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CS 590 Homework 2: Application Exercises

Due Date: February 6, 2022

Problem 2.5.32:

Based on the problem instructions, we have the following information:

1) x and y are the employees, who wants to date one another
2) T is the Tree
3) z is the tree root (it is the supervisor of all employees)

From the above and from my analysis,
Algorithm pseudocode is below:

Algorithm LCA(z, x, y):
Input: x, y, z, and T
Output: The Lowest Common Ancestor (LCA) between x and y

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if (z=0) then
  return NULL
```

if(z = x or z = y) then
return z

Left ← LCA(z->left, x, y)
Right ← LCA(z->right, x, y)

if(Left and Right) then
return z

return Left ? Left : Right

Since we are calling the Algorithm recursively multiple times, the running time of the Algorithm will be O(n).