HW 16 **Prof. Caldwell**
Due: 2 November 2006 **COSC 3015**

Exercise 0.1. Read pages 185–202 of chapter 6.
Recall the following tree traversal orders:
inorder:

i.) visit the left subtree, then

ii.) visit the root, then

iii.) visit the right subtree.

preorder:

i.) visit the root, then

ii.) visit the left subtree, then

iii.) visit the right subtree.

postorder:

i.) visit the left subtree, then

ii.) visit the right subtree, then

iii.) visit the root.

Consider trees of the following type:

```
data Ntree a = Nil | Node a (Ntree a) (Ntree a) deriving (Eq,Ord,Show)
```

Exercise 0.2. Write three versions of flatten, one for inorder traversal, another giving a preorder traversal and the thrird giving a postorder traversal.

Exercise 0.3 (more difficult) Write a function `reconstruct` that takes as inputs two lists, one contains the preorder flatten and the other list containing the inorder flatten. From these lists reconstruct the tree. In particular, if all the values in the tree t are distinct, then the following identity should hold:

$$t = reconstruct\ (preorder\ t)\ (inorder\ t)$$