Fundamental Algorithm Techniques

Problem Set #6

Review on November 15

Problem 1 (Facebook Interview, 10/10 pts)**.** *We consider trees of n children, each with weight $1/n$ of their parent's weight.*

1. *Write the general class for this object*
2. *Generate a tree of depth $N = 3$, with initial parent tree of weight $1/n$*
3. *create a depth first recursive function visiting each node and summing up the weights. Make sure it returns 1 for various n's!*
4. *Same with breadth first, check also 1!*
5. *Same as above for both searches, but each time you reach a node, flip the value sign. Make sure you get 1 and -1 after both first and second searches (run a test with fixed n)!*
6. *Write recursive and non recursive versions of breadth first.*
7. *Whilst depth first can be implemented recursively, it is not recommended for breadth first! Explain why?*
8. *Post discussion and code to github and in time!*