Helpful materials, concepts used for CircusTrain

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Course: IN-SDE4

Date: 2026-02-28

Introduction

This doument is about the materials, concepts I learned from and were helpful for solving the CircusTrain algorithm problem.

Useful materials

Sets theory & combinatorics

Useful for solving the pairing problem and calculating the possible sets per wagon. The combinatorics were useful for calculating all the possible sets of animals and then narrowing down the number to satisfy a given condition. Sets by default are symmetric, which means the order the elements come does not matter (comes in handy for performing symmetric pairing).

MIT 6.006 course

Source: https://www.youtube.com/playlist?list=PLUl4u3cNGP61Oq3tWYp6V_F-5jb5L2iHb**.**

Particularly I made use of Lecture 5 (Binary search trees, BTS sort) & Lecture 6 (AVL trees, AVL sort). They helped me better understand the tree data structure and its implementation, dictionaries, traversing them and look-up with each time complexity for every single operation. I chose to use dictionaries for storing the points per animal size and then easily make an association for finding which size has what value and the hashset data structure for the possible pairs and symmetric comparison as well as fast look-up.

Conclusion

Looking into this materials, concepts they helped me find a suitable and efficient solution to the algorithmic problem, making me account for different details I might have missed otherwise.