

11th Exercise sheet for Advanced Algorithmics, SS 13

Hand In: Until Wednesday, 03.07.2013, 12:00am, Exercise sessions, hand-in box in stairwell 48-6 or email.

Problem 29

- a) Assume you have access to an oracle that can determine in polynomial time and for arbitrary graphs which size a minimal VERTEX COVER has. How can you use it to construct a minimal VERTEX COVER in polynomial time?
- b) Does the approach from a) also work for factorising integers? Why (not)?
Hint: First, express factorisation as optimisation problem and state what the answer of an oracle would be.
- c) Argue why problems for which the method from a) is effective are often amenable to branch-&-bound algorithms.

Problem 30

Give a (deterministic) 2-approximation for MAXIMUM SUBGRAPH (cf. Problem 19).