

Homework(18/06/2025)

Q1- Convert pairs into adjacency list Using ArrayList Of ArrayList By User Input.

Java Program-

```
import java.util.ArrayList;
```

```
import java.util.Scanner;
```

```
public class UndirectedGraphFromInput {
```

```
    public static ArrayList<ArrayList<Integer>> convertToAdjList(int[][] edges, int  
n) {
```

```
        ArrayList<ArrayList<Integer>> adjList = new ArrayList<>();
```

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

```
            adjList.add(new ArrayList<>());
```

```
        }
```

```
        for (int[] edge : edges) {
```

```
            int from = edge[0];
```

```
            int to = edge[1];
```

```
            adjList.get(from).add(to);
```

```
            adjList.get(to).add(from);
```

```
        }
```

```
        return adjList;
```

```
    }
```

```
    public static void printAdjacencyList(ArrayList<ArrayList<Integer>> adjList) {
```

```
int index = 0;
for (ArrayList<Integer> neighbors : adjList) {
    System.out.print(index + ": ");
    for (int neighbor : neighbors) {
        System.out.print(neighbor + " ");
    }
    System.out.println();
    index++;
}
}
```

```
public static void main(String[] args) {
    Scanner scanner = new Scanner(System.in);

    System.out.print("Enter number of vertices: ");
    int n = scanner.nextInt();

    System.out.print("Enter number of edges: ");
    int e = scanner.nextInt();

    int[][] edges = new int[e][2];

    System.out.println("Enter edges (format: from to): ");
    for (int i = 0; i < e; i++) {
        edges[i][0] = scanner.nextInt();
        edges[i][1] = scanner.nextInt();
    }
}
```

```
}
```

```
scanner.close();
```

```
ArrayList<ArrayList<Integer>> adjacencyList = convertToAdjList(edges, n);
```

```
System.out.println("\nAdjacency List representation:");
```

```
printAdjacencyList(adjacencyList);
```

```
}
```

```
}
```