Lecture 1 Activity: Network Type Identification
(Moderate Learner)
Case Study: Identifying Network Types in Real-Life Scenarios
Scenario: You are a network technician at a training institute. You've been asked to help new IT interns understand different types of computer networks—LAN (Local Area Network), WAN (Wide Area Network), PAN (Personal Area Network), and MAN (Metropolitan Area Network)—by evaluating real-world examples.

Question 1: Scenario-Based Identification
A family has multiple devices (laptops, tablets, smart TVs, and phones) connected via a wireless router in their house. What type of network is this?
Answer:
LAN (Local Area Network) – Covers a small geographical area, like a home.

Question 2: Scenario-Based Identification
An executive is using Bluetooth to transfer files between their phone and laptop while on a flight. What type of network is in use?
Answer:
PAN (Personal Area Network) – Typically used for personal devices nearby.

Question 3: Scenario-Based Identification
A university campus has a network infrastructure connecting multiple buildings across several blocks within the city. What type of network is this?
Answer:
MAN (Metropolitan Area Network) – Spans a city or large campus.

Question 4: Multiple Choice
Which of the following best describes a Wide Area Network (WAN)?
A. A network within a single room
B. A network spanning a city
C. A network connecting offices in different countries
A Bluetooth headset connected to a phone
Answer: C. A network connecting offices in different countries

Question 5: True or False
A Local Area Network (LAN) typically requires an ISP (Internet Service Provider) to function.
Answer:
False – A LAN operates internally and doesn't need an ISP unless it connects to the internet.

Question 6: Match the Network Type to the Scenario

Scenario	Network Type
A smartwatch syncing with a mobile phone	A
Offices in London and Tokyo are connected via private lines	B
Multiple computers in a school's computer lab	C

Scenario	Network Type
A city-wide public Wi-Fi network	D

Options:
A. PAN
B. WAN
C. LAN
D. MAN

Solution:

- Smartwatch syncing → A (PAN)
- Offices in different countries → B (WAN)
- School lab → C (LAN)
- City Wi-Fi → D (MAN)

Question 7: Fill in the Blank
A _____ network is most suitable for connecting devices like smartphones, tablets, and smartwatches that are owned and used by a single person.
Answer:
PAN (Personal Area Network)

Question 8: Scenario-Based Identification
A company uses leased lines and satellites to connect data centers across continents. What type of network are they using?
Answer:
WAN (Wide Area Network) – Spans large geographical distances using public or leased infrastructure.

Question 9: Application-Based
Why might a business prefer a MAN over a WAN if it operates in only one city?
Answer:
Because a MAN is optimized for high-speed connectivity within a city. It's faster and more cost-effective than a WAN when operations are geographically concentrated.

Lecture 1 Activity: Protocol Sorting Exercise
(Slow Learner)
Case Study: Protocol Sorting Exercise
Scenario: You are working as a network intern at a managed IT service provider. Your supervisor assigns you a task to categorize various protocols (TCP, IP, FTP, HTTP, SMTP) based on the OSI model layers they operate on. This is a core part of understanding how data travels through a network stack.

Reference: Common Protocols and Their OSI Layers

Protocol	Description	OSI Layer
FTP	File transfer	Application
HTTP	Web traffic	Application
SMTP	Email sending	Application
TCP	Reliable transport of data	Transport

Protocol	Description	OSI Layer
IP	Logical addressing & routing	Network

Question 1: Which layer of the OSI model does the IP protocol operate on?
A. Data Link
B. Network
C. Transport
D. Application
Answer: B. Network

Question 2: Matching Exercise
Match the protocol to the correct OSI layer:

Protocol	OSI Layer
TCP	A. Application
SMTP	B. Transport
FTP	C. Network

Answer:

- TCP → B. Transport
- SMTP → A. Application
- FTP → A. Application

Question 3: True or False
HTTP and FTP both operate at the Transport layer of the OSI model.
Answer:
False – They operate at the Application layer; however, they use Transport layer protocols like TCP.

Question 4 Fill in the Blank
The _____ protocol is responsible for the reliable delivery of packets and operates at the Transport layer.
Answer:
TCP (Transmission Control Protocol)

Question 5: Scenario-Based
You're troubleshooting an issue where emails are not sending. The issue likely involves which OSI layer and protocol?
Answer:
Application Layer, using the SMTP (Simple Mail Transfer Protocol).

Question 6: Drag and Drop (Written Version)
Group these protocols by their OSI layer:
Protocols: TCP, IP, HTTP, SMTP, FTP
Group them under:

- Application Layer
- Transport Layer

- Network Layer

Answer:

- Application Layer: HTTP, FTP, SMTP
- Transport Layer: TCP
- Network Layer: IP

Question 7: Short Answer
What is the main difference between TCP and IP in terms of OSI layers and responsibilities?
Answer:

- TCP (Transport Layer) ensures reliable delivery, error checking, and sequencing of data.
- IP (Network Layer) handles routing and logical addressing of packets between devices.

Question 8: Protocol Pairing
Which transport protocol do FTP and HTTP typically rely on for reliable data transfer?
Answer:
TCP

Question 9: Identify the Layer
At which OSI layer would you typically troubleshoot a web page that fails to load, assuming the network is physically connected and the IP address is reachable?
Answer:
Application Layer – Check protocols like HTTP or DNS.