Div A Batch C Expt 7

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Thus in this experiment, I have implemented ford fulkerson algorithm in two ways, with DFS and BFS. The search algos are used to find valid path in directed graph from source to sink. A randomly generated graph of 20 vertices has been created, with randomly chosen source, sink. The path taken in each search is easily visible. The BFS algo uses significantly more paths than DFS to get to the answer, but both the answers are same

Time complexity

1) BFS

- BFS itself takes $O(V+E)$ for each search
- The max number of paths possible is bounded by $O(E \times V)$ because each pick increases flow, reduces residual capacity.

$\therefore TC = O(E \cdot V^2)$

2) DFS

DFS itself takes $O(V+E)$ time for each search

- The number of paths that can be picked can reach $O(F)$ where F is the max flow value.

$\therefore$ T.C is $O(E.F)$

BFS is better for larger inputs, DFS is better for smaller ones. Since the graph chosen has 20 vertices with 30% density, it is small and DFS is better