Technical University of Munich
School of Engineering and Design
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Computational Foundations II (Summer Term 2022)
Tutorial 4

Tasks marked with a star like **Optional Task*** are optional. Tasks marked like **Hard Task+** are given, but it is not expected that you solve them now. It is great if you learn to solve them during the lecture. Go back to them after a few weeks and see your own progress.

Learning Outcome: Network Routing Principles

Task 8: Network Server and Client

Implement a client and a server in the C programming language using Berkeley sockets. The protocol shall be a simple chat system. Each client can connect to the server and send a text command. Implement a few commands like "hello" letting the server give an answer, "quit" should be responsed to with a byebye message and a graceful disconnection from server side (shutdown, close).
You can extend this to a chat system for multiple clients or a classical text adventure, use a Google search to get inspiration.

Task 9: Routing Strategies

Given the network example from the beginning of the routing slides, compute optimal solutions for the named strategies (e.g., minimum maximum energy, etc.).

Task 10: Distance Vector Routing

On paper, run a few steps of DSDV on the network from slide 22 (before mobility, from zero knowledge). Assume that every node sends all information. As a second example, assume the network information is already fully distributed (every node knows a correct and complete table). For simplicity, assume all sequence numbers are one. Then, consider the mobility scenario from the slides and run a few updates (on paper). Assume that only changed lines are exchanged with neighbors.