

NAME : RASAVE PRALHAD MAROTI

ROLL NO : 55

ASS NO : 1

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import java.io.*;
import java.util.*;
class Graph {
    private int V;
    private LinkedList<Integer> adj[];
    @SuppressWarnings("unchecked")
    Graph(int v) {
        V = v;
        adj = new LinkedList[V];
        for (int i = 0; i < v; ++i)
            adj[i] = new LinkedList<>();
    }
    void addEdge(int v, int w) {
        adj[v].add(w);
    }
    void DFSUtil(int v, boolean visited[]) {
        visited[v] = true;
        System.out.print(v + " ");
        Iterator<Integer> i = adj[v].listIterator();
        while (i.hasNext()) {
            int n = i.next();
            if (!visited[n])
                DFSUtil(n, visited);
        }
    }
    void DFS(int v) {
        boolean visited[] = new boolean[V];
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        DFSUtil(v, visited);
    }

    void BFS(int s) {
        boolean visited[] = new boolean[V];

        LinkedList<Integer> queue = new LinkedList<Integer>(); visited[s] = true;    queue.add(s);

        while (queue.size() != 0) {
            s = queue.poll();

            System.out.print(s + " ");

            Iterator<Integer> i = adj[s].listIterator();

            while (i.hasNext()) {
                int n = i.next();

                if (!visited[n]) {
                    visited[n] = true;

                    queue.add(n);
                }
            }
        }
    }

    public static void main(String args[]) {
        Graph g = new Graph(4);

        g.addEdge(0, 1);
        g.addEdge(0, 2);
        g.addEdge(1, 2);
        g.addEdge(2, 0);
        g.addEdge(2, 3);
        g.addEdge(3, 3);

        System.out.println("Following is Depth First Traversal (starting from vertex 2):");

        g.DFS(1);

        System.out.println("\nFollowing is Breadth First Traversal (starting from vertex 2):");

        g.BFS(1);
    }

```

```
}
```

OUTPUT:-

Following is Depth First Traversal (starting from vertex 2):

1 2 0 3

Following is Breadth First Traversal (starting from vertex 2):

1 2 0 3

=== Code Execution Successful ===