Assignment 2

Deadline: August 10, 2006

Exercise 1: 5 Points
Argue that certain insertions and deletions will require \(\lceil N/B \rceil\) I/Os if we insist on exactly \(B\) consecutive elements in every block (except possibly the last). (Exercise 2.3 from the book)

Exercise 2: 7 Points
Show that insertions of \(N\) consecutive elements in a linked list can be done in \(O(1 + N/B)\) I/Os. (Exercise 2.4 from the book)

Exercise 3: 5 Points
Show how to implement concatenation of two lists and splitting of a list into two parts in \(O(1)\) I/Os. (Exercise 2.5 from the book)

Exercise 4: 15 Points
Given B-Tree \(A\) with \(|A|\) elements and B-tree \(B\) with \(|B|\) elements show how to construct B-tree \(C\) with elements including all elements of B-trees \(A\) and \(B\) \((C := A \cup B)\) using \(O(scan(|A| + |B|))\) I/Os.