

Here's a **curated list of the overall top 10 most popular graph problems** across major topics — **cycle detection, topological sort, Dijkstra, BFS, and DFS** — based on frequency in contests (Codeforces, LeetCode, GFG, etc.), conceptual importance, and recurrence in interviews.

Top 10 Most Popular Graph Problems Overall

1. Course Schedule – [LeetCode 207]

- ◆ **Concepts: Cycle detection, topological sort**

- 📌 Detect if a directed graph (course prerequisites) has a cycle.

- ✅ Classic problem for understanding cycles in **DAGs** using DFS.

2. Number of Islands – [LeetCode 200]

- ◆ **Concepts: DFS/BFS traversal, connected components**

- 📌 Count connected components in a 2D grid (graph disguised as matrix).

- ✅ Most famous DFS/BFS grid problem.

3. Dijkstra's Algorithm – [GFG / Custom Input]

- ◆ **Concepts: Dijkstra's algorithm, priority queue, SPT**

- 📌 Find shortest paths from source to all nodes in weighted graph.

- ✅ Most used shortest path technique.

4. Find Redundant Connection – [LeetCode 684]

- ◆ **Concepts: Cycle detection using DSU**

- 📌 Identify the edge that creates a cycle in a tree (undirected graph).

- ✅ Most famous **DSU** application.

5. Topological Sort – [GFG / Kahn's Algo]

- ◆ **Concepts: BFS (Kahn's Algorithm), DFS ordering**

- 📌 Generate a valid ordering of tasks (DAG).

- ✅ Essential for task scheduling & course planning.

6. Cheapest Flights Within K Stops – [LeetCode 787]

◆ **Concepts: Modified Dijkstra / BFS, limited depth**

📌 Shortest path with constraints on number of edges.

✅ Real-world airline graph problem.

7. Alien Dictionary – [LeetCode 269]

◆ **Concepts: Topological sort, graph from strings**

📌 Order characters based on alien language dictionary.

✅ Topological sort with character dependency.

8. Clone Graph – [LeetCode 133]

◆ **Concepts: BFS/DFS, graph copy**

📌 Deep copy of an undirected graph.

✅ Common in object graph-based problems.

9. Word Ladder – [LeetCode 127]

◆ **Concepts: BFS shortest path, graph from dictionary**

📌 Find shortest transformation sequence from start to end word.

✅ Famous BFS problem disguised as word puzzle.

10. Cycle Detection in Directed Graph – [GFG / LeetCode]

◆ **Concepts: DFS with visited + rec stack**

📌 Classic method to find cycles in a DAG.

✅ Frequently asked, foundational problem.

✅ Bonus Problems Worth Practicing

- **Network Delay Time** – [LeetCode 743] – Dijkstra variation.
- **Pacific Atlantic Water Flow** – [LeetCode 417] – BFS/DFS from multiple sources.

- **Detect Cycle in Undirected Graph** – [GFG] – DFS or DSU.
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Let me know if you want:

- C++ templates for these problems.
- Practice sheet / tracker.
- Sorted by platform or difficulty (easy/medium/hard).