

Karger's Minimum Cut Algorithm Implementation

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Overview

This implementation uses Karger's randomized algorithm to find the minimum cut in an undirected graph. The algorithm repeatedly contracts random edges until only 2 vertices remain, then counts edges between them.

Implementation

The code reads graph data from input.txt (format: V E followed by E edges). The kargerMinCut function: (1) initializes parent array for vertex tracking, (2) randomly selects and contracts edges until 2 vertices remain, (3) merges vertices using parent representatives, (4) removes self-loops, and (5) returns the cut size. The algorithm runs 10 times and writes results to output.txt.

Key Features

- Random edge selection using uniform distribution
- Parent array tracks contracted vertices
- Self-loops are automatically removed
- Multiple runs increase probability of finding minimum cut