

TP - IP Networks

<https://beta.computer-networking.info/syllabus/default/exercises/ipv6.html#design-questions>

Small reminder

- Longest-prefix match
 - Assume the following forwarding table
 - 2001:db8::/32 -> H1
 - 2001:db8:1234::/48 -> H2
 - 2001:db8:1234:5678::/61 -> H3
 - 2001:db8:1234:567c::/63 -> H4
 - Which entry (and next hop) will be selected by the following destination?
 - 2001:db8:1234:567f::a0b0:cafe

The TP

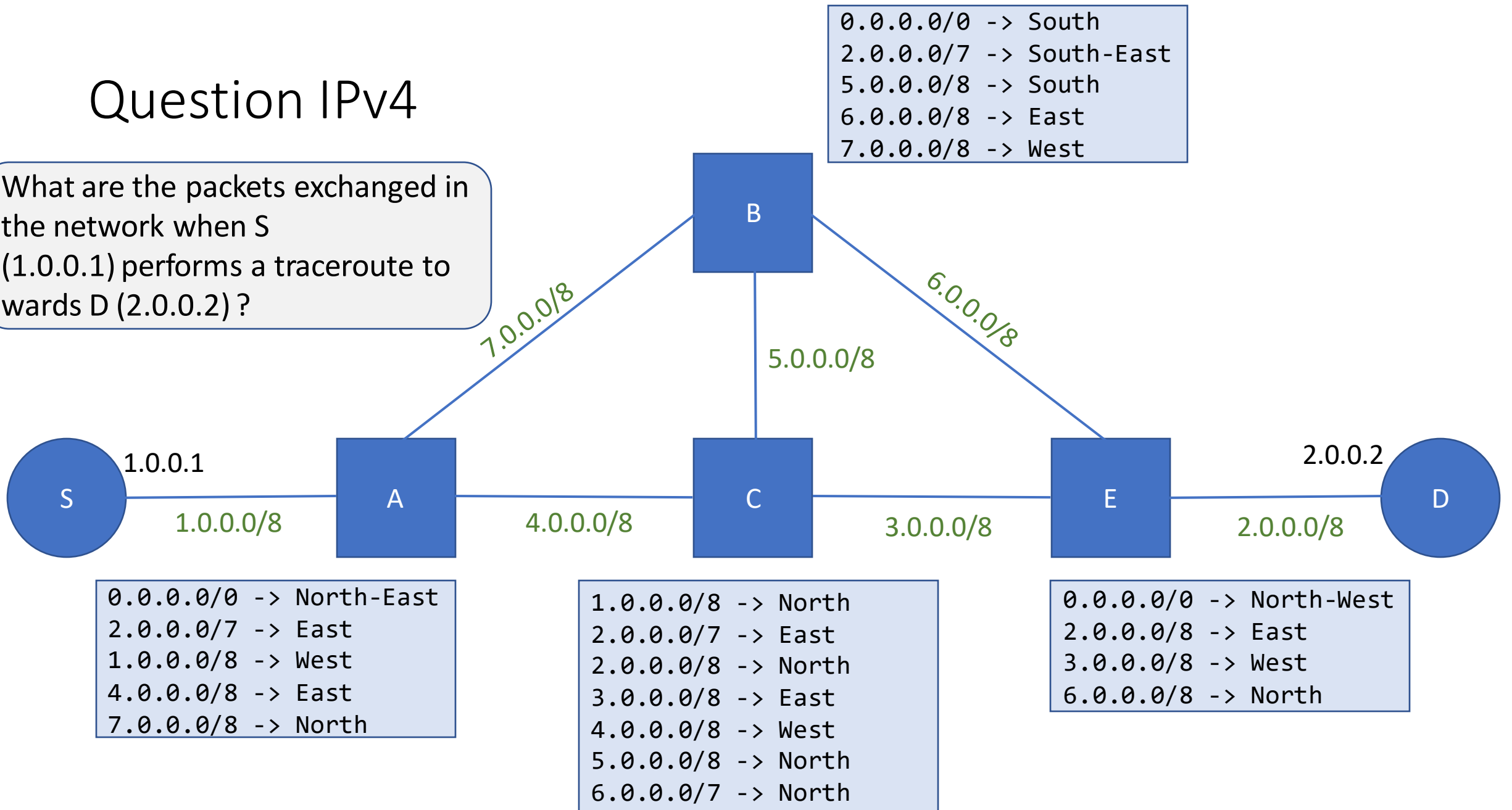
The following questions refer to the exercises available at

<https://beta.computer-networking.info/syllabus/default/exercises/ipv6.html#design-questions>

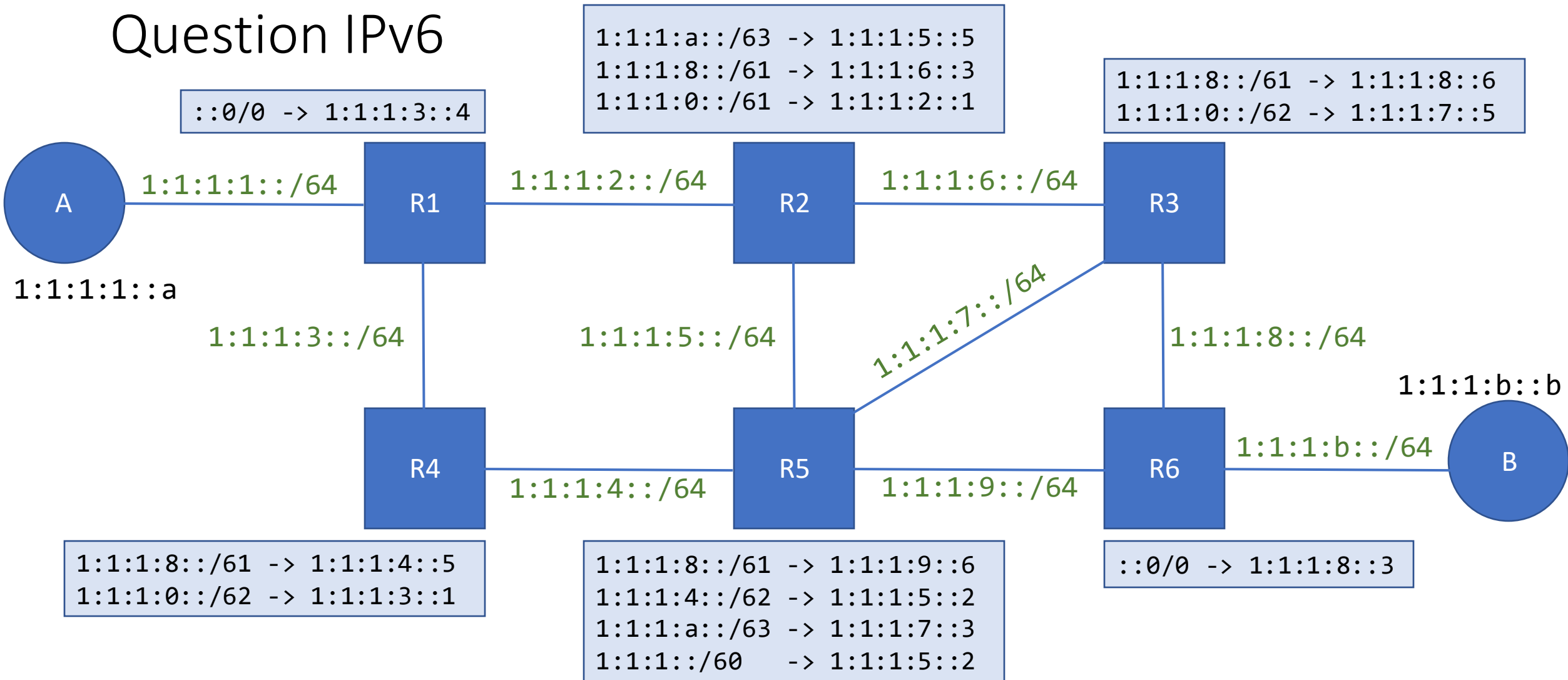
The following slides help you writing an answer, but the full information is available at the provided URL

Question IPv4

What are the packets exchanged in the network when S (1.0.0.1) performs a traceroute to wards D (2.0.0.2)?

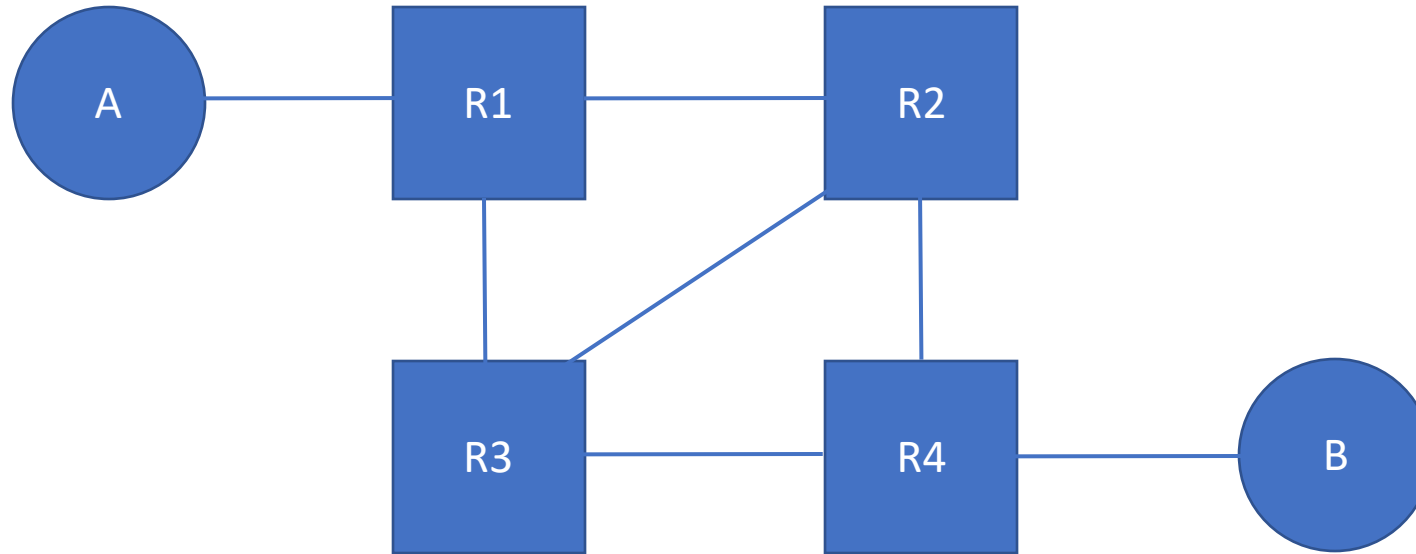


Question IPv6



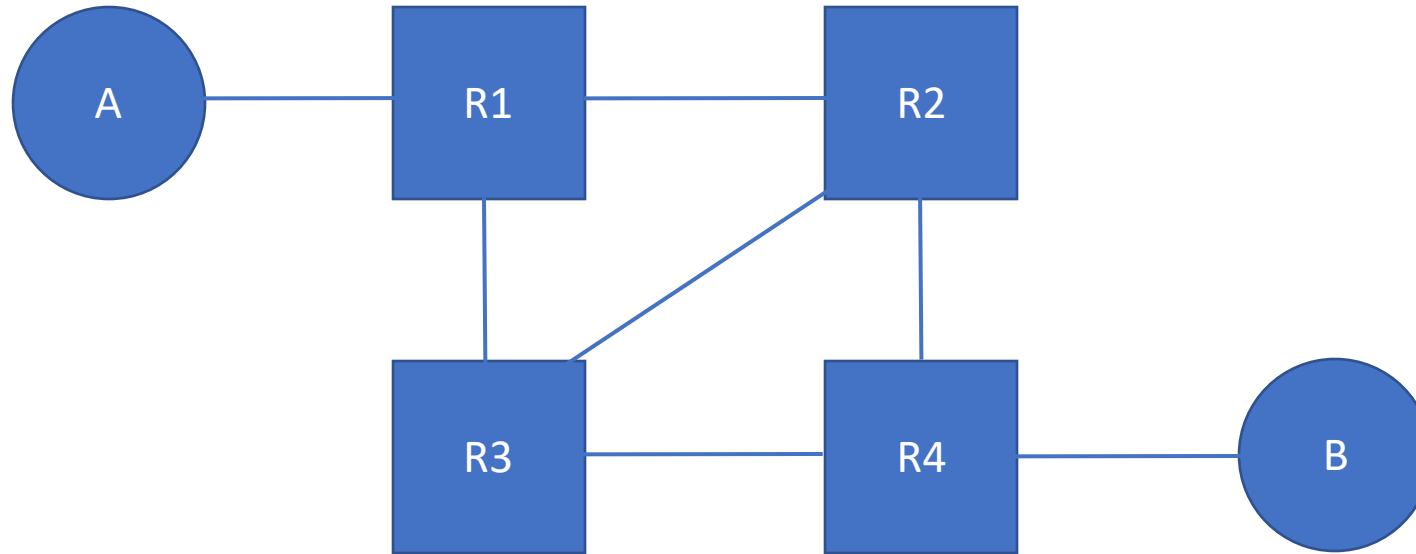
In subnet $w:x:y:z/64$, router **R1** has IP $w:x:y:z::1$ and router **R2** has IP $w:x:y:z::2$.
 What is the path followed by packets sent from A ($1:1:1:1::a$) to B ($1:1:1:b::b$) ?
 What is the path followed by packets sent from B to A ?

Question 1



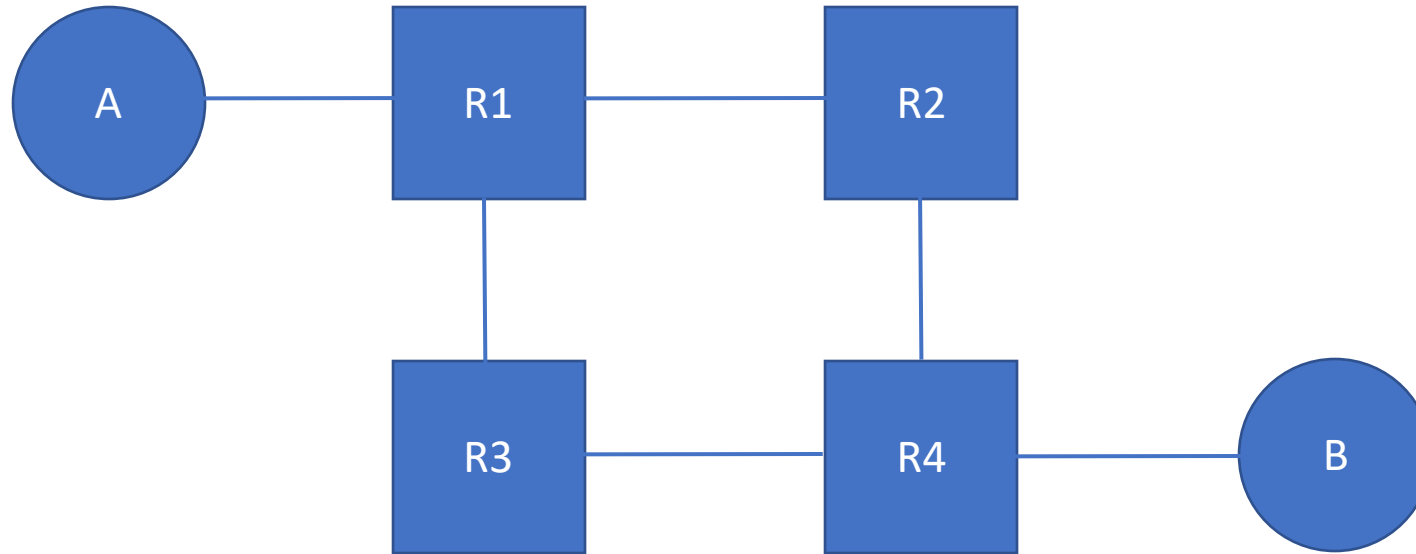
Forwarding tables for R2 and R3 to ensure A and B can exchange packets in both directions?

Question 2



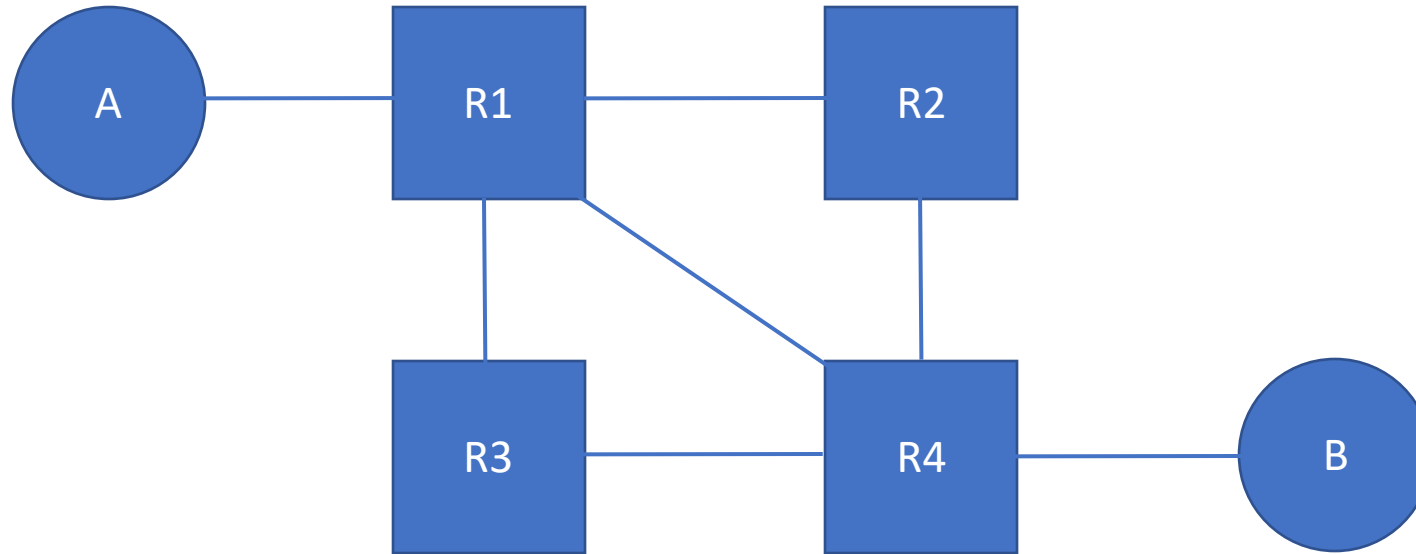
Select rules for R2 and R3 to ensure A and B have same path in both directions?

Question 3



Configure forwarding tables of R1 and R4 so that A can reach B and the reverse

Question 4



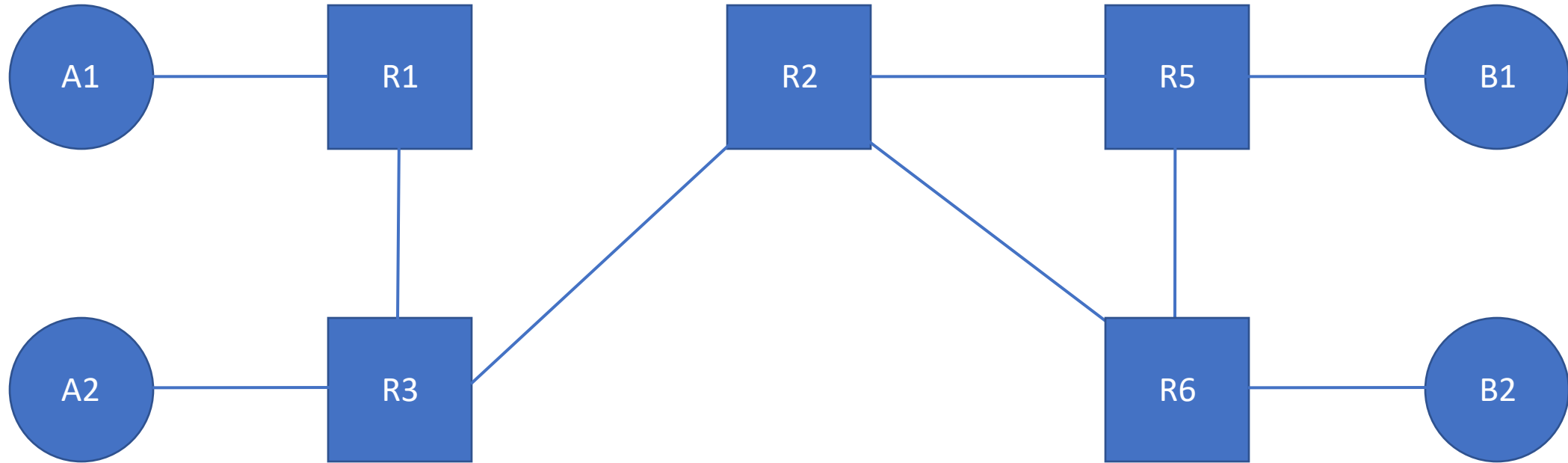
Can you configure the forwarding tables so that the following paths are used by packets sent by host A to reach one of the four addresses of router R4?

Do your forwarding tables impose the path used to reach host B which is attached to router R4 or do you need to configure an additional entry in these tables ?

Question 5

What do you think of the proposed network configuration?

Question 7



Assign IP subnets to all links in this network so that you can reduce the number of entries in the forwarding tables of all routers. Assume that you have received a `2001:ded1:cace:a0::/56` prefix that you can use as you want. Each subnet containing a host must be allocated a /64 subnet.