Exercise No. 9
Communication Networks I
Summer Term 2015

TECHNISCHE UNIVERSITÄT DARMSTADT

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General Remarks

Welcome to the exercise for Communication Networks I. Please adhere to the following general remarks regarding the organization of the exercise during this summer term.

- One week before the tutorial, a new exercise will be published at the Exercise area of the KN1 Moodle (`https://moodle.tu-darmstadt.de/course/view.php?id=5268`)
- The exercise serves as your hands-on experience in addition to the lecture and as a preparation for the exam
- The questions in the exercise can be discussed at the tutorial date
- The sample solution for the exercise is available at the Exercise area of KN1 Moodle in addition to the corresponding tutorial. Nevertheless, we encourage students to try to solve the exercise themselves before the tutorial date without looking into the solution as a good practice to understand the subject of the lecture

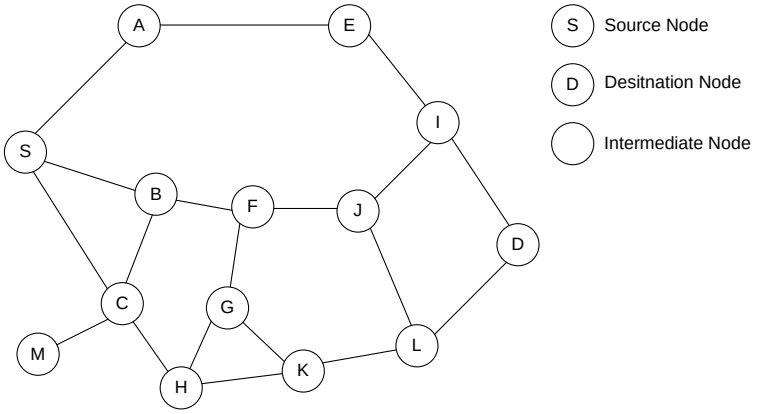
Problem 1 - Mobile Routing

a) What are the challenges in a wireless network? Why is CSMA CD not able to ensure a reliable medium access in these scenarios?

b) What are the differences between proactive and reactive protocols. What might be the merits and flaws?

c) What are the differences between AODV and DSR?

d) We are considering a scenario as shown in the figure below and the AODV as routing protocol. Which route is established by AODV (e.g. A-B-C-D...)?



Problem 2 - Transport Layer Basics

a) What is the function of the Transport Layer? Which Transport Services are provided? Describe two types of Transport Services and name corresponding protocols and applications making use of the different service types.

b) What are the main differences between the Network and the Transport Layer? Why are these two layers necessary?

c) How does addressing work in the Transport Layer? How does the specific address of a service become known? Describe three different approaches.

d) Describe how a Three-way Handshake Protocol works in principle. Describe two different alternatives how to disconnect an existing connection.

Problem 3 - UDP and TCP

a) Name some general functions of Transport Protocols.

b) Characterize UDP. What are the main advantages and disadvantages?

c) Characterize TCP. What are the main advantages and disadvantages?

d) What are the main differences between UDP and TCP?