323.36 Project 3 Huffman Encoding Part 1   Java

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Project Due Date 10/1/2022

Algorithm Steps

Step 0: inFile, outFile⇓args[0], args[0]

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: close all files.

Source Code:

Main.java

```java
import java.io.*;

public class Jonathan_Mathew_HuffmanCoding {

    public int[] charCountAry;
    String[] charCode;
    public Jonathan_Mathew_linkedList LL;
    public Jonathan_Mathew_BinaryTree biTree;


    public Jonathan_Mathew_HuffmanCoding(){
        int[] charCountAry = new int[256];
//        Arrays.fill(charCountAry, 0);
        String[] charCode = new String[256];
        this.LL = new Jonathan_Mathew_linkedList();
        this.biTree = new Jonathan_Mathew_BinaryTree();
    }

    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;
```

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

            charCountAry = input;
    }

    public void printCountAry(FileWriter outputFile) throws IOException {

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

            if(charCountAry[i]>0){
                outputFile.write((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];
                Jonathan_Mathew_treeNode newNode = new
Jonathan_Mathew_treeNode(chr, freq, "", null, null, null);
                LL.insertNewNode(LL.getHead(), newNode);
                LL.printList(outFile);
                outFile.write("\n\n");
            }
        }

    }

    public void constructHuffmanBinTree(Jonathan_Mathew_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;
            Jonathan_Mathew_treeNode newNode = new
Jonathan_Mathew_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);
    }
}
```

TreeNode.java

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

public class Jonathan_Mathew_treeNode {

    String chStr;
    int frequency;
    String code;
    Jonathan_Mathew_treeNode left;
    Jonathan_Mathew_treeNode right;
    Jonathan_Mathew_treeNode next;

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

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


    }

    public void printNode(Jonathan_Mathew_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 Jonathan_Mathew_linkedList {

    Jonathan_Mathew_treeNode listHead;


    public Jonathan_Mathew_linkedList(){
        listHead = new Jonathan_Mathew_treeNode("dummy", 0, "", null, null,
null);
    }

    public Jonathan_Mathew_treeNode getHead() {
        return listHead;
    }


    public Jonathan_Mathew_treeNode findSpot(Jonathan_Mathew_treeNode
listHead, Jonathan_Mathew_treeNode newNode){

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

        return spot;
    }

    public void insertNewNode(Jonathan_Mathew_treeNode listHead,
Jonathan_Mathew_treeNode newNode){

        Jonathan_Mathew_treeNode spot = findSpot(listHead, newNode);

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


    }

    public void printList(FileWriter outputFile) throws IOException {

        Jonathan_Mathew_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;

public class Jonathan_Mathew_BinaryTree {

    Jonathan_Mathew_treeNode root;

    public Jonathan_Mathew_BinaryTree(){
        root = new Jonathan_Mathew_treeNode(null, -1, null, null, null,
null);
    }

    public boolean isLeaf(Jonathan_Mathew_treeNode node){

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

    public Jonathan_Mathew_treeNode getRoot(){
        return root;
    }


    public void preOrderTraversal(Jonathan_Mathew_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(Jonathan_Mathew_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(Jonathan_Mathew_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

```
import java.io.*;

public class Jonathan_Mathew_HuffmanCoding {

    public int[] charCountAry;
    String[] charCode;
    public Jonathan_Mathew_linkedList LL;
    public Jonathan_Mathew_BinaryTree biTree;


    public Jonathan_Mathew_HuffmanCoding(){
        int[] charCountAry = new int[256];
//      Arrays.fill(charCountAry, 0);
        String[] charCode = new String[256];
        this.LL = new Jonathan_Mathew_linkedList();
        this.biTree = new Jonathan_Mathew_BinaryTree();
    }

    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){
                input[c]++;
            }
        }

        charCountAry = input;
    }

    public void printCountAry(FileWriter outputFile) throws IOException {

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

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

```java
        }
    }


    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];
                Jonathan_Mathew_treeNode newNode = new
Jonathan_Mathew_treeNode(chr, freq, "", null, null, null);
                LL.insertNewNode(LL.getHead(), newNode);
                LL.printList(outFile);
                outFile.write("\n\n");
            }
        }

    }

    public void constructHuffmanBinTree(Jonathan_Mathew_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;
            Jonathan_Mathew_treeNode newNode = new
Jonathan_Mathew_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);
    }

}
```

OUTPUT

```
*******************--PRINTING COUNT ARRAY--*******************
    740
!   2
"   4
'   7
(   3
)   3
```

```
,   60
-   19
.   39
/   1
0   4
1   7
2   2
3   3
5   2
6   1
7   1
8   3
9   2
:   13
;   2
?   3
A   16
B   12
C   14
D   7
E   8
F   3
G   6
H   6
I   12
J   1
L   7
M   25
N   20
O   8
P   4
R   11
S   12
T   6
U   2
V   4
W   12
Y   1
a   312
b   45
c   101
d   112
e   379
f   71
g   68
h   136
i   231
j   4
k   55
l   151
m   69
n   272
o   286
p   63
q   1
r   229
s   216
```

```
t  312
u  102
v  42
w  40
x  5
y  49
z  2


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



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


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


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


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


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


(dummy,0,,!,NULL,NULL)---->
(!,2,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,",NULL,NULL)---->
(",4,,',NULL,NULL)---->
(',7,,  ,NULL,NULL)---->
( ,740,,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)---->
( ,740,,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)---->
( ,740,,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)---->
( ,740,,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)---->
( ,740,,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)---->
( ,740,,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)---->
( ,740,,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)---->
( ,740,,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)---->
```

```
(  ,740,,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)---->
(  ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,6,NULL,NULL)---->
(6,1,,/,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)---->
(  ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,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)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,8,NULL,NULL)---->
(8,3,,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)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,8,NULL,NULL)---->
(8,3,,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)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
```

```
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,8,NULL,NULL)---->
(8,3,,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)---->
(:,13,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,8,NULL,NULL)---->
(8,3,,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)---->
(:,13,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,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)---->
(:,13,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,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)---->
(:,13,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,19,,.,NULL,NULL)---->
(.,39,,,,NULL,NULL)---->
(,,60,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
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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)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL




*******************--END OF HUFFMAN LIST--********************


******************--PRINTING HUFFMAN TREE--********************
(dummy,0,,q,NULL,NULL)---->
(q,1,,Y,NULL,NULL)---->
(Y,1,,J,NULL,NULL)---->
(J,1,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,qY,NULL,NULL)---->
(qY,2,,z,q,Y)---->
```

```
(z,2,,U,NULL,NULL)---->
(U,2,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,j,NULL,NULL)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,J,NULL,NULL)---->
(J,1,,7,NULL,NULL)---->
(7,1,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,J7,NULL,NULL)---->
(J7,2,,qY,J,7)---->
(qY,2,,z,q,Y)---->
(z,2,,U,NULL,NULL)---->
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(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,j,NULL,NULL)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,6,NULL,NULL)---->
(6,1,,/,NULL,NULL)---->
(/,1,,6/,NULL,NULL)---->
(6/,2,,J7,6,/)---->
(J7,2,,qY,J,7)---->
(qY,2,,z,q,Y)---->
(z,2,,U,NULL,NULL)---->
(U,2,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,, (,NULL,NULL)---->
((,3,,j,NULL,NULL)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
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(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,6/,NULL,NULL)---->
(6/,2,,J7,6,/)---->
(J7,2,,qY,J,7)---->
(qY,2,,z,q,Y)---->
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(U,2,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
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```
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,6/J7,NULL,NULL)---->
(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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)---->
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(h,136,,l,NULL,NULL)---->
(l,151,,s,NULL,NULL)---->
(s,216,,r,NULL,NULL)---->
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(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL
```

```
(dummy,0,,qY,NULL,NULL)---->
(qY,2,,z,q,Y)---->
(z,2,,U,NULL,NULL)---->
(U,2,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
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(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,qYz,NULL,NULL)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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)---->
```

```
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(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,U,NULL,NULL)---->
(U,2,,;,NULL,NULL)---->
(;,2,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,U;,NULL,NULL)---->
(U;,4,,qYz,U,;)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
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(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
(M,25,,.,NULL,NULL)----->
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(.,39,,w,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)---->
(,,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)---->
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(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,9,NULL,NULL)---->
(9,2,,5,NULL,NULL)---->
(5,2,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
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(),3,,(,NULL,NULL)---->
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(95,4,,U;,9,5)---->
(U;,4,,qYz,U,;)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(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)---->
(1,7,,',NULL,NULL)---->
(',7,,O,NULL,NULL)---->
(O,8,,E,NULL,NULL)---->
```

```
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(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,2,NULL,NULL)---->
(2,2,,!,NULL,NULL)---->
(!,2,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
((,3,,2!,NULL,NULL)---->
(2!,4,,95,2,!)---->
(95,4,,U;,9,5)---->
(U;,4,,qYz,U,;)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
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```
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(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
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(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
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(dummy,0,,F,NULL,NULL)---->
(F,3,,?,NULL,NULL)---->
(?,3,,8,NULL,NULL)---->
(8,3,,3,NULL,NULL)---->
(3,3,,),NULL,NULL)---->
(),3,,(,NULL,NULL)---->
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```
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(2!,4,,95,2,!)---->
(95,4,,U;,9,5)---->
(U;,4,,qYz,U,;)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
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(",4,,x,NULL,NULL)---->
(x,5,,F?,NULL,NULL)---->
(F?,6,,T,F,?)---->
(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)---->
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(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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)---->
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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)---->
(r,229,,i,NULL,NULL)---->
(i,231,,n,NULL,NULL)---->
(n,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
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(U;,4,,qYz,U,;)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
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(V,4,,P,NULL,NULL)---->
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(F?,6,,T,F,?)---->
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(H,6,,G,NULL,NULL)---->
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(',7,,O,NULL,NULL)---->
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(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
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(-,19,,N,NULL,NULL)---->
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(b,45,,y,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)---->
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(s,216,,r,NULL,NULL)---->
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( ,740,,NULL,NULL,NULL)---->
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(2!,4,,95,2,!)---->
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(U;,4,,qYz,U,;)---->
(qYz,4,,6/J7,qY,z)---->
(6/J7,4,,j,6/,J7)---->
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(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
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(",4,,x,NULL,NULL)---->
(x,5,,)(,NULL,NULL)---->
()(,6,,83,),()---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(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)---->
(S,12,,I,NULL,NULL)---->
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(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
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(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)---->
```

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(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,272,,o,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
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(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
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(",4,,x,NULL,NULL)---->
(x,5,,)(,NULL,NULL)---->
()(,6,,83,),())---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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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(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
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(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
(M,25,,.,NULL,NULL)---->
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```
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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)---->
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(n,272,,o,NULL,NULL)---->
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(V,4,,P,NULL,NULL)---->
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(x,5,,)(,NULL,NULL)---->
()(,6,,83,),()---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(1,7,,',NULL,NULL)---->
(',7,,U;qYz,NULL,NULL)---->
(U;qYz,8,,2!95,U;,qYz)---->
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(O,8,,E,NULL,NULL)---->
(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
```

```
(:,13,,C,NULL,NULL)---->
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(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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(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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(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


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(6/J7,4,,j,6/,J7)---->
(j,4,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(x,5,,)(,NULL,NULL)---->
()(,6,,83,),()---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(1,7,,',NULL,NULL)---->
(',7,,6/J7j,NULL,NULL)---->
(6/J7j,8,,U;qYz,6/J7,j)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
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(E,8,,R,NULL,NULL)---->
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(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
(M,25,,.,NULL,NULL)---->
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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)---->
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(n,272,,o,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,V,NULL,NULL)---->
(V,4,,P,NULL,NULL)---->
(P,4,,0,NULL,NULL)---->
(0,4,,",NULL,NULL)---->
(",4,,x,NULL,NULL)---->
(x,5,,)(,NULL,NULL)---->
()(,6,,83,),()---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(1,7,,',NULL,NULL)---->
(',7,,VP,NULL,NULL)---->
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(6/J7j,8,,U;qYz,6/J7,j)---->
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(I,12,,B,NULL,NULL)---->
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(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,19,,N,NULL,NULL)---->
(N,20,,M,NULL,NULL)---->
(M,25,,.,NULL,NULL)---->
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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)---->
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(u,102,,d,NULL,NULL)---->
(d,112,,h,NULL,NULL)---->
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(i,231,,n,NULL,NULL)---->
(n,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
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(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
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()(,6,,83,),()---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(1,7,,',NULL,NULL)---->
(',7,,0",NULL,NULL)---->
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(6/J7j,8,,U;qYz,6/J7,j)---->
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(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,R,NULL,NULL)---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
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(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
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(dummy,0,,x,NULL,NULL)---->
(x,5,,)(,NULL,NULL)---->
()(,6,,83,),()---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(1,7,,',NULL,NULL)---->
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(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,W,NULL,NULL)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,83,NULL,NULL)---->
(83,6,,F?,8,3)---->
(F?,6,,T,F,?)---->
(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)---->
(1,7,,',NULL,NULL)---->
```

```
(',7,,0",NULL,NULL)---->
(0",8,,VP,0,")---->
(VP,8,,6/J7j,V,P)---->
(6/J7j,8,,U;qYz,6/J7,j)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,83F?,NULL,NULL)---->
(83F?,12,,W,83,F?)---->
(W,12,,S,NULL,NULL)---->
(S,12,,I,NULL,NULL)---->
(I,12,,B,NULL,NULL)---->
(B,12,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,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)---->
(1,7,,',NULL,NULL)---->
(',7,,0",NULL,NULL)---->
```

```
(0",8,,VP,0,")---->
(VP,8,,6/J7j,V,P)---->
(6/J7j,8,,U;qYz,6/J7,j)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
(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,,:,NULL,NULL)---->
(:,13,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,G,NULL,NULL)---->
(G,6,,L,NULL,NULL)---->
(L,7,,D,NULL,NULL)---->
(D,7,,1,NULL,NULL)---->
(1,7,,',NULL,NULL)---->
(',7,,0",NULL,NULL)---->
(0",8,,VP,0,")---->
(VP,8,,6/J7j,V,P)---->
```

```
(6/J7j,8,,U;qYz,6/J7,j)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
(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,,C,NULL,NULL)---->
(C,14,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,D,NULL,NULL)---->
(D,7,,1,NULL,NULL)---->
(1,7,,',NULL,NULL)---->
(',7,,0",NULL,NULL)---->
(0",8,,VP,0,")---->
(VP,8,,6/J7j,V,P)---->
(6/J7j,8,,U;qYz,6/J7,j)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
```

```
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
(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,,A,NULL,NULL)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,',NULL,NULL)---->
(',7,,0",NULL,NULL)---->
(0",8,,VP,0,")---->
(VP,8,,6/J7j,V,P)---->
(6/J7j,8,,U;qYz,6/J7,j)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
```

```
(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,,A,',0")----->
(A,16,,-,NULL,NULL)----->
(-,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,272,,o,NULL,NULL)----->
(o,286,,t,NULL,NULL)----->
(t,312,,a,NULL,NULL)----->
(a,312,,e,NULL,NULL)----->
(e,379,, ,NULL,NULL)----->
( ,740,,NULL,NULL,NULL)----->
 NULL


(dummy,0,,VP,NULL,NULL)----->
(VP,8,,6/J7j,V,P)----->
(6/J7j,8,,U;qYz,6/J7,j)----->
(U;qYz,8,,2!95,U;,qYz)----->
(2!95,8,,O,2!,95)----->
(O,8,,E,NULL,NULL)----->
(E,8,,x)(,NULL,NULL)----->
(x)(,11,,R,x,)()----->
(R,11,,TH,NULL,NULL)----->
(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,,VP6/J7j,',0")---->
(VP6/J7j,16,,A,VP,6/J7j)---->
(A,16,,-,NULL,NULL)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,U;qYz,NULL,NULL)---->
(U;qYz,8,,2!95,U;,qYz)---->
(2!95,8,,O,2!,95)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
(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,,U;qYz2!95,',0")---->
```

```
(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,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,O,NULL,NULL)---->
(O,8,,E,NULL,NULL)---->
(E,8,,x)(,NULL,NULL)---->
(x)(,11,,R,x,)()---->
(R,11,,TH,NULL,NULL)---->
(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)---->
(-,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,,  ,NULL,NULL)---->
(  ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,x) (,NULL,NULL)---->
(x) (,11,,R,x,) ()---->
(R,11,,TH,NULL,NULL)---->
(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)---->
(-,19,,N,NULL,NULL)---->
(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)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,TH,NULL,NULL)---->
(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)---->
(-,19,,N,NULL,NULL)---->
(N,20,,x)(R,NULL,NULL)---->
(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)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(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)---->
(VP6/J7j,16,,A,VP,6/J7j)---->
(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?)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
```

```
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,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)---->
(-,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)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,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)---->
(-,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)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(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)---->
(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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,,  ,NULL,NULL)---->
(  ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,'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,,'0"OE,D1,C)---->
('0"OE,31,,.,'0",OE)---->
(.,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,U;qYz2!95,NULL,NULL)---->
(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,,'0"OE,D1,C)---->
('0"OE,31,,U;qYz2!95VP6/J7j,'0",OE)---->
(U;qYz2!95VP6/J7j,32,,.,U;qYz2!95,VP6/J7j)---->
(.,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL
```

```
(dummy,0,,A,NULL,NULL)---->
(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,,'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,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,,  ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,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,,'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,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,IB,NULL,NULL)---->
(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,,'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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,,  ,NULL,NULL)---->
( ,740,,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)---->
```

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(i,231,,n,NULL,NULL)---->
(n,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,, ,NULL,NULL)---->
( ,740,,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,272,,o,NULL,NULL)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,,  ,NULL,NULL)---->
( ,740,,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,272,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,t,NULL,NULL)---->
(t,312,,a,NULL,NULL)---->
(a,312,,e,NULL,NULL)---->
(e,379,,  ,NULL,NULL)---->
( ,740,,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,272,,gmfA-.,NULL,NULL)---->
```

```
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,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)---->
( ,740,,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,272,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,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)---->
( ,740,,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,272,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,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,)---->
( ,740,,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,272,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,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)---->
( ,740,,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,272,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,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,534,, ,'0"OEU;qYz2!95VP6/J7jph,n)---->
( ,740,,NULL,NULL,NULL)---->
 NULL


(dummy,0,,gmfA-.,NULL,NULL)---->
(gmfA-.,282,,o,gm,fA-.)---->
(o,286,,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,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,568,, ,gmfA-.,o)---->
( ,740,,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,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,568,,ta,gmFA-.,o)---->
(ta,624,, ,t,a)---->
( ,740,,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,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,568,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
( ,740,,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,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,568,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
( ,740,,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,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)---->
(gmfA-.o,568,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
( ,740,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D1
C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,994,,NULL,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
 NULL


(dummy,0,,gmfA-.o,NULL,NULL)---->
(gmfA-.o,568,,ta,gmfA-.,o)---->
(ta,624,,lwNx)(Rvbe,t,a)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
( ,740,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D1
C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,994,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.ota,1192,,NULL,gmfA-.o,ta)---->
 NULL


(dummy,0,,lwNx)(Rvbe,NULL,NULL)---->
(lwNx)(Rvbe,699,, ,lwNx)(Rvb,e)---->
( ,740,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D1
```

```
C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,994,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.ota,1192,,lwNx)(Rvbe ,gmfA-.o,ta)---->
(lwNx)(Rvbe ,1439,,NULL,lwNx)(Rvbe, )---->
 NULL


(dummy,0,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)---->
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D1
C,sdk,)---->
(ri'0"OEU;qYz2!95VP6/J7jphn,994,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.ota,1192,,lwNx)(Rvbe ,gmfA-.o,ta)---->
(lwNx)(Rvbe
,1439,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe, )---->
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1840,,NULL,IBWSTH83F?Mcuy
GL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)---->
 NULL


(dummy,0,,gmfA-.ota,NULL,NULL)---->
(gmfA-.ota,1192,,lwNx)(Rvbe ,gmfA-.o,ta)---->
(lwNx)(Rvbe
,1439,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe, )---->
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1840,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.otalwNx)(Rvbe ,2631,,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,1840,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)---->
(gmfA-.otalwNx)(Rvbe
,2631,,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
,4471,,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
,4471,,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
,4471,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe )
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1840,,gmfA-.otalwNx)(Rvbe
,IBWSTH83F?McuyGL:D1Csdk,,ri'0"OEU;qYz2!95VP6/J7jphn)
(IBWSTH83F?McuyGL:D1Csdk,,846,,ri'0"OEU;qYz2!95VP6/J7jphn,IBWSTH83F?McuyGL:D1
C,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,994,,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,534,,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,272,,gmfA-.,NULL,NULL)
(gmfA-.otalwNx)(Rvbe
,2631,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,gmfA-.ota,lwNx)(Rvbe )
(gmfA-.ota,1192,,lwNx)(Rvbe ,gmfA-.o,ta)
(gmfA-.o,568,,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,286,,t,NULL,NULL)
(ta,624,,lwNx)(Rvbe,t,a)
(t,312,,a,NULL,NULL)
(a,312,,lwNx)(Rvb,NULL,NULL)
(lwNx)(Rvbe
,1439,,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)
( ,740,,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:D1
C,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,1840,,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,994,,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,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)
(n,272,,gmfA-.,NULL,NULL)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphngmfA-.otalwNx)(Rvbe
,4471,,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,568,,ta,gmfA-.,o)
(o,286,,t,NULL,NULL)
(gmfA-.ota,1192,,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
,2631,,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
,1439,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe, )
( ,740,,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:D1
C,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,272,,gmfA-.,NULL,NULL)
('0"OEU;qYz2!95VP6/J7jphn,534,,gmfA-.o,'0"OEU;qYz2!95VP6/J7jph,n)
(ri'0"OEU;qYz2!95VP6/J7jphn,994,,gmfA-.ota,ri,'0"OEU;qYz2!95VP6/J7jphn)
(IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,1840,,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,286,,t,NULL,NULL)
(gmfA-.o,568,,ta,gmfA-.,o)
(t,312,,a,NULL,NULL)
(a,312,,lwNx)(Rvb,NULL,NULL)
(ta,624,,lwNx)(Rvbe,t,a)
(gmfA-.ota,1192,,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)
( ,740,,IBWSTH83F?McuyGL:D1Csdk,,NULL,NULL)
(lwNx)(Rvbe
,1439,,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,lwNx)(Rvbe, )
(gmfA-.otalwNx)(Rvbe
,2631,,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
,4471,,NULL,IBWSTH83F?McuyGL:D1Csdk,ri'0"OEU;qYz2!95VP6/J7jphn,gmfA-
.otalwNx)(Rvbe )

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