

Analysis of task bribe2

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Here are a few possible ideas for a solution:

MST

Simply finding a maximum spanning tree with Kruskal - this would give about 20 points.

Alternating weights

Alternating small and large weights in Kruskal - this would give about 33 points.

Hill Climb

A quite widely used approach for output-only tasks. Initially let our minimum spanning tree have sum min , and the maximum one max . One idea for a solution is to take some spanning tree (in principle it matters whether it will be a minimum, a maximum or a random one, but it is good to try everything), and to start doing a hill climb on it. On every iteration, we choose some random edge which we remove and we choose an edge which connects the two new components. We aim for the tree to have sum $min + 0.67(max - min)$. A similar strategy, using a maximum spanning tree, would give few points - the author solutions get about 9 points. Another option is to use as an initial spanning tree the one found in the next subsection, but it turns out that this actually takes it **further away** from the answer, getting about 47 points.

Simulation with random spanning trees

Directly doing what we are told in the statement, with some number of random spanning trees chosen by us. This solution works very well, and gets a lot of points (about 75) with a not very large number of spanning trees ($\frac{10^8}{N}$).

We prefer not to consider full solutions, since it turns out that they use FFT and dynamic programming, so about 85 points are enough 😊