B1/S and B2/S are both explosive rules in which every cell dies in every generation.

Rule B2/S is a life-like cellular automaton called “Seeds” in which only dead cells with exactly two live neighbours will turn into live cells on the next generation. Even though all the living cells die in every generation (turning every pattern into a phoenix), most patterns are still exploding quadratically.

Since it is an exploding rule where every cell dies in every generation. It has many simple orthogonal spaceships, though it is in general difficult to create patterns that don't explode.

When the rule B1/S is applied on the cube see (2x2) we end up with a simple expansion

pattern where the corner cells live, and the original cells die. On the next

step all the surrounding cells turn into living cells. During the next step the

outer cells move out just like the first step then all other cells end up dying.

This pattern is repeated.

(Ins image)WE DONE

When the rule B2/S is applied on the cube seed the all surrounding cells become

living cells except for the corner ones, the original cells then die. The same

thing happens as the previous step where all surrounding cells come alive apart

from the corner ones and the original ones die. The same thing keeps happening

for another step but in the step afterwards the inner cells start coming to

live. B2/S causes a much more complex pattern.

(Ins image)WE DONE

When we applied B1/S to the Beehive seed we ended up with a complex expansion

which led to a square shaped expansion with complex patterns inside it.

(Ins image)WE DONE

B2/S on the Bee-hive seed caused all surrounding cell to live except for corner

cells, the original cells then died. The second step caused the top half of the

pattern to move up a cell and the bottom half to move down a cell, then a line

formed between them. In the third step the line of cells died and the rest of the

pattern expanded in the same direction, this occurrence keeps happening.

which led to a square shaped expansion with complex patterns inside it.

(Ins image)WE DONE

B1/S -Rule 4

B2/S (Seeds) - Rule 16

EXERCISE 2

As in the logistic map we can find a stable 2-cycle for the map g(x) = xe^(a(1−x)), as we started by taking a look at the window with range of 1 ≤ a ≤ 4 where we find a bifurcation Diagram. This bifurcation Diagram had coordinates of **a=3,14 and start = 2,69.**

Image(label as “Bifurcation Diagram”)

With this data we were able to get the orbit for these coordinates where we see the population almost gets extinct but manages to stay stable.The orbit graph below shows us the **500** iteration of the orbit for **a=2,5** at a start=**2,69.**

Image(label as “Orbit Diagram”)

Notice then after **500** iterations the orbit is still stable. Therefore, the 2-cycle is at **a ≈ 2,5**