Estructura de Datos

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Grupo: 1360
Carrera: ingenieria en computacion

Tarea 6, muestra de funcionamiento

```
public class GameOfLife {
   private Array2d tablero;
   private int ren;
   private int col;

   public Array2d getCuadricula() {
       return tablero;
   }

   public void setCuadricula(Array2d cuadricula) {
       this.tablero = cuadricula;
   }

   public int getCol() {
       return col;
   }

   public void setCol(int col) {
       this.col = col;
   }

   public int getRows() {
       return ren;
   }

   public void setRows(int rows) {
       this.ren = rows;
   }

   public GameOfLife() {
       this.col = 0;
       this.ren = 0;
       this.tablero = null;
   }

   public GameOfLife(int renglones, int columnas) {
       this.ren = renglones;
       this.col = columnas;
       this.tablero = new Array2d(renglones, columnas);
       tablero.clear('m');
   }

   public void setCelula(int renglon, int columna, char VoM) {
       if (VoM == 'v') {
           tablero.setItem(renglon, columna, 'v');
       }else{
           tablero.setItem(renglon, columna, 'm');
       }

   }

   public char getCelula(int renglon, int columna) {
```

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        return this.tablero.getItem(renglon, columna);

    }

    public void imprimirTablero() {
        for (int i = 0; i < tablero.getRowSize(); i++) {
            for (int j = 0; j < tablero.getColSize(); j++) {
                if (getCelula(i, j) == 'v') {
                    System.out.print(" " + '■' + " ");
                } else {
                    System.out.print(" " + "□" + " ");
                }
            }
            System.out.println("");
        }
    }

    public int contarVecinos(int renglon, int columna) {
        int cuenta = 0;
        for (int i = renglon - 1; i <= renglon + 1; i++) {
            for (int j = columna - 1; j <= columna + 1; j++) {
                if ((i == renglon && j == columna) || i < 0 || j < 0 || i >=
this.ren || j >= this.ren) {
                    continue;
                } else {
                    if (getCelula(i, j) == 'v') {
                        cuenta++;
                    }
                }
            }
        }
        return cuenta;
    }

    public void nuevaGeneracion() {
        System.out.println("ʕ□ ˷• ˣ •˷□ʔ ♡ . ˖ ⁺ ✧ . ⁺ . ˙ . ˖ ⁺ ✧ . ⁺ . ˙ . ˖ ⁺ ✧ . ⁺ .
. ˖ ⁺ ✧ . ⁺ . ˙ . ˖ ⁺ ✧ . ⁺ . ˙ . ˖ ⁺ ✧ . ⁺ . ");
        Array2d nuevoTablero = new Array2d(this.ren,this.col);
        nuevoTablero.clear('m');
        for (int i = 0; i < ren; i++) {
            for (int j = 0; j < col; j++) {
                int vecinos = contarVecinos(i,j);
                if (getCelula(i,j) == 'v'){
                    if(vecinos < 2 || vecinos > 3){
                        nuevoTablero.setItem(i,j,'m');
                    }else{
                        nuevoTablero.setItem(i,j,'v');                    }
                }else{
                    if (vecinos == 3){
                        nuevoTablero.setItem(i,j,'v');
                    }else{
                        nuevoTablero.setItem(i,j,'m');
                    }
```

```
                }
            }
        }
        this.tablero=nuevoTablero;

    }
}
```

```
import java.util.Arrays;

public class Array2d {
    Character [][]data;
    int rowSize;
    int colSize;

    public Array2d(int ren, int col) {
        this.rowSize = ren;
        this.colSize = col;
        this.data = new Character[ren][col];
    }

    public void clear(Character dato){
        for (int i = 0; i < this.rowSize; i++) {
            for (int j = 0; j < this.colSize; j++) {
                this.data[i][j] = dato;
            }
        }
    }

    public int getRowSize() {
        return rowSize;
    }

    public int getColSize() {
        return colSize;
    }

    @Override
    public String toString() {
        String str = "";

        for (int i = 0; i < this.rowSize; i++) {
            for (int j = 0; j < this.colSize; j++) {
                str = str + this.data[i][j] + ", ";
            }
            str = str + "\n";
        }
        return str;
    }

    public void setItem(int ren, int col, Character dato){
        if (ren>=0 && ren < this.rowSize && col >= 0 && col < this.colSize){
            this.data[ren][col]=dato;
```

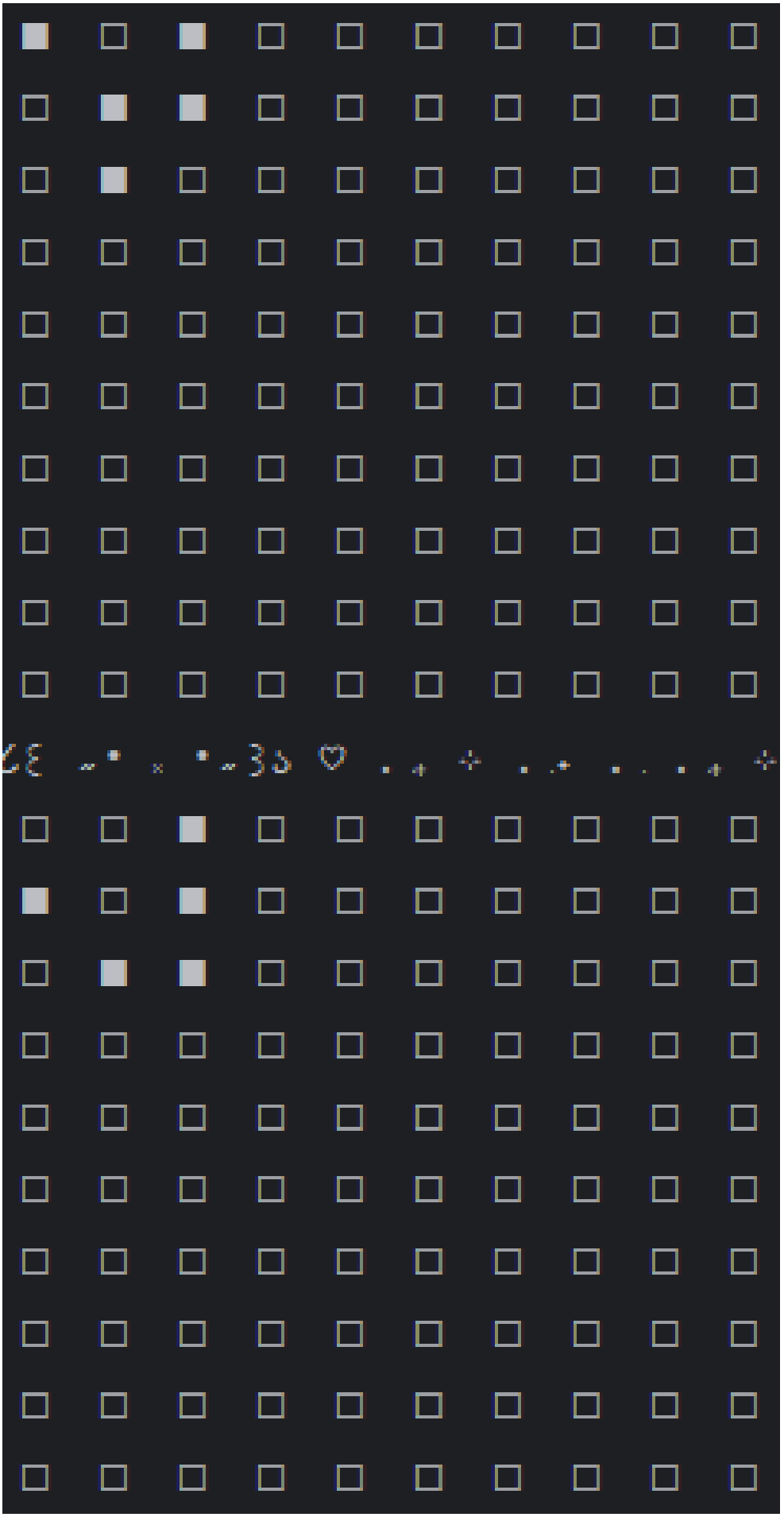
```
        }else{
            System.out.println("Indices fuera de rango");
        }

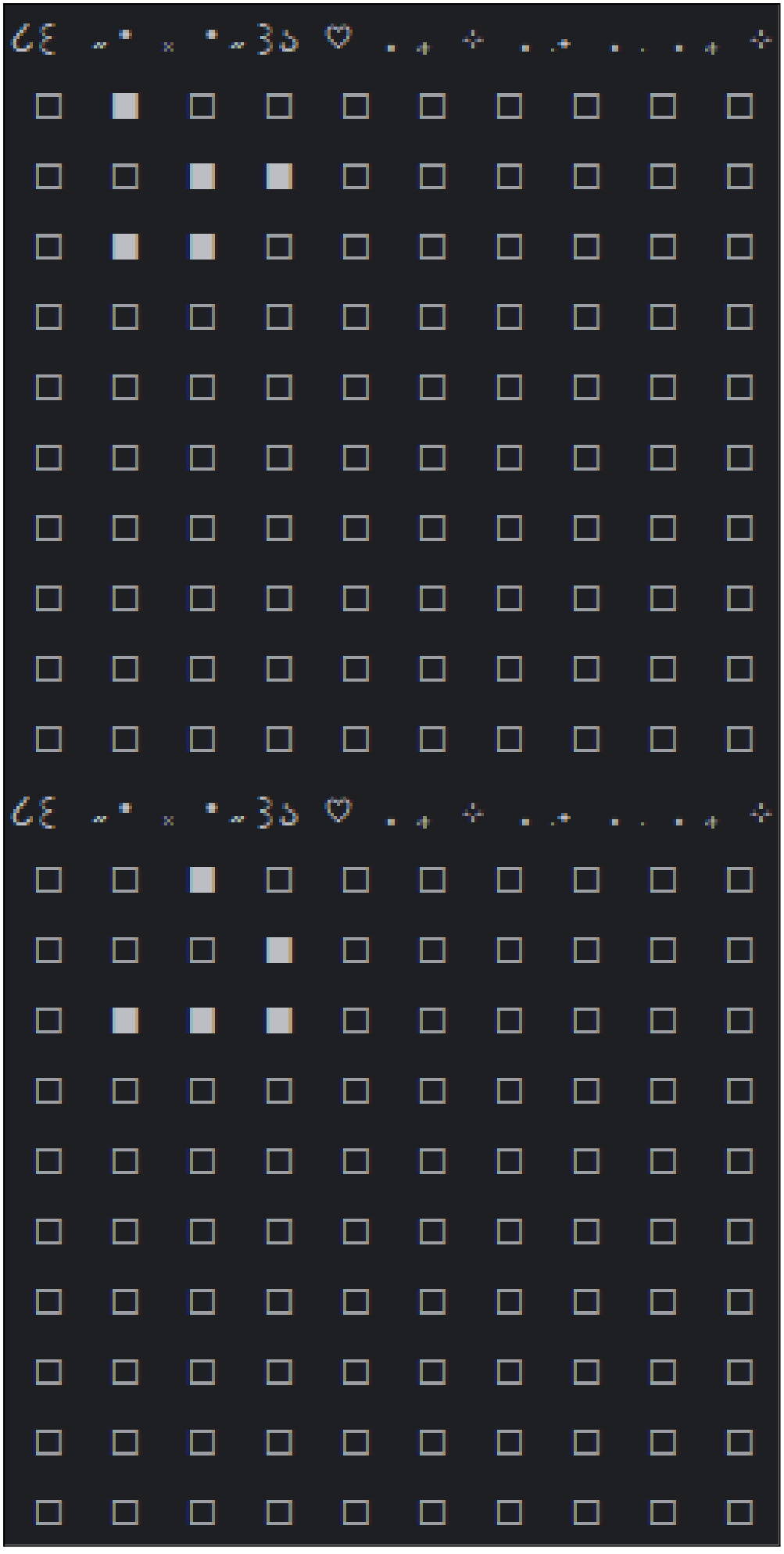
    }

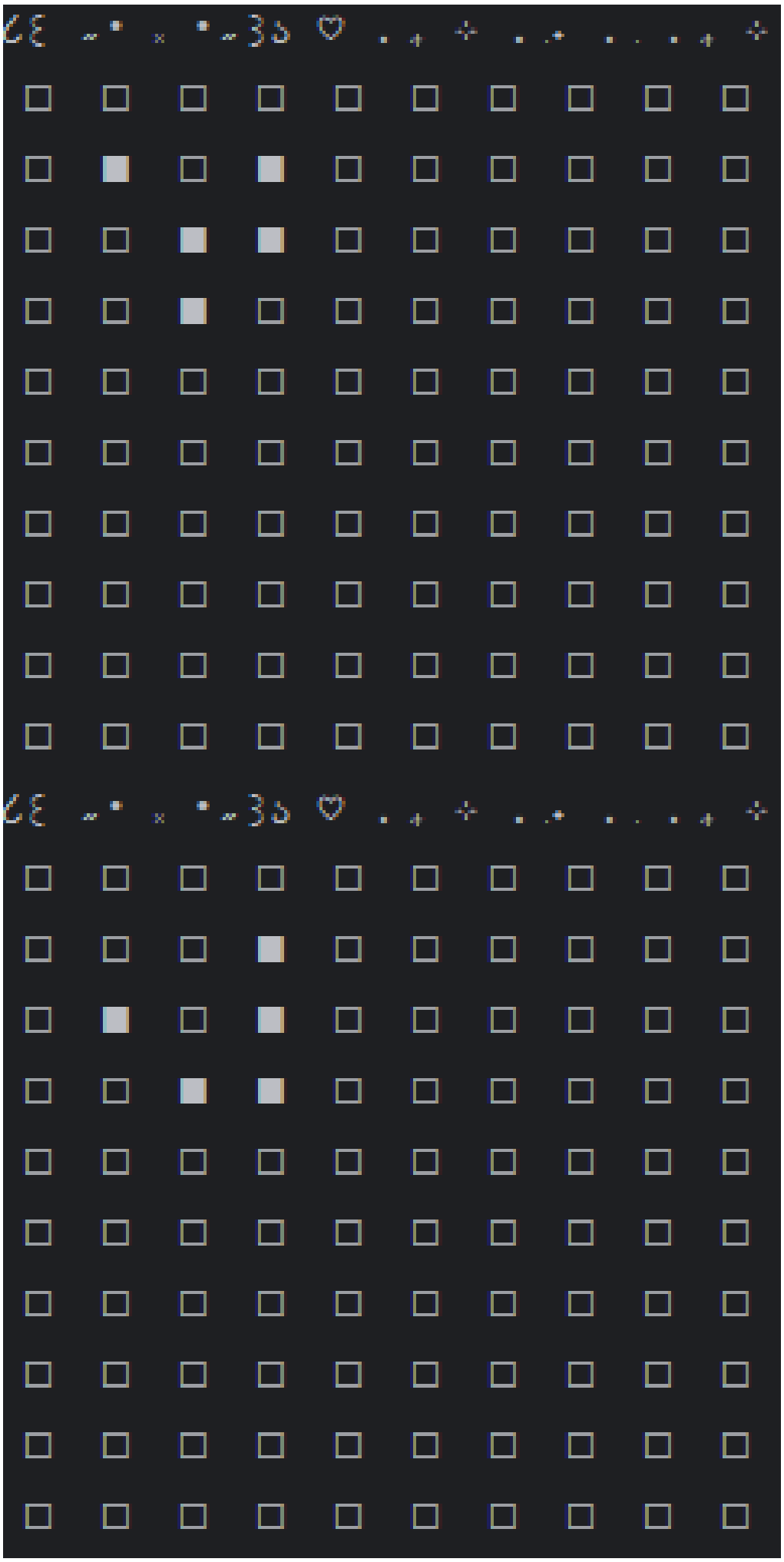
    public Character getItem(int ren, int col){
        if (ren>=0 && ren < this.rowSize && col >= 0 && col < this.colSize){
            return this.data[ren][col];
        }else{
            System.out.println("Indices fuera de rango");
        }
        return '\0';
    }

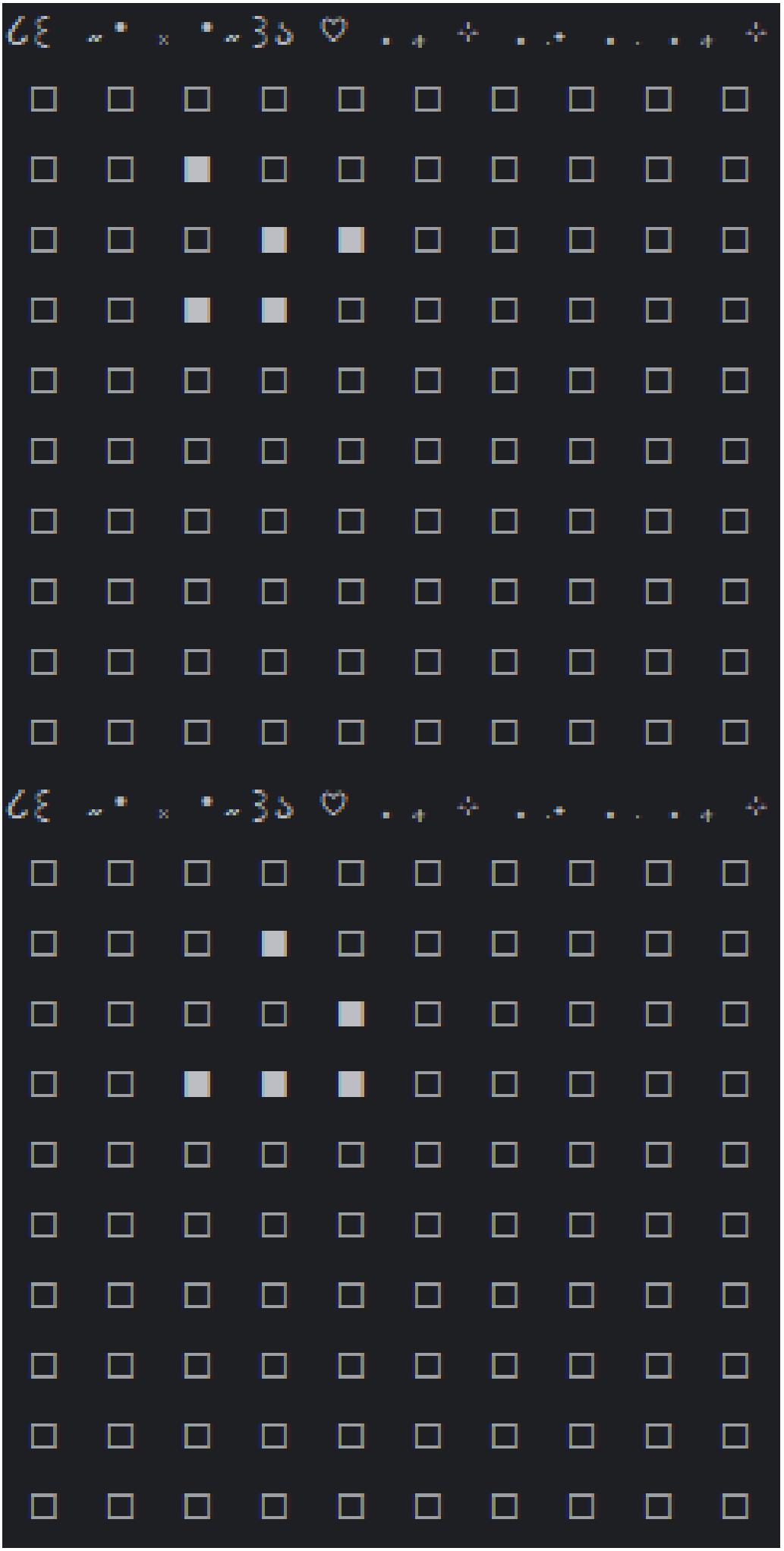

}
```

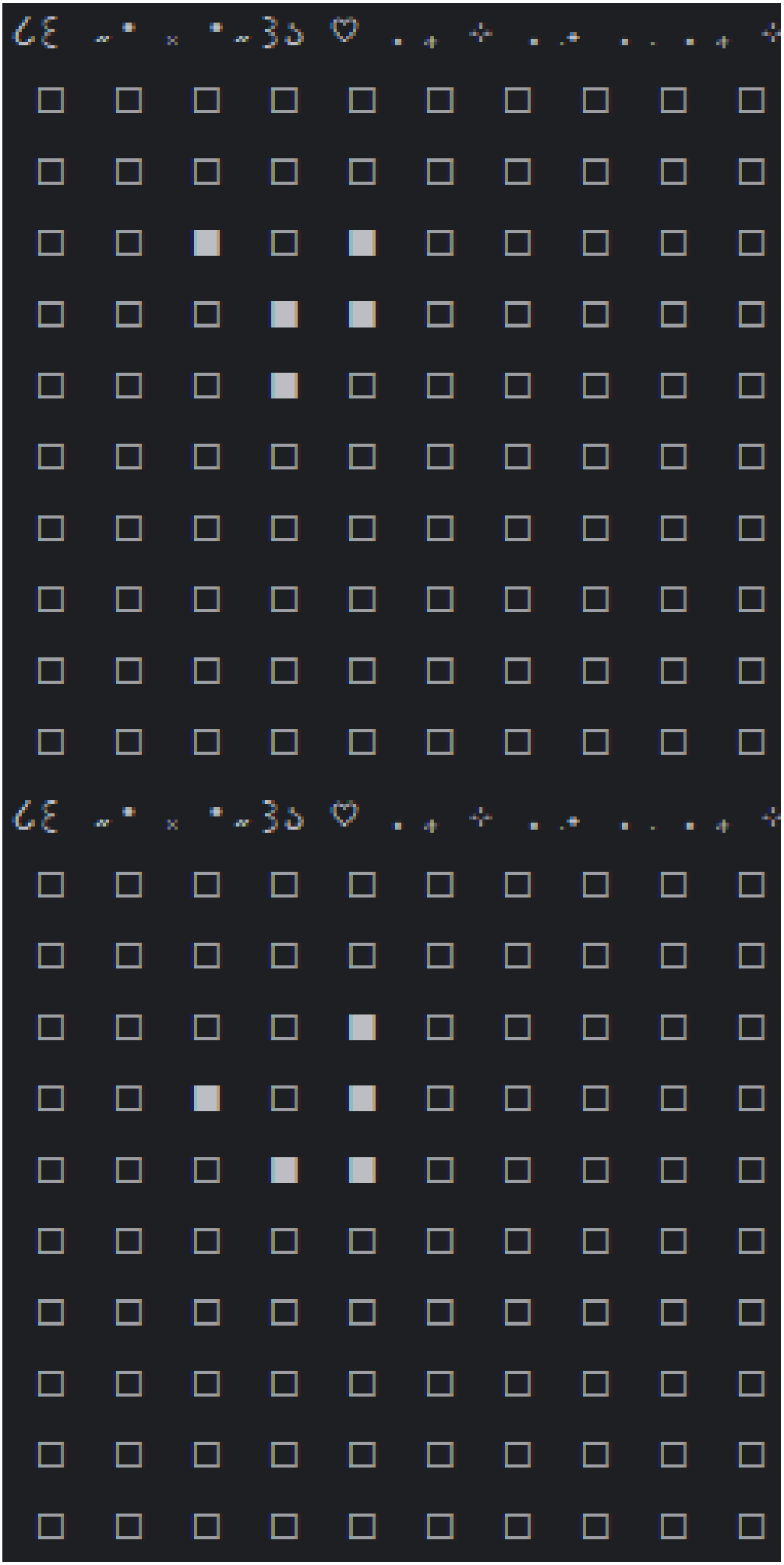
```
public class Main {
    public static void main(String[] args) {
    GameOfLife cgol = new GameOfLife(10,10);
    cgol.setCelula(0,0,'v');
    cgol.setCelula(0,2,'v');
    cgol.setCelula(1,1,'v');
    cgol.setCelula(1,2,'v');
    cgol.setCelula(2,1,'v');
    cgol.imprimirTablero();
        for (int i = 0; i < 10; i++) {
            cgol.nuevaGeneracion();
            cgol.imprimirTablero();
        }
    }
}
```

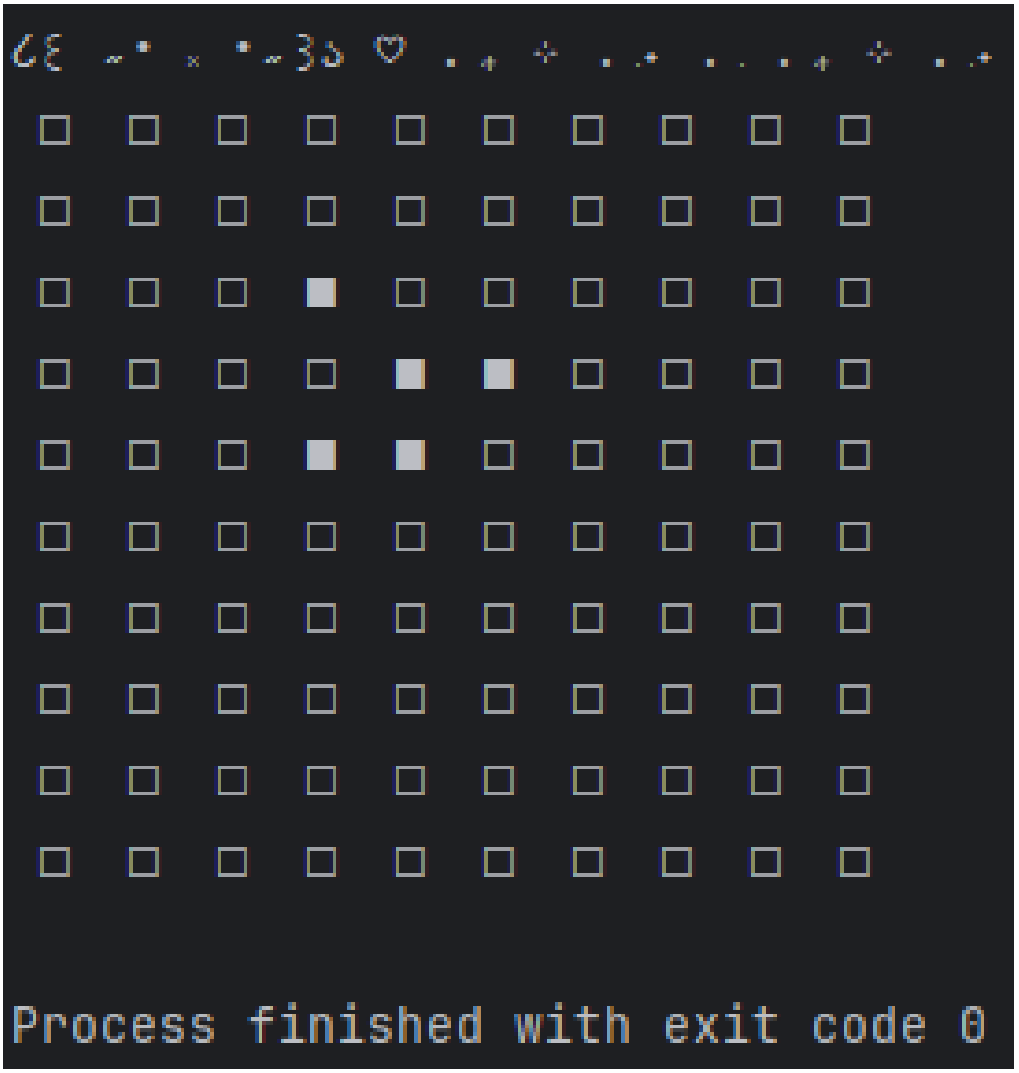








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