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

A retro bug behaves like a regular bug. It also has the ability to revert to its previous location and direction. When a retro bug acts, it maintains information about its location and direction at the beginning of the act. The retro bug has a `restore` method that restores it to the location (if possible) and direction it faced at the beginning of its previous act. A retro bug only maintains information about its most recent act; therefore, multiple calls to `restore` that occur before its next act will use the same information. The `restore` method has no effect if it is called before a retro bug's first act.

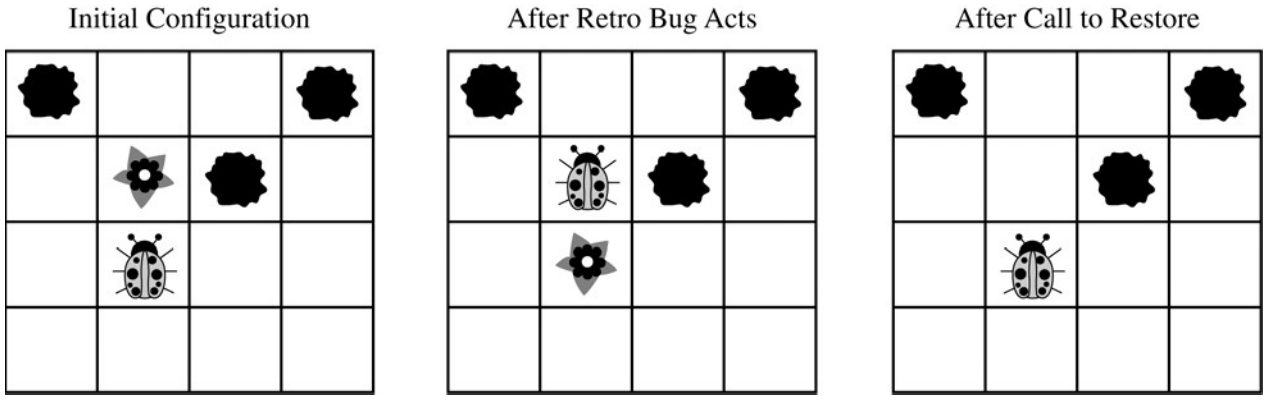
The `restore` method takes no parameters and does not return a value. The `restore` method has the following functionality.

- If the previous location of the retro bug is either unoccupied or contains a flower, the `restore` method places the retro bug in that previous location. The presence of any other type of actor in that location will prevent the retro bug from being placed in that location.
- The `restore` method always ends with the retro bug facing in the same direction that it had been facing at the beginning of its most recent act.

The following examples illustrate the behavior of the `restore` method.

Example 1

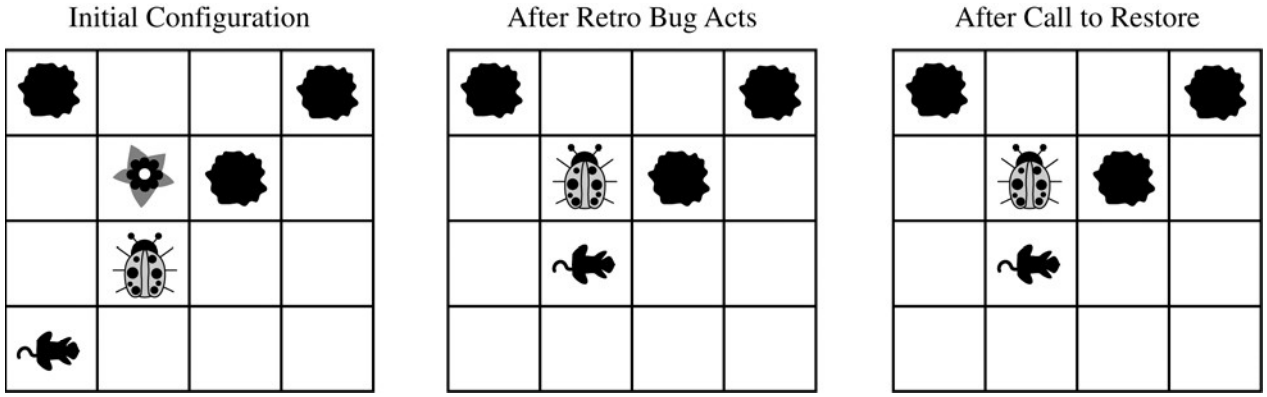
The retro bug acts once and later calls `restore`. Note that the flower that was originally in front of the retro bug is not replaced as a result of the call to `restore`. The retro bug is returned to its previous direction, which, in this case, is the same as the current direction.




Question 2 continues on the next page.

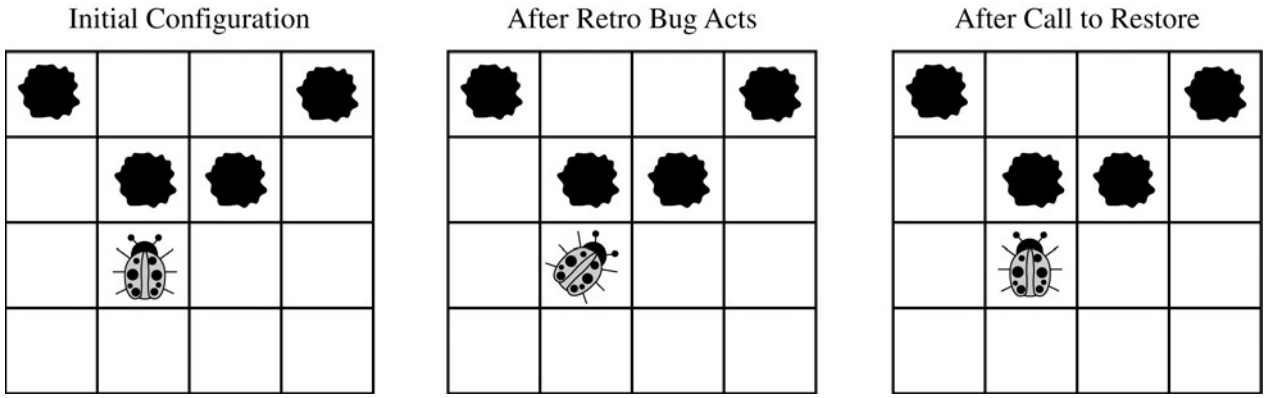
Example 2

The retro bug acts once and then some other actor moves into the location that the retro bug originally held. The call to `restore` results in the retro bug staying in its current location. The retro bug is returned to its previous direction (in this case it is the same as the current direction).




Example 3

The retro bug acts once and later calls `restore`. Because the retro bug is blocked from moving forward, it turns as its first act. The `restore` method results in the retro bug staying in its current location (the same as its previous location) and returning to its previous direction.




**WRITE YOUR SOLUTION ON THE NEXT PAGE.**

Write the entire `RetroBug` class, including all necessary instance variables and methods.