

CS4321 Homework 4

Due Thursday, Nov. 8 at the beginning of class.

(77 points)

1. (10 points) Draw the splay tree after each of the following operation beginning with an empty tree: insert 5, insert 7, insert 3, search 5, insert 8, insert 1, insert 6, search 3.
2. (8 points) Problem 21.2-2, P.504.
3. (8 points) Problem 21.3-1, P.509.
4. (10 points) Problem 16.2-3, P.384.
5. (10 + 5 points) Problem 16-1 a, c , P.402. (The proof in subproblem a is optional).
6. (8 points) Run Prim's algorithm on Figure 23.5 (a) at P.571 using c as the root vertex. Follow the style of Figure 23.5.
7. (8 points) Run Kruscal's algorithm on Figure 23.4 (a) at P.568 where the weight of each edge is changed to $30 - \text{the old weight}$. For example the new wieght of $\langle a, b \rangle$ is 26. Follow the style of Figure 23.4.
8. (10 points) Problem 24.3-1, P.600. You only need to use vertex z as the source.