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香港
VTC

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1. Introduction

The goal of the competition is to create a computer program that can restores a puzzle board by strategically applying die cuts to rearrange puzzle pieces. The objective is to efficiently achieve the target puzzle pattern with the minimum number of moves.

2. Overview of the Development

The program is built using the Python language. It uses the Tkinter GUI toolkit and the Matplotlib library for numerical mathematics plotting. The program consists of two parts: the GUI and the Algorithms. The Algorithms part solves the problems we input, and the GUI allow users choose the best algorithms solution approach.

2.1 Graphic user interface (GUI)

The user interface that shows the question puzzle, the target puzzle pattern, and the board's information received from server. It displays the number of steps taken by different algorithms. This allows users to evaluate and choose the best answer. This comparison will enable user to identify the most suitable die cuts for each specific scenario, ensuring algorithms are effective and efficient.

2.2 Restores puzzle Algorithms

This method involves a systematic, step-by-step process where the board is adjusted sequentially from the top row to the bottom, and from left to right within each row. Applying die cuts of size one to make precise alterations to individual bits, ensuring that each piece of the board aligns perfectly with the designated final structure. An advanced search algorithm that is specifically designed to optimize move efficiency by larger-sized die cuts.