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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.

Links

- Project files:
https://github.com/saun09/subset-simulation

- Project deployed on:
https://saun09.github.io/subset-simulation/

THANK YOU