HACETTEPE UNIVERSITY

DEPARTMENT OF COMPUTER ENGINEERING

BBM203 - SOFTWARE LABORATORY I

ASSIGNMENT – 4

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Algorithm

1st Part (main.c):

First of all "Enter directory:" is displayed on the screen to notify the paths of the first input and second input files. The first input file is read with *ReadFile1()* function after the user enter the file paths. The first input file consists of two columns and the first column is the number of elements. The second column contains information about which elements the tree will consist of. The first column's informations hold at the array which name is the "first[]". In the same way information in the second column is kept in the array which name is "second[]".

After the first input file is read tree is started to creats. Each of element in tree compose of nodes. This nodes create with struct. One node have a data, childrenCount, and childrenList. The first node in other words root is created in the main function. Then the other nodes are added to the tree with some controls and functions. *(These functions belong to "tree.c" and will be explained in the second part.)*

The other function in the main.c is *ReadFile2()*. This function used for read to the second input file.Second input file contains the command (listing and deletion). We were asked to delete and list the tree in the given assignment. But the deletion operation is not in the code that is the subject of this report. the process from which the listing must be executed should be declared. Two different functions are written for this transaction. One of the functions is *FindingNode()* and the other function is *Print()*.

(These functions belong to "tree.c" and will be explained in the second part.)

Another task of *ReadFile2()* is given the output file *(output.txt)*. For this task firstly open the file and then result is written this file.

2nd part (tree.c) :

First function in the tree.c is *LeafList()*. This function for used to find leaf nodes in the tree and keeps them in the array which name is "list". This fuunction look the node has child or not. Thus determining how the program will work.

The other function is *Insert()* which is used for adding node to the tree. Where it is checked whether the node is a child. If the node has no children, then creates *childrenList[]* with the <u>malloc</u>. but if there is a child in the node, it will be opened new field in the *childrenList[]* using <u>realloc</u>.

Third function is *FindingNode()*. The user can specify a starting point for the tree, and this function is used to find the specified point.

And the last function is *Print()* function. The purpose of this function is to list the tree starting from the specified node.