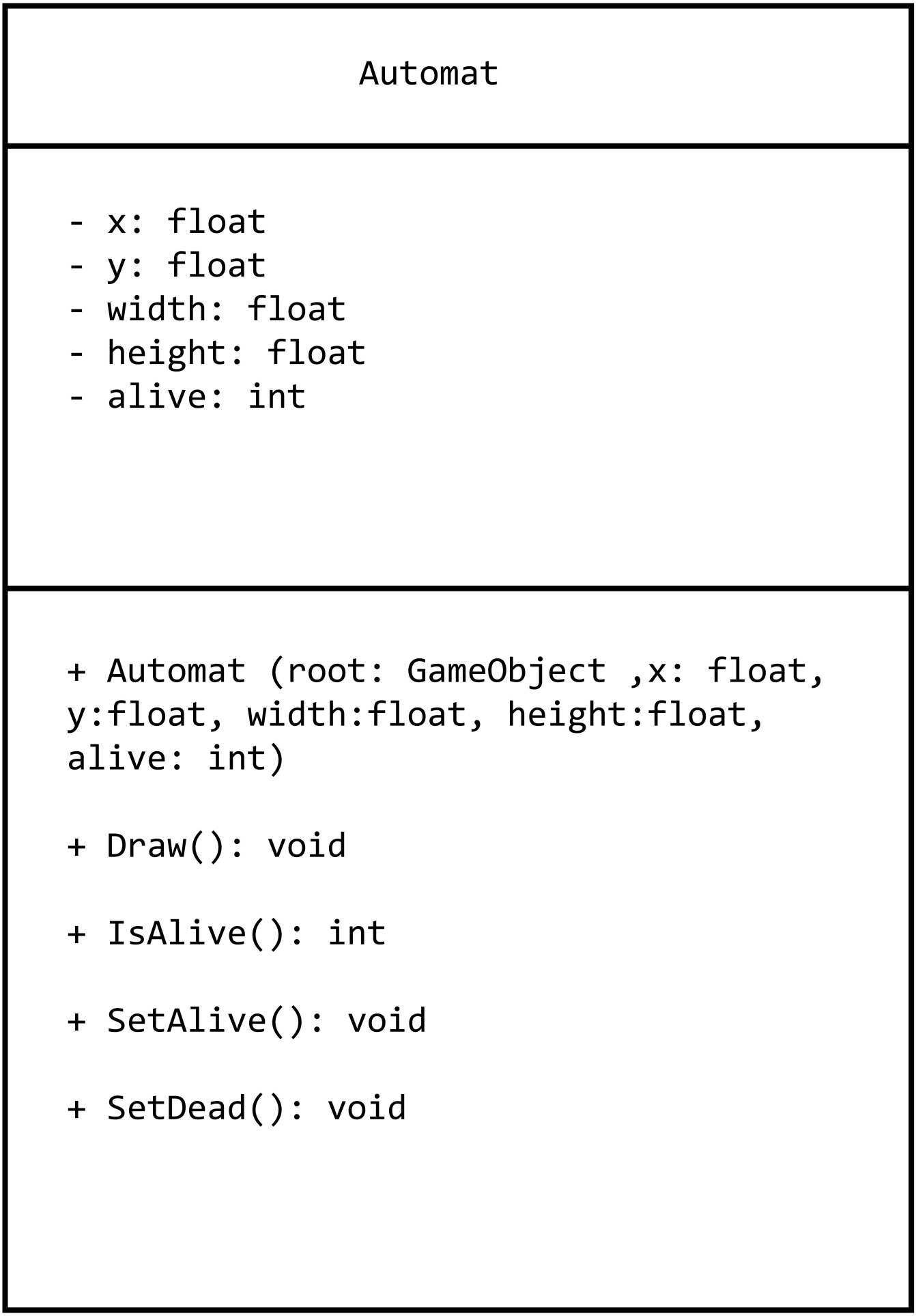
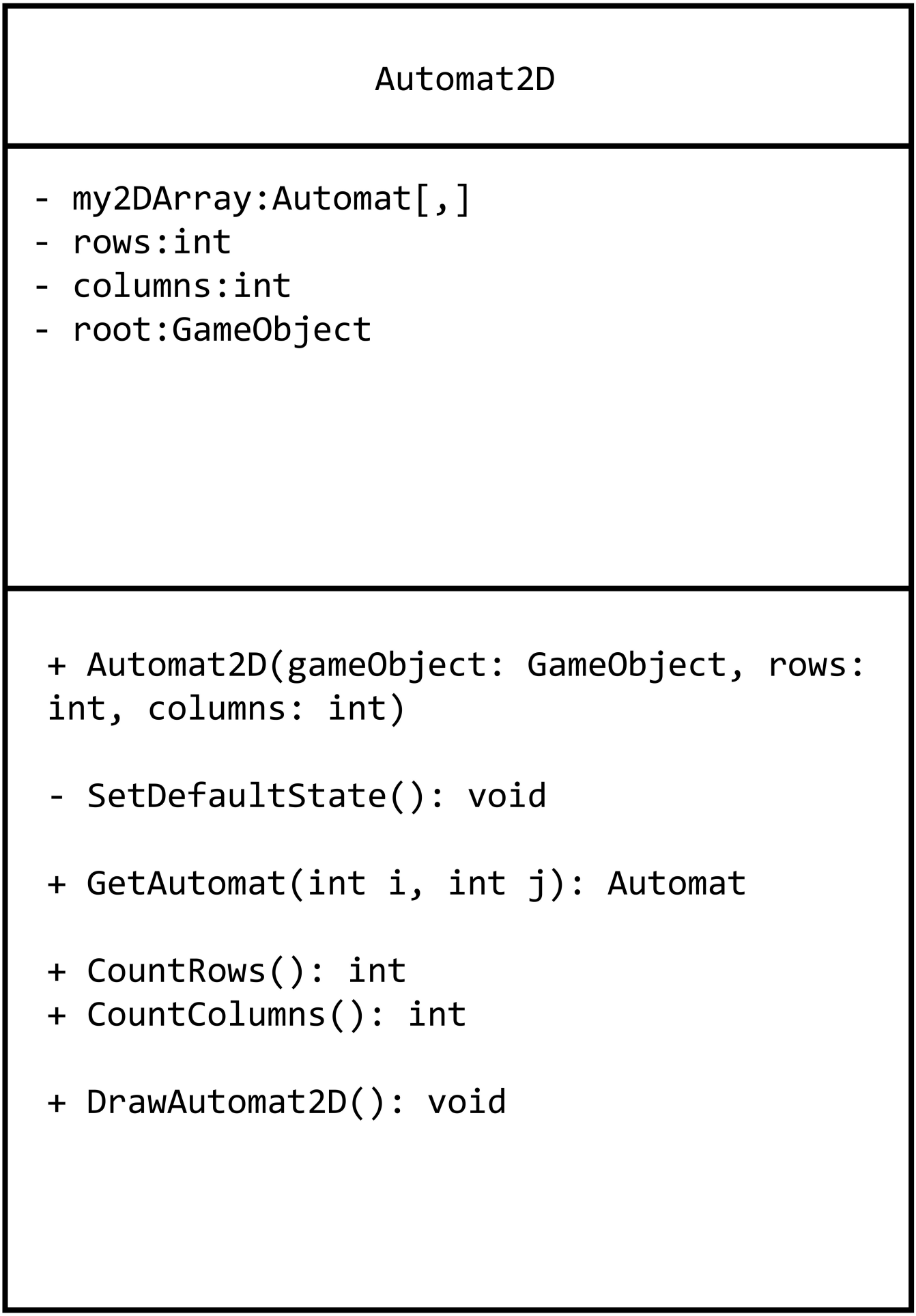
UML Diagrams

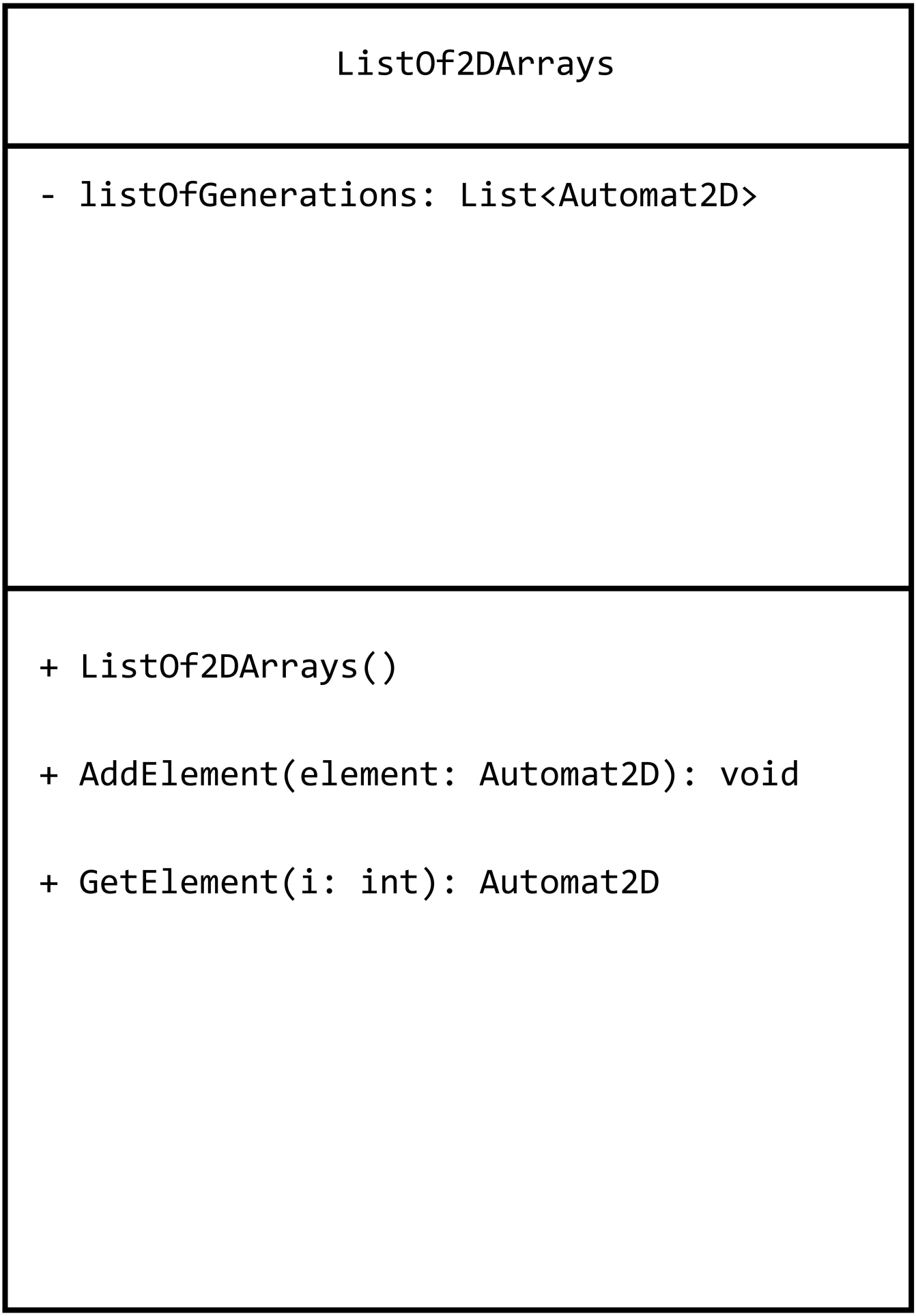
for

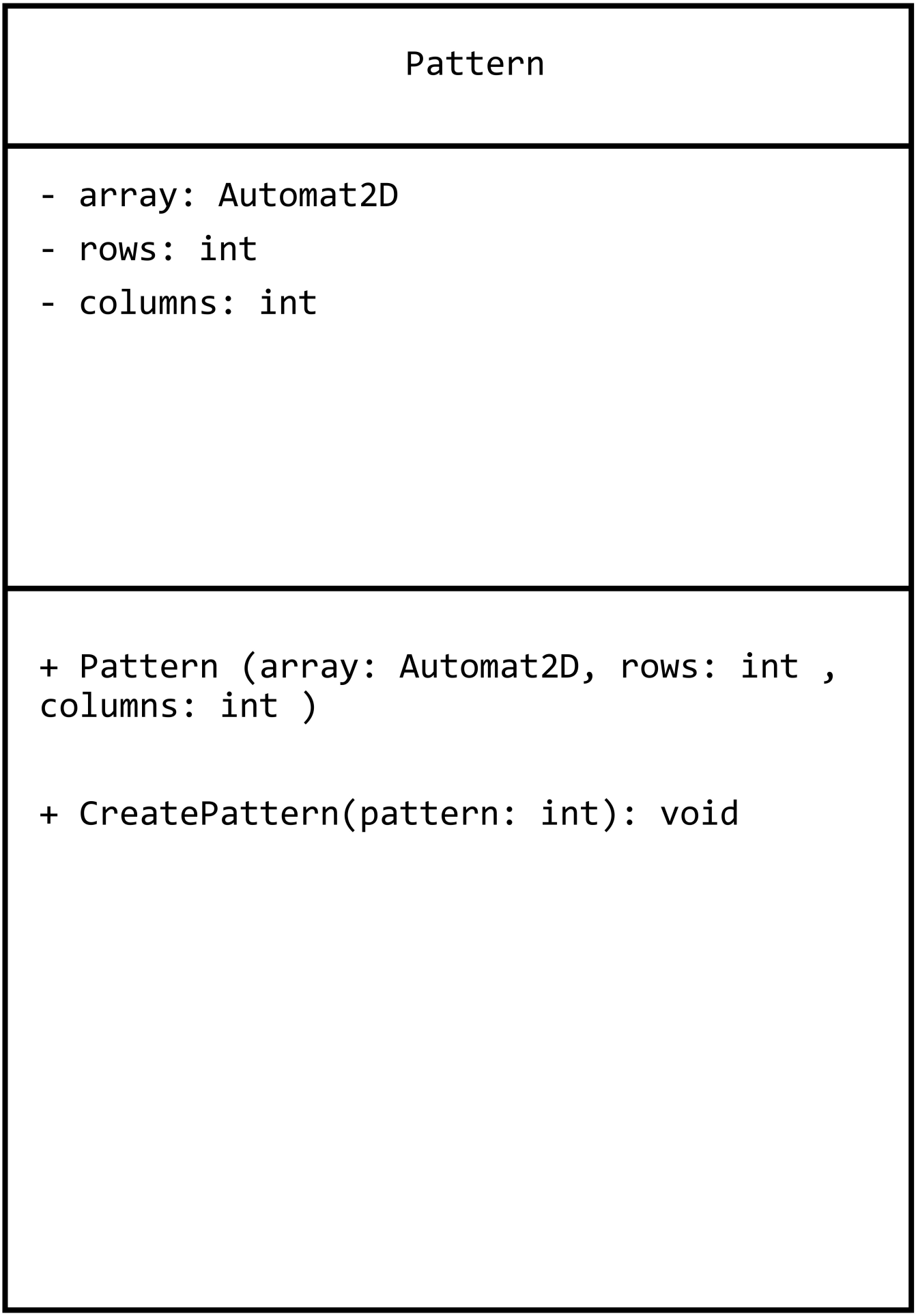
following classes:

- `Automat`
- `Automat2D`
- `ListOf2DArrays`
- `Pattern`


Automat
- x: float
- y: float
- width: float
- height: float
- alive: int
+ Automat (root: GameObject ,x: float, y:float, width:float, height:float, alive: int)
+ Draw(): void
+ IsAlive(): int
+ SetAlive(): void
+ SetDead(): void


Automat2D
- my2DArray:Automat[,]
- rows:int
- columns:int
- root:GameObject
+ Automat2D(gameObject: GameObject, rows: int, columns: int)
- SetDefaultState(): void
+ GetAutomat(int i, int j): Automat
+ CountRows(): int
+ CountColumns(): int
+ DrawAutomat2D(): void


ListOf2DArrays
- listOfGenerations: List<Automat2D>
+ ListOf2DArrays()
+ AddElement(element: Automat2D): void
+ GetElement(i: int): Automat2D

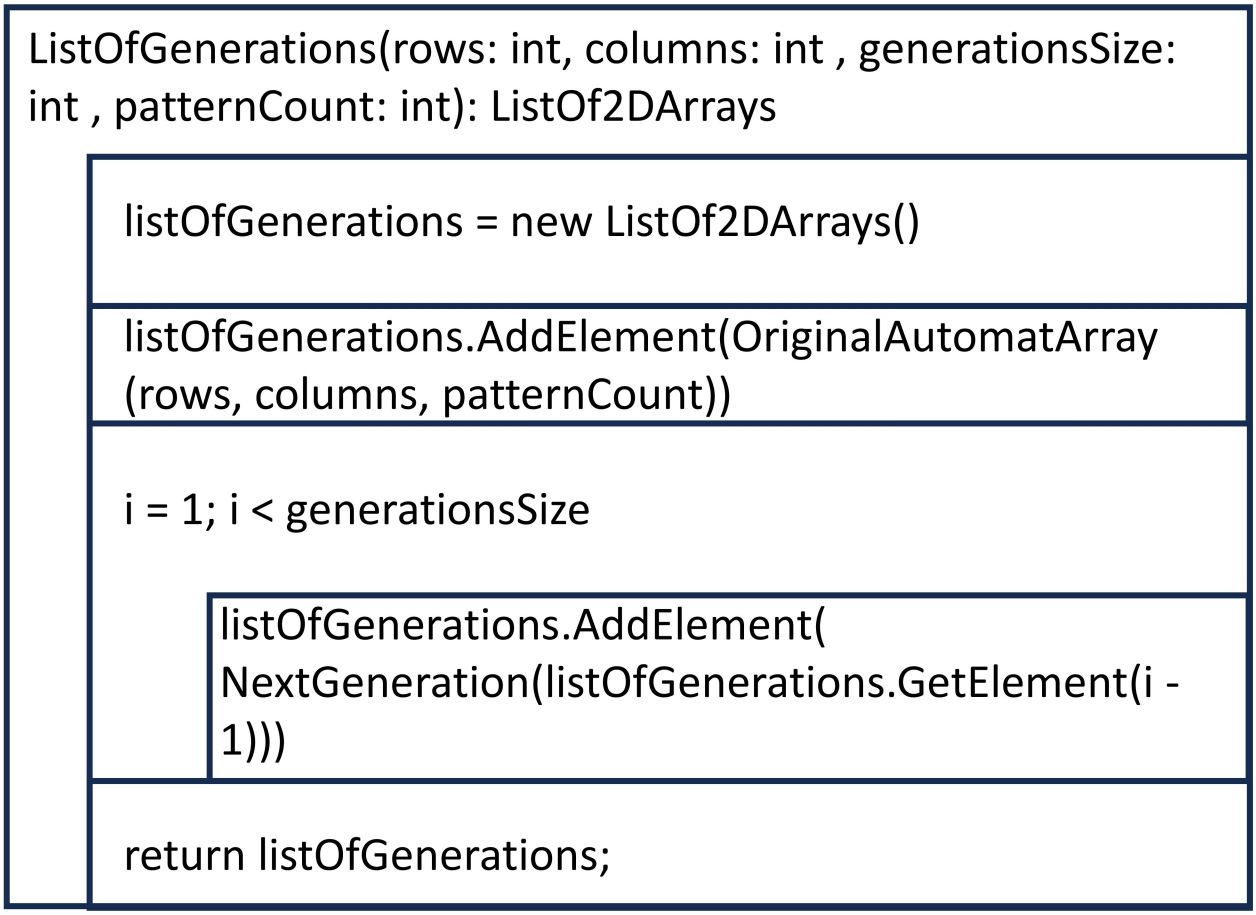

Pattern
- array: Automat2D
- rows: int
- columns: int
+ Pattern (array: Automat2D, rows: int , columns: int)
+ CreatePattern(pattern: int): void

Nassi-Shneiderman diagram

for

following methods:

- ListOfGenerations
- OriginalAutomatArray
- Pattern
- DrawGeneration
- CountAliveNeighbours
- NextGeneration


ListOfGenerations(rows: int, columns: int , generationsSize: int , patternCount: int): ListOf2DArrays
listOfGenerations = new ListOf2DArrays()
listOfGenerations.AddElement(OriginalAutomatArray (rows, columns, patternCount))
i = 1; i < generationsSize
listOfGenerations.AddElement(NextGeneration(listOfGenerations.GetElement(i - 1)))
return listOfGenerations;

OriginalAutomatArray(rows: int, columns:int, patternCount: int): Automat2D

automat_array = new Automat2D(gameObject, rows, columns)

Pattern(automat_array, patternCount, rows, columns)

return automat_array

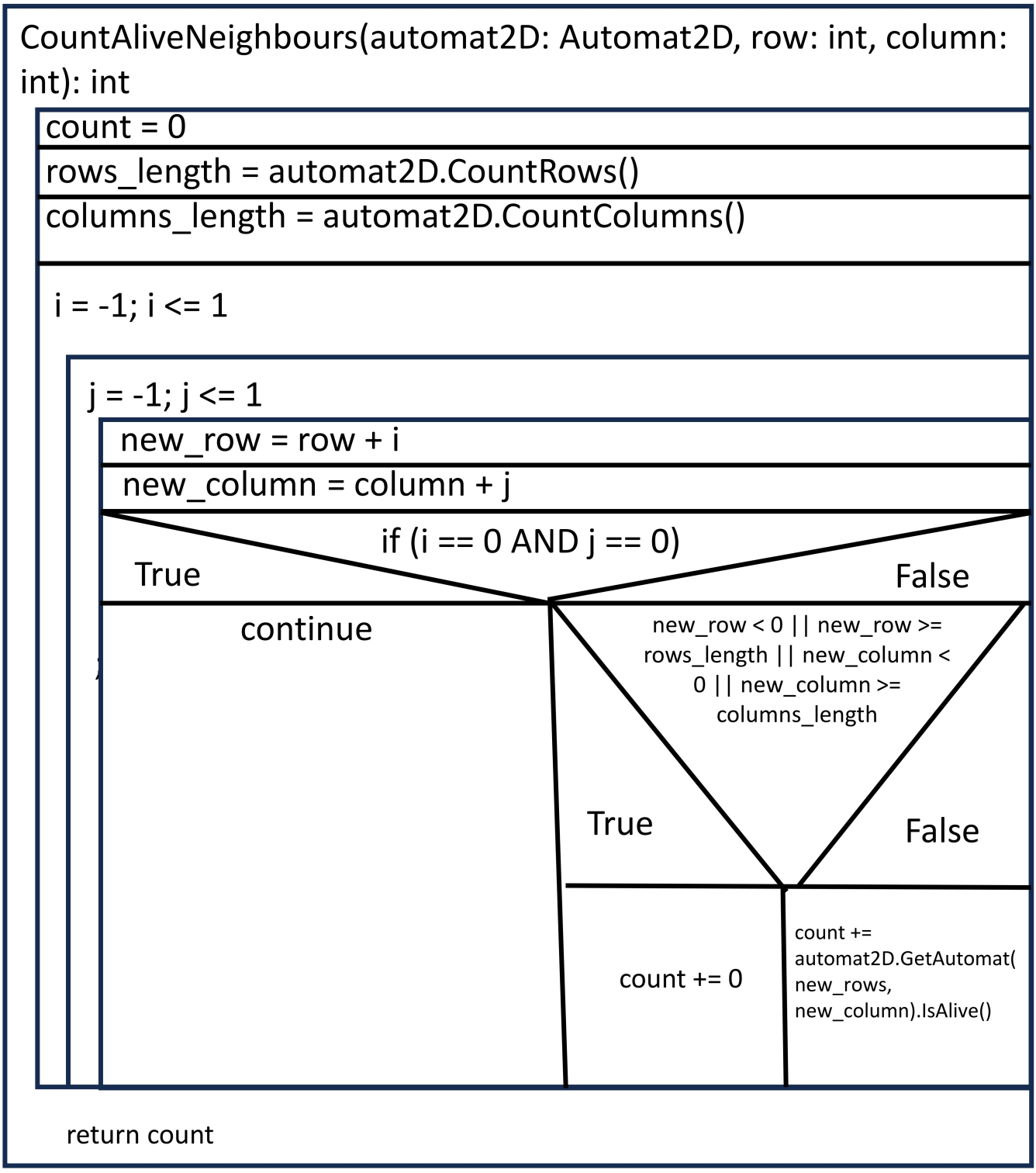
Pattern(array: Automat2D, patternCount: int, rows: int, columns: int): void

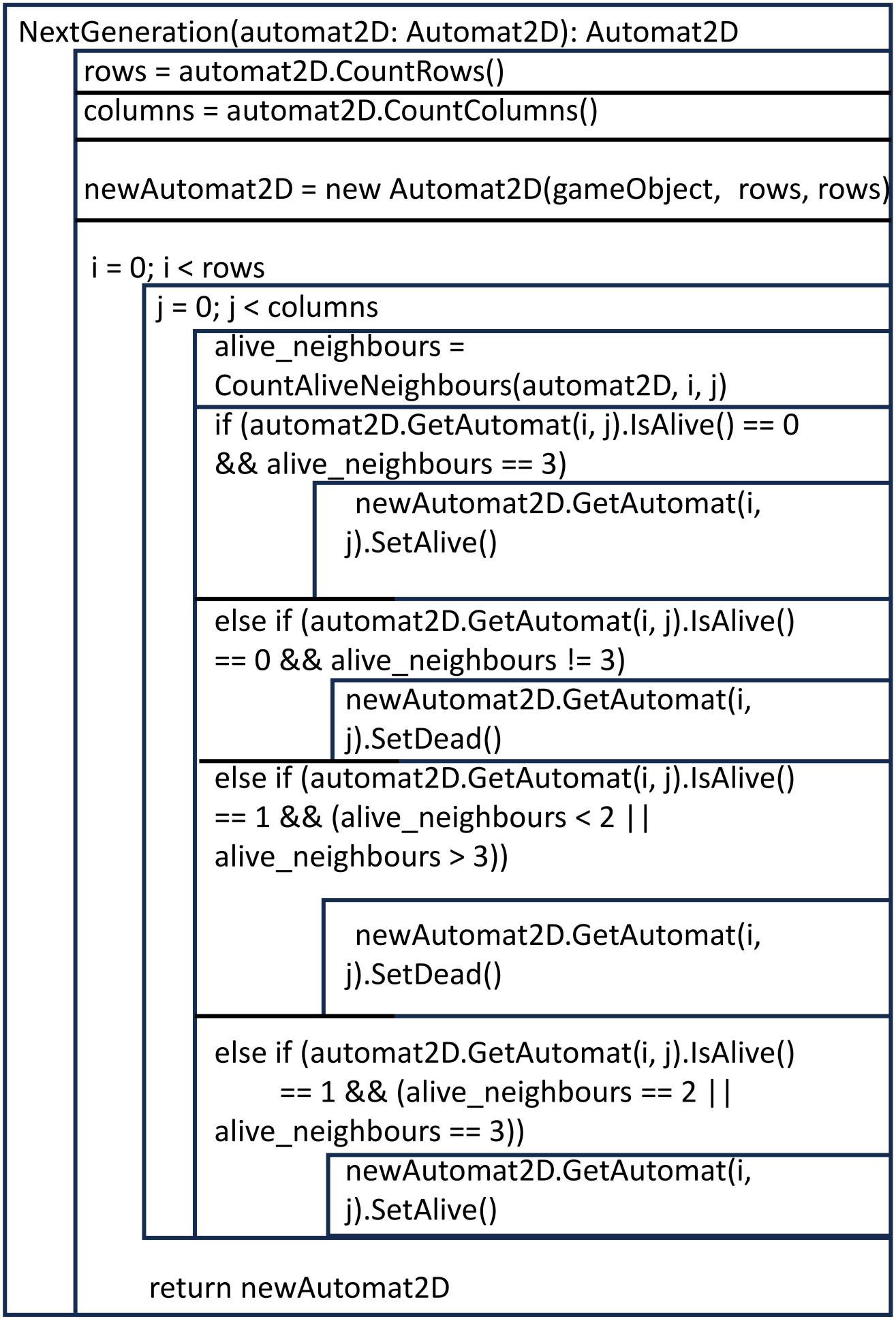
pattern = new Pattern(array, rows, columns)

pattern.CreatePattern(patternCount)

DrawGeneration(automat2D: Automat2D): void

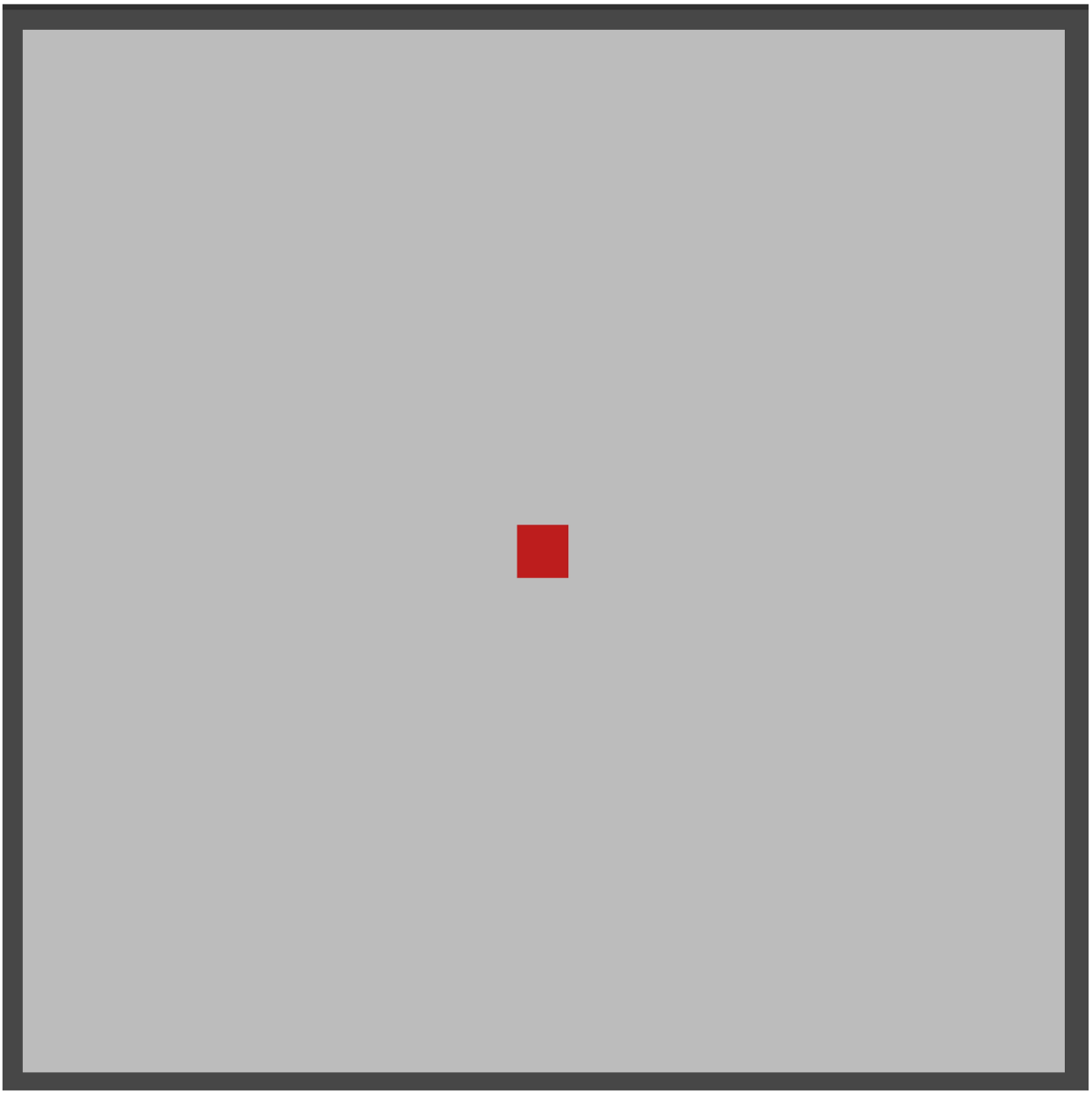
automat2D.DrawAutomat2D()


CountAliveNeighbours(automat2D: Automat2D, row: int, column: int): int
count = 0
rows_length = automat2D.CountRows()
columns_length = automat2D.CountColumns()
i = -1; i <= 1
j = -1; j <= 1
new_row = row + i
new_column = column + j
if (i == 0 AND j == 0)
True
False
continue
new_row < 0 || new_row >= rows_length || new_column < 0 || new_column >= columns_length
True
False
count += 0
count += automat2D.GetAutomat(new_rows, new_column).IsAlive()
return count


NextGeneration(automat2D: Automat2D): Automat2D
rows = automat2D.CountRows()
columns = automat2D.CountColumns()
newAutomat2D = new Automat2D(gameObject, rows, rows)
i = 0; i < rows
j = 0; j < columns
alive_neighbours = CountAliveNeighbours(automat2D, i, j)
if (automat2D.GetAutomat(i, j).IsAlive() == 0 && alive_neighbours == 3)
newAutomat2D.GetAutomat(i, j).SetAlive()
else if (automat2D.GetAutomat(i, j).IsAlive() == 0 && alive_neighbours != 3)
newAutomat2D.GetAutomat(i, j).SetDead()
else if (automat2D.GetAutomat(i, j).IsAlive() == 1 && (alive_neighbours < 2 || alive_neighbours > 3))
newAutomat2D.GetAutomat(i, j).SetDead()
else if (automat2D.GetAutomat(i, j).IsAlive() == 1 && (alive_neighbours == 2 || alive_neighbours == 3))
newAutomat2D.GetAutomat(i, j).SetAlive()
return newAutomat2D

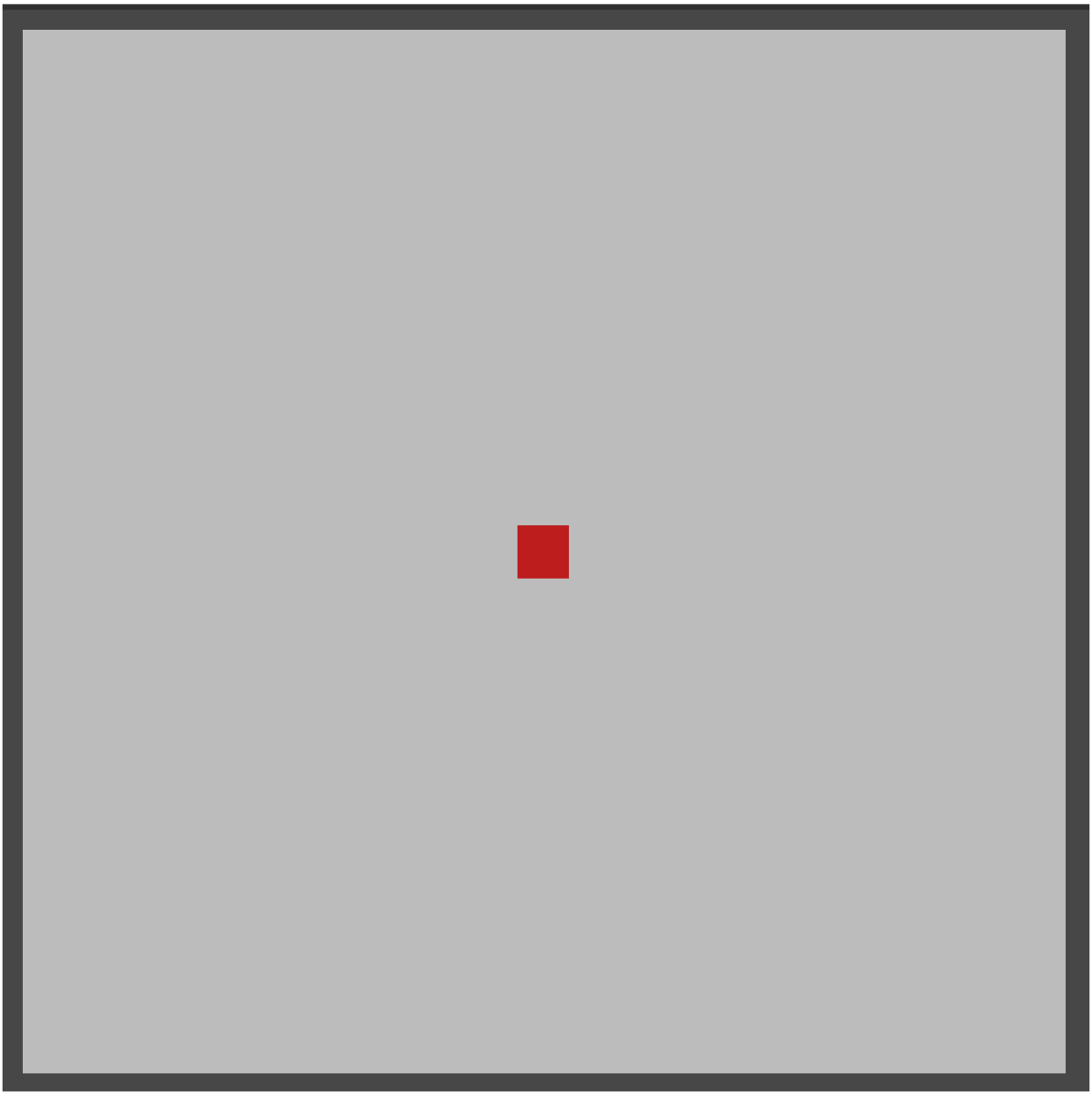
Pattern 1: Generation 1

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:1);
DrawGeneration(listOfGenerations.GetElement(0));
 }
```



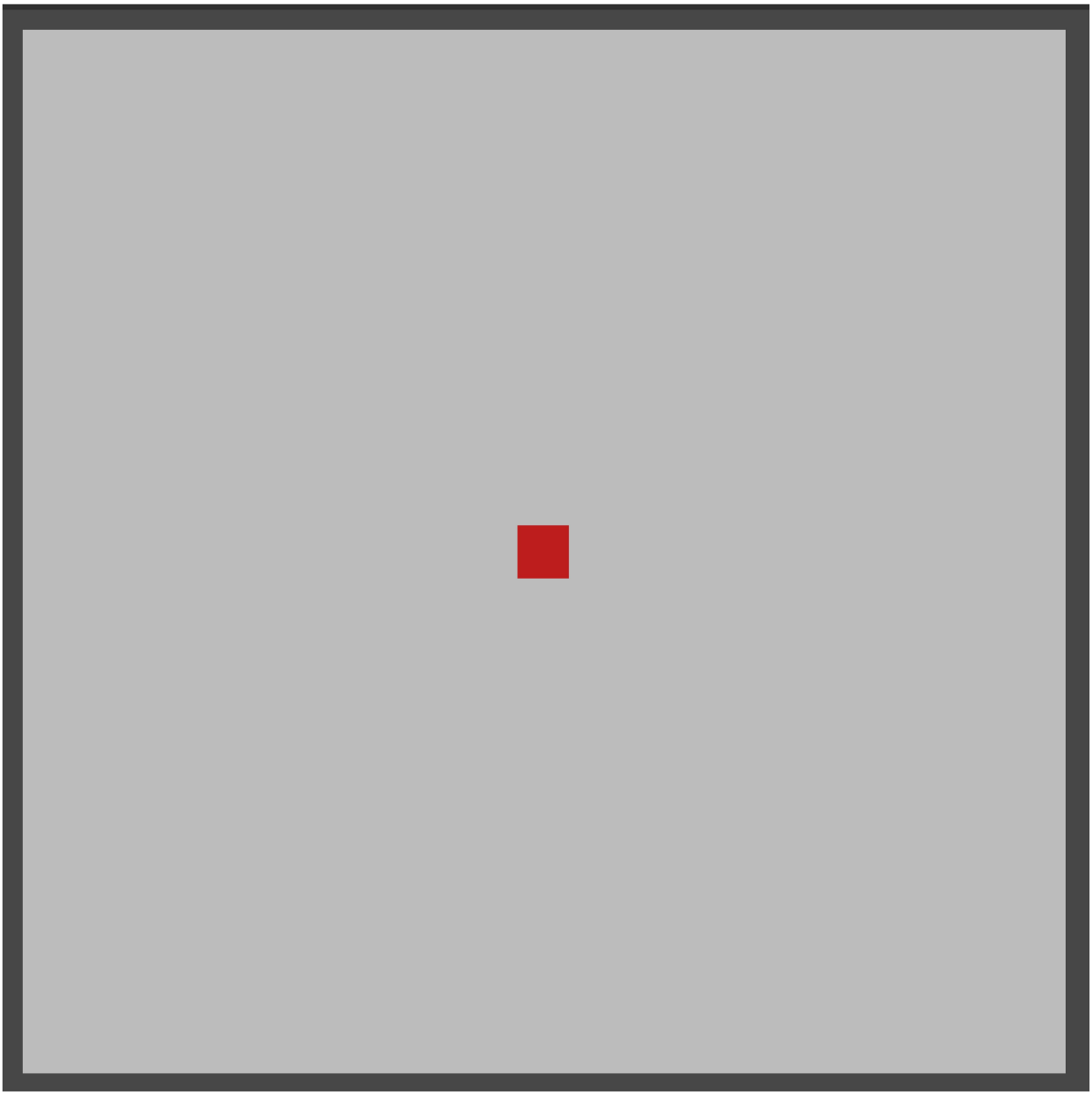
Pattern 1: Generation 5

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:1);
DrawGeneration(listOfGenerations.GetElement(4));
 }
```



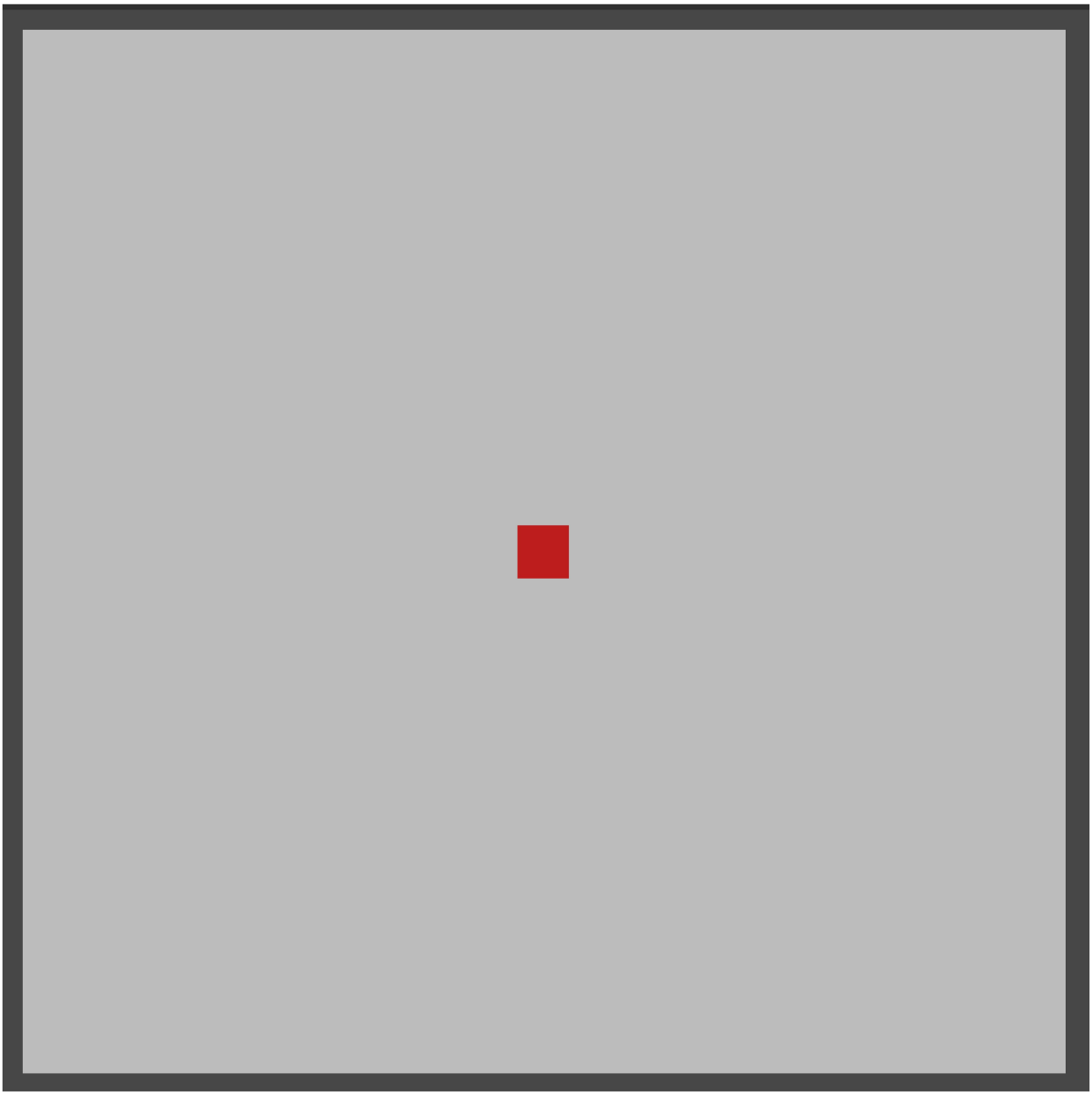
Pattern 1: Generation 10

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:1);
DrawGeneration(listOfGenerations.GetElement(9));
 }
```



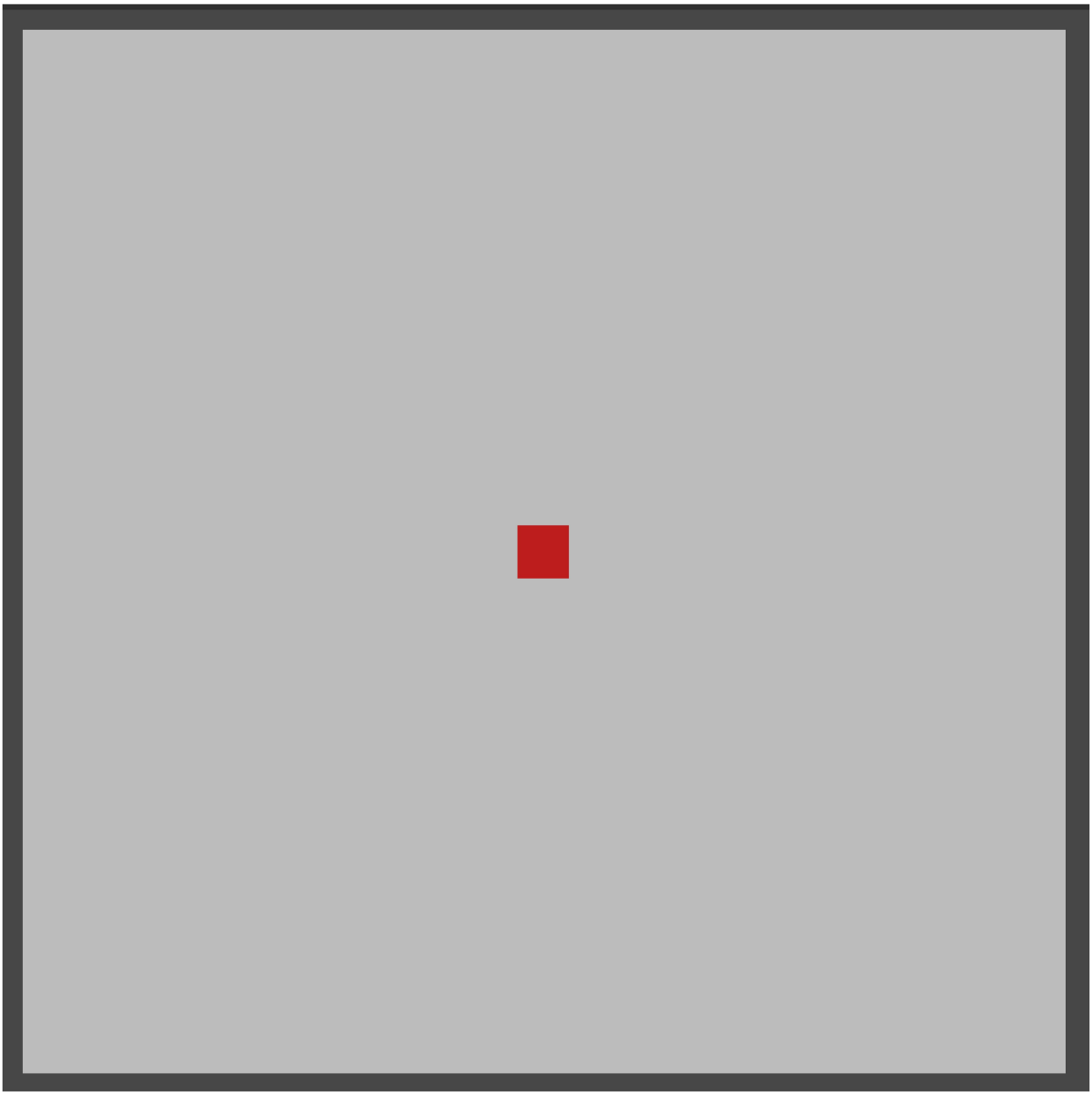
Pattern 1: Generation 20

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:1);
DrawGeneration(listOfGenerations.GetElement(19));
 }
```



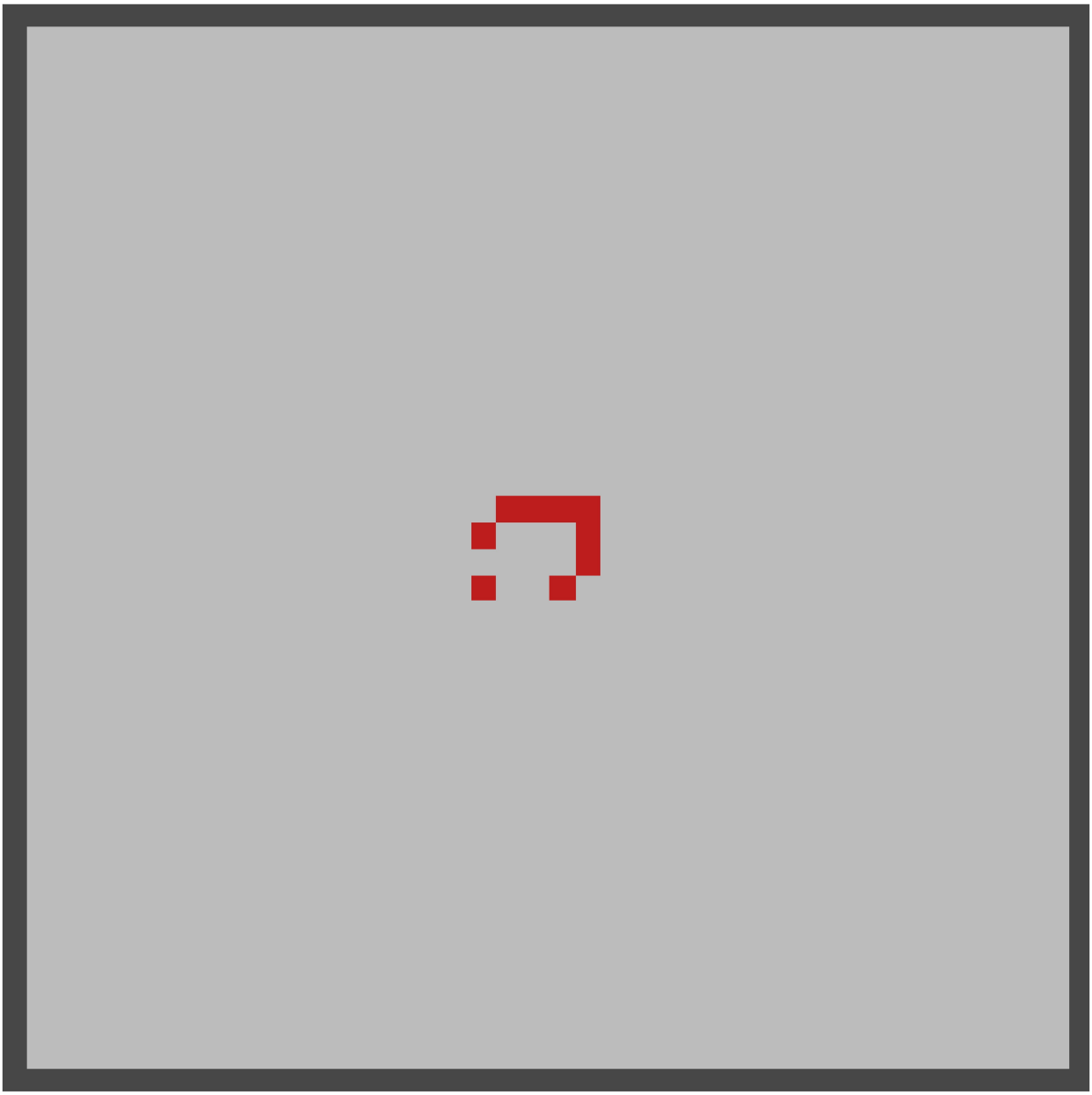
Pattern 1: Generation 50

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:1);
DrawGeneration(listOfGenerations.GetElement(49));
 }
```



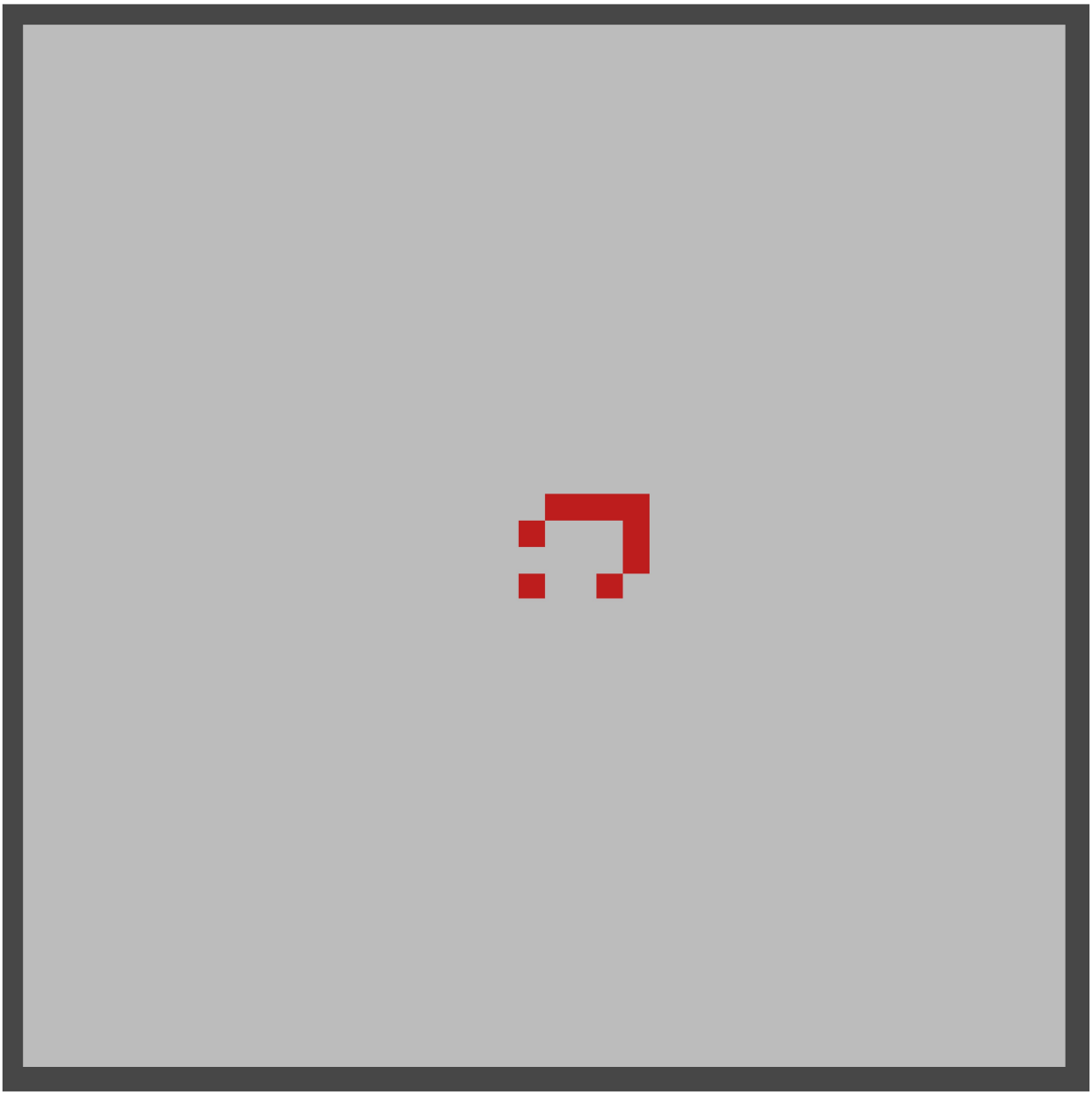
Pattern 2: Generation 01

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:2);
DrawGeneration(listOfGenerations.GetElement(0));
 }
```



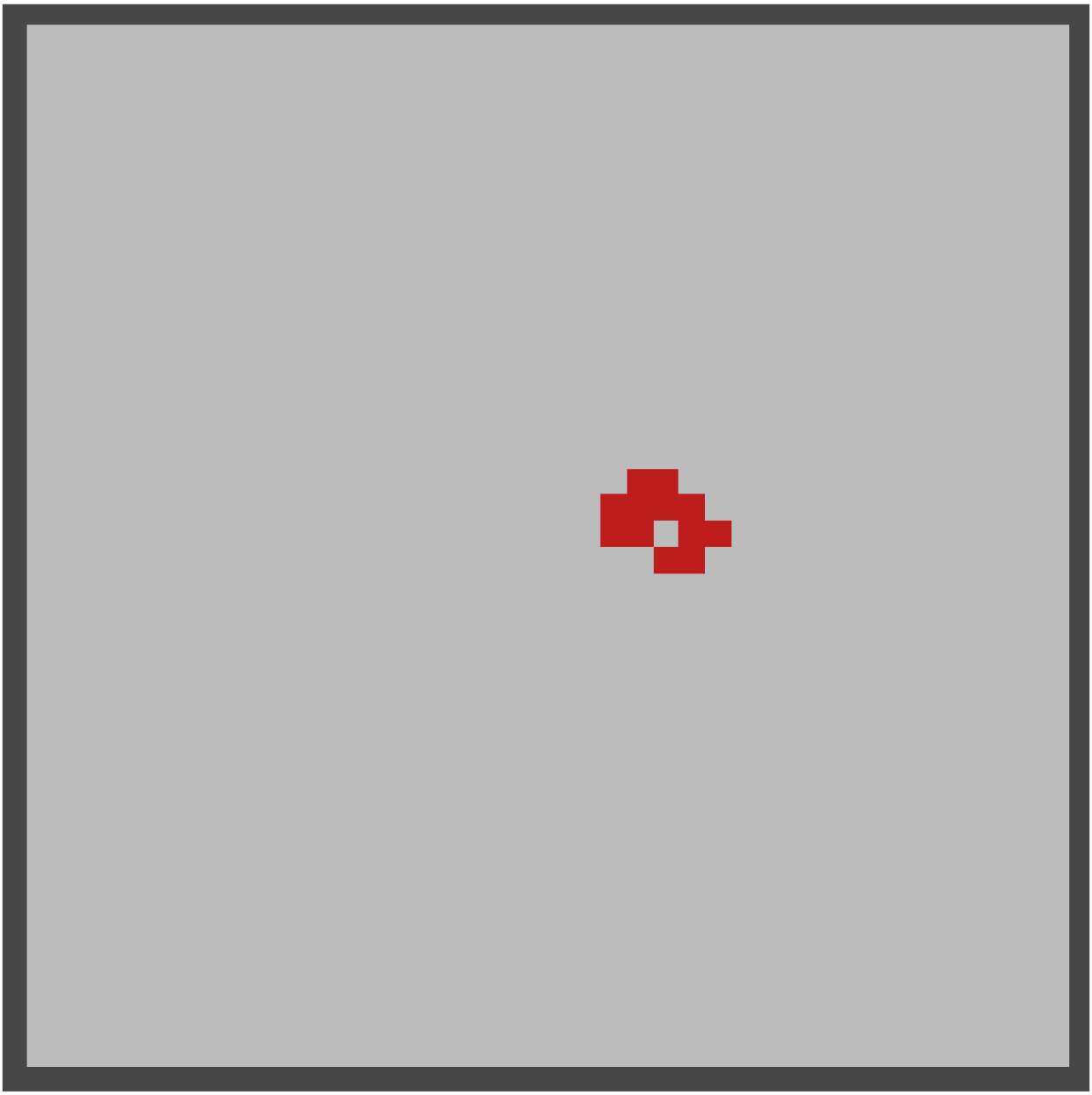
Pattern 2: Generation 05

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:2);
DrawGeneration(listOfGenerations.GetElement(4));
 }
```



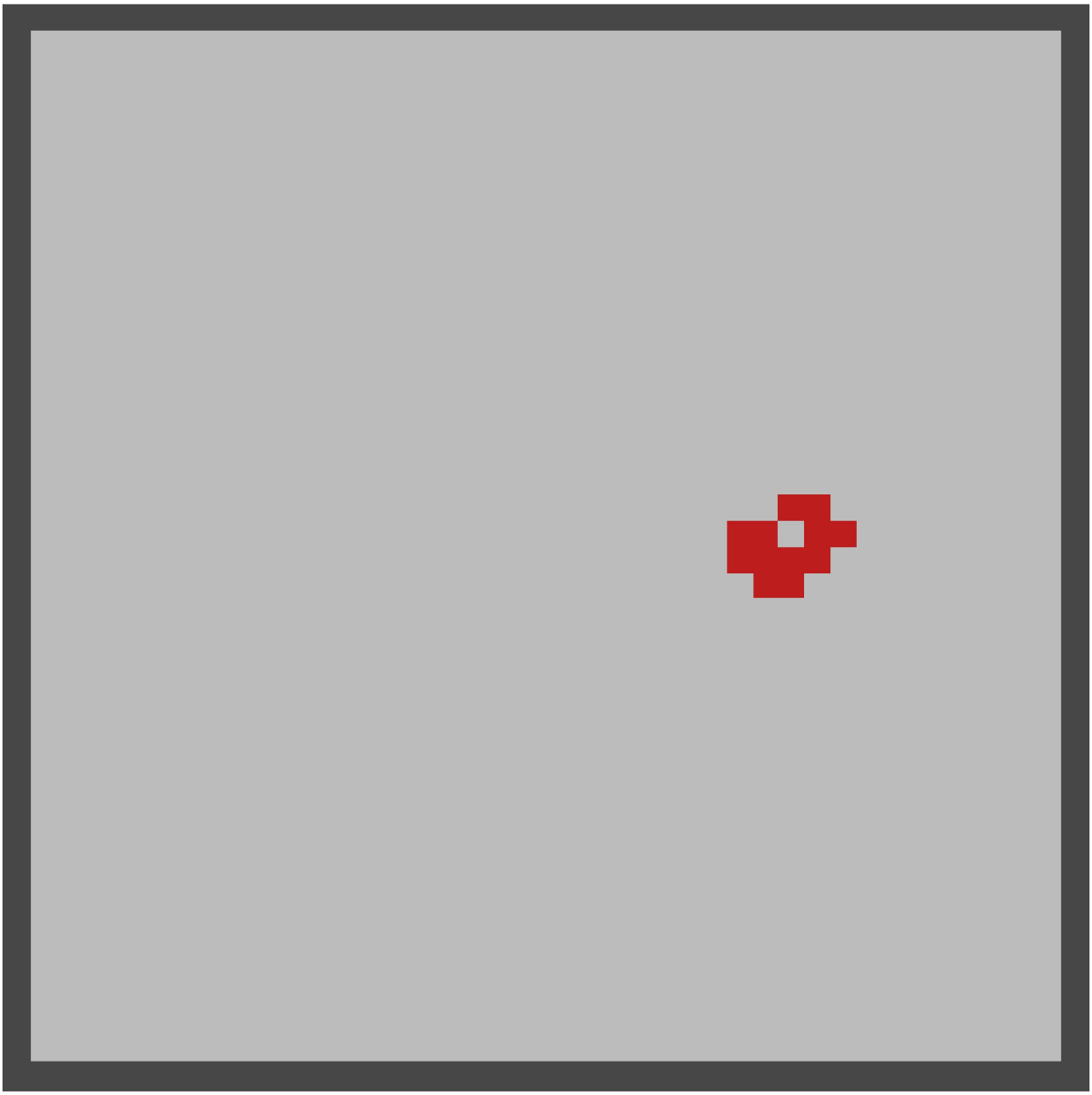
Pattern 2: Generation 10

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:2);
DrawGeneration(listOfGenerations.GetElement(9));
 }
```



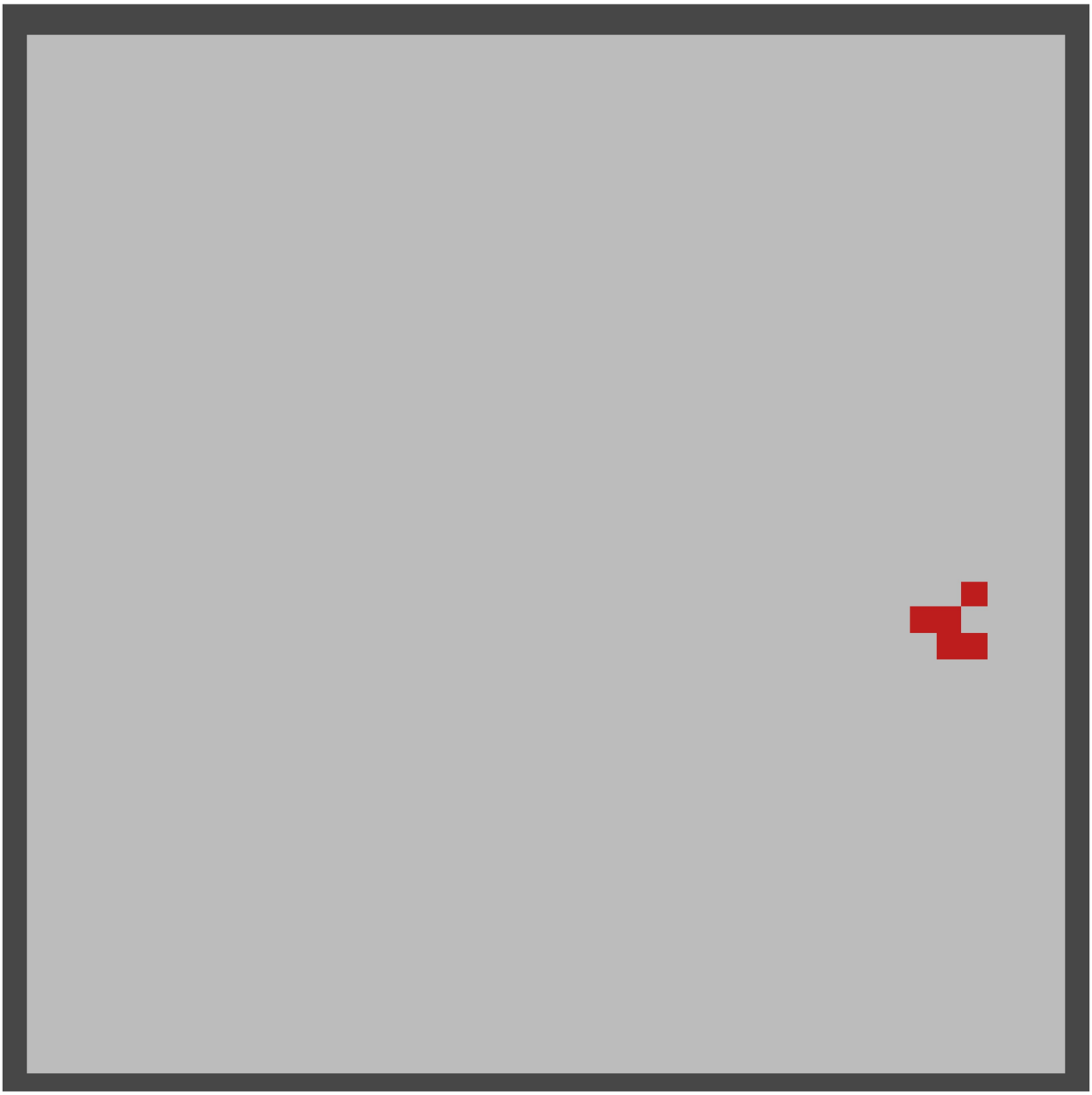
Pattern 2: Generation 20

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:2);
DrawGeneration(listOfGenerations.GetElement(19));
 }
```



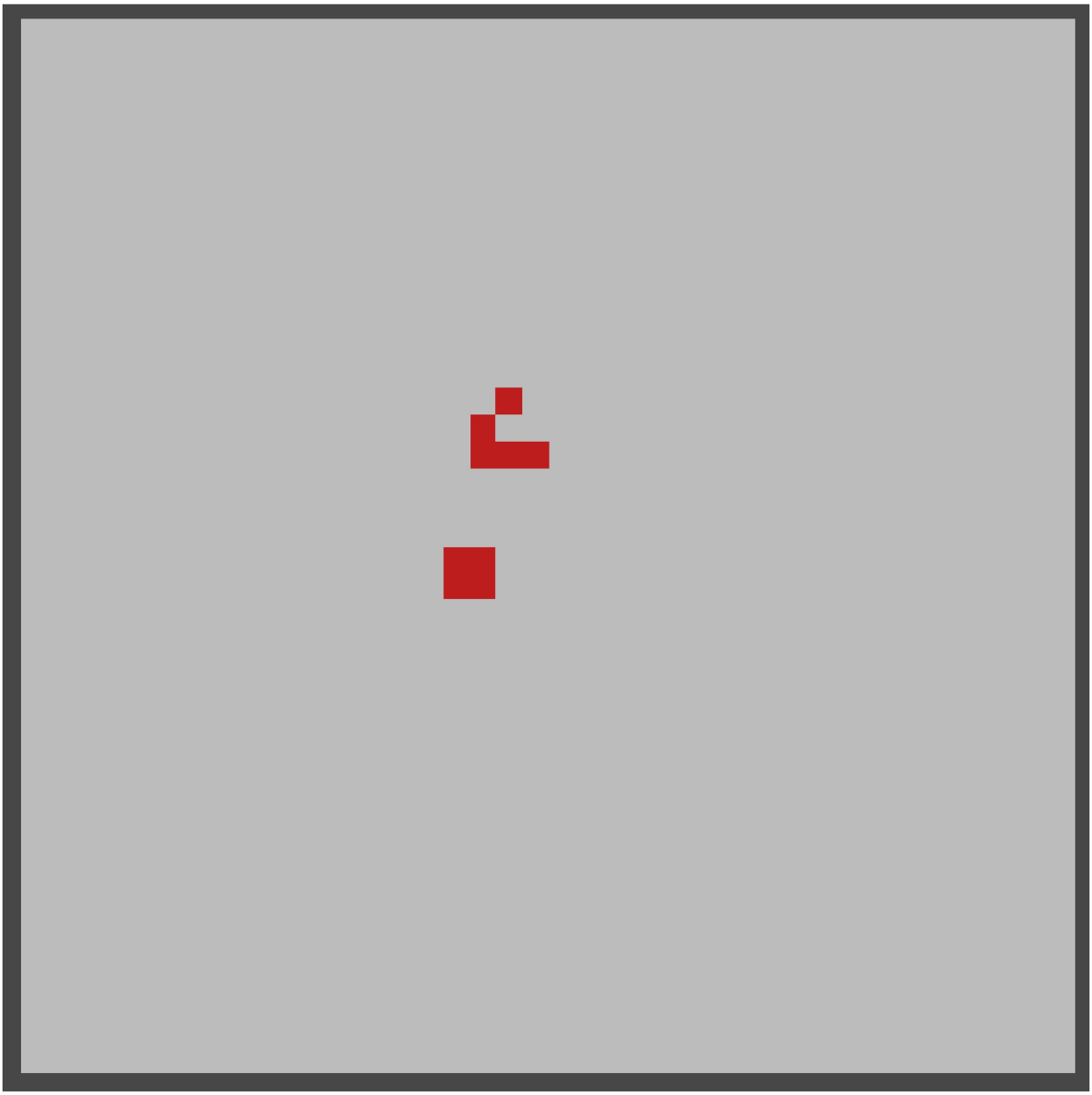
Pattern 2: Generation 50

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:2);
DrawGeneration(listOfGenerations.GetElement(49));
 }
```



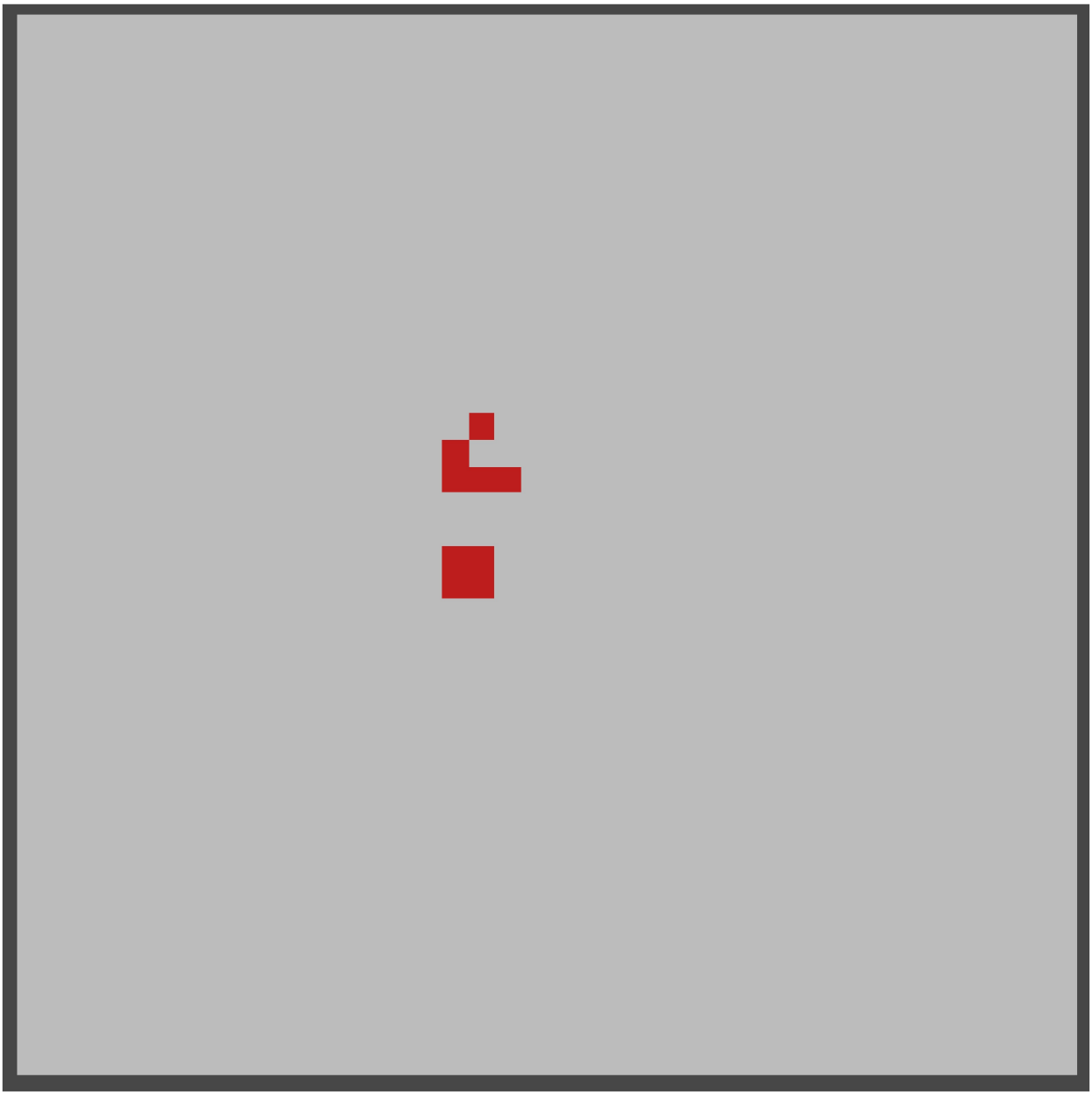
Pattern 3: Generation 01

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:3);
DrawGeneration(listOfGenerations.GetElement(0));
 }
```



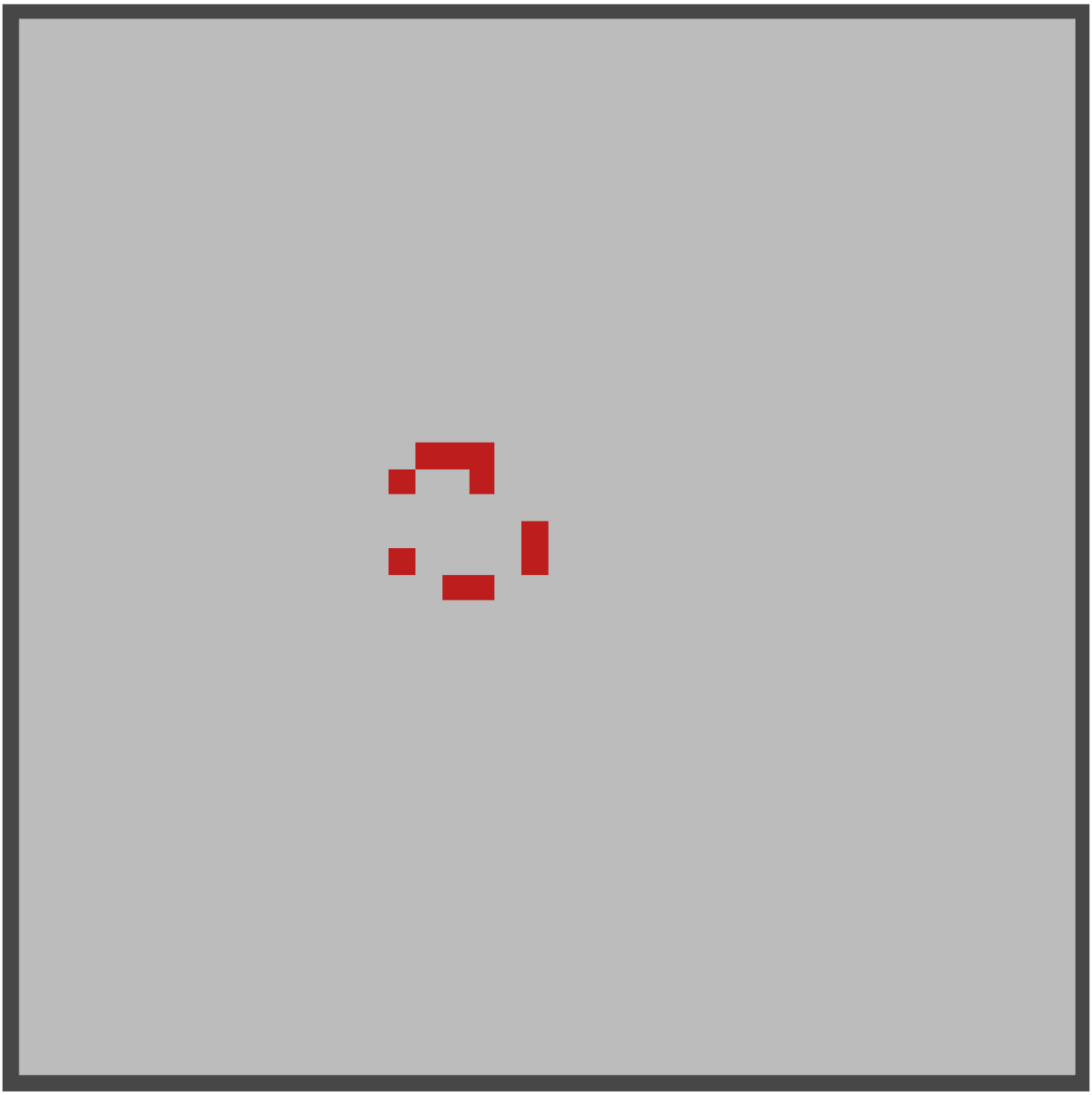
Pattern 3: Generation 05

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:3);
DrawGeneration(listOfGenerations.GetElement(4));
 }
```



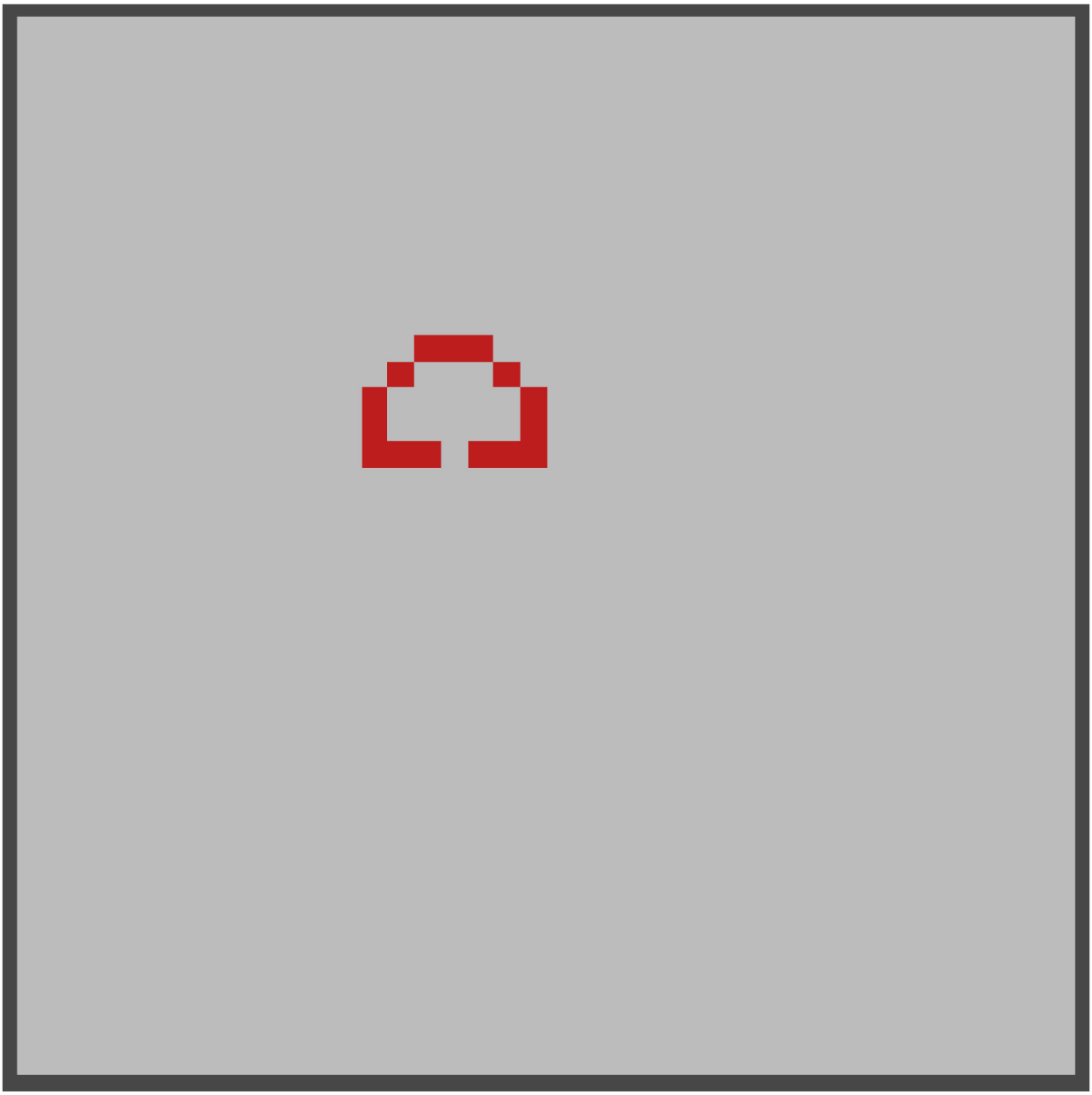
Pattern 3: Generation 10

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:3);
DrawGeneration(listOfGenerations.GetElement(9));
 }
```



Pattern 3: Generation 20

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:3);
DrawGeneration(listOfGenerations.GetElement(19));
 }
```



Pattern 3: Generation 50

```
void Start()  {
   var listOfGenerations = ListOfGenerations(rows: 40, columns:40,
generationsSize:50, patternCount:3);
DrawGeneration(listOfGenerations.GetElement(49));
 }
```