Practical 4

Name: Aaron Emmanuel Rocque
Batch: A2 Roll No: 31
Subject: DAA Lab

Problem Statement:

There are two business people who communicate through phone calls daily for 1 hour to discuss their daily tasks and strategies. Assume that during communication persons A and B are passing the message of length m and n. Write a data compression algorithm to lower their telecom bills as they are charged by data usage. Message length should be more than 120 words for each person.

Code:

node.java

```
package Experiment_4;

public class node {

    Character ch;
    int freq;
    node left = null;
    node right = null;

    node() {

    }

    node(Character ch, int freq) {
        this.ch = ch;
        this.freq = freq;
    }

    node(Character ch, int freq, node left, node right) {
        this.ch = ch;
```

```
        this.freq = freq;
        this.left = left;
        this.right = right;
    }

}
```

---

compareFreq.java

```
package Experiment_4;

import java.util.Comparator;

class compareFreq implements Comparator<node> {
    public int compare(node x, node y) {
        return x.freq - y.freq;
    }
}
```

---

huffman.java

```
package Experiment_4;

//import java.util.*;

class huffmanPrint {
    public static void printCode(node root, String s) {
        if (root.left == null && root.right == null) {
            System.out.println(root.ch + "-" + s);
            return;
        }
```

```
        printCode(root.left, s + "0");
        printCode(root.right, s + "1");
    }
}
```

Main.java

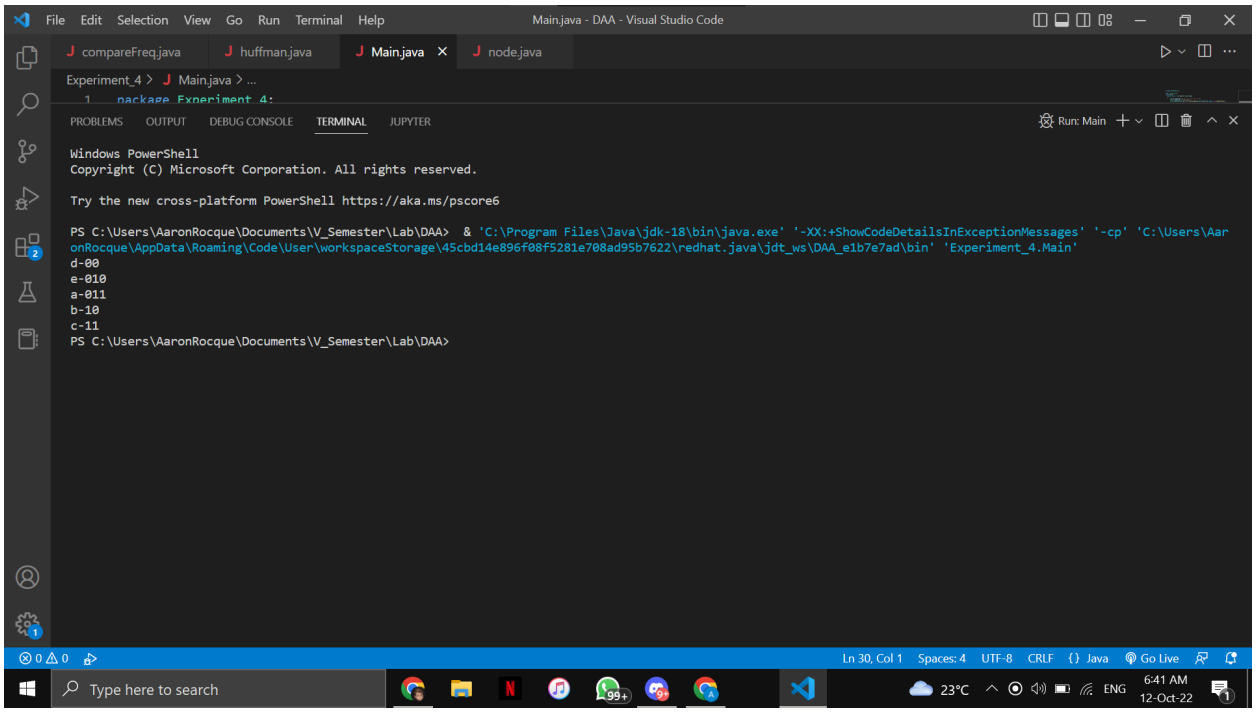
```
package Experiment_4;

import java.util.*;
class Main{
   public static void main(String[] args)
   {
       char[] charArray = { 'a', 'b', 'c', 'd', 'e' };
       int[] freqArray = { 3,5,6,4,2 };
       PriorityQueue<node> pq = new PriorityQueue<node>(charArray.length, new
compareFreq());
       for (int i = 0; i < charArray.length; i++){
           pq.add(new node(charArray[i],freqArray[i]));
       }

       node root = null;
       while (pq.size() > 1) {
           node x = pq.peek();
           pq.poll();
           node y = pq.peek();
           pq.poll();
           node n1 = new node();
           n1.freq = x.freq + y.freq;
           n1.left = x;
           n1.right = y;
           root = n1;
           pq.add(n1);
       }
       huffmanPrint.printCode(root, "");
```

```
    }
}
```

Output:


File Edit Selection View Go Run Terminal Help
Main.java - DAA - Visual Studio Code
compareFreq.java
huffman.java
Main.java
node.java
Experiment_4 > Main.java > ...
1 package Experiment_4;
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER
Run: Main
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\AaronRocque\Documents\V_Semester\Lab\DAA> & 'C:\Program Files\Java\jdk-18\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\AaronRocque\AppData\Roaming\Code\User\workspaceStorage\45cbd14e896f08f5281e708ad95b7622\redhat.java\jdt_ws\DAA_e1b7e7ad\bin' 'Experiment_4.Main'
d-00
e-010
a-011
b-10
c-11
PS C:\Users\AaronRocque\Documents\V_Semester\Lab\DAA>
Ln 30, Col 1 Spaces: 4 UTF-8 CRLF { } Java Go Live
Type here to search
23°C
ENG
6:41 AM
12-Oct-22
