PROJECT REPORT

Project Name:- DFS Animation

Project Track:- DFS graph traversal using canvas

Project Outline:-

This project demonstrates the dfs traversal in an undirected graph using the functions provided in the given files and some custom function made by the programmer.
The animation also tells if there is a cycle in the given graph and prints the node at which the dfs is currently .

Motivation:-

Many students studying computer science have difficulty in understanding such alogorithms and visual representation of these kinds help a lot to get the essence of how the algorithm works.
I particularly remember facing the same problem in my 2nd Semester and therefore decided to work upon this idea.

How the Project works:-

- The code has a **Creategraph()** function which forms a graph having the number of nodes given by the user.
- It has an **Addedge()** fn which joins the nodes to form the final graph.
- Finally, the **dfs()** fn which carries out the depth first search which works on the basis of recursion.
- The Program colour codes the nodes according to the number of not visited children it has, to make it convenient for the viewer to understand the dfs.
- The cycle detection works on the fact that if a node is surrounded by two previously visited nodes, then it is the part of a cycle.

Scope for Improvement and Expansion:-

- The current code involves hardcoding the values of the number of nodes and edges. This can be improved by taking on screen input from the user.
- Similar projects can be made for many other graph theory algorithms to help the students understand better.
- More animations can be added to make this more interesting.

Note of Thanks:-

I would like to thank zense for organising such a great event which provided incentive to learn new things.

References:

- **https://www.geeksforgeeks.org/depth-first-search-or-dfs-for-a-graph/**
- **https://www.w3schools.com/js/js_loop_for.asp**
- **https://trans4mind.com/personal_development/JavaScript/Array2D.htm**

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