

John Conway's Game of Life

Now that you've learned the basics of Plaid and state change, it's time to try out Plaid yourself. You'll implement the logic of John Conway's game of life as plugin to a game framework we built just for this demonstration. The Game of Life is a 'cellular automaton' invented by Cambridge mathematician John Conway. This game became widely known when it was mentioned in an article published by Scientific American in 1970. It consists of a collection of cells which, based on a few mathematical rules, can live, die or multiply. Depending on the initial conditions, the cells form various patterns throughout the course of the game.

The Rules:

For a cell that is alive:

Each cell with one or no neighbors dies, as if by loneliness.

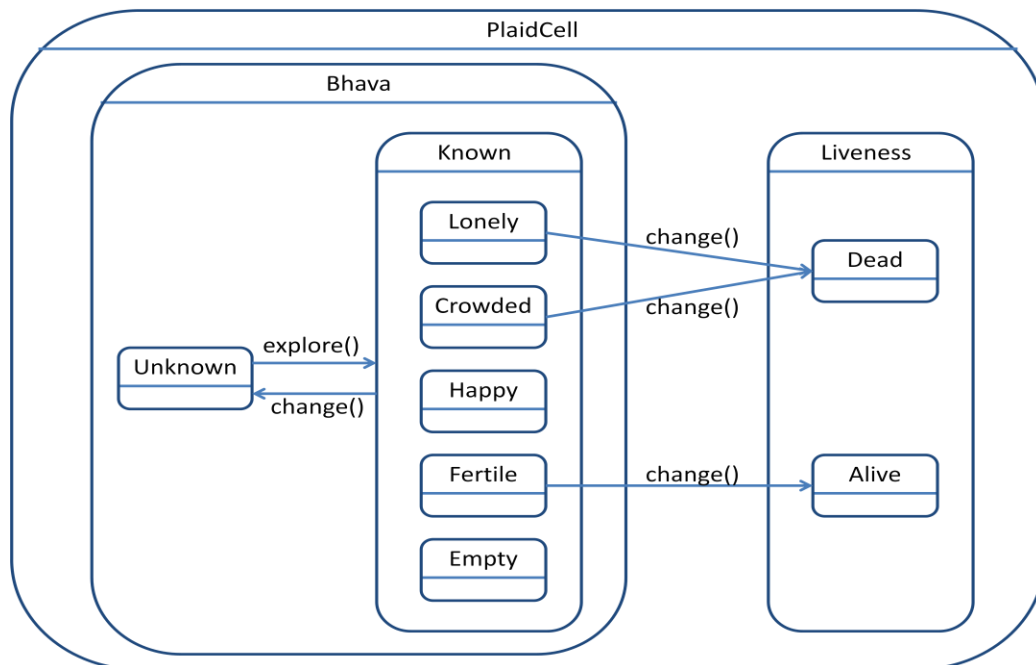
Each cell with four or more neighbors dies, as if by overpopulation.

Each cell with two or three neighbors is happy and survives.

For a cell that is dead

Each cell with three neighbors becomes populated.

Since you're already thinking in Plaid you immediately recognize that a cell has two states – alive and dead. If you're really insightful you might notice that cells have even more states – loneliness, crowded, happy, spawning, (and implicitly for a dead cell that stays dead, empty). In this exercise, cells have the following state-chart:



The two most important methods in the exercise are “explore” and “change.” The framework passes the explore method of each cell a list of neighbors (change to number of neighbors based on first trial). The cell then must decide its “bhava,” from Sanskrit word for state of being, i.e. if it is lonely, crowded, etc. Then, after all cells have been explored, the framework calls the change method on each cell. This method changes the cells “liveness” based on the “bhava” determined by explored.

More concretely, you need to read the plaid source code in `pld/plaid/demo/plugin` directory of the distribution we gave you. Every place that there is a `//TODO`, you need to fill in code to implement the enclosing method. Your implementation should match the specification in this document and in the method comment.