

Complexity of Boolean functions

SS 2018

Homework 8

25.06.2018

Exercise 1:

Disprove that $C^* \setminus C = \{W \notin C \mid C \vdash W\}$.

Exercise 2:

- a) Develop an algorithm for the computation of all prime clauses for a given function $f \in M_n$.
- b) Is it possible that a prime clause contains more than one variable of a prime implicant of f ? Prove your answer.

Exercise 3:

The disjunction of all prime implicants of a function $f \in M_n$ is the *P-DNF representation* of f . The conjunction of all prime clauses is the *P-CNF representation* of f .

- a) Develop an algorithm which given the P-CNF representation of $f \in M_n$ computes the P-DNF representation of f .
- b) For $f \in M_n$ show that the P-DNF- and also the P-CNF representations are unique.