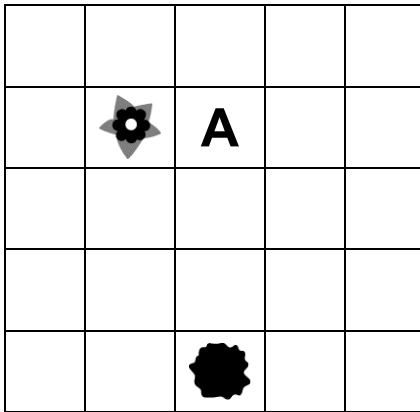


2011 AP[®] COMPUTER SCIENCE A FREE-RESPONSE QUESTIONS

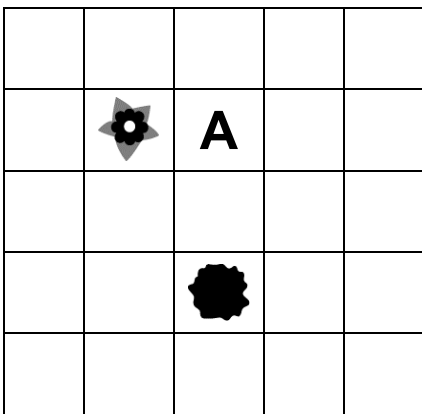
2. This question involves reasoning about the GridWorld case study. Reference materials are provided in the Appendix.

An attractive critter is a critter that processes other actors by attempting to relocate all of the other actors in the grid, including other attractive critters. The attractive critter attempts to move each other actor one grid cell closer to itself in the direction specified by `getDirectionToward`. An actor is relocated only if the location into which it would be relocated is empty. If an actor cannot be moved, it is left in its original position. After trying to move all other actors, the attractive critter moves like a critter.

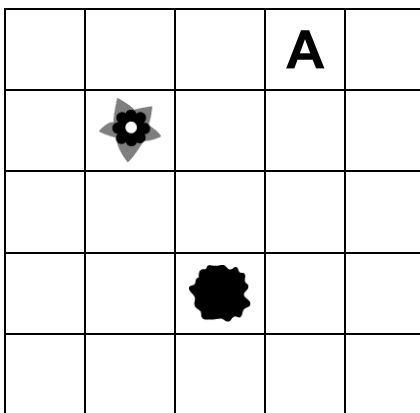
The following series of figures represents an example of how the attractive critter affects the other actors in the grid.



An attractive critter (indicated by the letter A) is in location (1, 2), a flower is in location (1, 1), and a rock is in location (4, 2).



When the attractive critter acts, the rock will be relocated to location (3, 2) because that location is one grid cell closer to the attractive critter and is empty. The flower will not be relocated because the grid cell that is one location closer to the attractive critter is already occupied.



After attempting to relocate all the other actors in the grid, the attractive critter then moves like a critter. In this example, the attractive critter moves to location (0, 3).

2011 AP[®] COMPUTER SCIENCE A FREE-RESPONSE QUESTIONS

The order in which the actors in the grid are processed is not specified, making it possible to get different results from the same grid of actors.

Write the complete `AttractiveCritic` class, including all instance variables and required methods. Do NOT override the `act` method. Remember that your design must not violate the postconditions of the methods of the `Critic` class and that updating an object's instance variable changes the state of that object.