Hacettepe University

Computer Engineering Department

BM203 Software Laboratory I - 2020 Fall

ASSIGNMENT 4

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1 Problem Definition

In this assignment our goal is encode some string based on Huffman algorithm then also decode them . We must use binary tree for achieve this goal.

2 Encoding Algorithm

First I count the characters one by one. For do this I used two arrays in the first one I have my chars and in the second one I have my chars count.After that I sort first array also sort second array based on first array.Then I merge first and second elements under the root of tree and I do that until one item remains in the my arrays.So in the last step I have one pointer in my first array also this is the root of my tree.So I have implement my tree.For the encode I used recursive function.In the beginning .I already copy of first string and with help of the for loop I search each char in my tree.And encode string char by char.And for the last I must save my tree because I want to use them later for the other operations.For save tree I used encode table. I traverse all my tree and while traversing I save each chars encode in a txt file.This txt file name is encodeTable.txt.And this is all for encode algorithm.

3 Decoding Algorithm

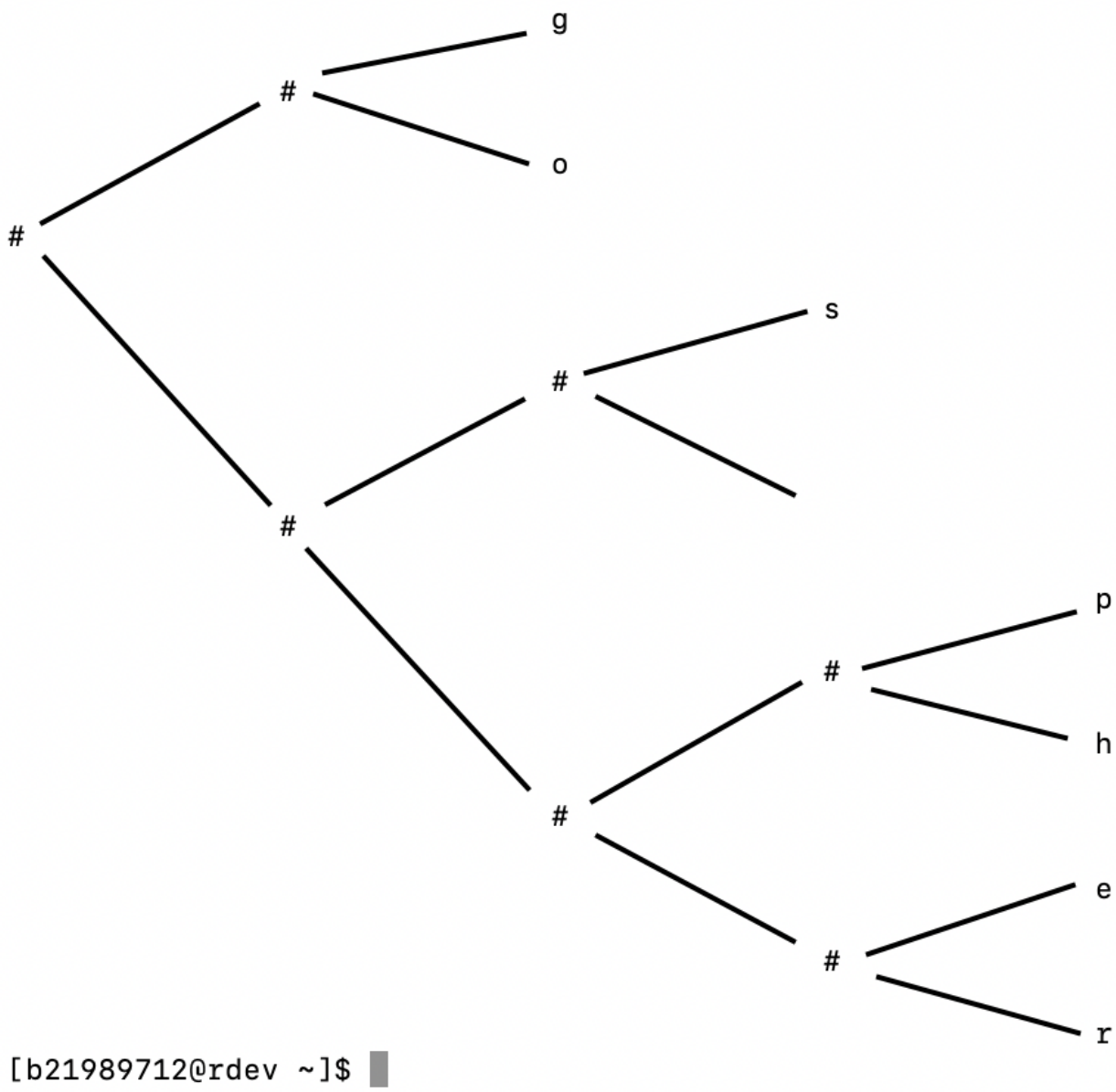
I this step I used my encodeTable.txt. I created a root and add the root child roots based on my encodeTable. After the recreating my tree I used huffman algorithm. If the encode number is zero go to the right else go to left until the node is null.And ı found my char in the tree.I concatenate them for the decode the string. So in the final my first string and last string is same thi is prpves my code is working correctly.

4 List Tree Command Algorithm

I this step I used my encodeTable.txt also.I recreate my tree again and after recreate I used recursive function for print my tree to the console. I used spaces and new lines for my tree can be seen good but while printing step I traverse my tree . So my tree is right to left and looks different from its original view.In the under you can see my tree based on the example we used in the lecture "go go gophers" And it's original view with my hand write.

5 Notes

I used # symbol for root nodes

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[b21989712@rdev ~]$
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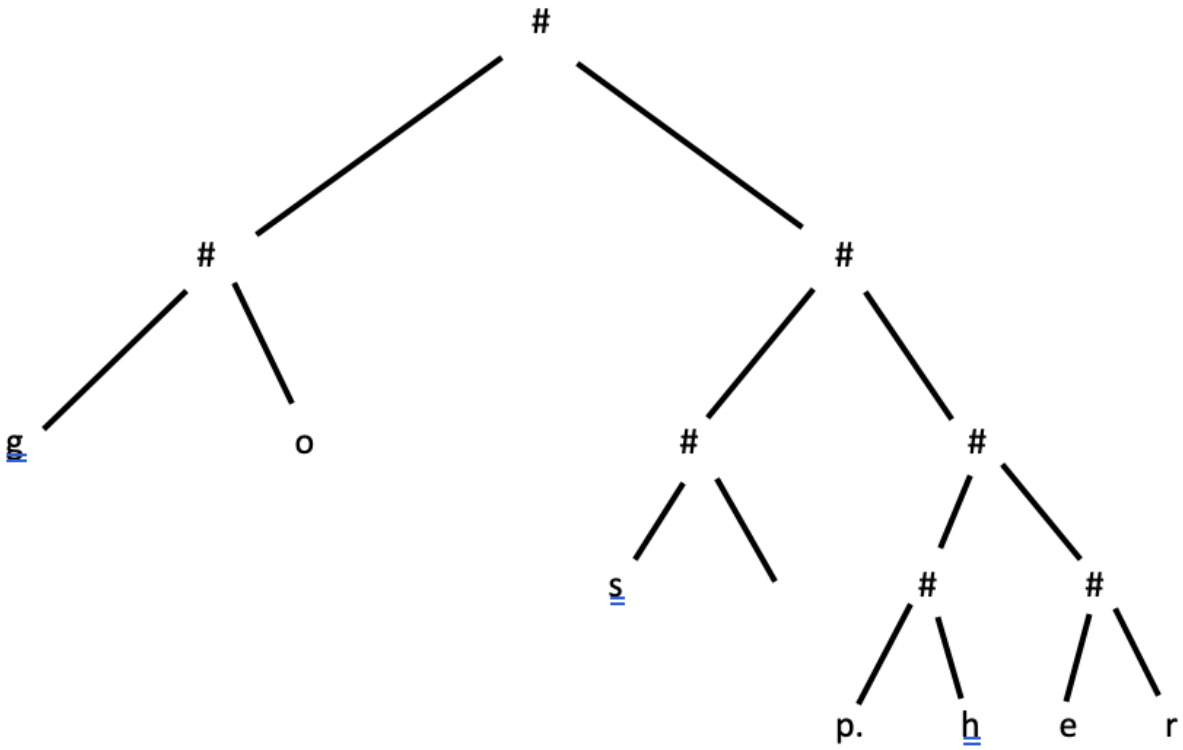
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