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AOA IA 2

Sum of Subset Simulation

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What Does the Simulation Do?

- Finds all subsets of a given array that sum up to a target value.
- Uses Backtracking algorithm to explore and prune paths.
- Animates the process with a tree showing each subset step-by-step.
- Logs each decision for user understanding.

Key Features

- Interactive D3.js-based animated graph.
- Highlights valid (green), invalid (red), and partial (pink) subsets.
- Supports zoom and pan for large trees.
- Logs logic explanations as simulation progresses.

Function-Wise Code Explanation (Part 1)

- `clearGraph()`: Clears the old graph.
- `logMessage(msg)`: Appends a message to the log output.
- `startSimulation()`: Main function to start simulation process.
 - Validates input.
 - Initializes graph.
 - Calls `generateSubsets` and `animate`.

Function-Wise Code Explanation (Part 2)

- `animate()`: Animates the tree node by node.
 - Draws circles and lines.
 - Displays subset and current sum.
- `generateSubsets()`: Recursive function.
 - Builds subset tree.
 - Uses depth and offset for layout.
 - Skips paths exceeding target.

Assumptions Made

- Input numbers are separated by commas and are valid integers.
- Target is a valid number.
- No duplicate subsets shown.
- Subsets use each number only once.
- Visual layout is simplified for readability.

THANK YOU