Assignment 4

Due: 4:25pm Nov. 11th (Wed.)

This assignment is done by a group of 2 or 3. Each group submits only 1 copy of the assignment.

README – 2 points
Input/output format (including the function name and the number of arguments) – 3 points

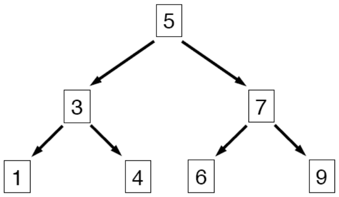
1**. [15 points]** Write a Haskell function **slice i j lt** that returns a list containing elements between the ith and the jth element of list lt. **Assume that i < j and the length of lt is greater than j.**
E.g. > slice 3 6 [2,3,5,7,9,8,1,4]
    [5,7,9,8] //returns elements between the 3rd and 6th element of the list

2. **[20 points]** Write a Haskell function **delete k lt** that removes **every kth** element of a list lt.
E.g. > delete 2 [3,4,5,6,7,8,9]
    [3,5,7,9]

3 [20 points] Consider the binary tree defined below:

data Tree = Leaf Int | Node Tree Int Tree

E.g., Node (Node (Leaf 1) 3 (Leaf 4)) 5 (Node (Leaf 6) 7 (Leaf 9)) specifies the tree:



Define a function **occurs x bt** that checks if an integer x occurs in a binary tree bt.
E.g. > occurs 9 (Node (Node (Leaf 1) 3 (Leaf 4)) 5 (Node (Leaf 6) 7 (Leaf 9)))
    True

4. [20 points] Write a Haskell function **sortlist lt** which sorts a list **lt** of integer lists according to the length of the sublists in **lt** (in ascending order).
E.g: > sortlist([[1,2],[1,2,3],[2,3],[4],[1,2,5,4],[2,3,1]])
    [[4],[1,2],[2,3],[1,2,3],[2,3,1],[1,2,5,4]]

5. **[20 points]** Write a Haskell function **flatten lt**, which transforms a list **lt** of lists of integers into a "flat" list by replacing each sublist in **lt** with its elements.
E.g. > flatten [[1,2],[2,3]]
    [1,2,2,3]

Instruction of Submission:

- Write a program **assignment4.hs** which contains the implementation of all functions.
- Write a **README** file (text file, do not submit a .doc file) which contains
  - You name and email address.
  - Whether your code was tested on bingsuns.
  - (Optional) Briefly describe anything special about your submission that the TA should take note of.

- Place assignment4.hs and README under one directory with a unique name (such as [userid]_4 for assignment 1, e.g. pyang_4).
- Tar the contents of this directory using the following command.
  tar –cvf [directory_name].tar [directory_name]
  E.g. tar -cvf pyang_4.tar pyang_4/
- Upload the tared file you created above on the blackboard.

Academic Honesty:

All students should follow Student Academic Honesty Code (http://watson.binghamton.edu/acadhonor-code.html). All forms of cheating will be treated with utmost seriousness. You may discuss the problems with other students, however, you must write your OWN codes and solutions. Discussing solutions to the problem is NOT acceptable. Copying an assignment from another student or allowing another student to copy your work may lead to an automatic **F** for this course. If you borrow small parts of code/text from Internet, you must acknowledge this in your submission. Also, you must clearly understand and be able to explain the material. Copying entire material or large parts of such material from the Internet will be considered academic dishonesty. Moss will be used to detect plagiarism in programming assignments. You need ensure that your code and documentation are protected and not accessible to other students. Use **chmod 700** command to change the permissions of your working directories before you start working on the assignments. If you have any questions about whether an act of collaboration may be treated as academic dishonesty, please consult the instructor before you collaborate.