Fundamental Algorithms, Section 003
Homework 2, Additional Problems, Fall 22.

1. Suppose the moves in the Tower of Hanoi problem are restricted to be all in a clockwise direction, i.e. from Pole A to Pole B, B to C, and C to A. Give a recursive procedure to move n rings from Pole A to Pole B.
Hint. You will want to use two mutually recursive procedures.

2. Suppose you are given a tree T in which each node is colored blue or red. For each node v, determine the edge-length of the longest all blue path descending from v, storing the result in $v.allb$. v's color is stored in the field $v.clr$.
Hint. What is the answer if $v.clr = $ Red? What answers are possible if $v.clr = $ Blue?

3. Let T be a tree. Task: Output a longest root to leaf path, using a two-pass algorithm. A two-pass algorithm means an algorithm that applies two separate recursive procedures one after the other to tree T. What additional information do we need to store at each node v besides the length of the longest path in its subtree?

4. Let T be a tree. Recall the example in class in which we computed, for each node v, the length of the longest path in v's subtree. Now, in addition, for each v, compute the endpoints of this longest path.
Hint. You will need to maintain some additional information. What information?