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Algorithm Steps

Step 0: (string) nameInFile←args[0]
inFile←open name
InFileoutFile←open args
[1]Step 1: computeCharCounts (inFile, charCountAry)
Step 2: printCountAry (charCountAry, outFile)
Step 3: constructHuffmanLList (charCountAry, outFile)
Step 4: constructHuffmanBinTree (listHead, outFile)
Step 5: printList (listHead, outFile)
Step 6: preOrderTraversal (Root, outFile)inOrderTraversal (Root, outFile)postOrderTraversal (Root, outFile)
Step 7: constructCharCode (Root, "")step 8: userInterface (Root, outFile) // given below
step 8: userInterface (Root, outFile) // given below
step 9: close all files.

Source Code:

Main.java

```java
import java.io.File;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
import java.util.Scanner;

public class Main {

    public static void main(String[] args) throws IOException {

        File inFile = new File(args[0]);
        File out = new File(args[1]);

        FileWriter outFile = new FileWriter(out);

        HuffmanCoding proj3 = new HuffmanCoding();
        proj3.computeCharCounts(inFile);

        outFile.write("*******************--PRINTING COUNT ARRAY--
```

```java
******************\n");
        proj3.printCountAry(outFile);
        outFile.write("\n\n******************--END OF COUNT ARRAY--
******************\n\n");

        outFile.write("\n\n******************--PRINTING HUFFMAN LIST--
******************\n");
        proj3.constructHuffmanLList(proj3.charCountAry, outFile);
        outFile.write("\n\n******************--END OF HUFFMAN LIST--
******************\n");

        outFile.write("\n\n******************--PRINTING HUFFMAN TREE--
******************\n");
        proj3.constructHuffmanBinTree(proj3.LL.getHead(), outFile);
        outFile.write("\n\n******************--PRINTING HUFFMAN TREE--
******************\n");

        outFile.write("\n\n******************--PRINTING LINKED LIST--
******************\n");
        proj3.LL.printList(outFile);
        outFile.write("\n\n******************--END OF LINKED LIST--
******************\n\n");

        outFile.write("\n\n******************--PRINTING PRE-ORDER TRAVERSAL--
******************\n");
        proj3.biTree.preOrderTraversal(proj3.biTree.getRoot(), outFile);
        outFile.write("\n\n******************--END OF PRE-ORDER TRAVERSAL--
******************\n\n");

        outFile.write("\n\n******************--PRINTING IN-ORDER TRAVERSAL--
******************\n");
        proj3.biTree.inOrderTraversal(proj3.biTree.getRoot(), outFile);
        outFile.write("\n\n******************--END OF IN-ORDER TRAVERSAL--
******************\n\n");

        outFile.write("\n\n******************--PRINTING POST-ORDER TRAVERSAL-
-******************\n");
        proj3.biTree.postOrderTraversal(proj3.biTree.getRoot(), outFile);
        outFile.write("\n\n******************--END OF POST-ORDER TRAVERSAL--
******************\n\n");

        proj3.constructCharCode(proj3.biTree.getRoot(), "");
        proj3.userInterface(proj3.biTree.getRoot(), outFile);
        outFile.close();

    }
}
```

TreeNode.java
```java
import java.io.FileWriter;
import java.io.IOException;

public class TreeNode {

    String chStr;
    int frequency;
    String code;
```

```java
    TreeNode left;
    TreeNode right;
    TreeNode next;

    public TreeNode(String chStr, int frequency, String code, TreeNode left,
TreeNode right, TreeNode next){

        this.chStr = chStr;
        this.frequency = frequency;
        this.code = code;
        this.left = left;
        this.right = right;
        this.next = next;


    }

    public void printNode(TreeNode node, FileWriter output) throws
IOException {
        String nextchar;
        String Rchar;
        String Lchar;

        if (node.next == null) {
            nextchar = "NULL";
        }else{
            nextchar = node.next.chStr;
        }
        if (node.right == null) {
            Rchar = "NULL";
        } else {
            Rchar = node.right.chStr;
        }

        if (node.left == null) {
            Lchar = "NULL";
        } else {
            Lchar = node.left.chStr;
        }

        output.write("(" + node.chStr + "," + node.frequency + "," +
node.code +  "," + nextchar +  "," + Lchar + "," + Rchar +  ")");


    }



}
```

LinkedList.java

```java
import java.io.FileWriter;
import java.io.IOException;

public class LinkedList {
```

```java
        TreeNode listHead;


        public LinkedList(){
            listHead = new TreeNode("dummy", 0, "", null, null, null);
        }

        public TreeNode getHead() {
            return listHead;
        }


        public TreeNode findSpot(TreeNode listHead, TreeNode newNode){

            TreeNode spot = listHead;
            while(spot.next!=null && spot.next.frequency < newNode.frequency){
                spot=spot.next;
            }

            return spot;
        }

        public void insertNewNode(TreeNode listHead, TreeNode newNode){

            TreeNode spot = findSpot(listHead, newNode);

            newNode.next = spot.next;
            spot.next = newNode;

        }

        public void printList(FileWriter outputFile) throws IOException {

            TreeNode curr = this.listHead;

            while(curr != null){
                curr.printNode(curr, outputFile);
                curr = curr.next;
                outputFile.write("---->\n");
            }

            outputFile.write(" NULL\n");

        }


}
```

BinaryTree.java

```java
import java.io.FileWriter;
import java.io.IOException;
```

```java
public class BinaryTree {

    TreeNode root;
    TreeNode trueRoot;

    public BinaryTree(){
        root = new TreeNode(null, -1, null, null, null, null);
        trueRoot = root;
    }

    public boolean isLeaf(TreeNode node){

        return node.right == null && node.left == null;
    }
    public void setRoot(TreeNode node) {
        root = node;
    }

    public TreeNode getRoot(){
        return root;
    }


    public void preOrderTraversal(TreeNode curr, FileWriter outFile) throws
IOException {
        if (isLeaf(curr)) {
            curr.printNode(curr, outFile);
            outFile.write("\n");
        } else {
            curr.printNode(curr, outFile);
            outFile.write("\n");
            preOrderTraversal(curr.left, outFile);
            preOrderTraversal(curr.right, outFile);


        }
    }

    public void inOrderTraversal(TreeNode curr, FileWriter outFile) throws
IOException {
        if (isLeaf(curr)){
            curr.printNode(curr,outFile);
            return;
        }
        inOrderTraversal(curr.left, outFile);
        outFile.write("\n");
        curr.printNode(curr,outFile);
        outFile.write("\n");
        inOrderTraversal(curr.right, outFile);


    }

    public void postOrderTraversal(TreeNode curr, FileWriter outFile) throws
IOException {
        if (isLeaf(curr)){
            curr.printNode(curr,outFile);
            return;
        }
```

```
            postOrderTraversal(curr.left, outFile);
            outFile.write("\n");
            postOrderTraversal(curr.right, outFile);
            outFile.write("\n");
            curr.printNode(curr,outFile);

    }
}
```

HuffmanCoding.java

```java
import java.io.*;
import java.security.spec.EncodedKeySpec;
import java.text.DecimalFormat;
import java.util.Arrays;
import java.util.Objects;
import java.util.Scanner;

public class HuffmanCoding {

    public int[] charCountAry;
    String[] charCode;
    public LinkedList LL;
    public BinaryTree biTree;


    public HuffmanCoding(){
        charCountAry = new int[256];
        charCode = new String[256];
        this.LL = new LinkedList();
        this.biTree = new BinaryTree();

//        Arrays.fill(charCode, "");
    }

    public void computeCharCounts(File inFile) throws IOException {

//        int[] input = new int[256];
        FileReader fr=new FileReader(inFile);    //reads the file
        BufferedReader br=new BufferedReader(fr);  //creates a buffering
character input stream
        String line;

        while((line=br.readLine())!=null){
            char[] ch = line.toCharArray();
            for(char c : ch){
                charCountAry[c]++;
            }
        }

    }

    public void printCountAry(FileWriter outputFile) throws IOException {

        for(int i=0; i<charCountAry.length;i++){
```

```java
            if(charCountAry[i]>0){
                outputFile.write(i + "   " +  (char) i + "   " +
charCountAry[i] + "\n");
            }

        }
    }


    public void constructHuffmanLList(int[] charArray, FileWriter outFile)
throws IOException {

        for (int index = 0; index < 256; index++) {
            if (this.charCountAry[index] > 0) {
                String chr = Character.toString((char) index);
                int freq = this.charCountAry[index];
                TreeNode newNode = new TreeNode(chr, freq, "", null, null,
null);

                LL.insertNewNode(LL.getHead(), newNode);
                LL.printList(outFile);
                outFile.write("\n\n");
            }
        }

    }

    public void constructHuffmanBinTree(TreeNode listHead, FileWriter
outputFile) throws IOException {

        while(listHead.next!=null && listHead.next.next != null){
            int freq = listHead.next.frequency +
listHead.next.next.frequency;
            String chr = listHead.next.chStr + listHead.next.next.chStr;
            TreeNode newNode = new TreeNode(chr, freq, "", listHead.next,
listHead.next.next, null);
            LL.insertNewNode(listHead, newNode);
            LL.printList(outputFile);
            outputFile.write("\n\n");
            listHead.next= listHead.next.next.next;
        }
        biTree.setRoot(listHead.next);
    }


    public void constructCharCode(TreeNode t, String code){
        if(biTree.isLeaf(t)){
            t.code = code;
//          System.out.println("t.code is: " + code);
            int index = t.chStr.charAt(0);
//          System.out.println("index is: " + index);
            charCode[index] = code;
        }else{

            this.constructCharCode(t.left, code + "0");
            this.constructCharCode(t.right, code + "1");
        }
```

```java
    }

    public void encode(File inFile, FileWriter compFile, FileWriter
outputFile) throws IOException {

        String code;
        int index;
        FileReader fr=new FileReader(inFile);    //reads the file
        BufferedReader br=new BufferedReader(fr);  //creates a buffering
character input stream
        String line;

        while((line=br.readLine())!=null){
            char[] ch = line.toCharArray();
            for(char c : ch){
                index = c;
                code = this.charCode[index];
                if(code!=null){
                    outputFile.write("char: "+ c + "     index: " + index + "
code: " + code + "\n");
                    compFile.write(code);
                }


            }
        }

    }


    public void decode(FileReader compFile, FileWriter decompFile) throws
IOException {

        TreeNode spot = biTree.getRoot();
        int oneBit;

        BufferedReader br=new BufferedReader(compFile);  //creates a
buffering character input stream

//          String line;
//          while((line=br.readLine())!=null) {
//              char[] ch = line.toCharArray();
//              for(char c : ch) {
//                  oneBit = c;
//                  if (biTree.isLeaf(spot)) {
//                      decompFile.write(spot.chStr);
//                      spot = biTree.getRoot();
//                  }
//
//                  System.out.println("OneBit is:     "+ oneBit);
//                  if (oneBit == '0') {
//                      spot = spot.left;
//                  } else if (oneBit == '1') {
//                      spot = spot.right;
//                  } else if(oneBit == 10){
//                      decompFile.write("\n");
//                  }else{
```

```java
//                  System.out.println();
//              }
//          }
//
//      }


        while((oneBit = br.read()) != -1){

            if (biTree.isLeaf(spot)) {
                decompFile.write(spot.chStr);
                spot = biTree.getRoot();
            }

            System.out.println("OneBit is:    "+ oneBit);
            if (oneBit == '0') {
                spot = spot.left;
            } else if (oneBit == '1') {
                spot = spot.right;
            } else if(oneBit == 10 ){
                decompFile.write("\n");
            } else {
                System.out.println("Error! The compress file contains invalid
character!");
            }
        }

        if(!biTree.isLeaf(spot))
            System.out.println("Error: The compress file is corrupted!");


    }


    public void userInterface(TreeNode root, FileWriter outFile) throws
IOException {

        String nameOrg;
        String nameComp;
        String nameDecomp;

        Scanner userInput = new Scanner(System.in);
        System.out.println("Would you like to compress a file? Y/N?");


        if(userInput.nextLine().equals("N")){
            return;
        }

        userInput = new Scanner(System.in);
        System.out.println("what is the name of the file to be compressed
without extensions (.txt)");

        nameOrg = userInput.nextLine();;
        nameComp = nameOrg + "_Compressed.txt";
        nameDecomp = nameOrg + "_DeCompressed.txt";
        nameOrg = nameOrg + ".txt";
```

```
        File orgFile = new File(nameOrg);
        FileWriter compF = new FileWriter(nameComp);
        FileWriter decompFile = new FileWriter(nameDecomp);

        encode(orgFile, compF, outFile);

        compF.close();

        FileReader compFile = new FileReader(nameComp);
        decode(compFile, decompFile);

        decompFile.close();
        compFile.close();


    }
}
```

OUTPUT

Test1_compressed.txt

```
0001101001000101110000110110111111001010101011011100110111110010111111101001101110111110101001011001111110
0110001011111001010110111001001110110000110111100000110001011011100110000111011111010011011101111100100000
1010000110000101011010111100110001011100000110010001001111010111000000101011001001101010101111000001010
1001011110001110001110001101101011110100110111010100110111110010111111110100110111011111000110000010101010
0011111100101110011011001101111100101101100101101110001000101000110100110010001011100110110111110010100
1111100110101101111111010100100100100001011001011010100101001111001011111110100110111011111011010101010010
10101001010001010000111100011111110011000011111001011110101011000110010010100011010001111110000001010
1101111101011110101001110000111000010110000110011111110110110111111111011011001000010111100001100100010011
11010101101010111000001011110010101011011010011011000111010101110001010001001001101000110001111111000
00111001000100111101011100000110010111101100110011100100000100111011101010010111010010110111011110110000
0111000011001001010101110000111000010110000110011111101001101111000011001000100111101010110101010111111010
1011111111001010100101001010011011111000110010000111010100010100001101101100000001001100000111110010010
11010011011110000001001101101101101110101111100110010011011100100001011110001001001001100001111101001101110
1111010100101100110001111110000000011111110100110110111011100011100110110011011011010100101111100101111101100
000101100101110011111010101001101101101111101111110000101000001001010010110111110010111111101001101110111
000001101100011100100000011111000001110010001001111010111000000101011001001101010101011110000010101001
1000111
```

Test1_decompressed

you can stand on the top of New England: the summit of Mount Washington.Get there on the Auto Road (self-drive or van tours)or on the historic Cog Railway. Want to climb an easy mountain?Near Jaffrey, Mount Monadnock is the "most climbed mountain in North America's"with great views from the top. In the Lakes Region,take a cruise on the M/S Mount Washington

Test2_compressed.txt

```
0001111000100010111001101101111001000001110101110101000011110000001110101011101011011111100101111001000101010101101111000111101011000111000011000101101110110011011010100101111000110001101110001111010100111111010011011011111100101110110110010011011011110000000000101100010110111001101111100111100101000011011010100001111111110010001011010010110111101100101010000110100001001001101100011010110010100110110101010100001101111100110010111000110001011100000110100101110010000010000010110111111011001011100011111101101101111101011010100110011110010001001000011000111111110110001101100110000101100101101010010110100011000111111100000001010010010011011000100100000011000111111101100011011001100001011001011010100110100011000111111110000000101001001100100111011000000011000111111000010110100011111100011111110000000110001101101111000111110101001101101010011000001101011100011000001111111110001100100001101010001010000110110110000000010111100111000001101101010010101011100101010110110111000011000110101100110011100100110101001101001101110000101010010110101010011110000101011100011000001111111100010101011000010101110000001101111001110010001111101001101111011011100110111010000010011111100100101011100001110111100011110100000101000000010100000111101100011111100000010101110100000101101111000010101001101101010010001101100011011001110010101110000011100110110110000110010111001010100100101110100101100101110010111110010111111110010010110111010011011010101100110001011101010101111111011000010000010101001100111110101001111011011100110111110010101010011100110110110000111001111101010010001111110001111000010010001010111100000111100010101111000110001100001010000010111111101101100110110000011101000110110010110101111000111101111011100011111100101101111101000010100101000010001010101100000010010101111101111000001000010010110101110001000111
```

Test2_decompressed.txt

Drive scenic State Route 169 parallel to the Rhode Island border, with picture-pretty villages such as Canterbury, Pomphrey, Brooklyn, and Woodstock. In Old Mystic, tour B. F. Clyde Cider Mill, America's oldest steam-powered cider mill, family owned and run since 1881. Watch cider-making demonstrations on weekends in October and November. During fall harvest time, learn the difference between Merlot and Chardonnay, Cayuga and Seyval at the 25wineries along the Connecticut Wine Trail

Output.txt

```
******************--PRINTING COUNT ARRAY--********************
32    746
33  !  2
34  "  4
39  '  7
40  (  3
41  )  3
44  ,  60
45  -  19
46  .  39
47  /  1
48  0  4
49  1  7
50  2  2
51  3  3
53  5  2
```

```
54  6  1
55  7  1
56  8  3
57  9  2
58  :  13
59  ;  2
63  ?  3
65  A  16
66  B  12
67  C  14
68  D  7
69  E  8
70  F  3
71  G  6
72  H  6
73  I  12
74  J  1
76  L  7
77  M  25
78  N  20
79  O  8
80  P  4
82  R  11
83  S  12
84  T  6
85  U  2
86  V  4
87  W  12
89  Y  1
97  a  312
98  b  45
99  c  101
100  d  112
101  e  379
102  f  71
103  g  68
104  h  136
105  i  231
106  j  4
107  k  55
108  l  151
109  m  69
110  n  271
111  o  285
112  p  63
113  q  1
```

114 r 229
115 s 216
116 t 312
117 u 102
118 v 42
119 w 40
120 x 5
121 y 49
122 z 2

*******************--END OF COUNT ARRAY--*********************

*******************--PRINTING HUFFMAN LIST--*********************
(dummy,0,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,",NULL,NULL)---->
(",4,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->

(',7,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->

(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,/,NULL,NULL)---->
(/,1,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,/,NULL,NULL)---->
(/,1,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,/,NULL,NULL)---->
(/,1,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,1,NULL,NULL)---->
(1,7,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->

(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,/,NULL,NULL)---->
(/,1,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,1,NULL,NULL)---->
(1,7,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,/,NULL,NULL)---->
(/,1,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,1,NULL,NULL)---->
(1,7,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,/,NULL,NULL)---->
(/,1,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->

```
((,3,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,1,NULL,NULL)---->
(1,7,,',NULL,NULL)---->
(',7,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
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(v,42,,b,NULL,NULL)---->
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(W,12,,S,NULL,NULL)---->
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(C,14,,A,NULL,NULL)---->
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(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
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(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
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(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
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*******************--END OF HUFFMAN LIST--*********************

*******************--PRINTING HUFFMAN TREE--*********************
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(Y,1,,J,NULL,NULL)---->
(J,1,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
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(/,1,,qY,NULL,NULL)---->
(qY,2,,z,q,Y)---->
(z,2,,U,NULL,NULL)---->
(U,2,,;,NULL,NULL)---->
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(3,3,,),NULL,NULL)---->

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(P,4,,0,NULL,NULL)---->
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(H,6,,G,NULL,NULL)---->
(G,6,,L,NULL,NULL)---->
(L,7,,D,NULL,NULL)---->
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(1,7,,',NULL,NULL)---->
(',7,,O,NULL,NULL)---->
(O,8,,E,NULL,NULL)---->
(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
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(?,3,,8,NULL,NULL)---->
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(E,8,,R,NULL,NULL)---->
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(v,42,,b,NULL,NULL)---->
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(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
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(f,71,,c,NULL,NULL)---->
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(j,4,,V,NULL,NULL)---->
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(H,6,,G,NULL,NULL)---->
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(L,7,,D,NULL,NULL)---->
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(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
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(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
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(x,5,,T,NULL,NULL)---->
(T,6,,H,NULL,NULL)---->
(H,6,,G,NULL,NULL)---->
(G,6,,L,NULL,NULL)---->
(L,7,,D,NULL,NULL)---->
(D,7,,1,NULL,NULL)---->
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(',7,,O,NULL,NULL)---->
(O,8,,E,NULL,NULL)---->
(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
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(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
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(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
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(b,45,,y,NULL,NULL)---->
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(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
( ,746,,NULL,NULL,NULL)---->
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(6/J7j,8,,U;qYz,6/J7,j)---->
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(C,14,,A,NULL,NULL)---->
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(6/J7j,8,,U;qYz,6/J7,j)---->
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(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
(TH,12,,83F?,T,H)---->
(83F?,12,,W,83,F?)---->
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(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
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(TH,12,,83F?,T,H)---->
(83F?,12,,W,83,F?)---->
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(2!95,8,,O,2!,95)---->
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(83F?,12,,W,83,F?)---->
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(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
(M,25,,.,NULL,NULL)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
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(O,8,,E,NULL,NULL)---->
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(x)(,11,,R,x,)()---->
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(TH,12,,83F?,T,H)---->
(83F?,12,,W,83,F?)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
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(GL,13,,:,G,L)---->
(:,13,,D1,NULL,NULL)---->

(D1,14,,C,D,1)---->
(C,14,,'0",NULL,NULL)---->
('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
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(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
(M,25,,.,NULL,NULL)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
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(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

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(TH,12,,83F?,T,H)---->
(83F?,12,,W,83,F?)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->

(B,12,,GL,NULL,NULL)---->
(GL,13,,:,G,L)---->
(:,13,,D1,NULL,NULL)---->
(D1,14,,C,D,1)---->
(C,14,,'0",NULL,NULL)---->
('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
(A,16,,-,NULL,NULL)---->
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(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,M,x)(,R)---->
(M,25,,.,NULL,NULL)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
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(f,71,,c,NULL,NULL)---->
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(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
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(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
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(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
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(83F?,12,,W,83,F?)---->
(W,12,,S,NULL,NULL)---->

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(I,12,,B,NULL,NULL)---->
(B,12,,GL,NULL,NULL)---->
(GL,13,,:,G,L)---->
(:,13,,D1,NULL,NULL)---->
(D1,14,,C,D,1)---->
(C,14,,'0",NULL,NULL)---->
('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
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(-,19,,N,NULL,NULL)---->
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(x)(R,22,,TH83F?,x)(,R)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,.,NULL,NULL)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
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(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
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(dummy,0,,W,NULL,NULL)---->

(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,GL,NULL,NULL)---->
(GL,13,,:,G,L)---->
(:,13,,D1,NULL,NULL)---->
(D1,14,,C,D,1)---->
(C,14,,'0",NULL,NULL)---->
('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
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(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,WS,x)(,R)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
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(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
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(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
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(i,231,,n,NULL,NULL)---->
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(GL,13,,:,G,L)---->
(:,13,,D1,NULL,NULL)---->
(D1,14,,C,D,1)---->
(C,14,,'0",NULL,NULL)---->
('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,IB,x)(,R)---->
(IB,24,,WS,I,B)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,.,NULL,NULL)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
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(GL,13,,:,G,L)---->
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('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,IB,x)(,R)---->
(IB,24,,WS,I,B)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,GL:,NULL,NULL)---->
(GL:,26,,.,GL,:)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
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(,,60,,p,NULL,NULL)---->
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(g,68,,m,NULL,NULL)---->
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(f,71,,c,NULL,NULL)---->
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(d,112,,h,NULL,NULL)---->
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(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
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(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,746,,NULL,NULL,NULL)---->
 NULL
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(dummy,0,,D1,NULL,NULL)---->
(D1,14,,C,D,1)---->
(C,14,,'0",NULL,NULL)---->
('0",15,,OE,',0")---->
(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,IB,x)(,R)---->
(IB,24,,WS,I,B)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,GL:,NULL,NULL)---->
(GL:,26,,D1C,GL,:)---->
(D1C,28,,.,D1,C)---->
(.,39,,w,NULL,NULL)---->
(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
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(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
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(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,'0",NULL,NULL)---->
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(OE,16,,U;qYz2!95,O,E)---->
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
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(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,IB,x)(,R)---->
(IB,24,,WS,I,B)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
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(GL:,26,,D1C,GL,:)---->
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('0"OE,31,,,'0",OE)---->
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(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
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(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
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(N,20,,x)(R,NULL,NULL)---->
(x)(R,22,,IB,x)(,R)---->
(IB,24,,WS,I,B)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,GL:,NULL,NULL)---->
(GL:,26,,D1C,GL,:)---->
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(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
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(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
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(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
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(,746,,NULL,NULL,NULL)---->
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(IB,24,,WS,I,B)---->
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(TH83F?,24,,M,TH,83F?)---->
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(A-,35,,.,A,-)---->
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(w,40,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
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(dummy,0,,N,NULL,NULL)---->
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(x)(R,22,,IB,x)(,R)---->
(IB,24,,WS,I,B)---->
(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
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(GL:,26,,D1C,GL,:)---->

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(b,45,,y,NULL,NULL)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,NULL,NULL)---->
(.,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
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(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
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(t,312,,a,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
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(WS,24,,TH83F?,W,S)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,GL:,NULL,NULL)---->
(GL:,26,,D1C,GL,:)---->
(D1C,28,,'0"OE,D1,C)---->
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)---->
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)---->
(A-,35,,.,A,-)---->
(.,39,,w,NULL,NULL)---->
(w,40,,Nx)(R,NULL,NULL)---->
(Nx)(R,42,,v,N,x)(R)---->

(v,42,,b,NULL,NULL)---->
(b,45,,IBWS,NULL,NULL)---->
(IBWS,48,,y,IB,WS)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,TH83F?,NULL,NULL)---->
(TH83F?,24,,M,TH,83F?)---->
(M,25,,GL:,NULL,NULL)---->
(GL:,26,,D1C,GL,:)---->
(D1C,28,,'0"OE,D1,C)---->
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)---->
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)---->
(A-,35,,.,A,-)---->
(.,39,,w,NULL,NULL)---->
(w,40,,Nx)(R,NULL,NULL)---->
(Nx)(R,42,,v,N,x)(R)---->
(v,42,,b,NULL,NULL)---->
(b,45,,IBWS,NULL,NULL)---->
(IBWS,48,,TH83F?M,IB,WS)---->
(TH83F?M,49,,y,TH83F?,M)---->
(y,49,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->

(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,GL:,NULL,NULL)---->
(GL:,26,,D1C,GL,:)---->
(D1C,28,,'0"OE,D1,C)---->
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)---->
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)---->
(A-,35,,.,A,-)---->
(.,39,,w,NULL,NULL)---->
(w,40,,Nx)(R,NULL,NULL)---->
(Nx)(R,42,,v,N,x)(R)---->
(v,42,,b,NULL,NULL)---->
(b,45,,IBWS,NULL,NULL)---->
(IBWS,48,,TH83F?M,IB,WS)---->
(TH83F?M,49,,y,TH83F?,M)---->
(y,49,,GL:D1C,NULL,NULL)---->
(GL:D1C,54,,k,GL:,D1C)---->
(k,55,,,,NULL,NULL)---->
(,,60,,p,NULL,NULL)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,c,NULL,NULL)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->

(s,216,,r,NULL,NULL)----->
(r,229,,i,NULL,NULL)----->
(i,231,,n,NULL,NULL)----->
(n,271,,o,NULL,NULL)----->
(o,285,,t,NULL,NULL)----->
(t,312,,a,NULL,NULL)----->
(a,312,,e,NULL,NULL)----->
(e,379,, ,NULL,NULL)----->
(,746,,NULL,NULL,NULL)----->
 NULL

(dummy,0,,'0"OE,NULL,NULL)----->
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)----->
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)----->
(A-,35,,.,A,-)----->
(.,39,,w,NULL,NULL)----->
(w,40,,Nx)(R,NULL,NULL)----->
(Nx)(R,42,,v,N,x)(R)----->
(v,42,,b,NULL,NULL)----->
(b,45,,IBWS,NULL,NULL)----->
(IBWS,48,,TH83F?M,IB,WS)----->
(TH83F?M,49,,y,TH83F?,M)----->
(y,49,,GL:D1C,NULL,NULL)----->
(GL:D1C,54,,k,GL:,D1C)----->
(k,55,,,,NULL,NULL)----->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)----->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)----->
(p,63,,g,NULL,NULL)----->
(g,68,,m,NULL,NULL)----->
(m,69,,f,NULL,NULL)----->
(f,71,,c,NULL,NULL)----->
(c,101,,u,NULL,NULL)----->
(u,102,,d,NULL,NULL)----->
(d,112,,h,NULL,NULL)----->
(h,136,,l,NULL,NULL)----->
(l,151,,s,NULL,NULL)----->
(s,216,,r,NULL,NULL)----->
(r,229,,i,NULL,NULL)----->
(i,231,,n,NULL,NULL)----->
(n,271,,o,NULL,NULL)----->
(o,285,,t,NULL,NULL)----->
(t,312,,a,NULL,NULL)----->
(a,312,,e,NULL,NULL)----->
(e,379,, ,NULL,NULL)----->
(,746,,NULL,NULL,NULL)----->

NULL

(dummy,0,,A-,NULL,NULL)---->
(A-,35,,.,A,-)---->
(.,39,,w,NULL,NULL)---->
(w,40,,Nx)(R,NULL,NULL)---->
(Nx)(R,42,,v,N,x)(R)---->
(v,42,,b,NULL,NULL)---->
(b,45,,IBWS,NULL,NULL)---->
(IBWS,48,,TH83F?M,IB,WS)---->
(TH83F?M,49,,y,TH83F?,M)---->
(y,49,,GL:D1C,NULL,NULL)---->
(GL:D1C,54,,k,GL:,D1C)---->
(k,55,,,,NULL,NULL)---->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,c,A-,.)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
NULL

(dummy,0,,w,NULL,NULL)---->
(w,40,,Nx)(R,NULL,NULL)---->
(Nx)(R,42,,v,N,x)(R)---->
(v,42,,b,NULL,NULL)---->
(b,45,,IBWS,NULL,NULL)---->
(IBWS,48,,TH83F?M,IB,WS)---->
(TH83F?M,49,,y,TH83F?,M)---->

(y,49,,GL:D1C,NULL,NULL)---->
(GL:D1C,54,,k,GL:,D1C)---->
(k,55,,,,NULL,NULL)---->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,c,w,Nx)(R)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,v,NULL,NULL)---->
(v,42,,b,NULL,NULL)---->
(b,45,,IBWS,NULL,NULL)---->
(IBWS,48,,TH83F?M,IB,WS)---->
(TH83F?M,49,,y,TH83F?,M)---->
(y,49,,GL:D1C,NULL,NULL)---->
(GL:D1C,54,,k,GL:,D1C)---->
(k,55,,,,NULL,NULL)---->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,c,v,b)---->
(c,101,,u,NULL,NULL)---->

(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,IBWS,NULL,NULL)---->
(IBWS,48,,TH83F?M,IB,WS)---->
(TH83F?M,49,,y,TH83F?,M)---->
(y,49,,GL:D1C,NULL,NULL)---->
(GL:D1C,54,,k,GL:,D1C)---->
(k,55,,,,NULL,NULL)---->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->

NULL

(dummy,0,,y,NULL,NULL)---->
(y,49,,GL:D1C,NULL,NULL)---->
(GL:D1C,54,,k,GL:,D1C)---->
(k,55,,,,NULL,NULL)---->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,h,NULL,NULL)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,k,NULL,NULL)---->
(k,55,,,,NULL,NULL)---->
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->

(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,h,k,,)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)---->
(p,63,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->

(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,g,NULL,NULL)---->
(g,68,,m,NULL,NULL)---->
(m,69,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->
(gm,137,,l,g,m)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,f,NULL,NULL)---->
(f,71,,A-.,NULL,NULL)---->
(A-.,74,,wNx)(R,A-,.)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->

(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,wNx)(R,NULL,NULL)---->
(wNx)(R,82,,vb,w,Nx)(R)---->
(vb,87,,IBWSTH83F?M,v,b)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->
(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,s,wNx)(R,vb)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,IBWSTH83F?M,NULL,NULL)---->
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)---->
(c,101,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->

(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->
(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)---->
(IBWSTH83F?Mc,198,,s,IBWSTH83F?M,c)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,u,NULL,NULL)---->
(u,102,,yGL:D1C,NULL,NULL)---->
(yGL:D1C,103,,d,y,GL:D1C)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->
(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)---->
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)---->
(uyGL:D1C,205,,s,u,yGL:D1C)---->
(s,216,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,d,NULL,NULL)---->
(d,112,,k,,NULL,NULL)---->
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->
(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)---->
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)---->
(uyGL:D1C,205,,s,u,yGL:D1C)---->
(s,216,,dk,,NULL,NULL)---->
(dk,,227,,r,d,k,)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,'0"OEU;qYz2!95VP6/J7jp,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)---->
(h,136,,gm,NULL,NULL)---->
(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)---->
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)---->
(uyGL:D1C,205,,s,u,yGL:D1C)---->
(s,216,,dk,,NULL,NULL)---->
(dk,,227,,r,d,k,)---->
(r,229,,i,NULL,NULL)---->
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,o,NULL,NULL)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,gm,NULL,NULL)---->
(gm,137,,fA-.,g,m)---->
(fA-.,145,,l,f,A-.)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)---->
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)---->
(uyGL:D1C,205,,s,u,yGL:D1C)---->
(s,216,,dk,,NULL,NULL)---->
(dk,,227,,r,d,k,)---->
(r,229,,i,NULL,NULL)---->
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,l,NULL,NULL)---->
(l,151,,wNx)(Rvb,NULL,NULL)---->
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)---->
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)---->
(uyGL:D1C,205,,s,u,yGL:D1C)---->
(s,216,,dk,,NULL,NULL)---->
(dk,,227,,r,d,k,)---->
(r,229,,i,NULL,NULL)---->
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,, ,NULL,NULL)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,IBWSTH83F?Mc,NULL,NULL)---->

(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)---->
(uyGL:D1C,205,,s,u,yGL:D1C)---->
(s,216,,dk,,NULL,NULL)---->
(dk,,227,,r,d,k,)---->
(r,229,,i,NULL,NULL)---->
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,, ,IBWSTH83F?Mc,uyGL:D1C)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,s,NULL,NULL)---->
(s,216,,dk,,NULL,NULL)---->
(dk,,227,,r,d,k,)---->
(r,229,,i,NULL,NULL)---->
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,, ,s,dk,)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,r,NULL,NULL)---->
(r,229,,i,NULL,NULL)---->
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->

(a,312,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,,ri,s,dk,)---->
(ri,460,, ,r,i)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)---->
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)---->
(n,271,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,,ri,s,dk,)---->
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)---->
('0"OEU;qYz2!95VP6/J7jphn,533,, ,'0"OEU;qYz2!95VP6/J7jph,n)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,285,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,,ri,s,dk,)---->
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)---->
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,567,, ,gmfA-.,o)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,lwNx)(Rvb,NULL,NULL)---->

(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,,ri,s,dk,)---->
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)---->
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,567,,ta,gmfA-.,o)---->
(ta,624,, ,t,a)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,lwNx)(Rvb,NULL,NULL)---->
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)---->
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,,ri,s,dk,)---->
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)---->
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,567,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
(,746,,NULL,NULL,NULL)---->
 NULL

(dummy,0,,IBWSTH83F?McuyGL:D1C,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)---->
(sdk,,443,,ri,s,dk,)---->
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)---->
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,567,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,NULL,IBWSTH83F?McuyGL:D1C,sdk,)---->
 NULL

(dummy,0,,ri,NULL,NULL)---->
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)---->
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,567,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->

(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D
1C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,NULL,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
 NULL

(dummy,0,,gmfA-.o,NULL,NULL)---->
(gmfA-.o,567,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D
1C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.ota,1191,,NULL,gmfA-.o,ta)---->
 NULL

(dummy,0,,lwNx)(Rvbe,NULL,NULL)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D
1C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.ota,1191,,lwNx)(Rvbe ,gmfA-.o,ta)---->
(lwNx)(Rvbe ,1445,,NULL,lwNx)(Rvbe,)---->
 NULL

(dummy,0,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D
1C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.ota,1191,,lwNx)(Rvbe ,gmfA-.o,ta)---->
(lwNx)(Rvbe
,1445,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe,)---->
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1839,,NULL,IBWSTH83F?Mc
uyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)---->
 NULL

(dummy,0,,gmfA-.ota,NULL,NULL)---->
(gmfA-.ota,1191,,lwNx)(Rvbe ,gmfA-.o,ta)---->
(lwNx)(Rvbe
,1445,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe,)---->

(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1839,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.otalwNx)(Rvbe ,2636,,NULL,gmfA-.ota,lwNx)(Rvbe)---->
 NULL

(dummy,0,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1839,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.otalwNx)(Rvbe
,2636,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,gmfA-.ota,lwNx)(Rvbe)---->
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,4475,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe)---->
 NULL

*******************--PRINTING HUFFMAN TREE--*********************

*******************--PRINTING LINKED LIST--********************
(dummy,0,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-
.otalwNx)(Rvbe ,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,4475,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe)---->
 NULL

*******************--END OF LINKED LIST--********************

*******************--PRINTING PRE-ORDER TRAVERSAL--*********************
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,4475,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1839,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D
1C,sdk,)
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)

(IBWSTH83F?M,97,,c,IBWS,TH83F?M)
(IBWS,48,,TH83F?M,IB,WS)
(IB,24,,WS,I,B)
(I,12,,B,NULL,NULL)
(B,12,,GL,NULL,NULL)
(WS,24,,TH83F?,W,S)
(W,12,,S,NULL,NULL)
(S,12,,I,NULL,NULL)
(TH83F?M,49,,y,TH83F?,M)
(TH83F?,24,,M,TH,83F?)
(TH,12,,83F?,T,H)
(T,6,,H,NULL,NULL)
(H,6,,G,NULL,NULL)
(83F?,12,,W,83,F?)
(83,6,,F?,8,3)
(8,3,,3,NULL,NULL)
(3,3,,),NULL,NULL)
(F?,6,,T,F,?)
(F,3,,?,NULL,NULL)
(?,3,,8,NULL,NULL)
(M,25,,GL:,NULL,NULL)
(c,101,,u,NULL,NULL)
(uyGL:D1C,205,,s,u,yGL:D1C)
(u,102,,yGL:D1C,NULL,NULL)
(yGL:D1C,103,,d,y,GL:D1C)
(y,49,,GL:D1C,NULL,NULL)
(GL:D1C,54,,k,GL:,D1C)
(GL:,26,,D1C,GL,:)
(GL,13,,:,G,L)
(G,6,,L,NULL,NULL)
(L,7,,D,NULL,NULL)
(:,13,,D1,NULL,NULL)
(D1C,28,,'0"OE,D1,C)
(D1,14,,C,D,1)
(D,7,,1,NULL,NULL)
(1,7,,',NULL,NULL)
(C,14,,'0",NULL,NULL)
(sdk,,443,,ri,s,dk,)
(s,216,,dk,,NULL,NULL)
(dk,,227,,r,d,k,)
(d,112,,k,,NULL,NULL)
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)
(k,55,,,,NULL,NULL)
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)

(r,229,,i,NULL,NULL)
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)
('0",15,,OE,',0")
(',7,,0",NULL,NULL)
(0",8,,VP,0,")
(0,4,,",NULL,NULL)
(",4,,x,NULL,NULL)
(OE,16,,U;qYz2!95,O,E)
(O,8,,E,NULL,NULL)
(E,8,,x)(,NULL,NULL)
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)
(U;qYz,8,,2!95,U;,qYz)
(U;,4,,qYz,U,;)
(U,2,,;,NULL,NULL)
(;,2,,9,NULL,NULL)
(qYz,4,,6/J7,qY,z)
(qY,2,,z,q,Y)
(q,1,,Y,NULL,NULL)
(Y,1,,J,NULL,NULL)
(z,2,,U,NULL,NULL)
(2!95,8,,O,2!,95)
(2!,4,,95,2,!)
(2,2,,!,NULL,NULL)
(!,2,,F,NULL,NULL)
(95,4,,U;,9,5)
(9,2,,5,NULL,NULL)
(5,2,,2,NULL,NULL)
(VP6/J7j,16,,A,VP,6/J7j)
(VP,8,,6/J7j,V,P)
(V,4,,P,NULL,NULL)
(P,4,,0,NULL,NULL)
(6/J7j,8,,U;qYz,6/J7,j)
(6/J7,4,,j,6/,J7)
(6/,2,,J7,6,/)
(6,1,,/,NULL,NULL)
(/,1,,6/,NULL,NULL)
(J7,2,,qY,J,7)
(J,1,,7,NULL,NULL)
(7,1,,6,NULL,NULL)
(j,4,,V,NULL,NULL)

(p,63,,g,NULL,NULL)
(h,136,,gm,NULL,NULL)
(n,271,,gmfA-.,NULL,NULL)
(gmfA-.otalwNx)(Rvbe
,2636,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,gmfA-.ota,lwNx)(Rvbe)
(gmfA-.ota,1191,,lwNx)(Rvbe ,gmfA-.o,ta)
(gmfA-.o,567,,ta,gmfA-.,o)
(gmfA-.,282,,o,gm,fA-.)
(gm,137,,fA-.,g,m)
(g,68,,m,NULL,NULL)
(m,69,,f,NULL,NULL)
(fA-.,145,,l,f,A-.)
(f,71,,A-.,NULL,NULL)
(A-.,74,,wNx)(R,A-,.)
(A-,35,,.,A,-)
(A,16,,-,NULL,NULL)
(-,19,,N,NULL,NULL)
(.,39,,w,NULL,NULL)
(o,285,,t,NULL,NULL)
(ta,624,,lwNx)(Rvbe,t,a)
(t,312,,a,NULL,NULL)
(a,312,,lwNx)(Rvb,NULL,NULL)
(lwNx)(Rvbe
,1445,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe,)
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)
(l,151,,wNx)(Rvb,NULL,NULL)
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)
(wNx)(R,82,,vb,w,Nx)(R)
(w,40,,Nx)(R,NULL,NULL)
(Nx)(R,42,,v,N,x)(R)
(N,20,,x)(R,NULL,NULL)
(x)(R,22,,IB,x)(,R)
(x)(,11,,R,x,)()
(x,5,,)(,NULL,NULL)
()(,6,,83,),()
(),3,,(,NULL,NULL)
((,3,,2!,NULL,NULL)
(R,11,,TH,NULL,NULL)
(vb,87,,IBWSTH83F?M,v,b)
(v,42,,b,NULL,NULL)
(b,45,,IBWS,NULL,NULL)
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)

```
*******************--END OF PRE-ORDER TRAVERSAL--*******************


*******************--PRINTING IN-ORDER TRAVERSAL--*******************
(I,12,,B,NULL,NULL)
(IB,24,,WS,I,B)
(B,12,,GL,NULL,NULL)
(IBWS,48,,TH83F?M,IB,WS)
(W,12,,S,NULL,NULL)
(WS,24,,TH83F?,W,S)
(S,12,,I,NULL,NULL)
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)
(T,6,,H,NULL,NULL)
(TH,12,,83F?,T,H)
(H,6,,G,NULL,NULL)
(TH83F?,24,,M,TH,83F?)
(8,3,,3,NULL,NULL)
(83,6,,F?,8,3)
(3,3,,),NULL,NULL)
(83F?,12,,W,83,F?)
(F,3,,?,NULL,NULL)
(F?,6,,T,F,?)
(?,3,,8,NULL,NULL)
(TH83F?M,49,,y,TH83F?,M)
(M,25,,GL:,NULL,NULL)
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)
(c,101,,u,NULL,NULL)
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)
(u,102,,yGL:D1C,NULL,NULL)
(uyGL:D1C,205,,s,u,yGL:D1C)
(y,49,,GL:D1C,NULL,NULL)
(yGL:D1C,103,,d,y,GL:D1C)
(G,6,,L,NULL,NULL)
(GL,13,,:,G,L)
(L,7,,D,NULL,NULL)
(GL:,26,,D1C,GL,:)
(:,13,,D1,NULL,NULL)
(GL:D1C,54,,k,GL:,D1C)
(D,7,,1,NULL,NULL)
(D1,14,,C,D,1)
(1,7,,',NULL,NULL)
(D1C,28,,'0"OE,D1,C)
(C,14,,'0",NULL,NULL)
```

(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D1C,sdk,)
(s,216,,dk,,NULL,NULL)
(sdk,,443,,ri,s,dk,)
(d,112,,k,,NULL,NULL)
(dk,,227,,r,d,k,)
(k,55,,,,NULL,NULL)
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1839,,gmfA-.otalwNx)(Rvbe,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)
(r,229,,i,NULL,NULL)
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)
(',7,,0",NULL,NULL)
('0",15,,OE,',0")
(0,4,,",NULL,NULL)
(0",8,,VP,0,")
(",4,,x,NULL,NULL)
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)
(O,8,,E,NULL,NULL)
(OE,16,,U;qYz2!95,O,E)
(E,8,,x)(,NULL,NULL)
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)
(U,2,,;,NULL,NULL)
(U;,4,,qYz,U,;)
(;,2,,9,NULL,NULL)
(U;qYz,8,,2!95,U;,qYz)
(q,1,,Y,NULL,NULL)
(qY,2,,z,q,Y)
(Y,1,,J,NULL,NULL)
(qYz,4,,6/J7,qY,z)
(z,2,,U,NULL,NULL)
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)
(2,2,,!,NULL,NULL)
(2!,4,,95,2,!)
(!,2,,F,NULL,NULL)
(2!95,8,,O,2!,95)
(9,2,,5,NULL,NULL)
(95,4,,U;,9,5)
(5,2,,2,NULL,NULL)
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)
(V,4,,P,NULL,NULL)
(VP,8,,6/J7j,V,P)
(P,4,,0,NULL,NULL)

(VP6/J7j,16,,A,VP,6/J7j)
(6,1,,/,NULL,NULL)
(6/,2,,J7,6,/)
(/,1,,6/,NULL,NULL)
(6/J7,4,,j,6/,J7)
(J,1,,7,NULL,NULL)
(J7,2,,qY,J,7)
(7,1,,6,NULL,NULL)
(6/J7j,8,,U;qYz,6/J7,j)
(j,4,,V,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)
(p,63,,g,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)
(h,136,,gm,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)
(n,271,,gmfA-.,NULL,NULL)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,4475,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe)
(g,68,,m,NULL,NULL)
(gm,137,,fA-.,g,m)
(m,69,,f,NULL,NULL)
(gmfA-.,282,,o,gm,fA-.)
(f,71,,A-.,NULL,NULL)
(fA-.,145,,l,f,A-.)
(A,16,,-,NULL,NULL)
(A-,35,,.,A,-)
(-,19,,N,NULL,NULL)
(A-.,74,,wNx)(R,A-,.)
(.,39,,w,NULL,NULL)
(gmfA-.o,567,,ta,gmfA-.,o)
(o,285,,t,NULL,NULL)
(gmfA-.ota,1191,,lwNx)(Rvbe ,gmfA-.o,ta)
(t,312,,a,NULL,NULL)
(ta,624,,lwNx)(Rvbe,t,a)
(a,312,,lwNx)(Rvb,NULL,NULL)
(gmfA-.otalwNx)(Rvbe
,2636,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,gmfA-.ota,lwNx)(Rvbe)
(l,151,,wNx)(Rvb,NULL,NULL)
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)
(w,40,,Nx)(R,NULL,NULL)
(wNx)(R,82,,vb,w,Nx)(R)
(N,20,,x)(R,NULL,NULL)
(Nx)(R,42,,v,N,x)(R)
(x,5,,)(,NULL,NULL)

(x)(,11,,R,x,)()
(),3,,(,NULL,NULL)
()(,6,,83,),()
((,3,,2!,NULL,NULL)
(x)(R,22,,IB,x)(,R)
(R,11,,TH,NULL,NULL)
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)
(v,42,,b,NULL,NULL)
(vb,87,,IBWSTH83F?M,v,b)
(b,45,,IBWS,NULL,NULL)
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)
(lwNx)(Rvbe
,1445,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe,)
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)

********************--END OF IN-ORDER TRAVERSAL--********************

******************--PRINTING POST-ORDER TRAVERSAL--********************
(I,12,,B,NULL,NULL)
(B,12,,GL,NULL,NULL)
(IB,24,,WS,I,B)
(W,12,,S,NULL,NULL)
(S,12,,I,NULL,NULL)
(WS,24,,TH83F?,W,S)
(IBWS,48,,TH83F?M,IB,WS)
(T,6,,H,NULL,NULL)
(H,6,,G,NULL,NULL)
(TH,12,,83F?,T,H)
(8,3,,3,NULL,NULL)
(3,3,,),NULL,NULL)
(83,6,,F?,8,3)
(F,3,,?,NULL,NULL)
(?,3,,8,NULL,NULL)
(F?,6,,T,F,?)
(83F?,12,,W,83,F?)
(TH83F?,24,,M,TH,83F?)
(M,25,,GL:,NULL,NULL)
(TH83F?M,49,,y,TH83F?,M)
(IBWSTH83F?M,97,,c,IBWS,TH83F?M)
(c,101,,u,NULL,NULL)
(IBWSTH83F?Mc,198,,uyGL:D1C,IBWSTH83F?M,c)
(u,102,,yGL:D1C,NULL,NULL)
(y,49,,GL:D1C,NULL,NULL)

(G,6,,L,NULL,NULL)
(L,7,,D,NULL,NULL)
(GL,13,,:,G,L)
(:,13,,D1,NULL,NULL)
(GL:,26,,D1C,GL,:)
(D,7,,1,NULL,NULL)
(1,7,,',NULL,NULL)
(D1,14,,C,D,1)
(C,14,,'0",NULL,NULL)
(D1C,28,,'0"OE,D1,C)
(GL:D1C,54,,k,GL:,D1C)
(yGL:D1C,103,,d,y,GL:D1C)
(uyGL:D1C,205,,s,u,yGL:D1C)
(IBWSTH83F?McuyGL:D1C,403,,sdk,,IBWSTH83F?Mc,uyGL:D1C)
(s,216,,dk,,NULL,NULL)
(d,112,,k,,NULL,NULL)
(k,55,,,,NULL,NULL)
(,,60,,'0"OEU;qYz2!95VP6/J7j,NULL,NULL)
(k,,115,,'0"OEU;qYz2!95VP6/J7jp,k,,)
(dk,,227,,r,d,k,)
(sdk,,443,,ri,s,dk,)
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D
1C,sdk,)
(r,229,,i,NULL,NULL)
(i,231,,'0"OEU;qYz2!95VP6/J7jph,NULL,NULL)
(ri,460,,'0"OEU;qYz2!95VP6/J7jphn,r,i)
(',7,,0",NULL,NULL)
(0,4,,",NULL,NULL)
(",4,,x,NULL,NULL)
(0",8,,VP,0,")
('0",15,,OE,',0")
(O,8,,E,NULL,NULL)
(E,8,,x)(,NULL,NULL)
(OE,16,,U;qYz2!95,O,E)
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)
(U,2,,:,NULL,NULL)
(;,2,,9,NULL,NULL)
(U;,4,,qYz,U,;)
(q,1,,Y,NULL,NULL)
(Y,1,,J,NULL,NULL)
(qY,2,,z,q,Y)
(z,2,,U,NULL,NULL)
(qYz,4,,6/J7,qY,z)
(U;qYz,8,,2!95,U;,qYz)
(2,2,,!,NULL,NULL)
(!,2,,F,NULL,NULL)

(2!,4,,95,2,!)
(9,2,,5,NULL,NULL)
(5,2,,2,NULL,NULL)
(95,4,,U;,9,5)
(2!95,8,,O,2!,95)
(U;qYz2!95,16,,VP6/J7j,U;qYz,2!95)
(V,4,,P,NULL,NULL)
(P,4,,0,NULL,NULL)
(VP,8,,6/J7j,V,P)
(6,1,,/,NULL,NULL)
(/,1,,6/,NULL,NULL)
(6/,2,,J7,6,/)
(J,1,,7,NULL,NULL)
(7,1,,6,NULL,NULL)
(J7,2,,qY,J,7)
(6/J7,4,,j,6/,J7)
(j,4,,V,NULL,NULL)
(6/J7j,8,,U;qYz,6/J7,j)
(VP6/J7j,16,,A,VP,6/J7j)
(U;qYz2!95VP6/J7j,32,,A-,U;qYz2!95,VP6/J7j)
('0"OEU;qYz2!95VP6/J7j,63,,p,'0"OE,U;qYz2!95VP6/J7j)
(p,63,,g,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jp,126,,h,'0"OEU;qYz2!95VP6/J7j,p)
(h,136,,gm,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jph,262,,n,'0"OEU;qYz2!95VP6/J7jp,h)
(n,271,,gmfA-.,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jphn,533,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)
(ri'0"OEU;qYz2!95VP6/J7jphn,993,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1839,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)
(g,68,,m,NULL,NULL)
(m,69,,f,NULL,NULL)
(gm,137,,fA-.,g,m)
(f,71,,A-.,NULL,NULL)
(A,16,,-,NULL,NULL)
(-,19,,N,NULL,NULL)
(A-,35,,.,A,-)
(.,39,,w,NULL,NULL)
(A-.,74,,wNx)(R,A-,.)
(fA-.,145,,l,f,A-.)
(gmfA-.,282,,o,gm,fA-.)
(o,285,,t,NULL,NULL)
(gmfA-.o,567,,ta,gmfA-.,o)
(t,312,,a,NULL,NULL)
(a,312,,lwNx)(Rvb,NULL,NULL)
(ta,624,,lwNx)(Rvbe,t,a)

(gmfA-.ota,1191,,lwNx)(Rvbe ,gmfA-.o,ta)
(l,151,,wNx)(Rvb,NULL,NULL)
(w,40,,Nx)(R,NULL,NULL)
(N,20,,x)(R,NULL,NULL)
(x,5,,)(,NULL,NULL)
(),3,,(,NULL,NULL)
((,3,,2!,NULL,NULL)
()(,6,,83,),()
(x)(,11,,R,x,)()
(R,11,,TH,NULL,NULL)
(x)(R,22,,IB,x)(,R)
(Nx)(R,42,,v,N,x)(R)
(wNx)(R,82,,vb,w,Nx)(R)
(v,42,,b,NULL,NULL)
(b,45,,IBWS,NULL,NULL)
(vb,87,,IBWSTH83F?M,v,b)
(wNx)(Rvb,169,,IBWSTH83F?Mc,wNx)(R,vb)
(lwNx)(Rvb,320,,e,l,wNx)(Rvb)
(e,379,,IBWSTH83F?McuyGL:D1C,NULL,NULL)
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)
(,746,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)
(lwNx)(Rvbe
,1445,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe,)
(gmfA-.otalwNx)(Rvbe
,2636,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,gmfA-.ota,lwNx)(Rvbe)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,4475,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe)

*******************--END OF POST-ORDER TRAVERSAL--********************

char: D   index: 68   code: 000111100
char: r   index: 114   code: 0100
char: i   index: 105   code: 0101
char: v   index: 118   code: 1100110
char: e   index: 101   code: 1101
char: index: 32   code: 111
char: s   index: 115   code: 0010
char: c   index: 99   code: 00001
char: e   index: 101   code: 1101
char: n   index: 110   code: 0111
char: i   index: 105   code: 0101
char: c   index: 99   code: 00001
char: index: 32   code: 111
char: S   index: 83   code: 00000011

```
char: t    index: 116   code: 1010
char: a    index: 97   code: 1011
char: t    index: 116   code: 1010
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: R    index: 82   code: 110010111
char: o    index: 111   code: 1001
char: u    index: 117   code: 00010
char: t    index: 116   code: 1010
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: 1    index: 49   code: 000111101
char: 6    index: 54   code: 011000111000
char: 9    index: 57   code: 01100010110
char:      index: 32   code: 111
char: p    index: 112   code: 011001
char: a    index: 97   code: 1011
char: r    index: 114   code: 0100
char: a    index: 97   code: 1011
char: l    index: 108   code: 11000
char: l    index: 108   code: 11000
char: e    index: 101   code: 1101
char: l    index: 108   code: 11000
char:      index: 32   code: 111
char: t    index: 116   code: 1010
char: o    index: 111   code: 1001
char:      index: 32   code: 111
char: t    index: 116   code: 1010
char: h    index: 104   code: 01101
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: R    index: 82   code: 110010111
char: h    index: 104   code: 01101
char: o    index: 111   code: 1001
char: d    index: 100   code: 00110
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: I    index: 73   code: 00000000
char: s    index: 115   code: 0010
char: l    index: 108   code: 11000
char: a    index: 97   code: 1011
char: n    index: 110   code: 0111
char: d    index: 100   code: 00110
char:      index: 32   code: 111
char: b    index: 98   code: 1100111
char: o    index: 111   code: 1001
```

```
char: r   index: 114   code: 0100
char: d   index: 100   code: 00110
char: e   index: 101   code: 1101
char: r   index: 114   code: 0100
char: ,   index: 44   code: 001111
char:     index: 32   code: 111
char: w   index: 119   code: 1100100
char: i   index: 105   code: 0101
char: t   index: 116   code: 1010
char: h   index: 104   code: 01101
char:     index: 32   code: 111
char: p   index: 112   code: 011001
char: i   index: 105   code: 0101
char: c   index: 99   code: 00001
char: t   index: 116   code: 1010
char: u   index: 117   code: 00010
char: r   index: 114   code: 0100
char: e   index: 101   code: 1101
char: -   index: 45   code: 10001101
char: p   index: 112   code: 011001
char: r   index: 114   code: 0100
char: e   index: 101   code: 1101
char: t   index: 116   code: 1010
char: t   index: 116   code: 1010
char: y   index: 121   code: 000110
char:     index: 32   code: 111
char: v   index: 118   code: 1100110
char: i   index: 105   code: 0101
char: l   index: 108   code: 11000
char: l   index: 108   code: 11000
char: a   index: 97   code: 1011
char: g   index: 103   code: 100000
char: e   index: 101   code: 1101
char: s   index: 115   code: 0010
char:     index: 32   code: 111
char: s   index: 115   code: 0010
char: u   index: 117   code: 00010
char: c   index: 99   code: 00001
char: h   index: 104   code: 01101
char:     index: 32   code: 111
char: a   index: 97   code: 1011
char: s   index: 115   code: 0010
char:     index: 32   code: 111
char: C   index: 67   code: 00011111
char: a   index: 97   code: 1011
char: n   index: 110   code: 0111
```

```
char: t    index: 116   code: 1010
char: e    index: 101   code: 1101
char: r    index: 114   code: 0100
char: b    index: 98   code: 1100111
char: u    index: 117   code: 00010
char: r    index: 114   code: 0100
char: y    index: 121   code: 000110
char: ,    index: 44   code: 001111
char:      index: 32   code: 111
char: P    index: 80   code: 0110001101
char: o    index: 111   code: 1001
char: m    index: 109   code: 100001
char: p    index: 112   code: 011001
char: h    index: 104   code: 01101
char: r    index: 114   code: 0100
char: e    index: 101   code: 1101
char: y    index: 121   code: 000110
char: ,    index: 44   code: 001111
char:      index: 32   code: 111
char: B    index: 66   code: 00000001
char: r    index: 114   code: 0100
char: o    index: 111   code: 1001
char: o    index: 111   code: 1001
char: k    index: 107   code: 001110
char: l    index: 108   code: 11000
char: y    index: 121   code: 000110
char: n    index: 110   code: 0111
char: ,    index: 44   code: 001111
char:      index: 32   code: 111
char: a    index: 97   code: 1011
char: n    index: 110   code: 0111
char: d    index: 100   code: 00110
char:      index: 32   code: 111
char: W    index: 87   code: 00000010
char: o    index: 111   code: 1001
char: o    index: 111   code: 1001
char: d    index: 100   code: 00110
char: s    index: 115   code: 0010
char: t    index: 116   code: 1010
char: o    index: 111   code: 1001
char: c    index: 99   code: 00001
char: k    index: 107   code: 001110
char: .    index: 46   code: 1000111
char:      index: 32   code: 111
char: I    index: 73   code: 00000000
char: n    index: 110   code: 0111
```

char: index: 32   code: 111
char: O   index: 79   code: 011000010
char: l   index: 108   code: 11000
char: d   index: 100   code: 00110
char: index: 32   code: 111
char: M   index: 77   code: 0000011
char: y   index: 121   code: 000110
char: s   index: 115   code: 0010
char: t   index: 116   code: 1010
char: i   index: 105   code: 0101
char: c   index: 99   code: 00001
char: ,   index: 44   code: 001111
char: index: 32   code: 111
char: t   index: 116   code: 1010
char: o   index: 111   code: 1001
char: u   index: 117   code: 00010
char: r   index: 114   code: 0100
char: index: 32   code: 111
char: B   index: 66   code: 00000001
char: .   index: 46   code: 1000111
char: index: 32   code: 111
char: F   index: 70   code: 0000010110
char: .   index: 46   code: 1000111
char: index: 32   code: 111
char: C   index: 67   code: 00011111
char: l   index: 108   code: 11000
char: y   index: 121   code: 000110
char: d   index: 100   code: 00110
char: e   index: 101   code: 1101
char: index: 32   code: 111
char: C   index: 67   code: 00011111
char: i   index: 105   code: 0101
char: d   index: 100   code: 00110
char: e   index: 101   code: 1101
char: r   index: 114   code: 0100
char: index: 32   code: 111
char: M   index: 77   code: 0000011
char: i   index: 105   code: 0101
char: l   index: 108   code: 11000
char: l   index: 108   code: 11000
char: ,   index: 44   code: 001111
char: index: 32   code: 111
char: A   index: 65   code: 10001100
char: m   index: 109   code: 100001
char: e   index: 101   code: 1101
char: r   index: 114   code: 0100

```
char: i   index: 105   code: 0101
char: c   index: 99   code: 00001
char: a   index: 97   code: 1011
char: '   index: 39   code: 011000000
char: s   index: 115   code: 0010
char:     index: 32   code: 111
char: o   index: 111   code: 1001
char: l   index: 108   code: 11000
char: d   index: 100   code: 00110
char: e   index: 101   code: 1101
char: s   index: 115   code: 0010
char: t   index: 116   code: 1010
char:     index: 32   code: 111
char: s   index: 115   code: 0010
char: t   index: 116   code: 1010
char: e   index: 101   code: 1101
char: a   index: 97   code: 1011
char: m   index: 109   code: 100001
char: -   index: 45   code: 10001101
char: p   index: 112   code: 011001
char: o   index: 111   code: 1001
char: w   index: 119   code: 1100100
char: e   index: 101   code: 1101
char: r   index: 114   code: 0100
char: e   index: 101   code: 1101
char: d   index: 100   code: 00110
char:     index: 32   code: 111
char: c   index: 99   code: 00001
char: i   index: 105   code: 0101
char: d   index: 100   code: 00110
char: e   index: 101   code: 1101
char: r   index: 114   code: 0100
char:     index: 32   code: 111
char: m   index: 109   code: 100001
char: i   index: 105   code: 0101
char: l   index: 108   code: 11000
char: l   index: 108   code: 11000
char: ,   index: 44   code: 001111
char:     index: 32   code: 111
char: f   index: 102   code: 100010
char: a   index: 97   code: 1011
char: m   index: 109   code: 100001
char: i   index: 105   code: 0101
char: l   index: 108   code: 11000
char: y   index: 121   code: 000110
char:     index: 32   code: 111
```

```
char: o    index: 111   code: 1001
char: w    index: 119   code: 1100100
char: n    index: 110   code: 0111
char: e    index: 101   code: 1101
char: d    index: 100   code: 00110
char:      index: 32   code: 111
char: a    index: 97   code: 1011
char: n    index: 110   code: 0111
char: d    index: 100   code: 00110
char:      index: 32   code: 111
char: r    index: 114   code: 0100
char: u    index: 117   code: 00010
char: n    index: 110   code: 0111
char:      index: 32   code: 111
char: s    index: 115   code: 0010
char: i    index: 105   code: 0101
char: n    index: 110   code: 0111
char: c    index: 99   code: 00001
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: 1    index: 49   code: 000111101
char: 8    index: 56   code: 0000010100
char: 8    index: 56   code: 0000010100
char: 1    index: 49   code: 000111101
char: .    index: 46   code: 1000111
char:      index: 32   code: 111
char: W    index: 87   code: 00000010
char: a    index: 97   code: 1011
char: t    index: 116   code: 1010
char: c    index: 99   code: 00001
char: h    index: 104   code: 01101
char:      index: 32   code: 111
char: c    index: 99   code: 00001
char: i    index: 105   code: 0101
char: d    index: 100   code: 00110
char: e    index: 101   code: 1101
char: r    index: 114   code: 0100
char: -    index: 45   code: 10001101
char: m    index: 109   code: 100001
char: a    index: 97   code: 1011
char: k    index: 107   code: 001110
char: i    index: 105   code: 0101
char: n    index: 110   code: 0111
char: g    index: 103   code: 100000
char:      index: 32   code: 111
char: d    index: 100   code: 00110
```

char: e   index: 101   code: 1101
char: m   index: 109   code: 100001
char: o   index: 111   code: 1001
char: n   index: 110   code: 0111
char: s   index: 115   code: 0010
char: t   index: 116   code: 1010
char: r   index: 114   code: 0100
char: a   index: 97   code: 1011
char: t   index: 116   code: 1010
char: i   index: 105   code: 0101
char: o   index: 111   code: 1001
char: n   index: 110   code: 0111
char: s   index: 115   code: 0010
char: index: 32   code: 111
char: o   index: 111   code: 1001
char: n   index: 110   code: 0111
char: index: 32   code: 111
char: w   index: 119   code: 1100100
char: e   index: 101   code: 1101
char: e   index: 101   code: 1101
char: k   index: 107   code: 001110
char: e   index: 101   code: 1101
char: n   index: 110   code: 0111
char: d   index: 100   code: 00110
char: s   index: 115   code: 0010
char: index: 32   code: 111
char: i   index: 105   code: 0101
char: n   index: 110   code: 0111
char: index: 32   code: 111
char: O   index: 79   code: 011000010
char: c   index: 99   code: 00001
char: t   index: 116   code: 1010
char: o   index: 111   code: 1001
char: b   index: 98   code: 1100111
char: e   index: 101   code: 1101
char: r   index: 114   code: 0100
char: index: 32   code: 111
char: a   index: 97   code: 1011
char: n   index: 110   code: 0111
char: d   index: 100   code: 00110
char: index: 32   code: 111
char: N   index: 78   code: 11001010
char: o   index: 111   code: 1001
char: v   index: 118   code: 1100110
char: e   index: 101   code: 1101
char: m   index: 109   code: 100001

```
char: b    index: 98   code: 1100111
char: e    index: 101   code: 1101
char: r    index: 114   code: 0100
char: .    index: 46   code: 1000111
char:      index: 32   code: 111
char: D    index: 68   code: 000111100
char: u    index: 117   code: 00010
char: r    index: 114   code: 0100
char: i    index: 105   code: 0101
char: n    index: 110   code: 0111
char: g    index: 103   code: 100000
char:      index: 32   code: 111
char: f    index: 102   code: 100010
char: a    index: 97   code: 1011
char: l    index: 108   code: 11000
char: l    index: 108   code: 11000
char:      index: 32   code: 111
char: h    index: 104   code: 01101
char: a    index: 97   code: 1011
char: r    index: 114   code: 0100
char: v    index: 118   code: 1100110
char: e    index: 101   code: 1101
char: s    index: 115   code: 0010
char: t    index: 116   code: 1010
char:      index: 32   code: 111
char: t    index: 116   code: 1010
char: i    index: 105   code: 0101
char: m    index: 109   code: 100001
char: e    index: 101   code: 1101
char: ,    index: 44   code: 001111
char:      index: 32   code: 111
char: l    index: 108   code: 11000
char: e    index: 101   code: 1101
char: a    index: 97   code: 1011
char: r    index: 114   code: 0100
char: n    index: 110   code: 0111
char:      index: 32   code: 111
char: t    index: 116   code: 1010
char: h    index: 104   code: 01101
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: d    index: 100   code: 00110
char: i    index: 105   code: 0101
char: f    index: 102   code: 100010
char: f    index: 102   code: 100010
char: e    index: 101   code: 1101
```

```
char: r    index: 114   code: 0100
char: e    index: 101   code: 1101
char: n    index: 110   code: 0111
char: c    index: 99   code: 00001
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: b    index: 98   code: 1100111
char: e    index: 101   code: 1101
char: t    index: 116   code: 1010
char: w    index: 119   code: 1100100
char: e    index: 101   code: 1101
char: e    index: 101   code: 1101
char: n    index: 110   code: 0111
char:      index: 32   code: 111
char: M    index: 77   code: 0000011
char: e    index: 101   code: 1101
char: r    index: 114   code: 0100
char: l    index: 108   code: 11000
char: o    index: 111   code: 1001
char: t    index: 116   code: 1010
char:      index: 32   code: 111
char: a    index: 97   code: 1011
char: n    index: 110   code: 0111
char: d    index: 100   code: 00110
char:      index: 32   code: 111
char: C    index: 67   code: 00011111
char: h    index: 104   code: 01101
char: a    index: 97   code: 1011
char: r    index: 114   code: 0100
char: d    index: 100   code: 00110
char: o    index: 111   code: 1001
char: n    index: 110   code: 0111
char: n    index: 110   code: 0111
char: a    index: 97   code: 1011
char: y    index: 121   code: 000110
char: ,    index: 44   code: 001111
char:      index: 32   code: 111
char: C    index: 67   code: 00011111
char: a    index: 97   code: 1011
char: y    index: 121   code: 000110
char: u    index: 117   code: 00010
char: g    index: 103   code: 100000
char: a    index: 97   code: 1011
char:      index: 32   code: 111
char: a    index: 97   code: 1011
char: n    index: 110   code: 0111
```

```
char: d    index: 100   code: 00110
char:      index: 32   code: 111
char: S    index: 83   code: 00000011
char: e    index: 101   code: 1101
char: y    index: 121   code: 000110
char: v    index: 118   code: 1100110
char: a    index: 97   code: 1011
char: l    index: 108   code: 11000
char:      index: 32   code: 111
char: a    index: 97   code: 1011
char: t    index: 116   code: 1010
char:      index: 32   code: 111
char: t    index: 116   code: 1010
char: h    index: 104   code: 01101
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: 2    index: 50   code: 01100010100
char: 5    index: 53   code: 01100010111
char: w    index: 119   code: 1100100
char: i    index: 105   code: 0101
char: n    index: 110   code: 0111
char: e    index: 101   code: 1101
char: r    index: 114   code: 0100
char: i    index: 105   code: 0101
char: e    index: 101   code: 1101
char: s    index: 115   code: 0010
char:      index: 32   code: 111
char: a    index: 97   code: 1011
char: l    index: 108   code: 11000
char: o    index: 111   code: 1001
char: n    index: 110   code: 0111
char: g    index: 103   code: 100000
char:      index: 32   code: 111
char: t    index: 116   code: 1010
char: h    index: 104   code: 01101
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: C    index: 67   code: 00011111
char: o    index: 111   code: 1001
char: n    index: 110   code: 0111
char: n    index: 110   code: 0111
char: e    index: 101   code: 1101
char: c    index: 99   code: 00001
char: t    index: 116   code: 1010
char: i    index: 105   code: 0101
char: c    index: 99   code: 00001
```

```
char: u    index: 117   code: 00010
char: t    index: 116   code: 1010
char:      index: 32   code: 111
char: W    index: 87   code: 00000010
char: i    index: 105   code: 0101
char: n    index: 110   code: 0111
char: e    index: 101   code: 1101
char:      index: 32   code: 111
char: T    index: 84   code: 000001000
char: r    index: 114   code: 0100
char: a    index: 97   code: 1011
char: i    index: 105   code: 0101
char: l    index: 108   code: 11000
char: .    index: 46   code: 1000111
```