12th Exercise sheet for
Advanced Algorithmics, SS 13

Hand In: *Until Wednesday, 10.07.2013, 12:00am, Exercise sessions, hand-in box in stairwell 48-6 or email.*

Problem 31

Consider the following approach for solving VERTEX COVER:

> Compute a spanning tree T of G by depth-first search and return the set of all inner nodes of T as result.

Show that this is a 2-approximation for VERTEX COVER.

Problem 32

Show that there is no $\varepsilon > 0$ so that layering is a $(f - \varepsilon)$-approximation for SET COVER, i.e. that f is tight.

Hint: Give a set of instances that contains infinitely many counterexamples for every $\varepsilon > 0$.