RWTH Aachen **WS 2018**
Lehrgebiet Theoretische Informatik Problem Set 6
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Parameterized Algorithms Tutorial

Tutorial Exercise T1

Design a fixed parameter algorithm for finding an $k \times k$-grid subgraph in a graph that is taken from a graph class with maximal degree d. The parameter is k. Analyse the running time.

Tutorial Exercise T2

Give a parameterized algorithm that decides if a graph G contains k many vertex disjoint claws. A claw is a $K_{1,3}$.

Tutorial Exercise T3

Design a fixed parameter algorithm for finding a cycle of length *at least* k in an arbitrary graph G.

Homework H1

The Triangle Packing problem is defined as follows: given a graph $G = (V, E)$ and an integer k, decide whether G has k vertex-disjoint 3-cycles. Use the idea of randomly coloring the vertices of G with k colors to enable easy detection of vertex-disjoint triangles. What is the expected running time of your algorithm?