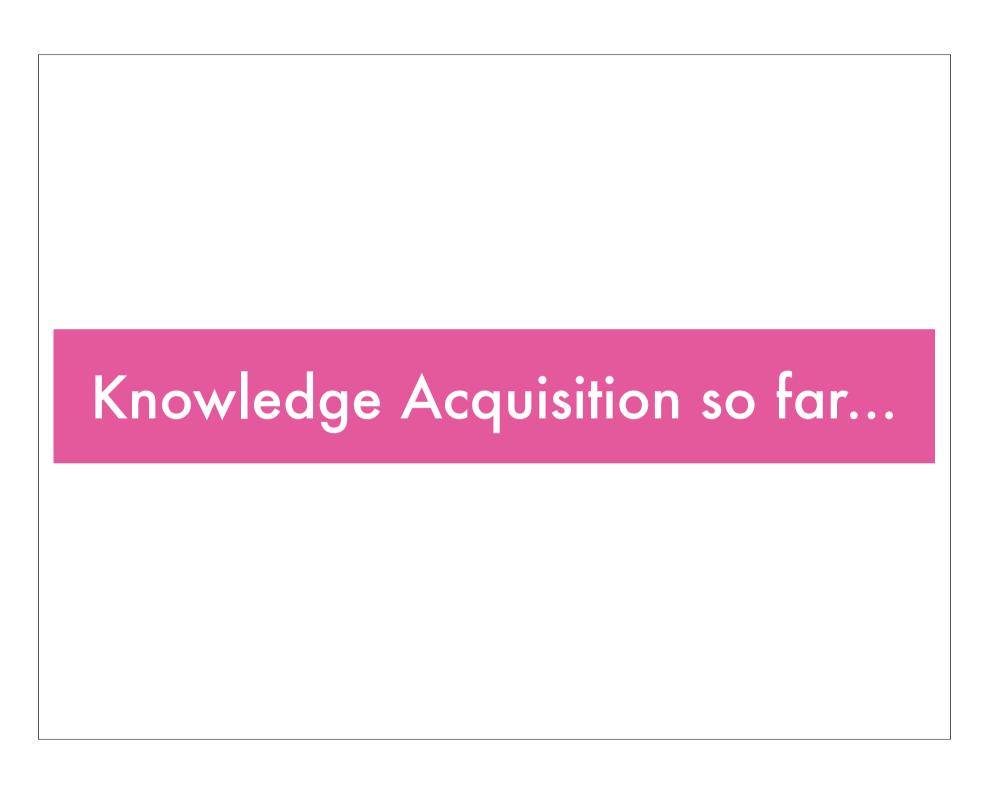
## Große Übung Computer Networks

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## Chapter 1: some Questions

- 1. What is a Computer Network
  - a. as opposed to a BUS?
  - b. as opposed to a Terminal Network?
- 2. What groups of standardization organizations exist?
- 3. Why is standardization especially relevant for Computer Networks?
- 4. How and why can a communication system be structured into layers?
- 5. Draw and label a picture of three nodes running an ISO/OSI stack (a-b-c) and fully explain the consequences of an e-mail sent from a to c!
- 6. Explain the following words: layer, protocol, service, service primitive!
- 7. Draw and label of an ISO/OSI stack side-by-side to a TCP/IP stack such that corresponding layers are on the same level. Describe similarities and difference.
- 8. Discuss the differences between OSI and IP, both of the reference model and the actual protocols.

## Chapter 2a: some Questions

- 1. You are able to define and explain the function of the Physical Layer!
- 2. You can classify time-dependend signals and name, sketch, and explain examples!
- 3. What is the purpose of line coding? What are the problems when transmitting with electricity? What are desirable properties of line codes and why?
- 4. You know all the line-codes of the slides by heart, can code and decode in them and can compare every two of them according to their features.
- 5. Explain the difference between bit and baud rate!
- 6. Explain the terms modulation and modem!
- 7. Name and explain the three modulation techniques from the slides, including drawn examples.
- 8. Explain multiplexing in the context of transmission paths/channels!
- 9. Explain FDM, the two flavours of TDM and discuss the pros and cons!
- 10. Explain the fundamental advantages of transmitting data digitally.
- 11. Explain the fundamental steps of Digitalization.
- 12. Explain sampling and Nyquists's Theorem using self-drawn examples.
- 13. Explain Quantization, Quantization error and PCM giving an example.
- 14. Explain Delta Modulation, PCM and ADPCM!

## Chapter 2b: some Questions

- 15. Explain the difference between synchronous and asynchroneous transmission. Give an example for both!
- 16. Make a complete figure with explanation of a System as described on Slide 2a-54 transmitting the number sequence 7-2-8-1 from a to b.
  - 1. You are able to name, sketch, and describe the topologies shown in the slides! Furthermore, you can compare them w.r.t. e.g., fault tolerance, cost cable length etc...
  - 2. You can explain the basic cable types featured in the slides. Also, you can in principal compare electrical vs. optical cabling.
  - 3. What are the special properties of Satellite Communication, Wireless LAN, Bluetooth, and Cellular Networks like UMTS/GSM, what are the advantages and disadvantages.
  - 4. How does the physical Layer of V.24 work in principal?
  - 5. What do members of the xDSL protocol family have in common, how do they work in principal? Make a sketch of the system from Internet to Home.
  - 6. Compare the members of the xDSL family.
  - 7. Why is ADSL asymmetric?
  - 8. Explain QUAM using a self-made diagram. How is ist possible to get multiple bits per baud?
  - How does CAP work, how DMT?