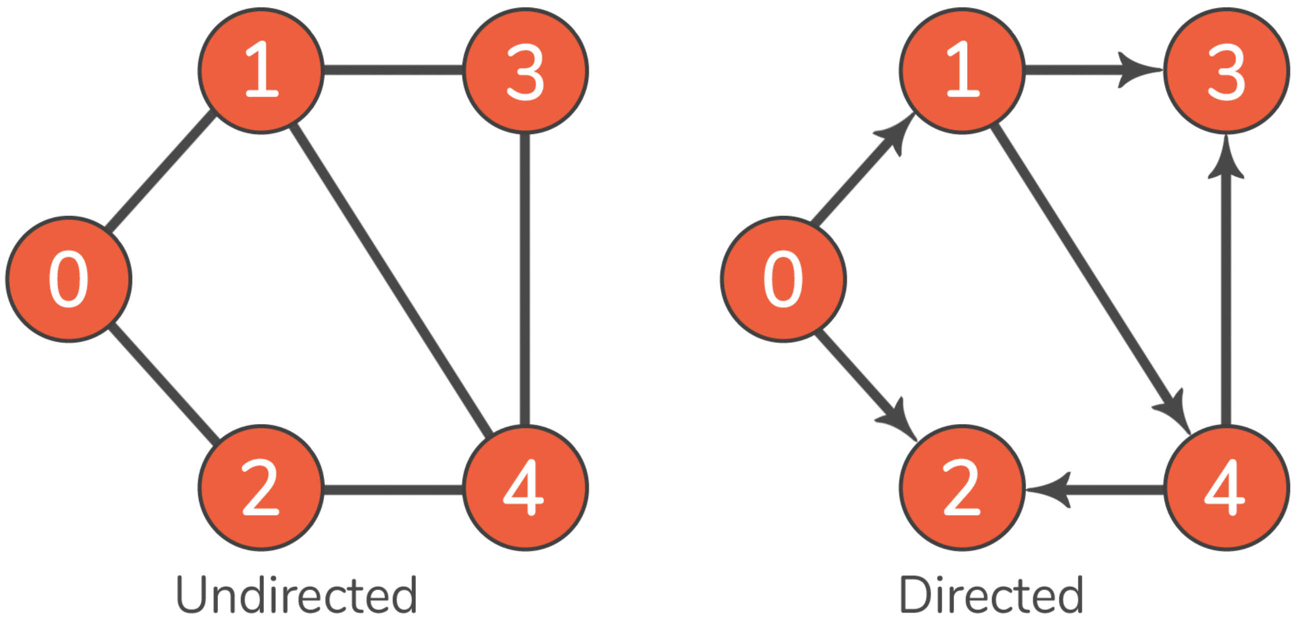
Graph Representation using an Adjacency List CodeStudio

This program demonstrates graph representation using an adjacency list. The **Graph** class encapsulates the logic for initializing the number of nodes, adding edges, and printing the adjacency list. The adjacency list offers a flexible way to store and traverse graph connections.

Example:



Output:

```
Undirected Graph

0: {1, 2}

1: {0, 3, 4}

2: {0, 4}

3: {1, 4}

4: {2, 3}


Directed Graph

0: {1, 2}

1: {3, 4}
```

4: {2, 3}

Graph Class

Members:

- **int nodes**: Number of nodes in the graph.
- **unordered_map<int, list<int>> adjacencyList**: Adjacency list representation.

Methods:

1. **Graph(int nodes)**
   - **Purpose:** Initializes the graph with a specified number of nodes.
   - **Complexities:**
     - **Time: O(1)**
     - **Space: O(1)**
2. **void addEdge(vector<vector<int>> &edges, bool isDirected)**
   - **Purpose:** Adds edges to the graph.
   - **Complexities:**
     - **Time: O(E), where E is the number of edges.**
     - **Space: O(E)**
3. **void printGraph()**
   - **Purpose:** Prints the adjacency list of the graph.
   - **Complexities:**
     - **Time: O(V + E), where V is the number of vertices and E is the number of edges.**
     - **Space: O(1)**