

# Bridges

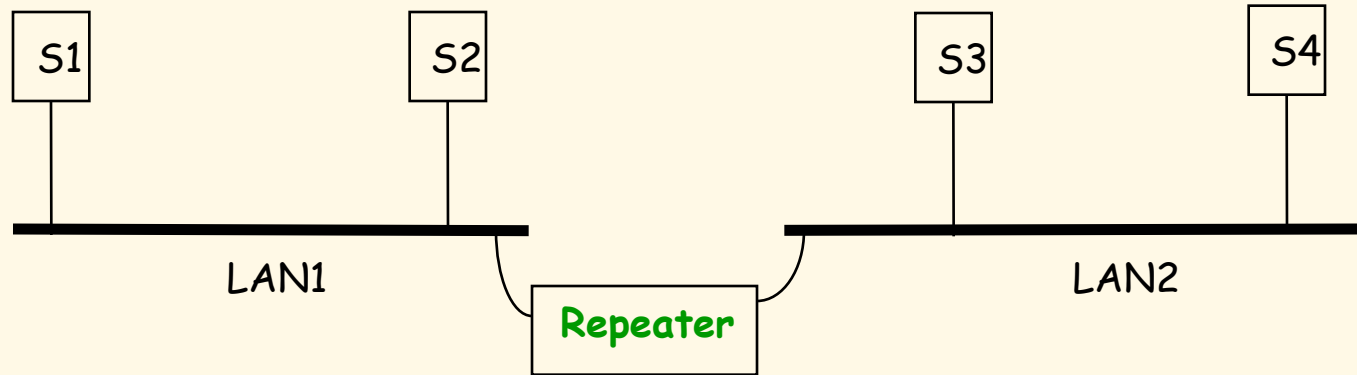


**Advanced Computer Networks**  
**C13**

# Bridges Outline

- Repeaters
- Bridges
  - Backward learning
- Bridge Loops
  - Spanning trees (transparent bridges)
  - Source-routing bridges (e.g., token rings)

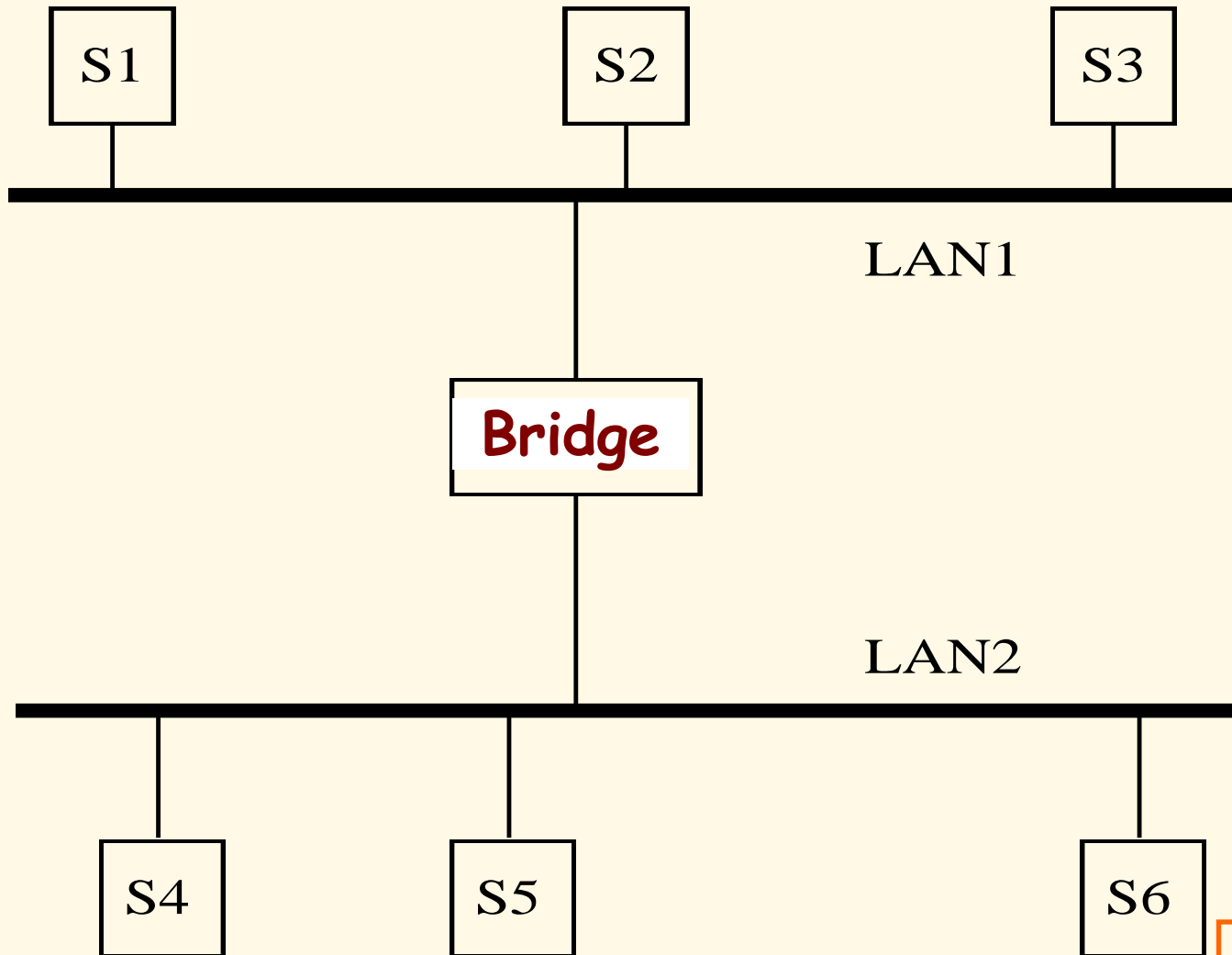
# Repeaters



A **repeater** operates at the physical layer and forwards everything between the two LANs.

LAN1 and LAN2 are in the same **collision domain**.

# Bridges

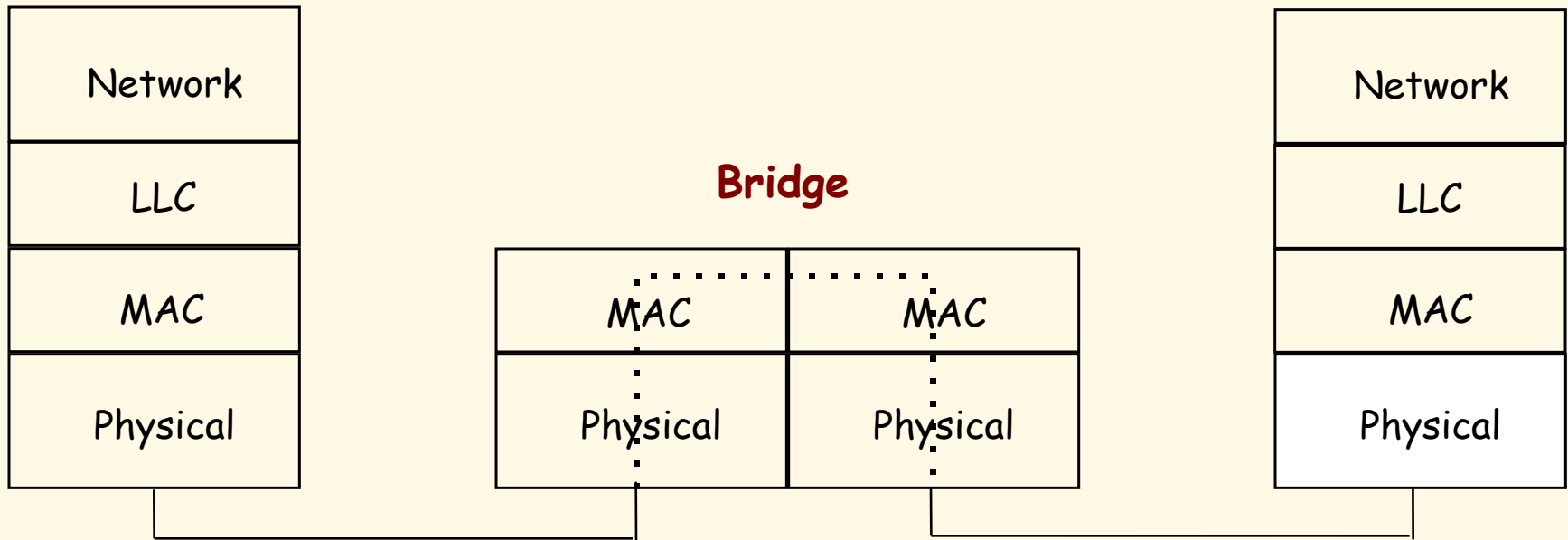


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# Bridges

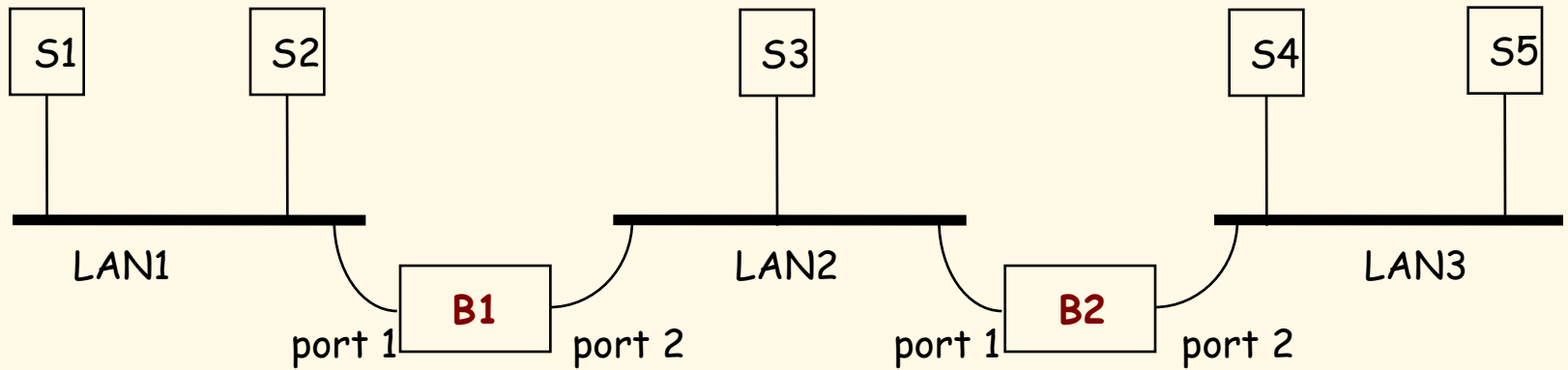
- Operate at the data link layer.
- **Bridges** use **backward learning** in recording source address on transmissions.
- Unlike repeaters, bridges will not forward a frame onto another LAN segment if it knows about the location of the destination node.
- **Bridge management gets more complicated when loops are possible in the frame route.**

# Bridge



A bridge is a store and forward device that **separates** collision domains.

# Bridges

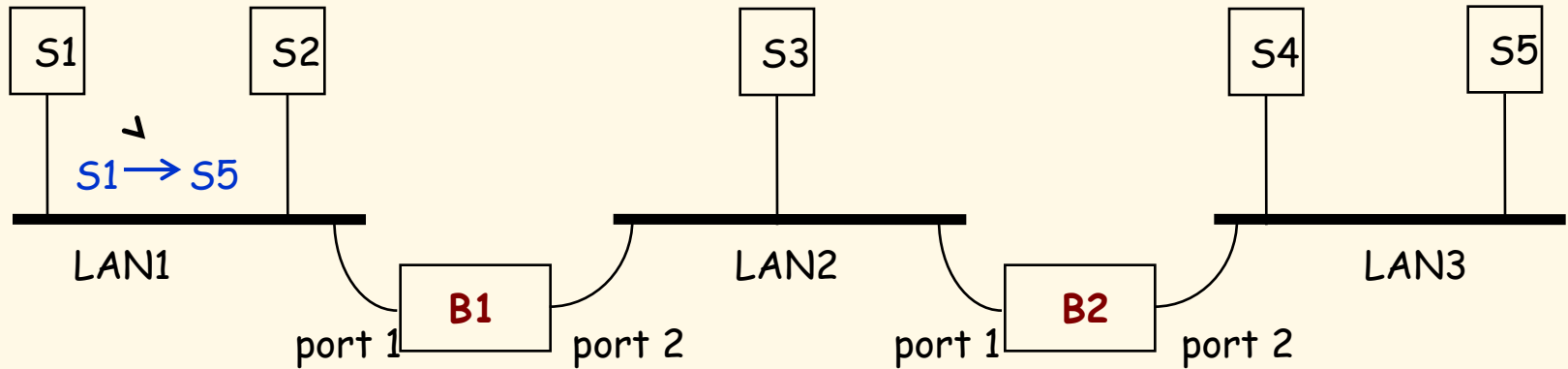


Address	Port

Address	Port

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# Bridges



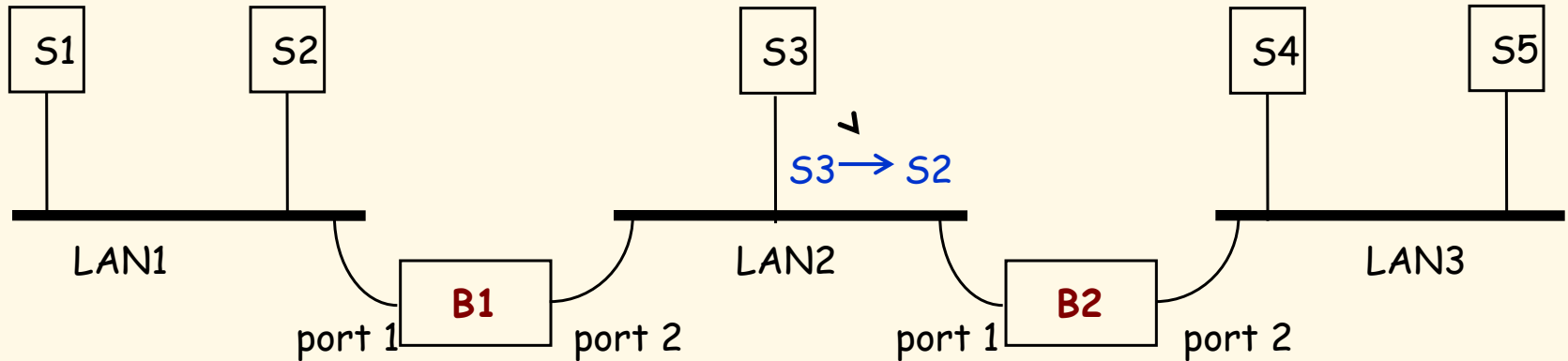
Address	Port
S1	1

Address	Port
S1	1

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# Bridges

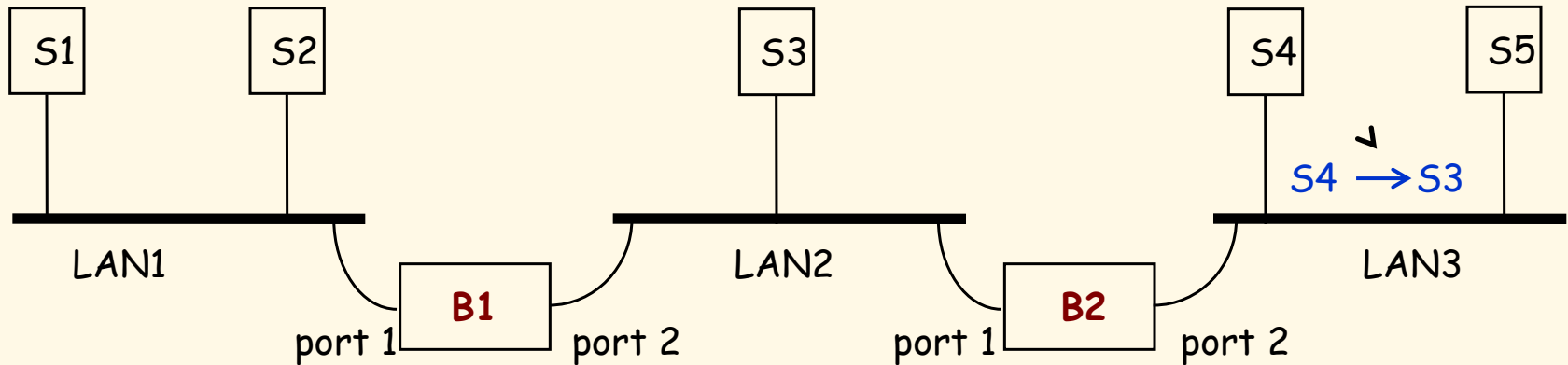


Address	Port
S1	1
S3	2

Address	Port
S1	1
S3	1

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# Bridges



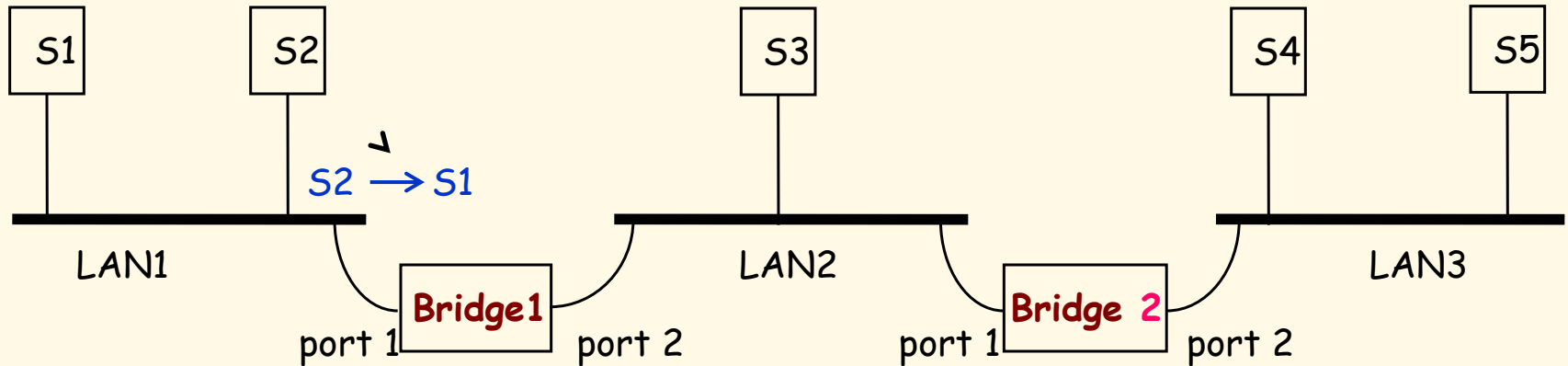
Bridge 1 does not forward the frame to LAN1

Address	Port
S1	1
S3	2
S4	2

Address	Port
S1	1
S3	1
S4	2

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# Bridges



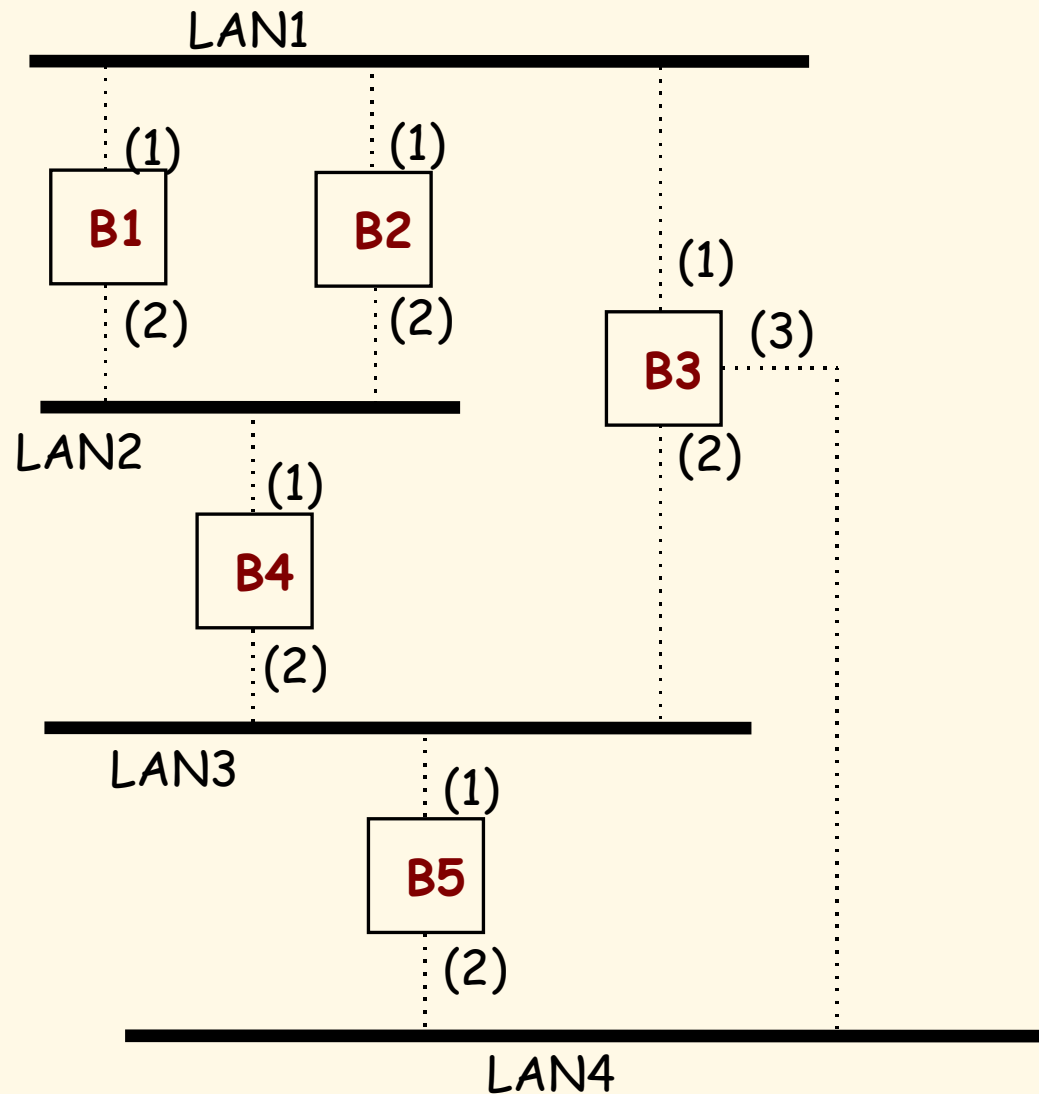
Bridge 1 does not forward the frame to LAN2

Address	Port
S1	1
S3	2
S4	2
S2	1

Address	Port
S1	1
S3	1
S4	2

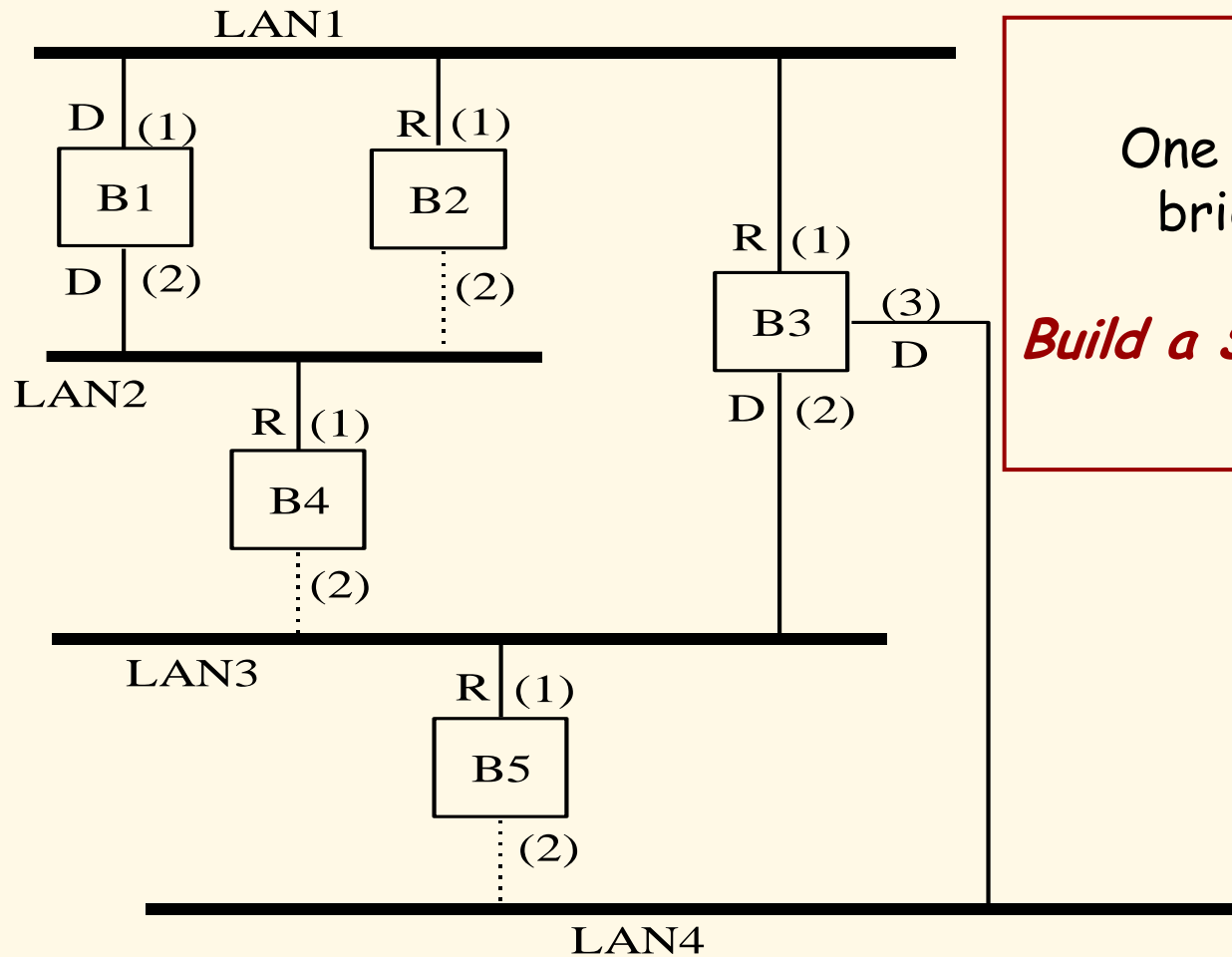
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# MAN with Bridge Loops



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# MAN with Bridge Loops



One solution to bridge loops  
*Build a Spanning Tree!*

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# Bridges Summary

- **Repeaters**
- **Bridges**
  - Backward learning
- **Bridge Loops**
  - Spanning trees (transparent bridges)
  - Source-routing bridges (e.g., token rings)