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Proseminar Algorithmen und Datenstrukturen

Exercise Sheet 14

Exercise 1 (Depth-first Search)

Given a directed graph $G = (V, E)$ and some node $v \in V$, write a C program that numbers all nodes in the graph according to the order in which they are traversed during depth-first search; the number associated with v should be 1. Make sure that all nodes are numbered, and that all numbers are different! Use adjacency matrices to represent graphs!

Exercise 2 (Depth-first Search)

Given a connected, undirected graph $G = (V, E)$, write a C program that computes a spanning tree of G using depth-first search. Use adjacency matrices to represent graphs!

Exercise 3 (Connected Components)

Given an undirected graph, provide pseudo-code for the computation of its connected components.

Exercise 4 (Connected Components)

Given some node v of an undirected graph, provide pseudo-code for the computation of the number of edges in the connected component v belongs to.