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/**
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 *
 *@(#)Seed.java
 *
 *Stores the starting state and reads from a file
 */

import java.io.File;
import java.io.FileNotFoundException;
import java.util.Arrays;
import java.util.Scanner;
import java.util.stream.Collectors;

public class Seed implements Comparable {
    private int[][] cells;
    private String name;
    /**
     *Constructs a new seed given a filename
     * @param filePath, the path to the file, usually "Patterns/_____"
     */
    public Seed(String filePath) {
        this.cells = decode(readFile(filePath));
        name = filePath;
    }
    /**
     * returns the size on the X axis of the seed (the horizontal distance between
     * the left-most and right-most points)
     * @return the X size
     */
    public int getSizeX() { return cells[0].length; }
    /**
     * returns the size on the Y axis of the seed (the vertical distance between
     * the top-most and bottom-most points)
     * @return the Y size
     */
    public int getSizeY() { return cells.length; }

    /**
     * returns the number of cells, or the count of the cells whose state > 0
     * @return the number of cells
     */
    public int getNumOfCells() {
        int count = 0;
        for (int[] i : cells)
            for (int j : i)
                count += j;
        return count;
    }

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}

/**
 *Returns the filename of the seed that was created.
 *@return the name of the current seed.
 */
public String getName() { return name; }

/**
 *Returns the Array that the seed is composed of
 *@return the seed
 */
public int[][] getCells() { return cells; }

/**
 *String representations of the
 *object, in the form of an array with the state
 *of each cell and '#' is an alive cell
 *@return the string representation
 */
@Override
public String toString() {
    return Arrays.asList(cells)
        .parallelStream()
        .map(s -> {
            return Arrays.stream(s)
                .mapToObj(c -> { return (c == 1) ? "#" : " "; })
                .collect(Collectors.joining(""));
        })
        .collect(Collectors.joining("\n"));
}

/**
 *Seeds are equal if they share a name
 *@return whether they are equal
 */
@Override
public boolean equals(Object o) {
    Seed other = (Seed)o;
    return this.name.equals(other.name);
}

/**
 * Compares the Area of the bounding box of the seed
 *@return comparison of the Areas
 */
@Override
public int compareTo(Object o) {
    Seed other = (Seed)o;
    int thisArea = (this.getSizeY() * this.getSizeX());
    int otherArea = (other.getSizeY() * other.getSizeX());

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    return Integer.compare(thisArea, otherArea);
}

private String readFile(String filePath) {
    try {
        // read seed from file
        Scanner input = new Scanner(new File(filePath));
        String rle = "";

        // collect to string
        while (input.hasNext())
            rle += input.nextLine() + '\n';

        input.close();

        // remove lines starting with '#'
        rle = rle.replaceAll("#.*\\n", "");

        // initialize size value from header lines
        String headerX = rle.split(",")[0].substring(4);
        String headerY = rle.split(",")[1].substring(5);

        // return the pixel data only
        return rle
            .replaceFirst(".*\\n", "") // Remove the header line
            .replaceAll("\\n", "");    // concatenates into one string
    } catch (FileNotFoundException e) {
        System.err.println("Try a different filepath!\\n" + e);
        return null;
    }
}

private int[][] decode(String encoding) {
    int index = 0;

    String test = "";

    // The actual decoding, the cells collect into 'test'
    while (index < encoding.length()) {
        int runLength = 1;

        String num = "";
        while (Character.isDigit(encoding.charAt(index))) {
            num += encoding.charAt(index++);
            runLength = Integer.parseInt(num);
        }

        char token = encoding.charAt(index++);
        token = token == '$' ? '\n' : token;
    }
}

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        for (int i = 0; i < runLength; i++)
            test += token;
    }
    test = test.substring(0, test.length() - 1);
    String[] s = test.split("\n");
    int maxLen = Arrays.stream(s).map(String::length).reduce(0, Math::max);
    int[][] cellsTemp = new int[s.length + 1][maxLen];

    // 2d array representation
    for (int i = 0; i < s.length; i++) {
        for (int j = 0; j < s[i].length(); j++) {
            char c = s[i].charAt(j);
            if (c == 'o')
                cellsTemp[i][j] = 1;
            else
                cellsTemp[i][j] = 0;
        }
    }
    return cellsTemp;
}
}

```