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### Week1: Task 2 - Tradeoffs of DFS and BFS

We have discussed two search algorithms in class: Depth First Search and Breadth-First Search. Although they both are good choices regarding search algorithms, there are some tradeoffs that we could discuss. For example, some advantages that DFS has is that it uses less time and space complexity, resulting in less memory consumption. DFS will find the best solution without searching for many paths simultaneously. It uses the stack data structure to push the first visited vertices into the stack and if there are no vertices, then visited vertices are popped. It does have some disadvantages, though. Depth First Search can't always guarantee a solution, and sometimes the process is prolonged because it can get stuck searching through a path that we know won't be useful for the algorithm.

On the other hand, Breadth-First Searches' advantages include a guaranteed solution faster than DFS. It can do this because it simultaneously searches two nodes simultaneously, which results in never being trapped in unwanted nodes. Its sole function is to find the solution with the most minimal steps it can take. Although BFS is fast and great, it does come with some disadvantages. For example, when BFS searches through the nodes simultaneously, it stores those nodes in memory which can cause memory constraints. If it has to search through a very complex program, you will find that the program is consuming large amounts of memory space.