Cpt S 450 Homework #3—-bonus

Please print your name!

No late homework!

(very hard) In class, we presented an approach to sort 5 numbers using only 7 comparisons. Now, you are asked to write a C-program to automatically generate such an approach by enumerating through all possible such approaches. Minimally, you may want to tell me how to design such a program. A key is to build a good data structure for the aproach.

An approach A to sort 5 numbers using 7 comparisons can be thought of a binary tree with depth 7. On a branch from a parent to a child, there is a label (such as "$C(3,5) = true$" or "$C(3,5) = false$" —meaning that we are comparing the third number in the input array with the fifth number in the array and the result is either the third is bigger than the fifth or the fifth is bigger than the third, respectively). However, not every such a tree is valid (you need try a few examples) and not every such a tree will end up with a working sorting approach (that can sort 5 numbers).

Good luck.