Space complexity

Stack depth could reach $O(N)$ in the worst case, Graph storage $= O(N+E)$

Overall $= O(N+E)$

Spares vs Dense Graphy

Spare Graph: $E \approx N$ → Both BFS & DFS run in about $O(N)$ time

Dense Graph: $E \approx N^2$ → Both BFS & DFS may run in $O(N^2)$ time

for every deep or skewed graphy, DFS might risk stack overflow, while BFS may consume more memory

Space complexity

Stack depth could reach $O(N)$ in the worst case, Graph storage $= O(N+E)$

Overall $= O(N+E)$

Sparse vs Dense Graphs

Sparse Graph: $E \approx N$ → Both BFS & DFS run in about same time

Dense Graph: $E \approx N^2$ → Both BFS & DFS may run in $O(N^2)$ time

for very deep or skewed graphs, DFS might risk stack overflow, while BFS may consume more memory

Space complexity

Stack depth could reach $O(N)$ in the worst case, Graph storage $= O(N+E)$

Overall $= O(N+E)$

Spares vs Dense Graphy

Spare Graph: $E \approx N$ → Both BFS & DFS run in about $O(N)$ time

Dense Graph: $E \approx N^2$ → Both BFS & DFS may run in $O(N^2)$ time

for every deep or skewed graphs, DFS might risk stack overflow, while BFS may consume more memory