Algorithms Project 3

Tesseract Stacking - Worksheet 1

Consider the 4-Dimensional block with dimensions $w = 2, x = 4, y = 1, z = 3$. The constraints of the rotations for the box stacking problem are as follows:

- The 3D projection will be made up of the x, y, z dimensions *after* the rotation
- after each rotation, x will be the smallest, followed by y as the next smallest, and finally z i.e. $x \leq y \leq z$

1. A 4D block normally has 8 different rotations, find all such rotations for the object above. Two such rotations for the given block is $w = 4, x = 2, y = 1, z = 3$ and $w = 2, x = 4, y = 3, z = 1$

2. Now that you have the different rotations, apply the constraints for the rotations the problem has. You should end up with 4 different rotations.

3. With the 4 different rotations the problem requires, find the volume for the 3D projections $x * y * z$ for each rotation followed by the 4th dimension, w, which we will maximize within the problem.