Theory of Computation

Homework 2
Due: 9:10, 2009/10/27

Problem 1. *We call a boolean function* $f : \{0,1\}^k \to \{0,1\}$ *symmetric if* $f(x_1, x_2, \ldots, x_k)$ *depends only on* $\sum_{i=1}^{k} x_i$*. How many symmetric boolean functions of* k *variables are there?*

Problem 2. It is known that the language

$$\{M : M\text{halts on all inpots}\}$$

is undecidable. Prove or disprove that the following restricted language

$$L_{1000} = \{M : M \text{ halts on all inputs and } M \text{ is at most 1000 bits long}\}$$

is undecidable.