

Assignment No :- 2

Q] Write a program to implement Huffman Encoding using a greedy strategy.

Code

```
import java.util.Comparator;
import java.util.PriorityQueue;
import java.util.Scanner;

class HuffmanCo {

    public static void printCode(HuffmanNode root, String s)
    {

        if (root.left == null && root.right == null
            && Character.isLetter(root.c)) {

            System.out.println(root.c + ":" + s);

            return;
        }

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

    public static void main(String[] args)
    {

        Scanner s = new Scanner(System.in);

        int n = 6;
        char[] charArray = { 'a', 'b', 'c', 'd', 'e', 'f' };
        int[] charfreq = { 5, 9, 12, 13, 16, 45 };

        PriorityQueue<HuffmanNode> q
            = new PriorityQueue<HuffmanNode>(
                n, new MyComparator());

        for (int i = 0; i < n; i++) {

            HuffmanNode hn = new HuffmanNode();

            hn.c = charArray[i];
```

```

        hn.data = charfreq[i];

        hn.left = null;
        hn.right = null;

        q.add(hn);
    }
    HuffmanNode root = null;
    while (q.size() > 1) {
        HuffmanNode x = q.peek();
        q.poll();
        HuffmanNode y = q.peek();
        q.poll();
        HuffmanNode f = new HuffmanNode();
        f.data = x.data + y.data;
        f.c = '-';

        f.left = x;
        f.right = y;
        root = f;
        q.add(f);
    }
    printCode(root, "");
}

class HuffmanNode {

    int data;
    char c;

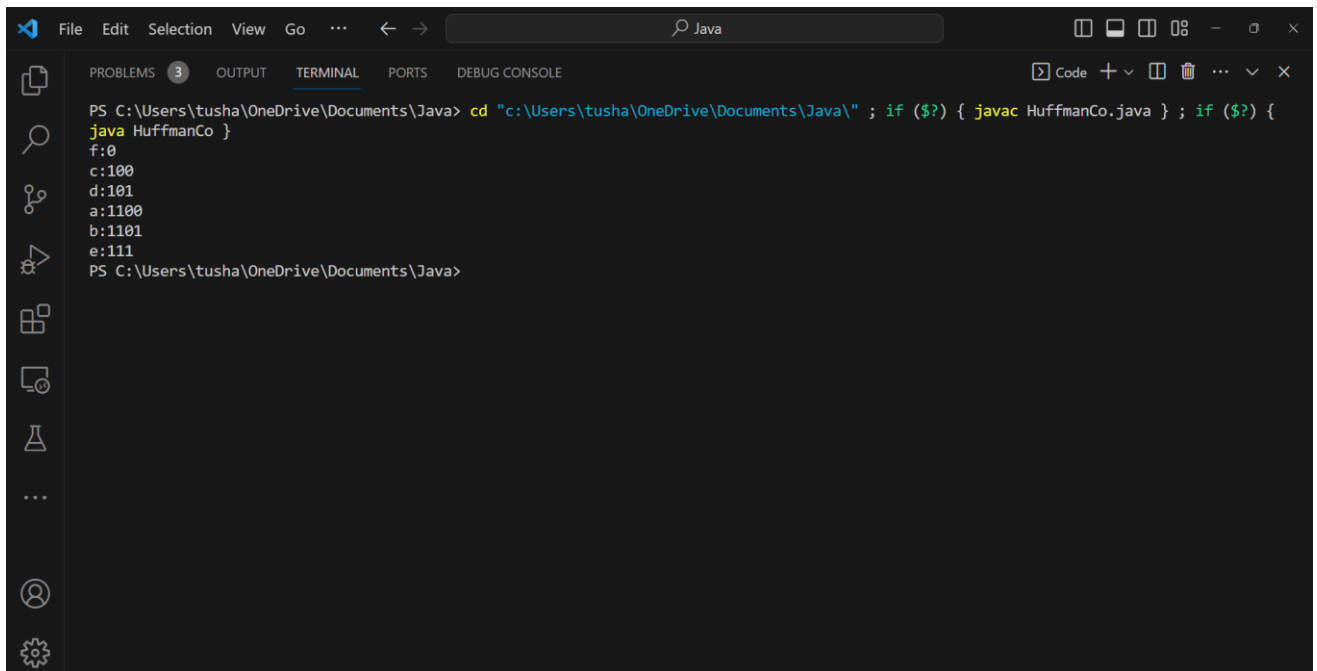
    HuffmanNode left;
    HuffmanNode right;
}

class MyComparator implements Comparator<HuffmanNode> {
    public int compare(HuffmanNode x, HuffmanNode y)
    {

        return x.data - y.data;
    }
}

```

Output



The screenshot shows a Visual Studio Code interface with a terminal window open. The terminal displays the output of a Java program. The command prompt is `PS C:\Users\tusha\OneDrive\Documents\Java>`. The command executed is `cd "c:\Users\tusha\OneDrive\Documents\Java\" ; if ($?) { javac HuffmanCo.java } ; if ($?) { java HuffmanCo }`. The output of the program is as follows:

```
f:0
c:100
d:101
a:1100
b:1101
e:111
PS C:\Users\tusha\OneDrive\Documents\Java>
```

The terminal window has a dark theme and includes a sidebar on the left with icons for Explorer, Search, Source Control, Run and Debug, and Extensions. The top menu bar shows File, Edit, Selection, View, Go, and a search bar with the text "Java".