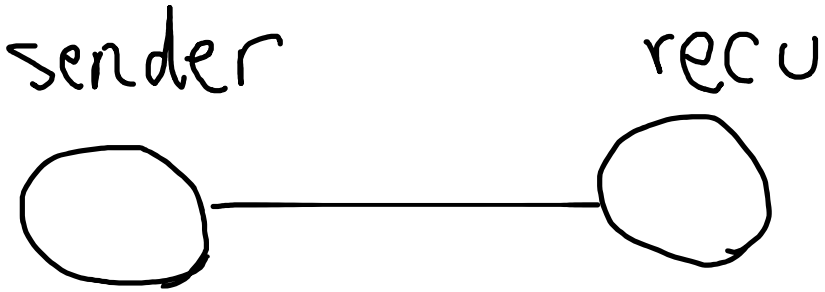
Tutorial #3

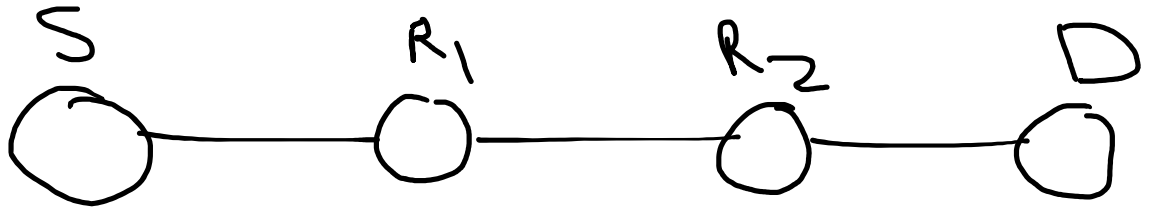
CSC458

Problem 1 – A



- We have a link, rate 100 Kbit/s, latency 1ms, MTU 100, sending 80 bytes of IP payload. How long does it take to transmit the data?
  - Ignore the Ethernet Header for now.

Problem 1 – B



- We have 3 back-to-back links, going through 2 intermediate switches. Similar numbers for the links. we have **store and forward** for the switches.

Problem 1 – C

- Similar, but cut-through switching for the switches.

Problem 1 – D

- Let's go back to store and forward, Last link has MTU of 60.

Problem 1 – other variations.

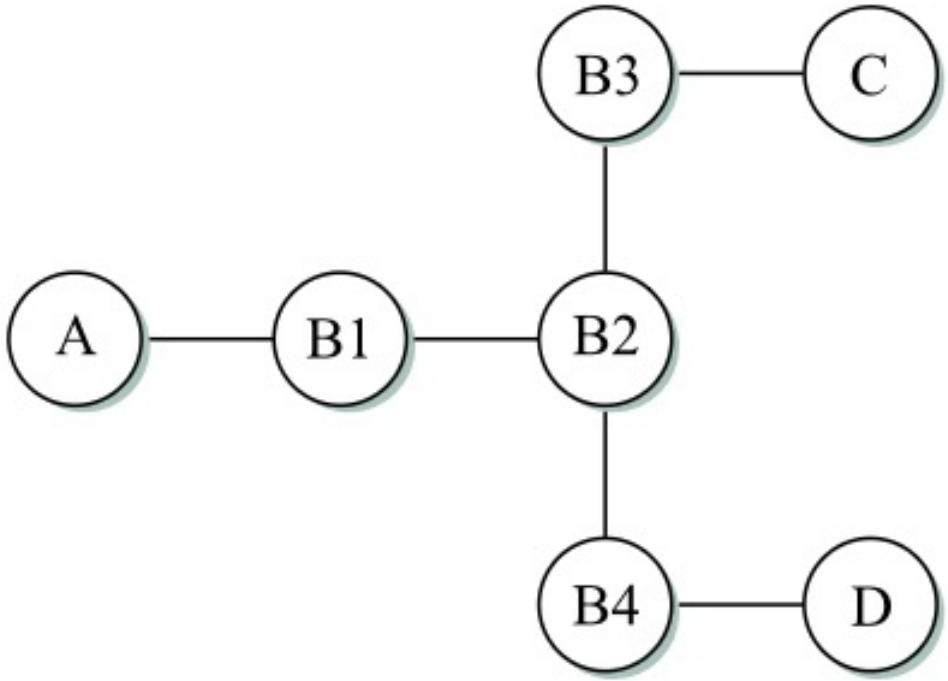
- Think about the other cases for the next session
  - Fragmentation happens at the second link, we have cut-through
- What if IP didn't support fragmentation? What would be the transmission time?
- What are the values of the fragmentation-related header fields?

Problem 2

- Learning bridges, Initially empty, sending these packets:

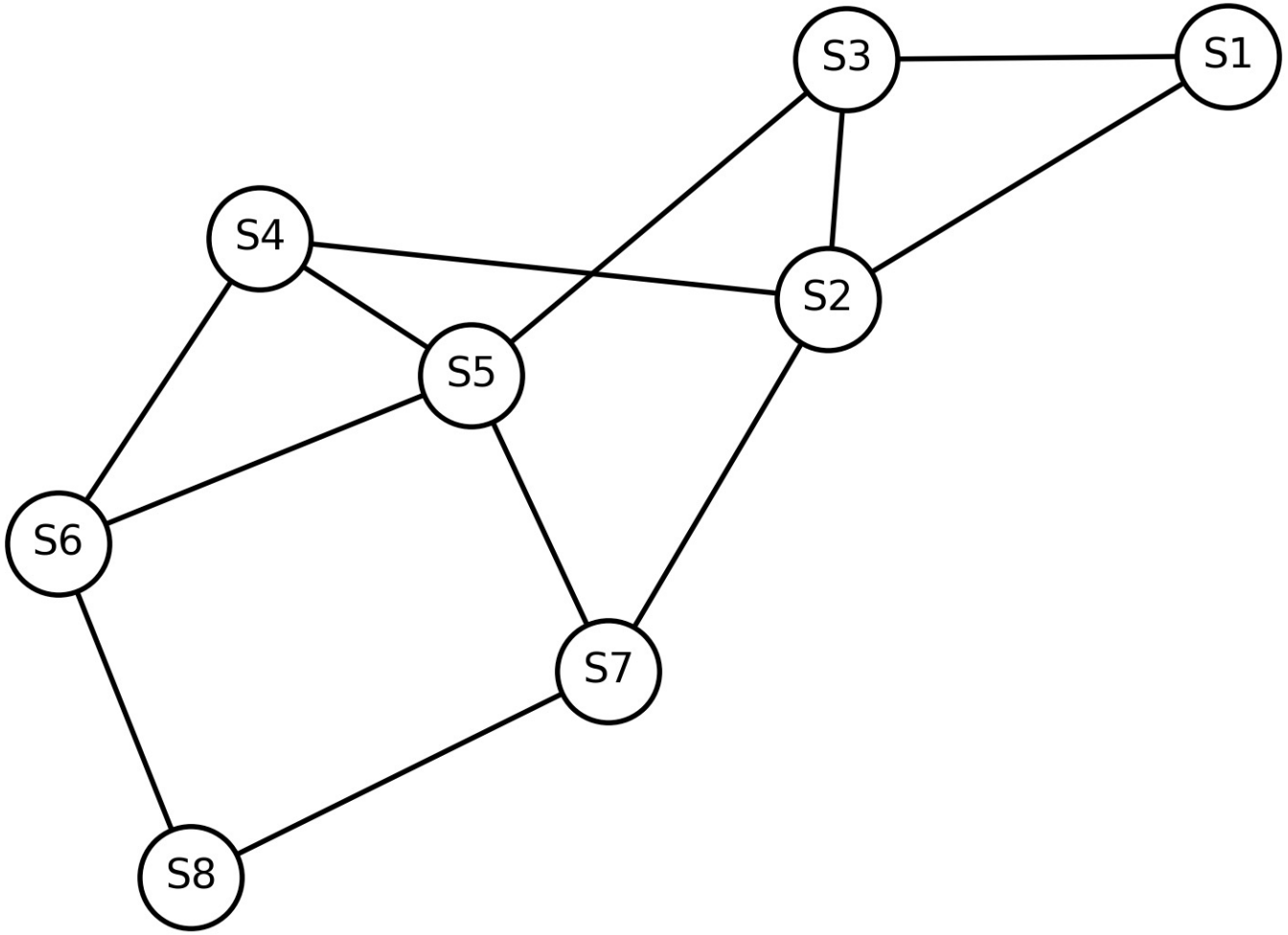
- A → C
- C → A
- D → C

What happens in the bridges?



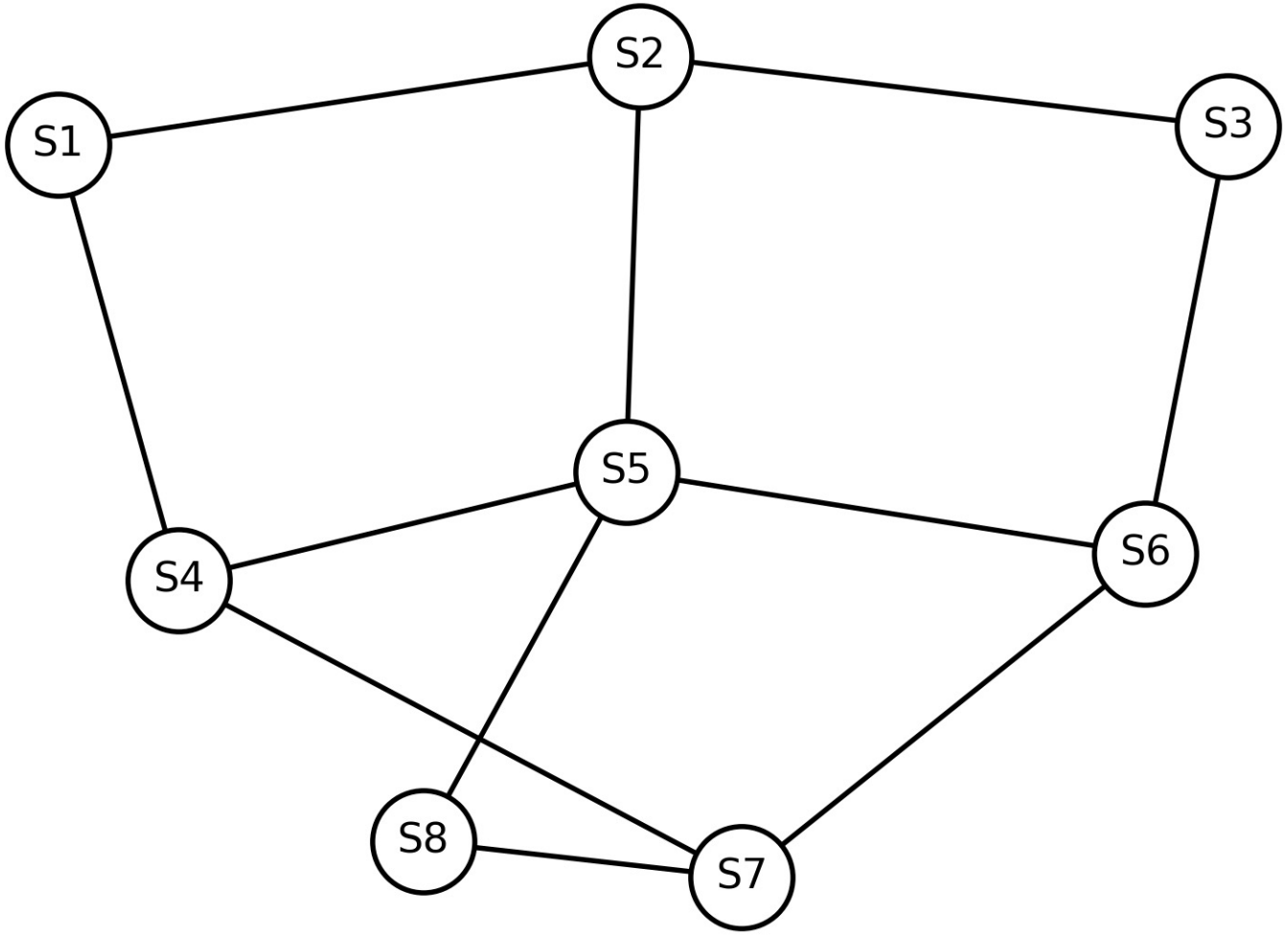
Problem 2 – Spanning Tree

BEFORE STP (Example 1): All links forwarding



Problem 2 – Spanning Tree

BEFORE STP (Example 2): All links forwarding



Problem 2 – Spanning Tree

- What happens when the link costs are different?
- What happens when a new link is created or removed, or a node goes down?
- Is this a minimum spanning tree (MST)?
- What is the stretch factor for these examples? Will an MST create the lowest stretch factor?

Problem 3

- Assume we did distance vector.
- A network with 6 hosts, A to F.
- This is how the tables ended up at A and F.
- What does the network actually look like?

Node	Distance	Nexthop
B	1	B
C	2	B
D	1	D
E	2	B
F	3	D

Forwarding table on A

Node	Distance	Nexthop
A	3	E
B	2	C
C	1	C
D	2	E
E	1	E

Forwarding table F

Problem 4

Where these packets will be routed based on Longest Prefix Matching?

- a) 10.1.129.70 → ___
- b) 10.1.129.10 → ___
- c) 10.1.130.5 → ___
- d) 10.2.3.4 → ___
- e) 11.0.0.1 → ___
- f) 10.1.0.1 → ___
- g) 10.1.128.200 → ___
- h) 10.1.255.255 → ___

Prefix	Next Hop
10.0.0.0/8	P
10.1.0.0/16	Q
10.1.128.0/17	R
10.1.128.0/24	S
10.1.129.64/26	T
* (Default)	U