Packing Puzzle Solver

Miles Moran
@miles-moran on GitHub

Description

Given a packing puzzle with a container and smaller shapes, the program will find a perfect fit for shapes within the container. The program can solve puzzles with two-dimensional containers or three-dimensional containers. Solution times vary.

The program is designed to solve a specific puzzle known as “Cat Stax”.

Features

- Dynamic form for shape entry written in JavaScript
- Algorithm that goes through every possible orientation of shapes within their container
- CRUD repository that hastens user input with pre-drawn shapes

Planning - User Stories

Users can input shapes with dynamic forms.

Users can save shapes they wish to use later.

Users are given a visualization of how shapes can be rotated along an x, y, or z axis.

Users are given a color-coded solution to their puzzle.

Planning - Database

The database includes:

- A table of shapes
- A table of points with an x, y, and z value, and the ID of their corresponding shape

Technology Stack

- Java
- Spring Boot
- Thyme Leaf
- MAMP
- JavaScript

Demo

What I Learned

- JavaScript for living, breathing HTML documents
- Handling data types outside the realm of integers and strings
- Applying brute force to solve a problem
- A better understanding of geometry, coordinate planes, and computational complexity
- Refactoring code for the sake of speed, rather than organization

What's Next

- An improved solving algorithm that is recursive in nature
- Refactoring ugly code
- Reorganizing my database