

TopologicalSort.java

```
1 import java.util.*;
2
3 public class TopologicalSort {
4     private Stack<Integer> stack;
5     public TopologicalSort() {
6         stack = new Stack<Integer>();
7     }
8
9     public int[] topological(int matrix[][], int s) throws
    NullPointerException {
10         int numNodes = matrix[s].length - 1;
11         int[] topological_sort = new int[numNodes + 1];
12         int pos = 1;
13         int j;
14         int visited[] = new int[numNodes + 1];
15         int element = s;
16         int i = s;
17         visited[s] = 1;
18         stack.push(s);
19
20         while (!stack.isEmpty()) {
21             element = stack.peek();
22             while (i <= numNodes) {
23                 if (matrix[element][i] == 1 && visited[i] == 1) {
24                     if (stack.contains(i)) {
25                         System.out.println("NOT POSSIBLE");
26                         return null;
27                     }
28                 }
29                 if (matrix[element][i] == 1 && visited[i] == 0) {
30                     stack.push(i);
31                     visited[i] = 1;
32                     element = i;
33                     i = 1;
34                     continue;
35                 }
36                 i++;
37             }
38             j = stack.pop();
39             topological_sort[pos++] = j;
40             i = ++j;
```

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41     }
42     return topological_sort;
43 }
44
45 public static void main(String...arg) {
46     int numNodes, source;
47     Scanner scanner = null;
48     int tsort[] = null;
49     try {
50         System.out.println("Enter numNodes:");
51         scanner = new Scanner(System.in);
52         numNodes = scanner.nextInt();
53
54         int adjacency_matrix[][] = new int[numNodes + 1]
[numNodes + 1];
55         System.out.println("Enter the adjacency matrix");
56
57         for (int i = 1; i <= numNodes; i++)
58             for (int j = 1; j <= numNodes; j++)
59                 adjacency_matrix[i][j] = scanner.nextInt();
60
61         System.out.println("Enter source:");
62         source = scanner.nextInt();
63
64         System.out.println("Topological sort: ");
65         TopologicalSort toposort = new TopologicalSort();
66         tsort = toposort.topological(adjacency_matrix, source);
67         System.out.println();
68         for (int i = tsort.length - 1; i > 0; i--) {
69             if (tsort[i] != 0)
70                 System.out.print(tsort[i]+"\\t");
71         }
72     }
73     catch (InputMismatchException inputMismatch) {
74         System.out.println("Wrong Input format");
75     }
76     catch (NullPointerException nullPointer) {
77     }
78     scanner.close();
79 }
80 }
```