IT251 Assignment 3

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TOPIC: BFS-APPLICATIONS

README File:

The program computes diameter of undirected graphs using the following steps:

- Adjacency list is generated using the edge set given by the user.
- Depth First Search is carried out on the whole graph to generate a verdict (whether graph is connected, cyclic)
- If graph is disconnected, the diameter is shown as infinity and the program ends.
- If the graph is connected but cyclic, then BFS is carried out on each vertex and the diameter is computed as the maximum of the longest distances reachable from a vertex (NORMAL METHOD).
- The distances of vertices from a particular vertex are computed as the level in which the vertex lies in the BFS tree, considering 0 as the level of the starting vertex.
- If the graph is connected as well as acyclic, then the graph is a tree and BFS is used only twice, one with starting vertex as 1 and next as the starting vertex which is farthest from vertex 1. The maximum of the longest distances reachable is taken as the diameter of the graph (OPTIMIZED METHOD).

The time complexity when using the normal method is around O(V*(V+E)) and when using the optimized method is O(V+E), where “V” is the number of vertices and E is the number of edges in the undirected graph.

THANK YOU!!