Competitive Programming Library

Too bad to be Accepted

Contents

1 Dynamic Programming

2 Bit Manipulation

3 Algorithms

4 Data Structures

5 Graph Theory

5.1 Dijkstra Algorithm

```cpp
#define INF (1e18)

int n, m;
vector<vector<pair<int, int>>> adj;
vector<int> cost;
vector<int> parent;

void dijkstra(int startNode = 1) {
    priority_queue<pair<ll, int>, vector<pair<ll, int>>, greater<>> pq;

    cost[startNode] = 0;
    pq.emplace(0, startNode);

    while (!pq.empty()) {
        int u = pq.top().second;
        ll d = pq.top().first;
        pq.pop();

        if (d > cost[u]) continue;

        for (auto &p: adj[u]) {
            int v = p.first;
            int w = p.second;
            if (cost[v] > cost[u] + w) {
                cost[v] = cost[u] + w;
                parent[v] = u;
                pq.emplace(cost[v], v);
            }
        }
    }
}

void run_test_case(int testNum) {
    cin >> n >> m;

    adj.assign(n + 1, {});
    cost.assign(n + 1, INF);
    parent.assign(n + 1, -1);

    while (m--) {
        // Read Edges
    }

    dijkstra();

    if (cost[n] == INF) {
        cout << -1 << el; // not connected {Depends on you use case}
        return;
    }

    stack<int> ans;
    for (int v = n; v != -1; v = parent[v]) ans.push(v);

    while (!ans.empty()) { // printing the path
        cout << ans.top() << ' ';
        ans.pop();
    }
    cout << el;
}
```

Dijkstra Implementation