Pre-Lecture 2: Graph Search (BFS, DFS)

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In last week's lecture, we started by looking at the problem of *flood fill*, an operation on images where we filled in a region with a new color. Briefly at the end of that lecture, we made some modifications to that algorithm such that, rather than filling in a region, we were able to find a path between two points in an image.

This week's pre-lecture materials are presented in video form, as a portion of a lecture from the spring 2021 semester. The video builds on the ideas from last week's lecture and formalizes them a little bit, introducing an interesting category of algorithms called *graph search* algorithms, with a particular focus on *path-finding*.

In Monday's lecture, we'll continue to build on these ideas.

Please watch the video and answer the question below.

Which of the following statements are true?

☐ In order to be a BFS, it's important that new paths are added to (and removed from) the *front* of the agenda, rather then the *end* of the agenda.

☐ If BFS finds a path, that path is guaranteed to be optimal (in terms of length).

☐ DFS might enter an infinite loop even if the search domain is finite.

☐ It is possible that DFS and BFS could return the same path for some problem.

☐ It is possible that DFS and BFS could return different paths for some problem.

☐ BFS is guaranteed to find a path if one exists, even in an infinite domain.