

## FUZZY GRAPH COLORING CODE

```
import java.util.*;  
  
public class Main {  
  
    public static void colorFuzzyGraph(int[][] adjMatrix, double[]  
fuzzyValues, int numColors) {  
  
        int[] colors = new int[adjMatrix.length];  
  
        Arrays.fill(colors, -1);  
  
        PriorityQueue<Integer> pq = new PriorityQueue<Integer>((a,b) -> adjMatrix[b].length - adjMatrix[a].length);  
  
        for (int i = 0; i < adjMatrix.length; i++) {  
  
            pq.offer(i);  
  
        }  
  
        while (!pq.isEmpty()) {  
  
            int u = pq.poll();  
  
            boolean[] available = new boolean[numColors];  
  
            Arrays.fill(available, true);  
  
            for (int v : adjMatrix[u]) {  
  
                if (colors[v] != -1) {  
  
                    if (fuzzyValues[u] >= 0.5) {  
  
                        available[colors[v]] = false;  
  
                    }  
  
                }  
  
            }  
  
            int color = 0;  
  
            while (!available[color]) {  
                color++;  
            }  
  
            colors[u] = color;  
  
        }  
  
    }  
  
}
```

```
    }

}

}

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

    if (available[i]) {

        colors[u] = i;

        break;

    }

}

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

    System.out.println("Vertex " + i + " is colored " + colors[i]);

}

public static void main(String[] args) {

    int[][] adjMatrix = {

        {1, 2},

        {0, 2},

        {0, 1, 3},

        {2}

    };

}
```

```
    double[] fuzzyValues = {0.5, 0.7, 0.3, 0.9};

    int numColors = 3;

    colorFuzzyGraph(adjMatrix, fuzzyValues, numColors);

}

}
```

## OUTPUT:

```
Vertex 0 is colored 2
Vertex 1 is colored 1
Vertex 2 is colored 0
Vertex 3 is colored 1

...Program finished with exit code 0
Press ENTER to exit console.[]
```