Theory of Computer Science

G. Röger
Spring Term 2019

University of Basel
Computer Science

Exercise meeting 9

Exercise 9.1

Consider propositional formula $\varphi = \neg(A \vee (\neg B \wedge C))$.

(a) Specify formula χ_{all} as it is used in the polynomial reduction of SAT to 3SAT.

(b) $\mathcal{I} = \{A \mapsto F, B \mapsto T, C \mapsto T\}$ is a model of φ. Specify the corresponding model of χ_{all}.

Exercise 9.2

The decision problem SAT(satisfiability) is defined as follows:

Given: a propositional logic formula φ
Question: Is φ satisfiable?

The general problem GenSAT(model generation) is defined as follows:

Given: a propositional logic formula φ
Output: a model for φ or a message that none exists

Show that if there is a polynomial algorithm for SAT then there is a polynomial algorithm for GenSAT.