A small Test / repetition

Talk and discuss with your neighbour following questions

The layered communication model (once again just to be sure):

- Describe the 5 layers in the internet model have (the model from the book)
- What is the horizontal communication?
- What is the vertical communication?
- What is a header?
- What is a protocol?

Application layer:

- What is the purpose of the application layer?
- What is the purpose of the http?
- Which port is http using?
- What is P2P?
- Which types of applications use P2P?
- What is the basic idea behind P2P?
- What are the challenges of the P2P architecture?
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Transport Layer:

- Which types of computers (equipment) is part of the transport layer communication?
- What is UDP an acronym for?
- What is the purpose of UDP?
- Which types of application would prefer UDP as transport protocol?
- The header for the UDP how does it looks like.
- What do the different fields mean?

- What is TCP an acronym for?
- What is the purpose of TCP?
- Which types of application would prefer TCP as transport protocol?
- The header for the TCP how does it looks like.
- What do the different fields mean?
- How does the TCP protocol establish a connection?
- How do the TCP ensure that it deliver a reliable connection?
- How do the TCP handle congestion control?

Network Layer:

- What are the important network-layer function(s) in datagram network?
- Explain forwarding.
- What is the content of a forward table? Moreover, how to use a forward table?
- What is the fundamental difference between a router and a packet switch (link-layer switch)?
- Take a closer look at fig.4.16 (p.358) and explain the meaning and use of Version, Time to live, Header Length, Datagram Length, Upper-Layer Protocol
- How many bits are in an IPv4 address?
- What is a subnet?
- How can you find the net-id from a network address?
- How many hosts can you approx. have on a class B network?
- Two organisation are given the address space 233.1.1.0/24 respectively 223.1.1.0/16 what are the network-ID and the broadcast address in the two net?
- How many devices can get an individual IP-address in the two organisations?
- It is stated, that the world is running out of IPv4-addresses. Why? How to solve this problem?
- What is a NAT-router?
- How many computers/devices can be behind one NAT-router?
- Describe the two ways a Host (Computer) can obtain an IP-address.
- Why do we not just all switch to IPv6?

Security -- concepts:

- What are the four different goals for security?
- What does each (sub) goal mean?

- For symmetric encryption / decryption, how many key(s) do you have?
- Which goal does symmetric key(s) fulfil?
- For symmetric keys what are the typical length of a key?
- For symmetric keys, name at least two algorithms.
- What are the major problem using symmetric keys

- For asymmetric encryption / decryption, how many key(s) do you have?
- Which goal do asymmetric keys fulfil?
- For asymmetric keys what are the typical length of a key?
- For asymmetric keys, name at least one algorithm.
- What are the major problem using asymmetric keys?

- What is message digest? In addition, a digital signature?
- What is PGP? In addition, how does it make use of encryption/decryption?
- What is SSL? In addition, how does it make use of encryption/decryption?
- When do you use PGP? and SSL?

- Describe the most important C#-classes in a **client** for SSL programming.
- Describe the most important C#-classes in a **server** for SSL programming