Assignment 9

CS1083

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Code :

```
/**  @AUTHOR Omar Sebri 3722350 */

import java.util.*;
import java.io.*;
public class Painter{
    /* The array and its number of columns and rows */
    char[][] array ;
    int nrows;
    int ncols;
    /* The constructor that Initializes the Array from the file*/
      public Painter(String fname) throws FileNotFoundException{
      int j=0;
      String rline ="";
        Scanner sc = new Scanner(new File(fname));
        this.nrows = sc.nextInt();
        this.ncols = sc.nextInt();
        array = new char[nrows][ncols];
        String temp = sc.nextLine();
        for(int i=0;i<nrows;i++){
           rline= sc.nextLine();
           j=0;
           while(j<ncols){
            array[i][j]= rline.charAt(j);
            j++;
        }
        }
  }
  /*Painter method that finds the bucket then calls the paint() recursive
method */
public void paint(){
    for(int i=0;i<this.nrows;i++){
        for(int j=0;j<this.ncols;j++){
            if(this.array[i][j]!='0'&& this.array[i][j]!='1'){
                paint(i,j,array[i][j]);
            }
        }
    }
}
/* the recursive paint method */
private void paint(int row, int col, char colour){
    try{
```

```
    if(array[row+1][col]=='0'){
        array[row+1][col]= colour ;
        paint(row+1,col,colour);} }
        catch(ArrayIndexOutOfBoundsException e){}
    try{
    if(array[row-1][col]=='0'){
        array[row-1][col]= colour ;
        paint(row-1,col,colour);} }
        catch(ArrayIndexOutOfBoundsException e){}
    try{
    if(array[row][col+1]=='0'){
        array[row][col+1]= colour ;
        paint(row,col+1,colour);}}
        catch(ArrayIndexOutOfBoundsException e){}
    try{
    if(array[row][col-1]=='0'){
        array[row][col-1]= colour ;
        paint(row,col-1,colour);}}

catch(ArrayIndexOutOfBoundsException e){}
}
}


/** @Author: Omar Sebri   */


import java.io.FileNotFoundException;

public class PainterDriver {
    public static void main(String[] args)throws FileNotFoundException {
        System.out.println("The Room before printing");
        Painter room = new Painter("data3.txt");
            for(int i=0;i<room.nrows;i++){
                for(int j=0;j<room.ncols;j++){
                    System.out.print(room.array[i][j]);
                }
                System.out.print("\n");
            }
            room.paint();
            System.out.print("The Room after printing\n");
            for(int i=0;i<room.nrows;i++){
                for(int j=0;j<room.ncols;j++){
                    System.out.print(room.array[i][j]);
                }
                System.out.print("\n");
            }
        }
}
```

Testing:

Test Case 1:
Input:

7

6

000001

000R01

111111

000100

00B10G

111100

000000

Output:

The Room before printing

000001

000R01

111111

000100

00B10G

111100

000000

The Room after printing

RRRRR1

RRRRR1

111111

BBB1GG

BBB1GG

1111GG

GGGGGG

Test Case 2:

8

7

1000000

11111G0

00B0101

1111111

101R101

1010101

0001111

0B010G0

Output:

The Room before printing

1000000

11111G0

00B0101

1111111

101R101

1010101

0001111

0B010G0

The Room after printing

1GGGGGG

11111GG

BBBB1G1

1111111

1B1R101

1B1R101

BBB1111

BBB1GGG

Test case 3:

Input:

6

7

0001000

0001111

B011010

001R010

001001G

0011100

Output:

The Room before printing

0001000

0001111

B011010

001R010

001001G

0011100

The Room after printing

BBB1000

BBB1111

BB11R1G

BB1RR1G

BB1RR1G

BB111GG