Exercise 4 – Description

Problem 1: Given is the rudimental implementation of a singly linked list explained in class. It contains the functions isEmpty:Boolean, head:Int, tail:IntList, nth(index:Int):Int, contains(elem:Int):Boolean and insert(elem:Int):IntList. Furthermore there are some singnatures for functions which should be implemented in this exercise.

Implement the the functions which should follow the described behaviour:

a) delete: Delete the first occurence of an element.
b) deleteAll: Delete all occurences of an element.
c) insertS: Insert an element into a sorterted list, so that the list keeps its sorting.
d) insertSO (Class IntList): Same job as in c
e) insertionSortI: Write a function that sorts an abitrary list. Use for this task the implemented function insertSO. (Itererate through the list and invoke for each element the function insertSO.)
f) insertionSort (class IntList): Same job as in e
g) prefix: puts a prefex in front of the current list
h) flip: flips the current list

Use only means of functional programming – only immutable variables and recursions.