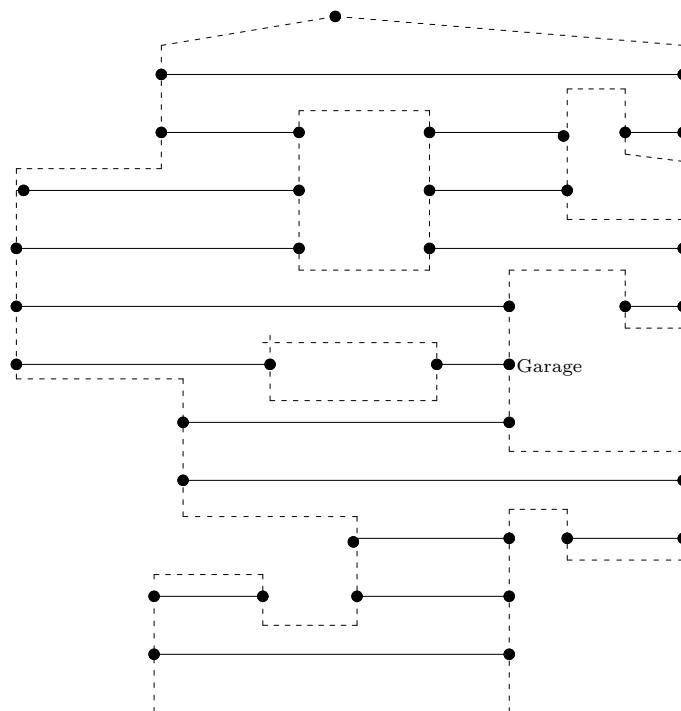


Fun with Graphs

Problem # 2

You are trying to plan a path to spread fertilizer on your lawn, whose sketch is given below. The solid lines indicate required edges, you must traverse them. The dashed boundary edges are optional, you may traverse them if you want to. However, you may *not* traverse an edge more than once, as this will cause over-fertilization of the grass, which is not good for it! So, whenever you get “stuck”, you must pick up the fertilizer spreading machine and carry it to another point where you will put it down and continue. Your goal is to minimize the *number* of times that you have to pick up this machine. To simplify matters, assume that you must start and end at the same spot (the garage, where your fertilizer spreader is stored).

Describe a graph model, what are the nodes and edges of your graph? How many times must you pick up the machine?



Think: How does the problem change if you *must* also traverse every dashed (boundary) edge exactly once?

Think: Now you are trying to plan a lawn-mowing route. This means that you are allowed to repeat edges you already traversed, and your goal is to minimize the time (length) of travel.