Report: Connected Components Warmup

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Results

input file	0 connected to 1?
tinyUF.txt	yes
mediumUF.txt	no
largeUF.txt	yes

Methods

For the union–find data structure we used 'Weighted quick-union' algorithm from the textbook.
Weighted quick-union always connects the smaller tree to the larger one.
When merging trees, the height being 2^n (n being of amount of nodes), we get a tree of 2^n+1. Thereby we will get logarithmic performance.
This means that it is much faster than 'quick-find' and 'quick-union' (with large amounts of data), which is always linear time.
Theoretically speaking, 'Weighted quick-union with path compression' would be even faster, since it flattens out the tree. It does this by linking every node to the root of the tree. To implement it, we can simply link the nodes that we examine directly to the root.