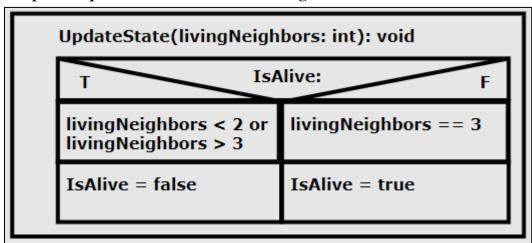
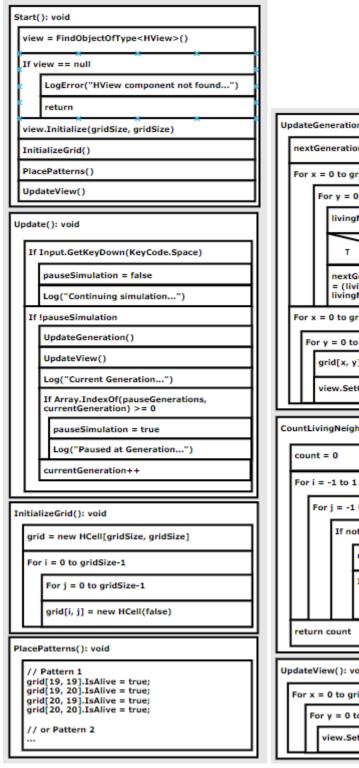
Report: 1
Date: 02.02.2024

Ajay Satish Patil | Registration No.: 126655

1. Graph to represent the behavior of a single automat via Nassi-Shneiderman

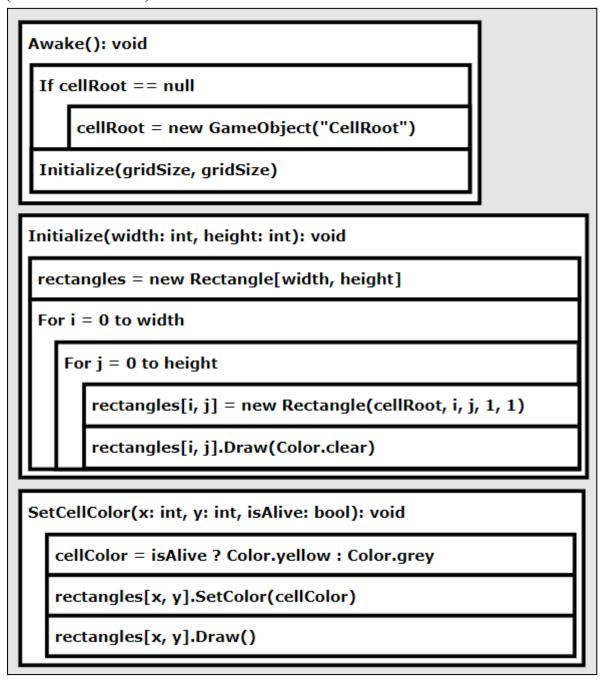


# 2. The Nassi-Shneiderman diagram for the calculation of the whole field (method wise NSDs)

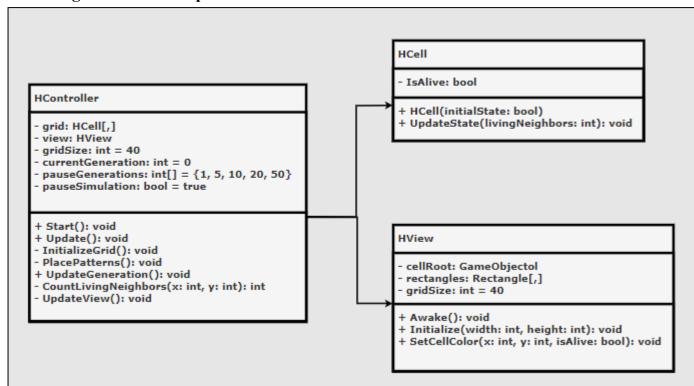


```
UpdateGeneration(): void
   nextGeneration = new bool[gridSize, gridSize]
   For x = 0 to gridSize-1
        For y = 0 to gridSize-1
           livingNeighbors = CountLivingNeighbors(x, y)
                              If grid[x, y].lsAlive
            nextGeneration[x, y]
                                           nextGeneration[x, y]
           = (livingNeighbors == 2 ||
livingNeighbors == 3)
                                           = (livingNeighbors == 3)
   For x = 0 to gridSize-1
      For y = 0 to gridSize-1
         grid[x, y].IsAlive = nextGeneration[x, y]
        view.SetCellColor(x, y, grid[x, y].IsAlive)
CountLivingNeighbors(x: int, y: int): int
       For j = -1 to 1
            If not (i == 0 && j == 0)
                  nx = x + i, ny = y + j
                  If nx and ny within grid bounds
                    count += grid[nx, ny].IsAlive ? 1 : 0
UpdateView(): void
  For x = 0 to gridSize-1
       For y = 0 to gridSize-1
          view.SetCellColor(x, y, grid[x, y].IsAlive)
```

3. The Nassi-Shneiderman diagram for the visualization of the field (method wise NSDs)



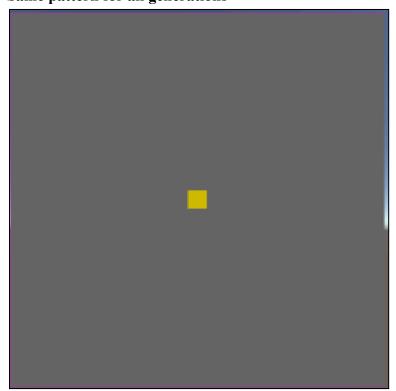
#### 4. Class diagrams for the implemented classes



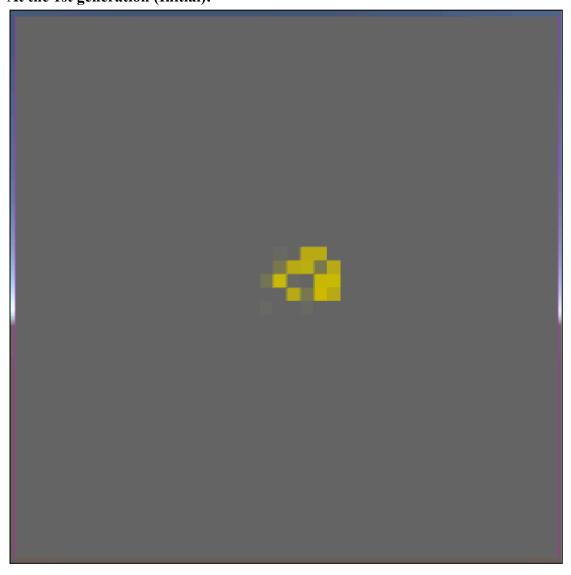
#### 5. Screenshots of the evolution results:

#### [1] Pattern 1:

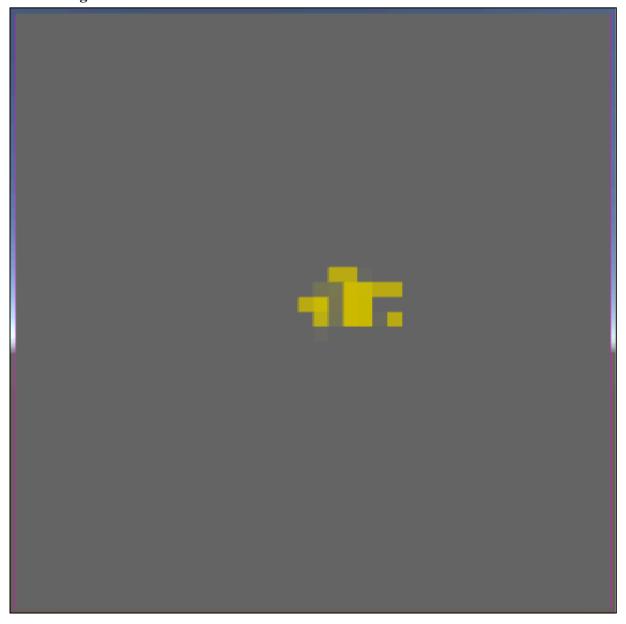
Same pattern for all generations -



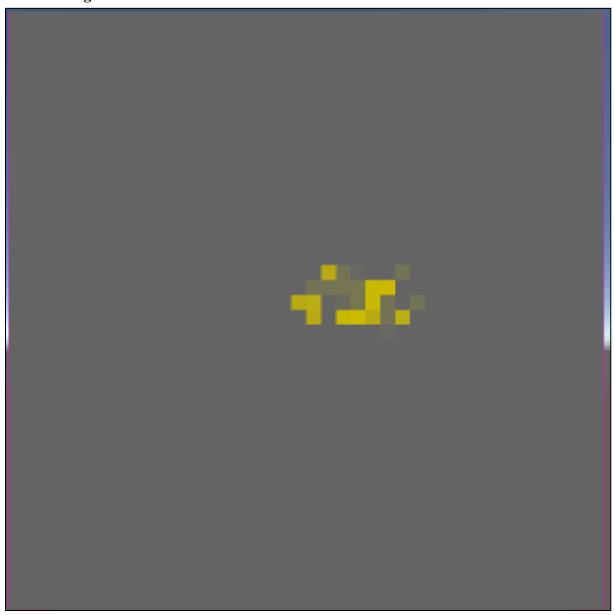
## [2] Pattern 2: At the 1st generation (Initial):



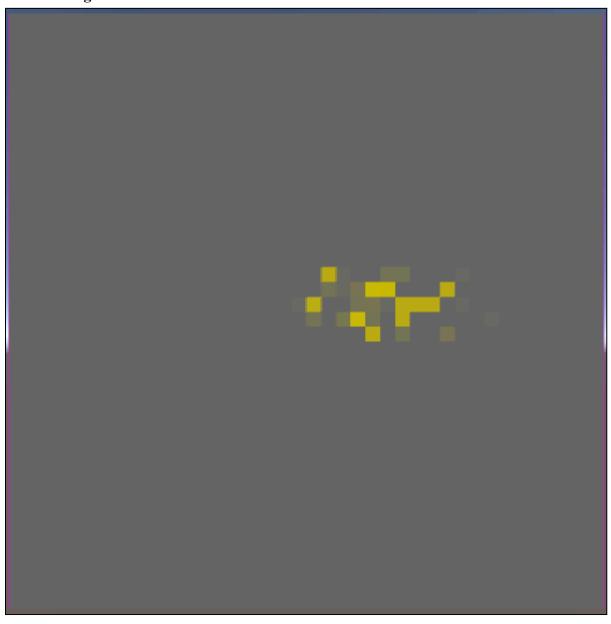
# At the 5th generation:



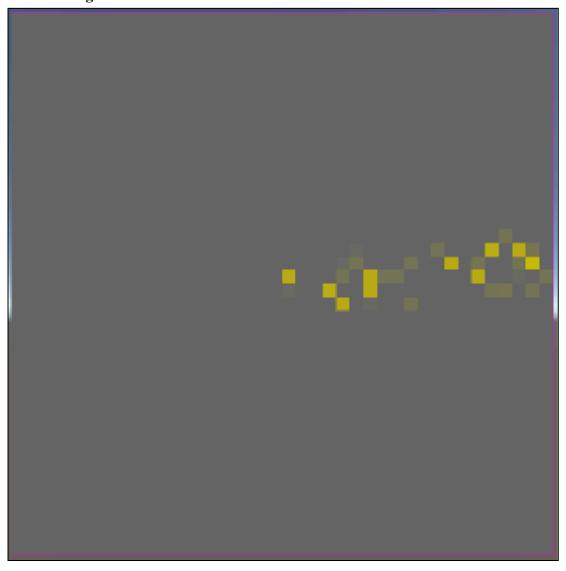
#### At the 10th generation:



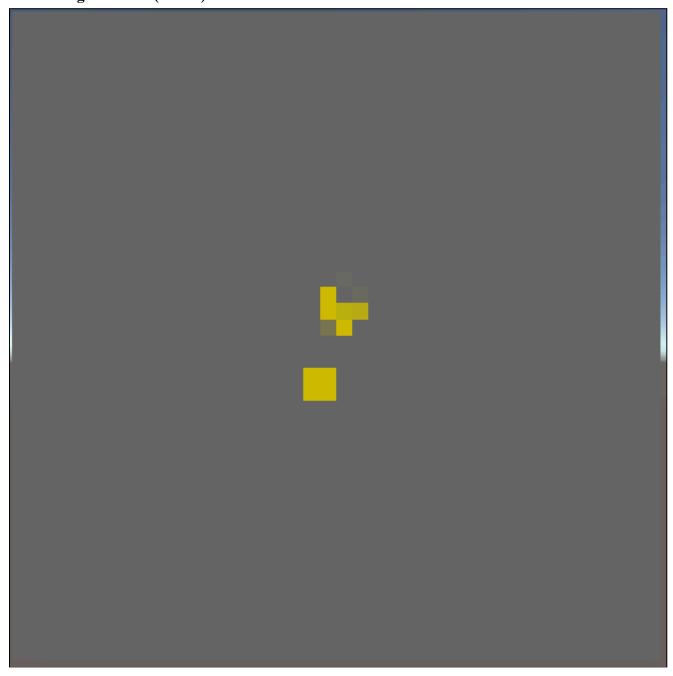
#### At the 20th generation:



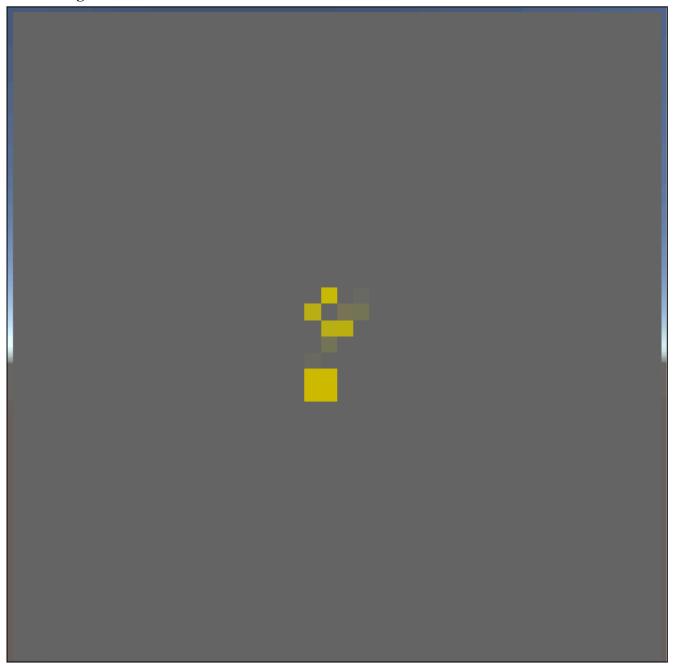
## At the 50th generation:



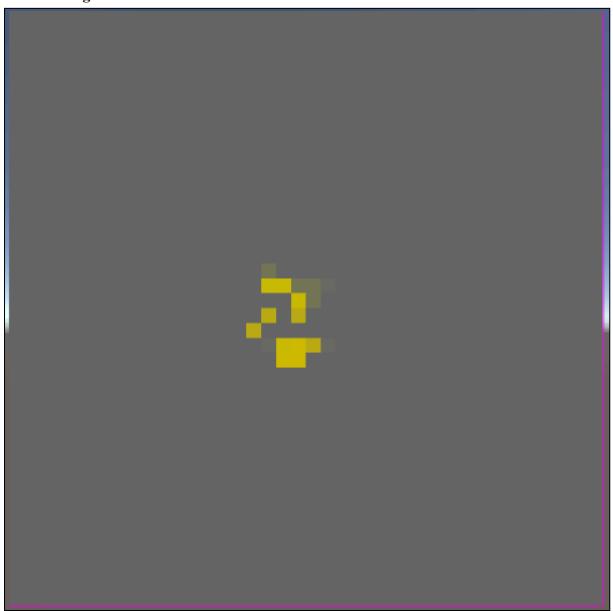
[3] Pattern 3: At the 1st generation (Initial):



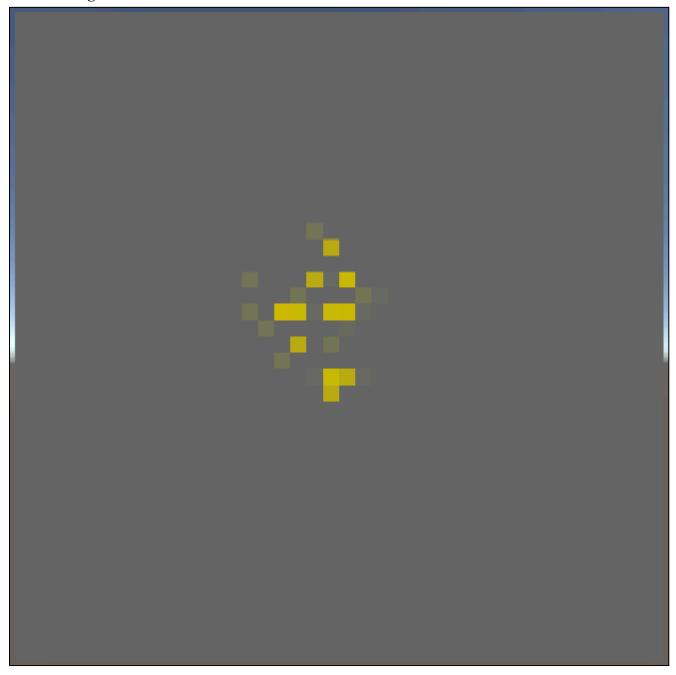
# At the 5th generation:



## At the 10th generation:



## At the 20th generation:



# At the 50th generation:

