

Solution:

The server application initiates the connection.

In the TCP three-way handshake process,

it is the client application that initiates the connection by sending a SYN packet to the server.

The server then responds with an ACK packet with the SYN flag set, and

finally, the client sends an ACK packet back to the server to complete the three-way handshake.

So, the correct option is: The server application initiates the connection.

3. In a large enterprise network, assume that a user is accessing a web application hosted on a remote server. The user's computer sends an HTTP request to the server, and the server responds with the requested web page. During this process, \_\_\_\_\_ and \_\_\_\_\_ are involved in the communication and perform specific functions.

Select the correct option from the given choices:

- Data link layer and transport layer
- Physical layer and network layer
- Network layer and application layer
- Application layer and transport layer

Solution:

Application layer and transport layer

In a large enterprise network, when a user is accessing a web application hosted on a remote server, the communication involves the application layer and the transport layer.

'Application layer': This layer is responsible for the user-facing communication and handles the high-level protocols.

In this scenario, the user's computer sends an HTTP request to the server using protocols like HTTP or HTTPS, which are part of the application layer.

'Transport layer': This layer is responsible for end-to-end communication between the client and server.

It manages the transport of data packets and provides features like error detection, flow control, and congestion control.

In this scenario, the transport layer handles the HTTP response sent by the server to the user's computer, and

it may use protocols like TCP or UDP to ensure reliable data delivery.

So, the correct option is: Application layer and transport layer.

4. You are configuring a network subnet for a large organization.

The network administrator has been assigned the task of assigning a subnet mask.

The organization has a class B network address with the default subnet mask of 255.255.0.0.

The network administrator decides to use a subnet mask of 255.255.255.0 for a particular subnet.

What is the effect of this subnet mask assignment?

Select the correct option from the given choices:

- It allows for 512 subnets with 254 hosts each.
- It allows for 256 subnets with 254 hosts each.
- It allows for 256 subnets with 256 hosts each.
- It allows for 512 subnets with 128 hosts each.

Solution:

In a class B network (e.g., 172.16.0.0 to 172.31.255.255), the default subnet mask is 255.255.0.0, which allows for 65536 ( $2^{16}$ ) IP addresses in a single subnet.

However, with the subnet mask 255.255.255.0, the third octet (8 bits) is used for subnetting, leaving 8 bits for host addresses in each subnet.

With 8 bits for hosts, there are  $2^8 = 256$  possible host addresses in each subnet (ranging from 0 to 255).

However, two addresses are reserved in each subnet - the network address (all 0's in the host part) and the broadcast address (all 1's in the host part), leaving 254 usable host addresses in each subnet.

Since there are 256 possible combinations for the third octet ( $2^8$ ), and two addresses are reserved, there can be 256 subnets with 254 hosts each.

Therefore, the correct option is: It allows for 256 subnets with 254 hosts each.

5. Assume that James is a software engineer who is developing a client-server application, that relies on TCP for communication. He wants to ensure the proper establishment of a TCP connection

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between the client and the server. In a TCP connection, the process of establishing a connection between a client and a server involves three steps.

Which option from the given choices correctly represents the order in which these steps occur?

Select the correct option from the given choices:

- SYN, SYN-ACK, ACK
- ACK, SYN, SYN-ACK
- SYN-ACK, SYN, ACK
- SYN, ACK, SYN-ACK

Solution:

SYN (Synchronize):

The client initiates the connection by sending a SYN packet to the server.

This packet contains a random initial sequence number (ISN) that the client chooses.

SYN-ACK (Synchronize-Acknowledgment):

Upon receiving the SYN packet, the server responds with a SYN-ACK packet.

The SYN-ACK packet acknowledges the receipt of the SYN packet and also contains the server's own random initial sequence number (ISN).

ACK (Acknowledgment):

Finally, the client acknowledges the receipt of the SYN-ACK packet by sending an ACK packet to the server.

The ACK packet contains the next sequence number (based on the ISN received from the server) and indicates that the connection establishment is complete.

Therefore, the correct option is: SYN, SYN-ACK, ACK.

6. Consider you are a network engineer for a large company. You are troubleshooting a problem with a user who is unable to access a website. The user's computer is connected to the company's network via a wired Ethernet adapter. You have checked the user's IP address and it is correct.

You have also checked the user's DNS settings and they are also correct. You have narrowed down the problem to the OSI Reference Model.

Which layer might be causing the problem?

Select the correct option from the given choices:

- The Data Link layer, which is responsible for error detection and correction.
- The Transport layer, which is responsible for providing reliable end-to-end delivery of data.

- The Physical layer, which is responsible for the electrical and mechanical aspects of data transmission.
- The Network layer, which is responsible for routing packets between different networks.

Solution:

The Physical layer of the OSI Reference Model is responsible for the physical transmission of data over the network medium, such as transmitting bits as electrical signals over an Ethernet cable.

It deals with the hardware aspects of data transmission, including the physical medium, connectors, and signaling. In this scenario, since the user is connected to the company's network via a wired Ethernet adapter, issues at the Physical layer could be causing the problem. This could include problems with the physical connection, such as a loose cable, damaged cable, or issues with the network interface card (NIC) of the user's computer. Issues with the Physical layer can result in the inability to establish a proper physical connection to the network, leading to difficulties in accessing websites or other network resources.

Therefore, the correct option is: The Physical layer, which is responsible for the electrical and mechanical aspects of data transmission.

7. In a network consisting of 10,000 devices, assume that a company has divided the network into 10 subnets. Each subnet is connected to the rest of the network through a \_\_\_\_\_. The company has decided to enforce a new security policy that mandates encryption for all traffic exchanged between subnets in order to encrypt the complete IP packet, including the original IP header.

To achieve this, the company opts to implement the \_\_\_ IPsec.

Select the correct option from the given choices:

- Hub-Authentication Header (AH)
- Router Transport Mode
- Router Tunnel Mode
- Hub-Encapsulating Security Payload (ESP)

Solution:

In the given scenario, the company has divided the network into 10 subnets. To enforce a new security policy that mandates encryption for all traffic exchanged between subnets and encrypt the complete IP packet, including the original IP header, the company opts to implement IPsec in Router Tunnel Mode.

IPsec (Internet Protocol Security) is a suite of protocols that provides security services for IP (Internet Protocol) data packets. It can be used to encrypt and authenticate IP packets, providing confidentiality, integrity, and authentication for network communications.

In Router Tunnel Mode, the entire original IP packet, including the original IP header, is encapsulated within a new IP packet, which is then encrypted and authenticated. This allows for secure communication between subnets as the entire packet is protected.

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The other options are not relevant in this context:

Hub-Authentication Header (AH) is an IPsec protocol that provides data integrity and authentication, but it does not encrypt the entire IP packet, including the original IP header.

Router Transport Mode encrypts only the data payload of the IP packet, not the entire IP packet including the original IP header.

Hub-Encapsulating Security Payload (ESP) is an IPsec protocol that provides data confidentiality, integrity, and authentication.

However, in this context, it does not encapsulate the entire IP packet, including the original IP header, which is required by the company's new security policy.

8. You are a network architect designing a new network infrastructure for a large corporation.

To create an accurate network model, you decide to use a graph-based approach in Python.

You implement the following code snippet to represent the network:

```
#code_start_Python  
import networkx as nx  
  
def create_network_model():  
    G = nx.Graph()  
  
    G.add_node('Router')  
    G.add_node('Switch')  
    G.add_node('Firewall')  
    G.add_node('Server')  
  
    G.add_edge('Router', 'Switch')  
    G.add_edge('Switch', 'Firewall')  
    G.add_edge('Firewall', 'Server')  
  
    return G  
  
#code_end
```

Based on the given code, what does the `create_network_model()` function return?

Select the correct option from the given choices:

- A graph object representing the network model with nodes as devices and edges as connections.
- An empty graph object.

- A list of devices in the network.
- A list of connections between the devices in the network.

Solution:

The `create_network_model()` function returns:

A graph object representing the network model with nodes as devices and edges as connections.

Explanation:

In the given Python code snippet, the function `create_network_model()` uses the `networkx` library to create a graph-based representation of a network model. The function creates a graph object 'G' using the `nx.Graph()` constructor.

It then adds four nodes to the graph, representing different devices in the network - 'Router', 'Switch', 'Firewall', and 'Server'.

Each of these nodes represents a device in the network infrastructure.

Next, the function adds three edges to the graph using the `G.add_edge()` method.

These edges represent connections between the devices in the network.

Specifically, there is a connection between 'Router' and 'Switch', 'Switch' and 'Firewall', and 'Firewall' and 'Server'. These edges define the connectivity between the devices in the network.

Finally, the function returns the graph object 'G', which represents the entire network model with nodes as devices and edges as connections.

Therefore, the correct option is:

A graph object representing the network model with nodes as devices and edges as connections.

9. Assume that a company is planning to implement a new network infrastructure and is evaluating different network models. The company requires a model that provides fault tolerance, scalability, and efficient communication between distributed systems.

Which network model will be most suitable for its requirements?

Select the correct option from the given choices:

- Peer-to-peer (P2P) network model
- Bus network model
- Client-server network model
- Hybrid network model

Solution:

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Fault Tolerance: In a client-server network model, fault tolerance can be achieved by having dedicated servers responsible for providing specific services.

If one server fails, other servers can continue to provide the required services, ensuring high availability and fault tolerance.

Scalability: Client-server network models are inherently scalable.

As the company's network grows and more clients need to be accommodated, additional servers can be added to handle the increased load, allowing for easy scalability.

Efficient Communication: In a client-server network model, the servers are responsible for handling specific tasks and services.

This centralized approach allows for efficient communication between clients and servers, as clients can request services directly from the appropriate server.

This direct communication ensures faster response times and efficient data exchange.

On the other hand:

Peer-to-peer (P2P) network model:

While P2P networks can be decentralized and allow for direct communication between nodes (peers), they might not provide the same level of fault tolerance and efficient communication as client-server models, especially in large-scale infrastructures.

Bus network model: Bus networks are simple and easy to implement, but they might lack fault tolerance and scalability, making them less suitable for large organizations and distributed systems.

Hybrid network model: Hybrid networks combine elements of different network models, including client-server and P2P.

While they can provide some level of fault tolerance and scalability, the level of efficiency might vary based on the specific implementation.

Therefore, the most suitable network model for the company's requirements is the client-server network model.

10. You are a network engineer working on a Python script to configure static on a router.

The script requires assigning a subnet mask to a specific network.

The IP address range has been defined as 192.168.100-192.168.10.255.

You are tasked with completing the code snippet below by adding the missing line to assign the appropriate subnet mask.

```
#code_start_python  
import ipaddress  
ip_network = ipaddress.IPv4Network('192.168.10.0/24')  
subnet_mask = # add the missing line of code  
print(subnet_mask)  
#code_end
```

Which line of code should be added to correctly assign the subnet mask for the given IP address range?

Select the correct option from the given choices:

- ip\_networksubnet\_mask
- ipaddress.IPv4Network\_subnet\_mask
- ipaddress.ip\_network\_subnet\_mask.
- ip\_network.netmask

Solution:

The correct line of code to assign the subnet mask for the given IP address range is:

ip\_network.netmask

The netmask attribute of the IPv4Network object in the ipaddress module provides the subnet mask for the specified IP network.

11. Consider you are a network engineer for a large company.

You are troubleshooting a problem with a user who is unable to access a website.

The user's computer is connected to the company's network via a \_\_\_\_\_.

You have checked the user's IP address and it is correct. You have also checked the user's DNS settings and they are also correct.

The most likely cause of the problem is that the \_\_\_\_\_ layer of the OSI Reference Model is not functioning correctly.

Select the correct option from the given choices:

- Wireless Wi-Fi adapter, physical layer
- Wired Ethernet adapter, network layer

- Wireless Wi-Fi adapter, transport layer
- Wired Ethernet adapter, data link layer

Solution:

The correct option is:

Wired Ethernet adapter, data link layer

The data link layer is responsible for providing reliable communication between devices on the same local network (LAN) and is involved in addressing and error detection.

If the user's wired Ethernet adapter, which operates at the data link layer, is not functioning correctly, it could be the likely cause of the problem in accessing the website.

12. Assume that you are setting up a small office network that consists of a router, switch, and several computers. The router is connected to the internet, and the switch connects the computers within the office. You want to ensure that all the computers in the office can access the internet.

Which configuration will you use in this scenario?

Select the correct option from the given choices:

- Connect all the computers directly to the switch.
- Connect the switch to the router, and then connect the computers to the switch.
- Connect the computers directly to the internet without using the router or switch.
- Connect all the computers directly to the router.

Solution:

Correct option:

Connect the switch to the router, and then connect the computers to the switch.

This configuration allows the router to manage the connection to the internet while the switch enables local network

communication among the computers within the office.

13. Assume that you have been hired as a network consultant for a multinational with offices located in different countries. The company wants to establish a reliable and efficient network infrastructure to connect all its offices. As part of your analysis, you need to match the given network types with their corresponding characteristics:

Characteristics:

A. Typically owned and managed by a single organization.

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- B. Spans across multiple buildings or a larger geographical area such as a city or metropolitan area.
- C. Covers the largest geographical area, often spanning across countries or continents.
- D. Covers a small geographical area such as a single building or campus.

Network Types:

LAN (Local Area Network)

MAN (Metropolitan Area Network)

WAN (Wide Area Network)

WLAN (Wireless Local Area Network)

Analyze the given choices and select the correct option.

Select the correct option from the given choices:

LAN(Local Area Network)-(C)

MAN (Metropolitan Area Network) - (D)

WAN (Wide Area Network) - (B)

WLAN (Wireless Local Area Network) - (A)

LAN (Local Area Network) - (B)

MAN (Metropolitan Area Network) - (C)

WAN (Wide Area Network) - (A)

WLAN (Wireless Local Area Network) - (D)

LAN (Local Area Network) - (A)

MAN (Metropolitan Area Network) - (B)

WAN (Wide Area Network) - (C)

WLAN (Wireless Local Area Network) - (D)

LAN (Local Area Network) - (D)

MAN (Metropolitan Area Network) - (B)

WAN (Wide Area Network) - (C)

WLAN (Wireless Local Area Network) - (A)

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Solution:

The correct option is:

- LAN (Local Area Network) - (D)
- MAN (Metropolitan Area Network) - (B)
- WAN (Wide Area Network) - (C)
- WLAN (Wireless Local Area Network) - (A)

Here's the explanation:

LAN (Local Area Network) covers a small geographical area such as a single building or campus.  
(Characteristics D)

MAN (Metropolitan Area Network) spans across multiple buildings or a larger geographical area such as a city or metropolitan area.

(Characteristics B)

WAN (Wide Area Network) covers the largest geographical area, often spanning across countries or continents. (Characteristics C)

WLAN (Wireless Local Area Network) is a type of network that is typically owned and managed by a single organization.

(Characteristics A)

14. Assume you are troubleshooting a network connectivity issue between two computers. After performing some tests, you find that the computers can communicate with each other on the local network but not on the internet. You suspect a possible issue with TCP.

Which option from the given choices denotes the likely cause of the problem?

Select the correct option from the given choices:

- Firewall blocking outgoing traffic
- Faulty Ethernet cable.
- Incorrect subnet mask configuration.
- Improper DNS server settings.

Solution:

The correct option is:

Firewall blocking outgoing traffic.

If the computers can communicate with each other on the local network but not on the internet,

it suggests that local network connectivity is fine,

but there might be an issue with outgoing traffic being blocked by a firewall.

Firewalls can be configured to block certain types of traffic, including outgoing traffic to the internet.

This can prevent the computers from accessing the internet even though they can communicate with each other locally.

15. In a large corporate network, assume that a user in the Sales department is experiencing connectivity issues. The user is unable to access resources on the internet and is also unable to connect to any devices within the local network. The user's computer is configured with the correct IP address, subnet mask, and default gateway. Which option from the given choices denotes the most likely cause of this issue?

Select the correct option from the given choices:

- Network congestion due to high data traffic.
- Network address conflict.
- Misconfigured VLAN settings.
- Faulty Ethernet cable connection.

Solution:

The correct option is:

Network address conflict

If the user's computer is configured with the correct IP address, subnet mask, and default gateway, but they are unable to access resources on the internet and cannot connect to devices within the local network, it suggests that there might be a network address conflict.

This occurs when two devices on the network have the same IP address,

causing communication problems and connectivity issues.

The conflict could prevent the user's computer from reaching both local and internet resources.

16. Assume that a medium-sized enterprise is planning to implement a wireless network infrastructure that can support a high volume of simultaneous connections, provide seamless mobility for employees, and ensure robust security. The network should cover multiple floors in an office building and accommodate a variety of devices, including laptops, smartphones, and IoT devices. Which wireless networking standard will be the most suitable choice for this complex scenario?

Select the correct option from the given choices:

- 802.11g is a wireless networking standard that operates in the 2.4 GHz band and supports data rates up to 54 Mbps.
- 802.11n is a wireless networking standard that uses MIMO to achieve speeds of up to 600 Mbps.
- 802.11ax is the Wi-Fi standard that operates in both the 2.4 GHz and 5 GHz bands.

- 802.11b is a wireless networking standard that operates in the 2.4 GHz band and supports data rates up to 11 Mbps.

Solution:

The correct option is:

802.11ax is the Wi-Fi standard that operates in both the 2.4 GHz and 5 GHz bands.

802.11ax, also known as Wi-Fi 6, is the latest generation of Wi-Fi technology designed to handle high-density environments with a large number of devices and high demand for bandwidth.

It provides improved efficiency, better performance, and enhanced security features compared to previous Wi-Fi standards.

Wi-Fi 6 supports a high volume of simultaneous connections, offers seamless mobility, and ensures robust security.

It is well-suited for complex scenarios such as the one described, where multiple floors, various devices, and reliable connectivity are required.

17. Match the following network layers to their corresponding functions in the given scenario.

You are a network administrator for a large university campus network.

The network consists of multiple interconnected buildings, each housing various departments and student dormitories. One day, you receive complaints from users in different buildings about slow internet connectivity. To diagnose the issue, you decide to analyze the network architecture and its corresponding functions at different layers.

Match the network layers with their corresponding functions in this scenario.

Functions:

1. Responsible for dividing data into packets for transmission.
2. Handles routing and forwarding of data between buildings.
3. Manages logical addressing and translates IP addresses to physical MAC addresses.
4. Provides reliable and error-free data delivery.

Network Layers:

- a. Data link Layer
- b. Network Layer
- c. Transport Layer
- d. Physical Layer

Select the correct option from the given choices:

- Function 1: d, Function 2: b, Function 3: c, Function 4: a
- Function 1: b, Function 2: d, Function 3: a, Function 4: c
- Function 1: c, Function 2: d, Function 3: a, Function 4: b
- Function 1: a, Function 2: b, Function 3: c, Function 4: d

Solution:

The correct option is:

Function 1: a, Function 2: b, Function 3: c, Function 4: d

Here's the explanation:

- Function 1: Responsible for dividing data into packets for transmission.

This corresponds to the Data Link Layer (a) as it frames data into frames for transmission.

- Function 2: Handles routing and forwarding of data between buildings.

This corresponds to the Network Layer (b) as it is responsible for routing data between different networks.

- Function 3: Manages logical addressing and translates IP addresses to physical MAC addresses.

This corresponds to the Data Link Layer (c) as it deals with MAC addresses and can perform address resolution.

- Function 4: Provides reliable and error-free data delivery.

This corresponds to the Transport Layer (d) as it is responsible for ensuring data reliability and error correction.

18. Assume you are a network administrator for a large company.

You are troubleshooting a problem with a user who is unable to access the company's intranet.

The user's computer is connected to the company's network via a \_\_\_\_\_,

but the user's computer is not receiving an IP address.

The most likely cause of the problem is that the \_\_\_\_\_ is not configured correctly.

Select the correct option from the given choices:

- Dynamic Host Configuration Protocol (DHCP) Server, Dynamic Host Configuration Protocol (DHCP) Server.

- Domain Name System (DNS) Server, Wireless Wi-Fi Adapter
- Wired Ethernet Adapter, Dynamic Host Configuration Protocol (DHCP) server.
- Wireless Wi-Fi Adapter, Wireless Wi-Fi Adapter.

Solution:

The correct option is:

Wired Ethernet Adapter, Dynamic Host Configuration Protocol (DHCP) server.

Explanation:

- The user's computer is connected to the company's network via a Wired Ethernet Adapter, indicating the type of network connection.
- The most likely cause of the problem is that the Dynamic Host Configuration Protocol (DHCP) server is not configured correctly.

DHCP is responsible for assigning IP addresses to devices on the network, and if the DHCP server is not functioning properly, devices like the user's computer won't receive an IP address, leading to connectivity issues.

19. In a network communication scenario, assume that a user wants to access a web server hosted on a remote network.

In order to establish a successful connection, the user's application data must traverse multiple layers of the OSI reference model.

The process starts at the \_\_\_\_\_ layer, where the user's application sends a request to the \_\_\_\_\_ layer.

The \_\_\_\_\_ layer then adds the necessary addressing and routing information to the request and passes it to the \_\_\_\_\_ layer.

Finally, at the \_\_\_\_\_ layer, the request is broken into smaller segments and encapsulated into packets for transmission over the network.

Select the correct option from the given choices:

- Application Layer, Transport Layer, Network Layer, Data Link Layer
- Data Link Layer, Presentation Layer, Session Layer, Physical Layer, Application Layer.
- Application Layer, Presentation Layer, Network Layer, Session Layer, Transport Layer.
- Data Link Layer, Session Layer, Network Layer, Transport Layer.

The correct option is:

Application Layer, Transport Layer, Network Layer, Data Link Layer

20. In a distributed system, a client application needs to retrieve data from a remote server using the HTTP protocol.

The server sends the response in JSON format. The client application wants to parse the JSON response and extract specific information.

Which of the following options correctly describes the steps the client application needs to perform?

Select the correct option from the given choices:

- The client application should establish a TCP connection with the server, send an HTTP request, receive the JSON response, and use a JSON parsing library to extract the desired information.
- The client application should establish a UDP connection with the server, send an HTTP request, receive the JSON response, and use a JSON parsing library to extract the desired information.
- The client application should establish a UDP connection with the server, send an FTP request, receive the JSON response, and use a JSON parsing library to extract the desired information.
- The client application should establish a TCP connection with the server, send an FTP request, receive the JSON response, and use a JSON parsing library to extract the desired information.

Solution:

The correct option is:

The client application should establish a TCP connection with the server, send an HTTP request, receive the JSON response, and use a JSON parsing library to extract the desired information.

In a distributed system, when a client application wants to retrieve data from a remote server using the HTTP protocol and the response is in JSON format, the following steps are typically taken:

**Establish a TCP Connection:** The client application initiates a TCP (Transmission Control Protocol) connection with the remote server.

**TCP ensures reliable communication by providing error-checking and retransmission of lost packets.**

**Send an HTTP Request:** Once the TCP connection is established, the client application sends an HTTP (Hypertext Transfer Protocol) request to the server.

The HTTP request specifies the desired resource (such as a specific URL) and any required headers or parameters.

**Receive the JSON Response:** The server processes the HTTP request and sends back an HTTP response.

This response typically contains the requested data, such as the JSON-formatted information.

The data is transmitted over the established TCP connection.

Use a JSON Parsing Library: To extract specific information from the JSON response, the client application uses a JSON parsing library.

This library helps parse the JSON data structure and convert it into a format that the client application can work with, such as dictionaries or objects in Python.

Extract Desired Information: Once the JSON response is parsed, the client application can access and extract the desired information using programming constructs.

For example, if the JSON contains key-value pairs, the client application can access specific values by their corresponding keys.

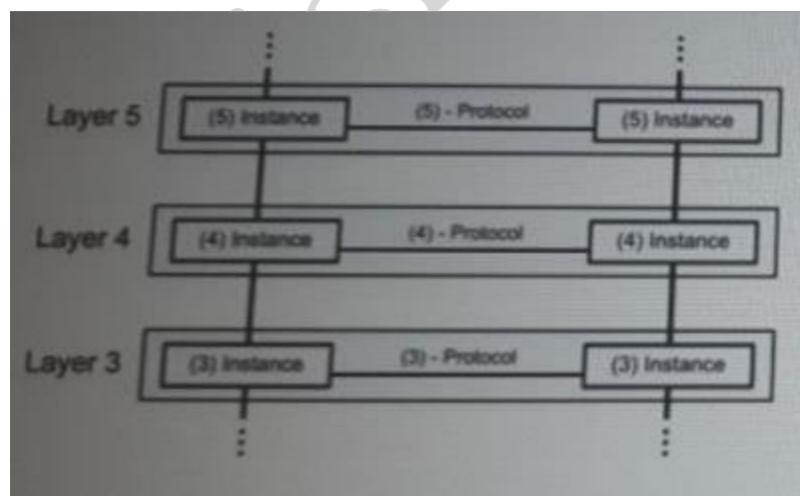
The mentioned steps ensure that the client application can effectively communicate with the remote server, retrieve the required data in JSON format, and process the data using a JSON parsing library.

This approach is widely used in web-based applications to exchange information between clients and servers over the HTTP protocol.

Bonus Questions:

1. The following diagram depicts the communication of a conceptual model whose function is to standardize the communication function of a telecommunication system. This is done without any regard to its underlying internal structure or technology.

Identity the model from the diagram.



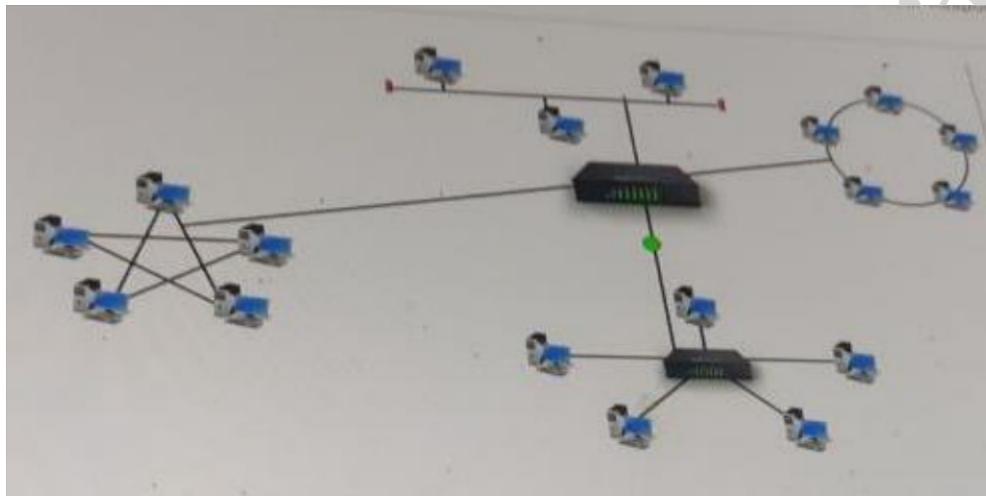
Choose the best option:

- OSI Model

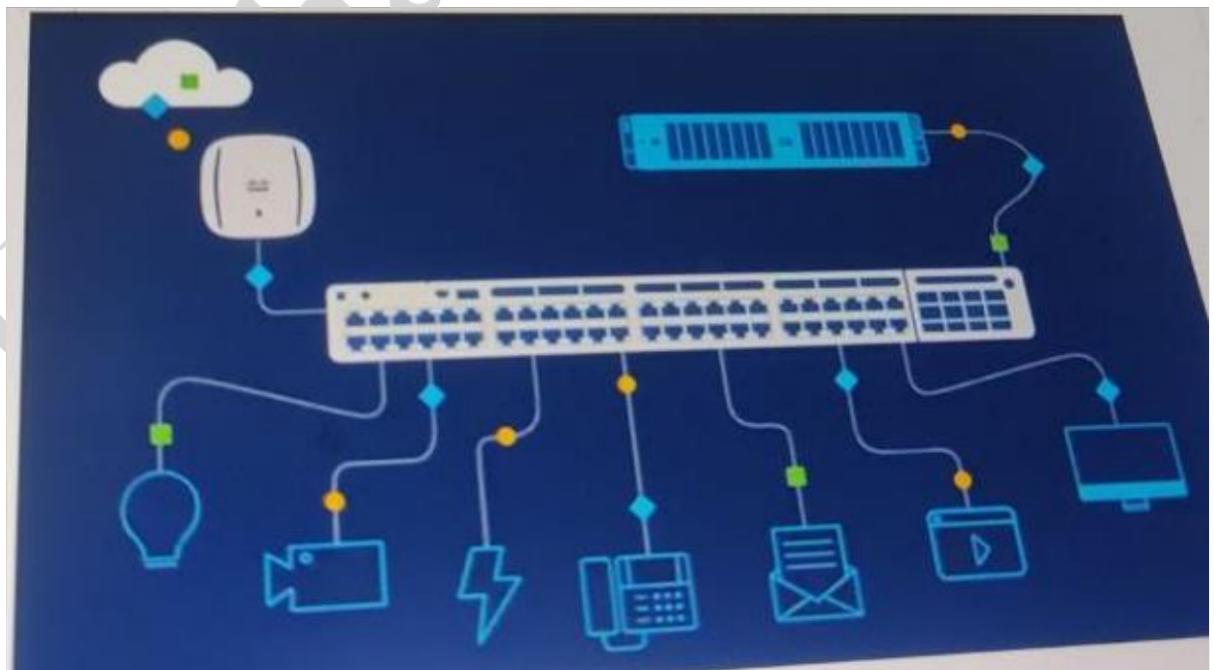
- TCP Model
- ONF Model
- None of these

2. Assume that you are tasked with setting up a small office network for a company. As part of the setup, you need to ensure that each computer in the office can connect to the network and communicate with each other. While configuring the network, you come across a component that plays a crucial role in enabling network connectivity at the physical level. Which device operates at the Physical layer of the OSI model in this network setup? Analyze the given choices and select the correct option.

Select an option:



- 



-

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