#include <iostream>

#include <queue>

using namespace std;

int adj\_mat[50][50] = {0, 0};

int visited[50] = {0};

void dfs(int s, int n, string arr[])

{

visited[s] = 1;

cout << arr[s] << " ";

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

{

if (adj\_mat[s][i] && !visited[i])

dfs(i, n, arr);

}

}

void bfs(int s, int n, string arr[])

{

bool visited[n];

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

visited[i] = false;

int v;

queue<int> bfsq;

if (!visited[s])

{

cout << arr[s] << " ";

bfsq.push(s);

visited[s] = true;

while (!bfsq.empty())

{

v = bfsq.front();

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

{

if (adj\_mat[v][i] && !visited[i])

{

cout << arr[i] << " ";

visited[i] = true;

bfsq.push(i);

}

}

bfsq.pop();

}

}

}

int main()

{

cout << "Enter no. of cities: ";

int n, u;

cin >> n;

string cities[n];

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

{

cout << "Enter city name for city no." << i+1 <<" : ";

cin >> cities[i];

}

cout << "\nYour cities are: " << endl;

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

cout << "city :" << i << ": " << cities[i] << endl;

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

{

for (int j = i + 1; j < n; j++)

{

cout << "Enter distance between " << cities[i] << " and " << cities[j] << " : ";

cin >> adj\_mat[i][j];

adj\_mat[j][i] = adj\_mat[i][j];

}

}

cout << endl;

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

cout << "\t" << cities[i] << "\t";

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

{

cout << "\n"

<< cities[i];

for (int j = 0; j < n; j++)

cout << "\t" << adj\_mat[i][j] << "\t";

cout << endl;

}

cout << "Enter Starting Vertex: ";

cin >> u;

cout << "DFS: ";

dfs(u, n, cities);

cout << endl;

cout << "BFS: ";

bfs(u, n, cities);

return 0;

}