Northwestern University | Jan. 30, 2002
Electrical and Computer Engineering | Handout #3
ECE459: VLSI Algorithmics, Winter 02 | Due: Feb. 20
Prof. Hai Zhou

Homework 3

You may discuss the assignments with your classmates but need to write down your solutions independently. Be careful with your handwriting. Unclear solutions will be assumed to be wrong.

1. (25 pts) Given n Boolean inputs, the k-majority function $m_k(x_1, x_2, \ldots, x_n) : B^n \to B$ gives 1 when there are at least k inputs which are 1s. For example a 1-majority function is an OR function and an n-majority function is an AND function. What is the best variable order for a minimum ROBDD of the k-majority function? What is the size (i.e. number of nodes) of such a minimum ROBDD in terms of n and k?
2. (25 pts) Problem 6.1
3. (25 pts) Problem 6.2
4. (25 pts) Problem 6.5