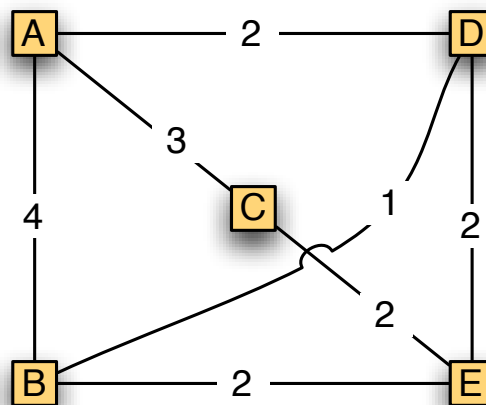


Ex. 10-1: Multicast

- What is multicast communication good for?
- Is multicast treated differently in LANs and WANs? Explain!
- Why would you rather not use Multicast IP to transmit an e-mail with multiple recipients?
- Assume the topology given below (each link's **cost** is given as a number on the line):



Draw an arrow for every packet sent following the *incomplete Reverse Path Broadcasting (RPB)* algorithm when A sends packets to everyone. In a second step, potentially using a different color, draw the arrows for the complete version.

- How would the result change if the link between B and E had weight 1?

Ex. 10-2: Addressing

- a) The routing layer of the Internet uses IP addresses to identify the start and destination address of a package. For the final delivery in an Ethernet you have to determine the Ethernet address of the destination host. What format have IP addresses (tables) and Ethernet addresses?

	identifier	net bits	host bits	network size
class A:				
class B:				
class C:				
class D:				

- b) Discuss pros and cons of IP addresses.
- c) How many IP addresses are assigned to an Internet router?
- d) Is it possible to use hardware addresses (like in Ethernet) instead of the abstract addressing concept of IP? Constitute your answer.
- e) The inflexible concept of the IP address classes has been extended by two approaches, namely Subnetting and Classless Interdomain Routing (CIDR). Explain how these techniques work and why they are necessary?

Ex. 10-3: Address Resolution Protocol (ARP)

- a) The address mapping from IP to Ethernet is done by the Address Resolution Protocol (ARP). Explain the functionality of ARP according to the following example. Assume host A would like to communicate with host B. Which packets will be sent using ARP?
- b) Think about some other solutions that are not based on ARP.
- c) Explain how ARP caches work? What are they used for? Is it possible for ARP to work without such caches?
- d) Try to find out what the magnitude for the cache timeouts is. What will happen if the timeout is too long or too short, respectively?