Universität
des
Saarlandes
FR 6.2 Informatik

Dr. Ulrich Meyer WS 2003/4

Exercises for Parallel and Distributed Algorithms

5. Assignment Due 01. Dec. 2003

Exercise 1 (2 *Points*)
Show that ANSV-problems of size n can be solved in constant time on a CRCW PRAM with n^2 PUs.

Exercise 2 (1 *Point*)
Give an $O(1)$-time linear work reduction on a CREW in order to show that ANSV cannot be solved faster than the OR problem.

Exercise 3 (2 *Points*)
Provide an $O(1)$-time linear work reduction in order to prove that ANSV is not easier than merging two sorted sequences.

Exercise 4 (2 *point*)
(Matching of parentheses). Consider the inputs of proper parenthesis terms with n characters (like $((()())())$ for $n = 10$). Compute for each opening parenthesis the appropriate closing parenthesis and vice versa. Your algorithm should run on a CREW PRAM in $O(\log n)$ time using $O(n)$ operations. *Hint:* Start by computing the depths of the parentheses and apply some form of ANSV.