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For homework 5 we were tasked with expanding on the `alife.py` file that was developed in class. This file initially only featured rabbits eat and reproducing. We were tasked with expanding that simulation to include foxes as a natural predator, who could eat rabbits, move, and die if they go without food. At first the task seemed as simple as creating a new class called 'foxes' and copy/pasting the rabbit functionality into it, which wasn't altogether untrue. Foxes, like rabbits, behaved similarly in that they could eat, move, reproduce, and die. What we had to change about the foxes was how they moved, what they ate, and how often they ate. After doing so, in the earlier iterations of our simulation, the fox population would overrun the rabbits very quickly. To solve this, we put lifetime limits on both animals (which seemed reasonable considering no animal lives forever in real life) to try to limit fox reproduction. In another attempt to make the simulation more life-like, we included that offspring must respawn in some small vicinity around their parent, rather than anywhere random on the field, as was the case with the spawning of the first of each animal. Even with each of the modifications to try to limit the dominance of the foxes, they still tended to overrun the rabbits. We believe that the simplest ways to keep this from happening would be to increase how many rabbits are born in each reproduction cycle, or to make the foxes reproduce less often. Other more complicated ways of doing this would be to expand the simulation altogether (introduce a predator to the foxes). The

biggest issue in all of this was managing the reproduction of the animals from the point of view of computing effort.