



Connecting LANs

CONNECTING DEVICES

In this section, we divide connecting devices into five different categories based on the layer in which they operate in a network.

Topics discussed in this section:

Passive Hubs

Active Hubs

Bridges

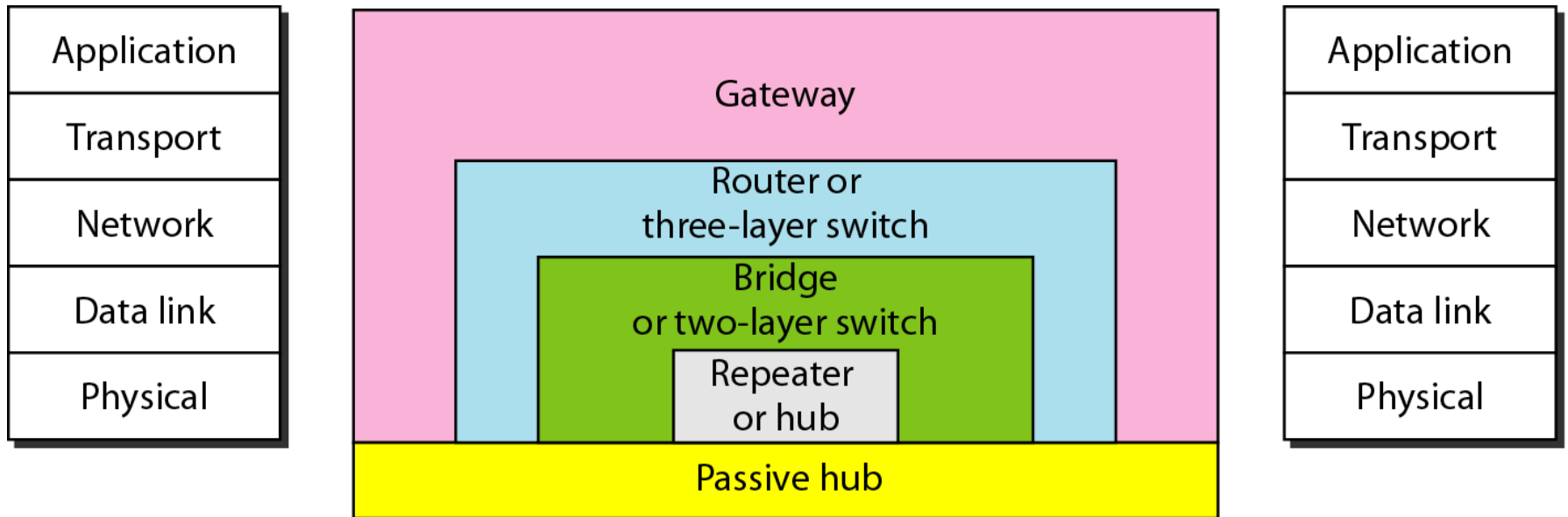
Two-Layer Switches

Routers

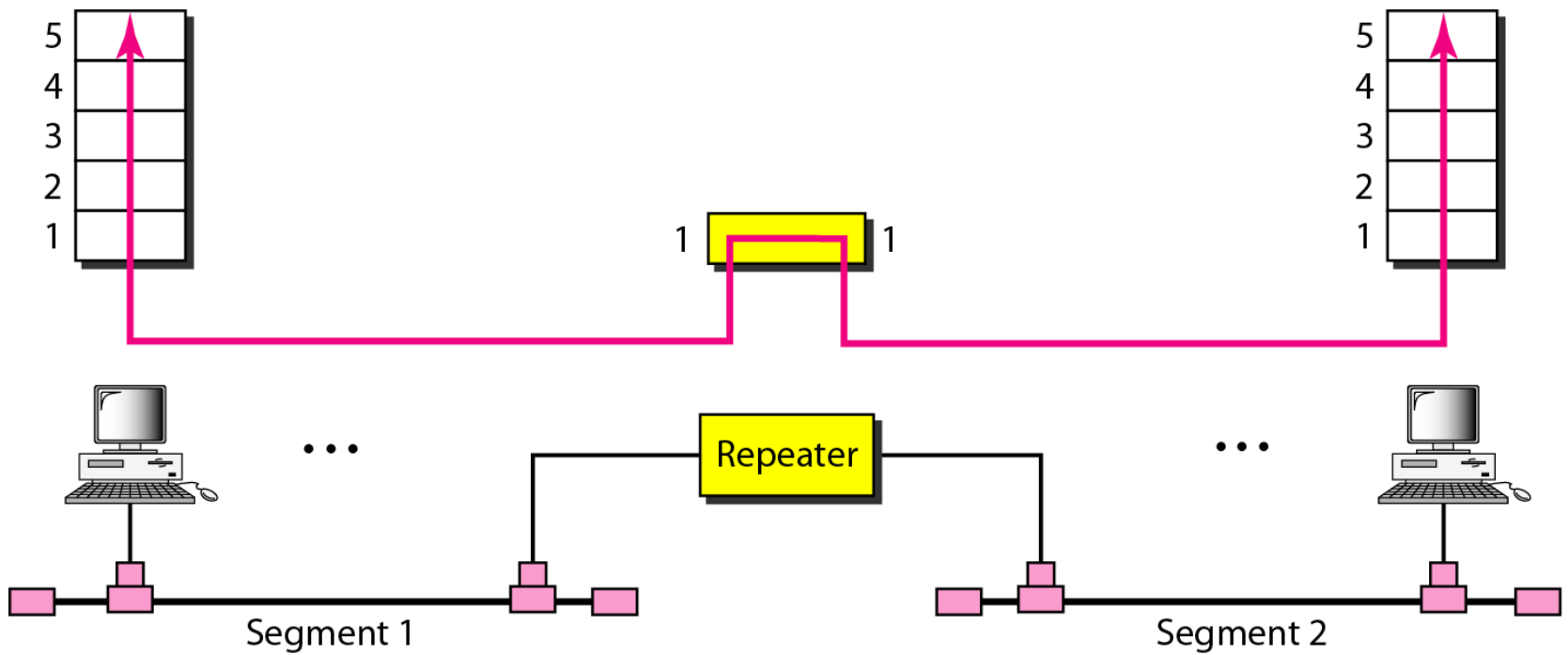
Three-Layer Switches

Gateways

Five categories of connecting devices



A repeater connecting two segments of a LAN





Note

A repeater connects segments of a LAN.



Note

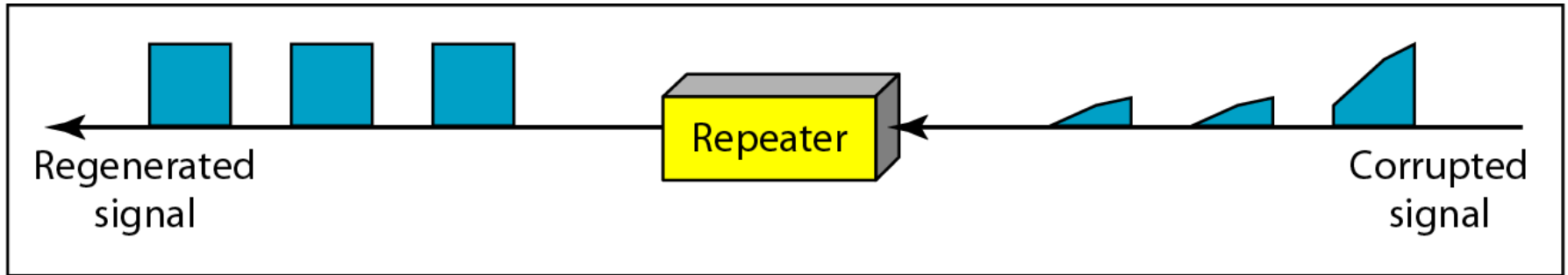
**A repeater forwards every frame;
it has no filtering capability.**



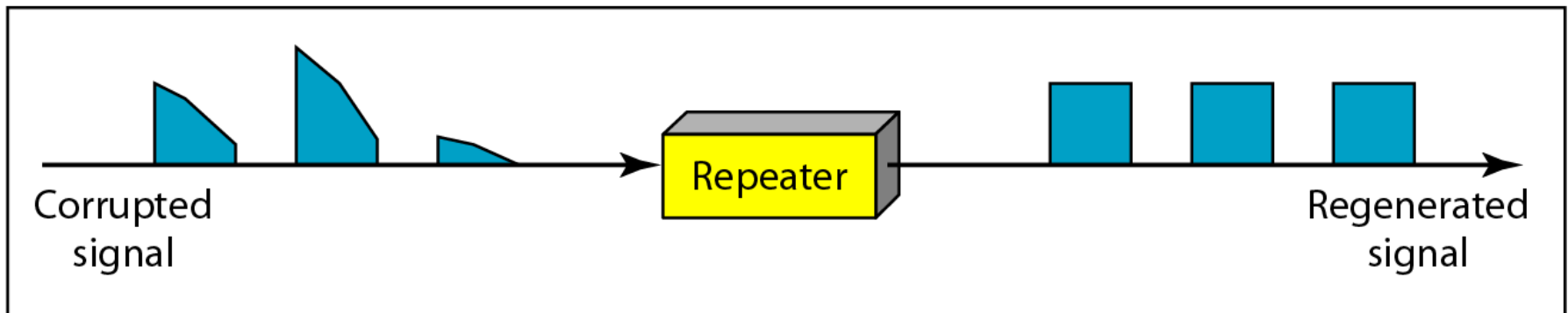
Note

**A repeater is a regenerator,
not an amplifier.**

Function of a repeater

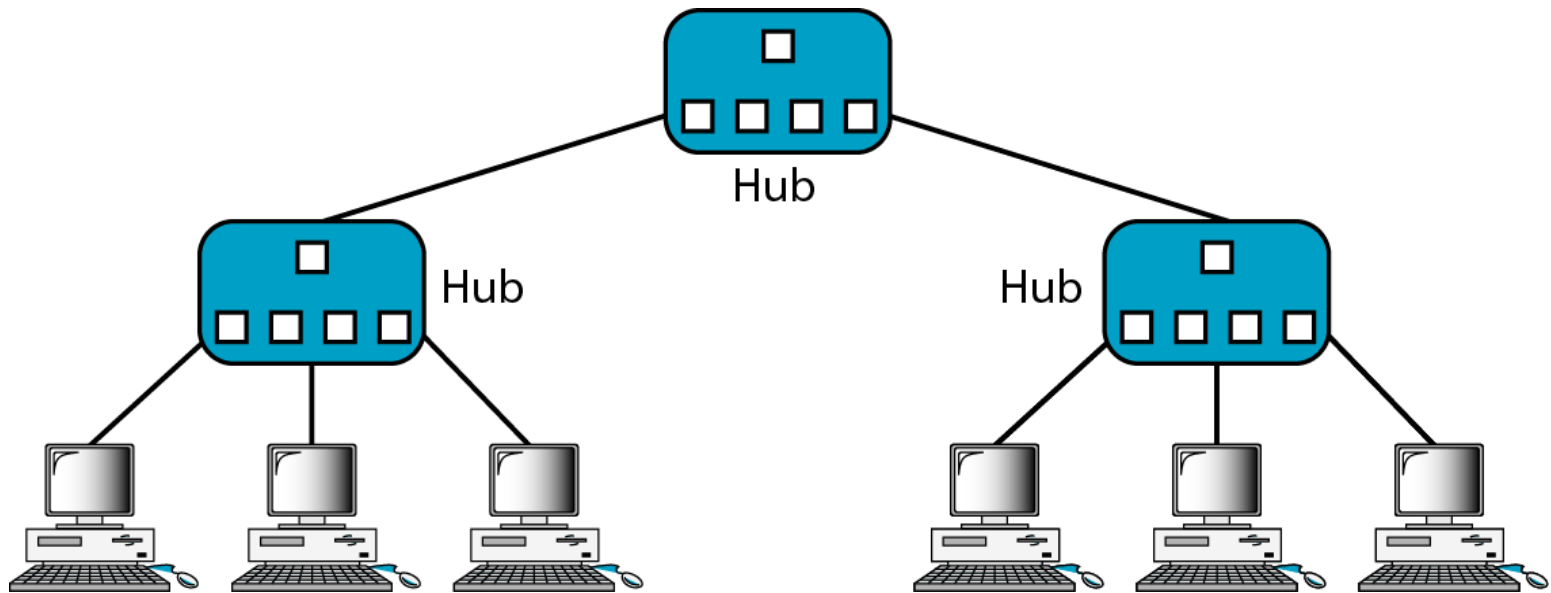


a. Right-to-left transmission.



b. Left-to-right transmission.

A hierarchy of hubs

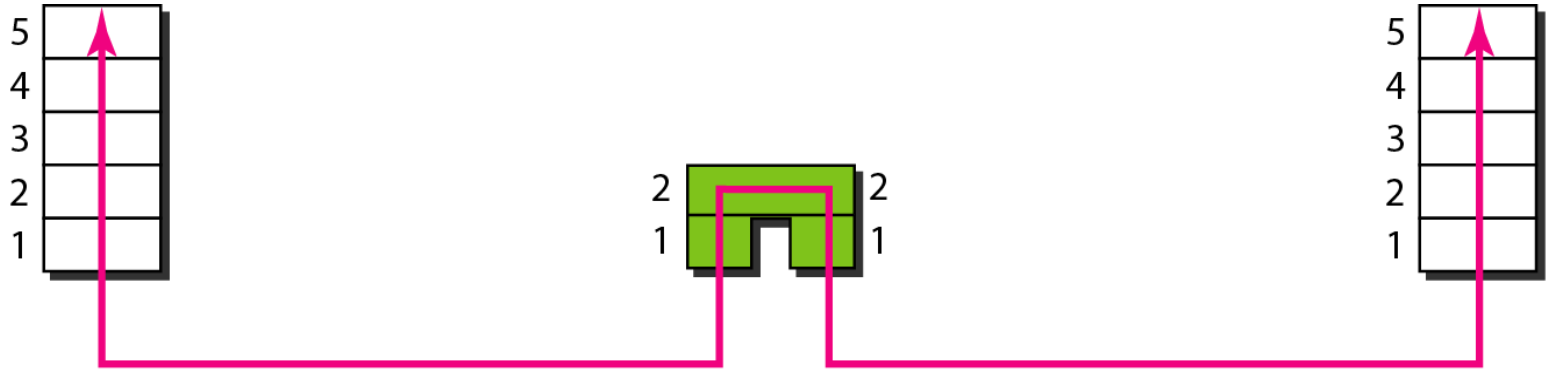




Note

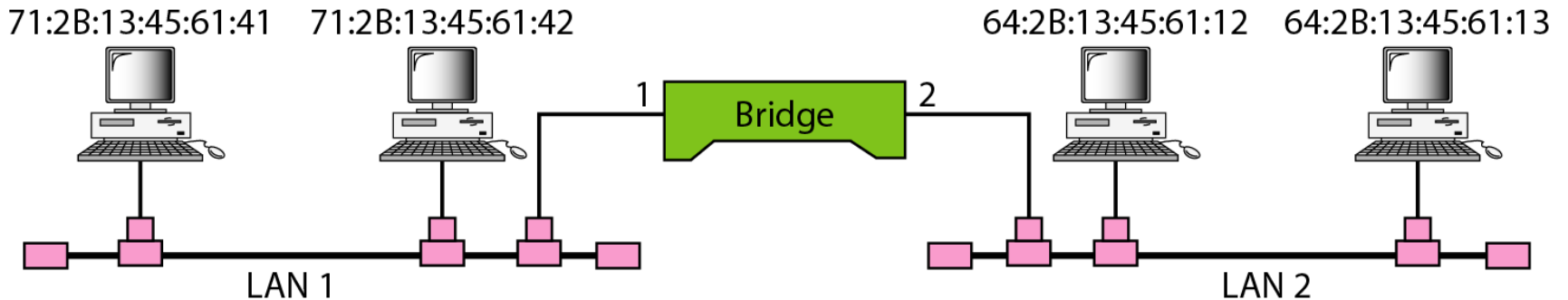
A bridge has a table used in filtering decisions.

A bridge connecting two LANs



Address	Port
71:2B:13:45:61:41	1
71:2B:13:45:61:42	1
64:2B:13:45:61:12	2
64:2B:13:45:61:13	2

Bridge Table

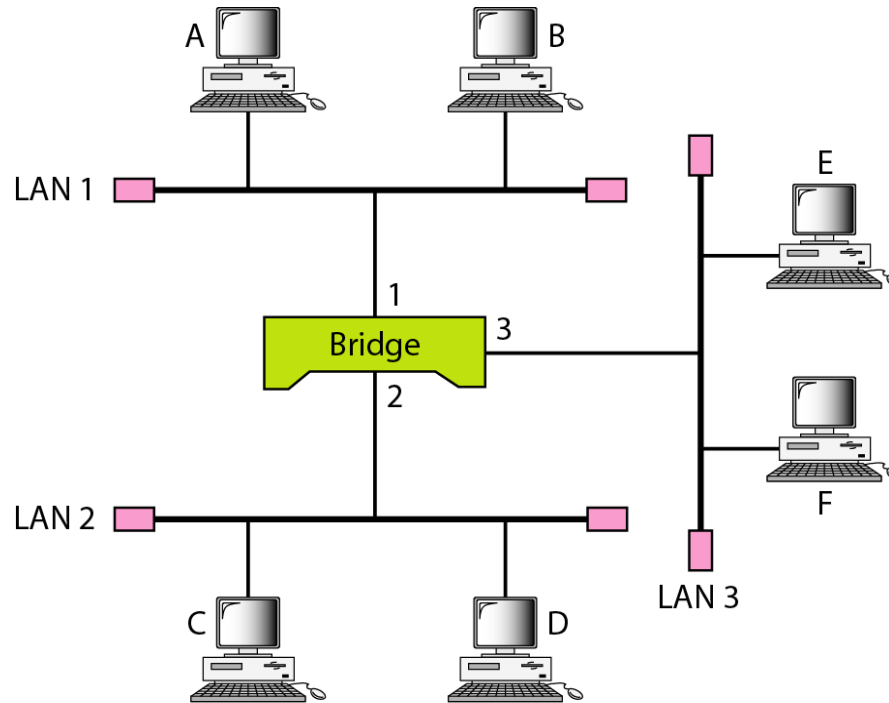




Note

A bridge does not change the physical (MAC) addresses in a frame.

A learning bridge and the process of learning



Address	Port

a. Original

Address	Port
A	1

b. After A sends a frame to D

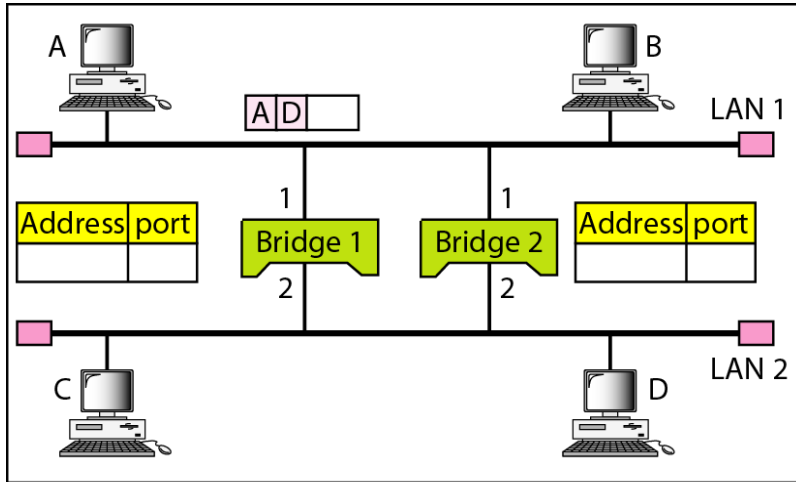
Address	Port
A	1
E	3

c. After E sends a frame to A

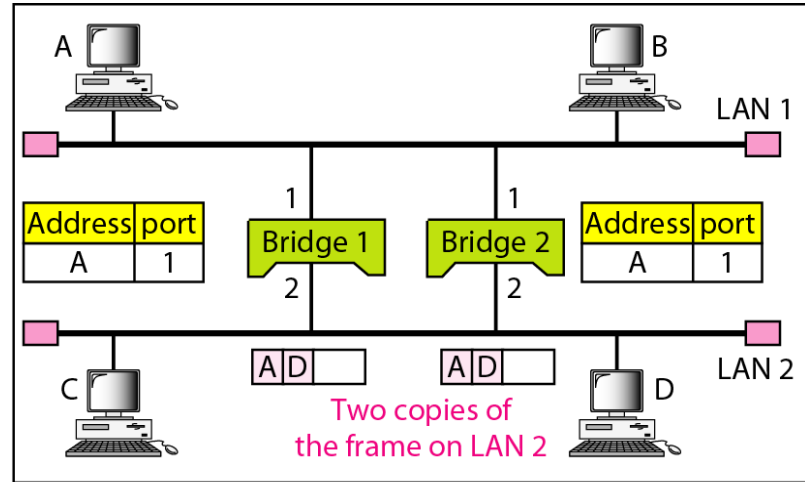
Address	Port
A	1
E	3
B	1

d. After B sends a frame to C

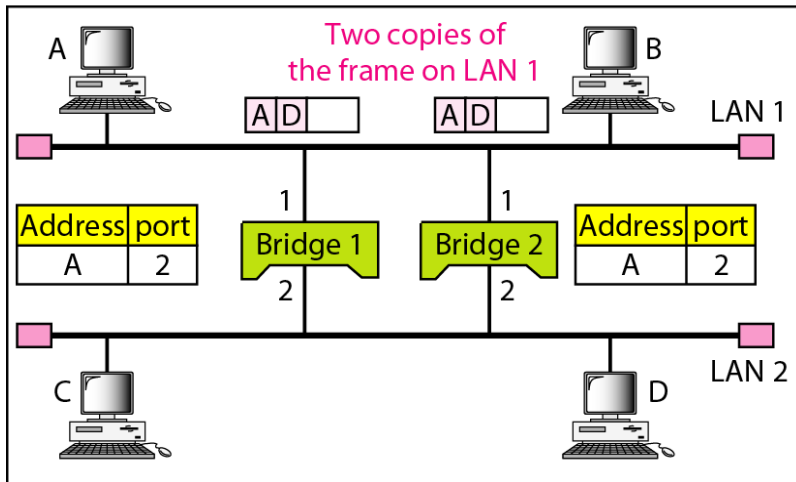
Loop problem in a learning bridge



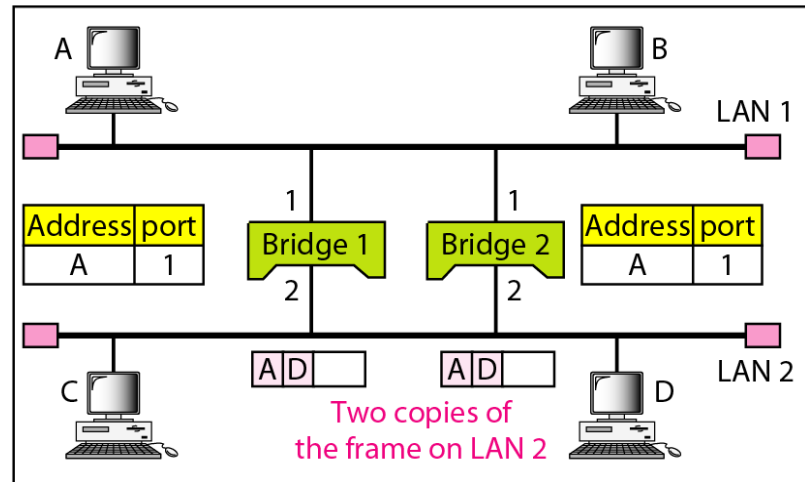
a. Station A sends a frame to station D



b. Both bridges forward the frame

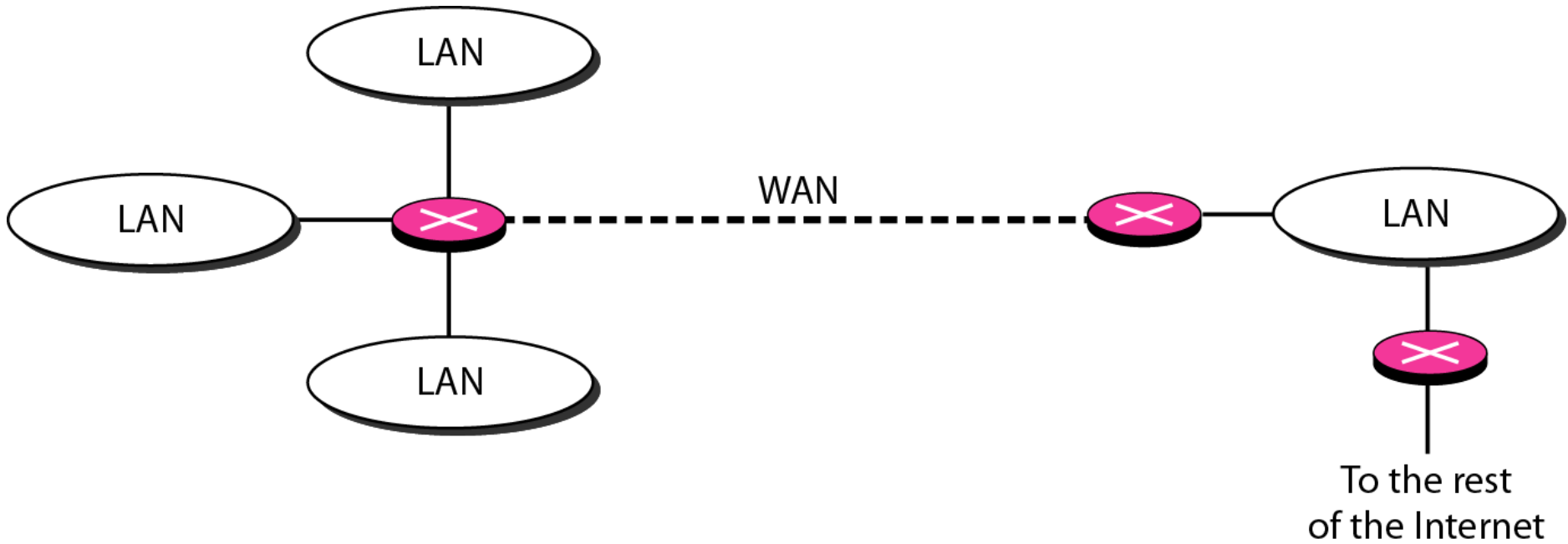


c. Both bridges forward the frame



d. Both bridges forward the frame

Routers connecting independent LANs and WANs



Computer Science & Engineering Assignment

Semester- VI (I & II)

Branch: CSE

Subject with Code: Computer Networks (IT-305-F)

Q:1 Explain the Following.

- 1. Hub**
- 2. Router**
- 3. Bridge**
- 4. Repeater**