Technische Universität Berlin

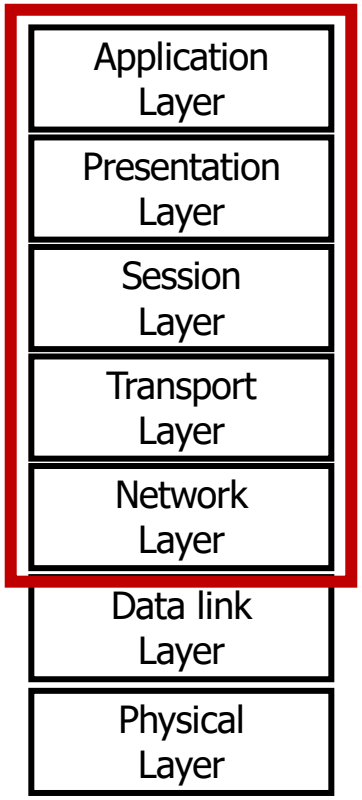
# Computer Networks

Introduction

# Chapters

1. **Introduction**
   - **Computer networks**
   - **Classification**
   - **Standardization**
2. Switching
3. Protocols
4. Application layer
5. Web services
6. Publish/Subscribe
7. Distributed hash tables
8. Time synchronization
9. Transport layer
10. UDP / RTP / TCP
11. Network layer
12. Internet protocol
13. Quality of service

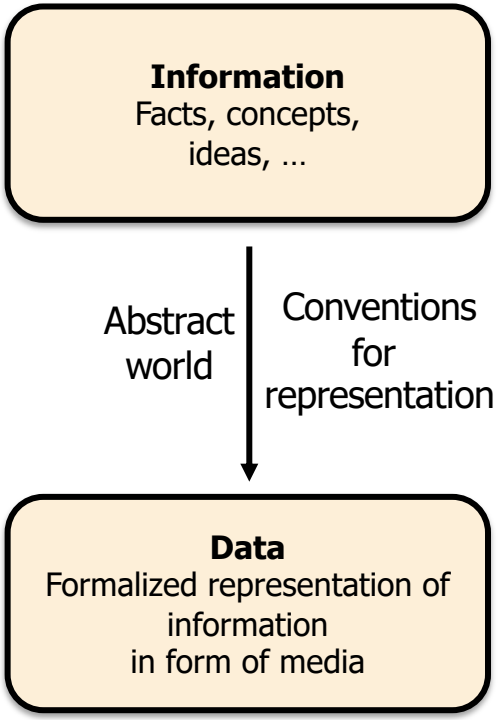
Top-Down-Approach



# Introduction

# What to Communicate: Information, Data

- Information
  - Facts, concepts, ideas
  - A human-oriented term
- **Data** (encapsulated in media)
  - A formalized representation of facts, concepts, ideas
  - Example: text, speech, picture, video
  - A human interpretation of data, conferring meaning to data
- Note:
  - Only data can be communicated,
  - The recipient of data restores information,
  - The recipient interprets data – subject to her interpretation



# The Data Tsunami

- In 2000 years of recorded history humans created 2 Exabytes of data.
- We generate over 2.5 Exabytes of data/day now!
  - Different sources
- Problem: extracting information out of **data**
  - Where to process them?
  - Bringing data to the processing?
  - Processing data where it emerges and transport (partial) results?

| Value | Metric |
|---|---|
| 1000 | kB kilobyte |
| $1000^2$ | MB megabyte |
| $1000^3$ | GB gigabyte |
| $1000^4$ | TB terabyte |
| $1000^5$ | PB petabyte |
| $1000^6$ | EB exabyte |
| $1000^7$ | ZB zettabyte |
| $1000^8$ | YB yottabyte |