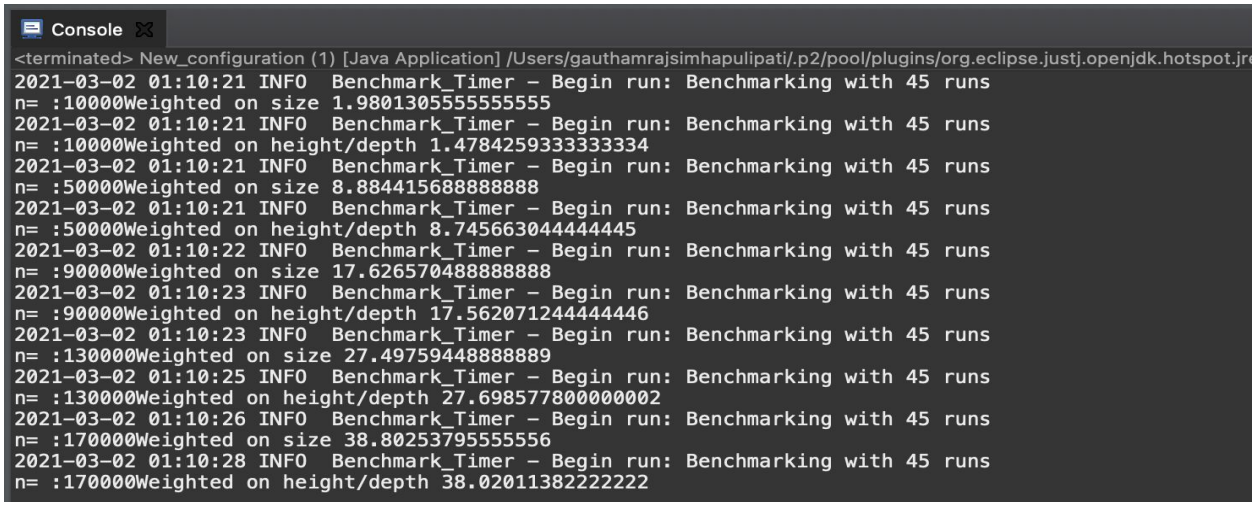
Gautham Rajsimha Pulipati (001572432)

TASK

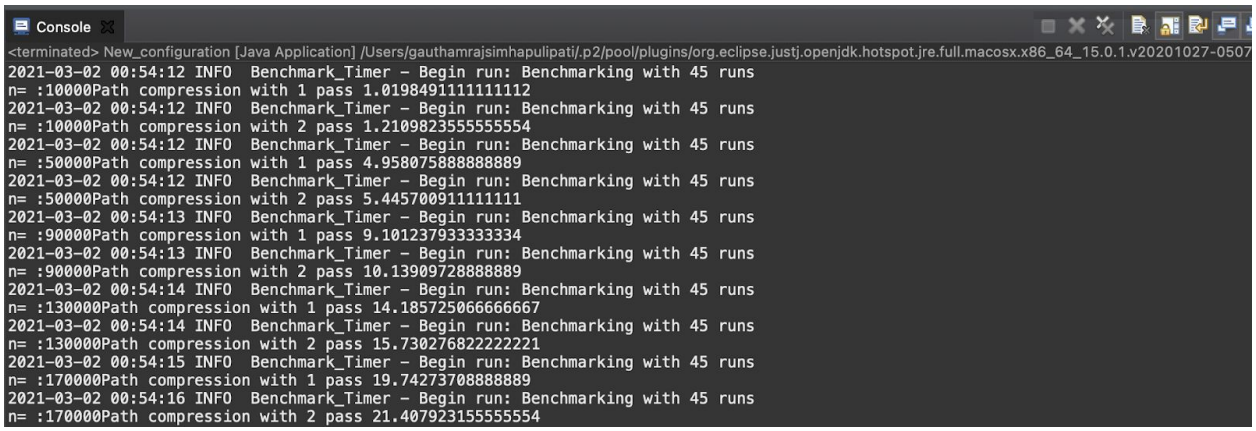
Union Find Alternatives

OUTPUT:

Part 1, Weighted Quick Union with depth vs size



Part 2, Weighted Quick Union with Path Compression on 1 pass vs 2 pass

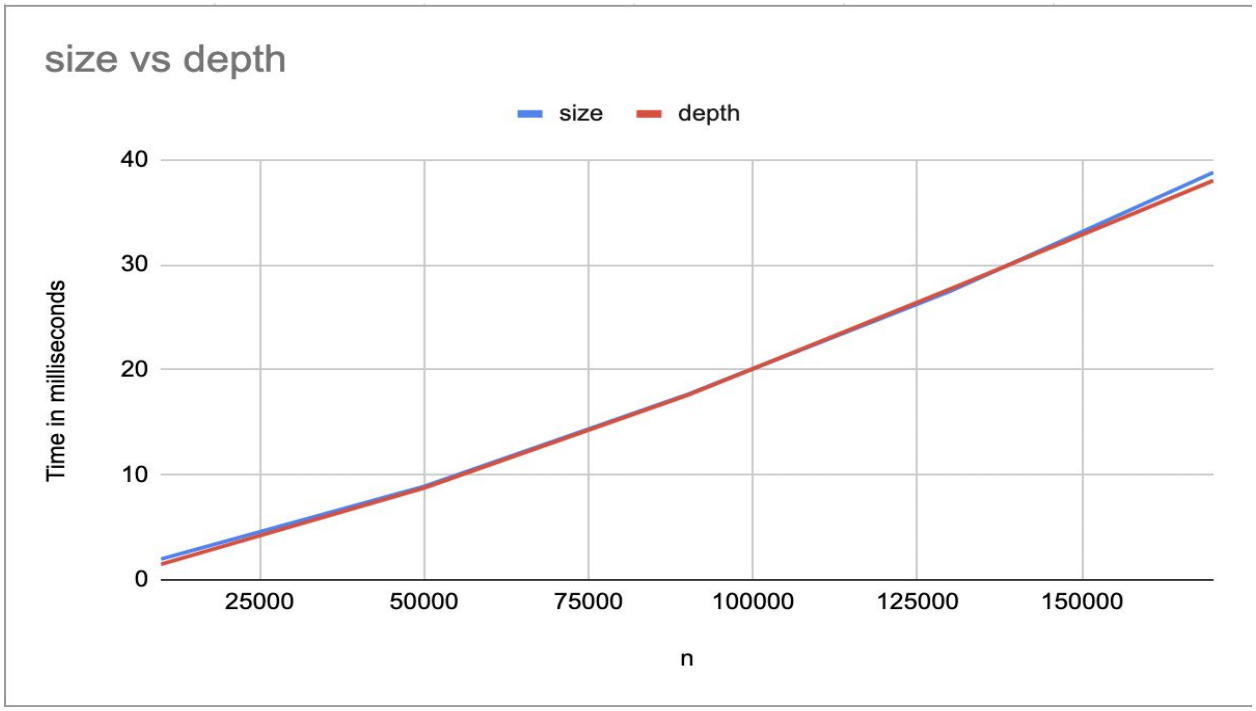


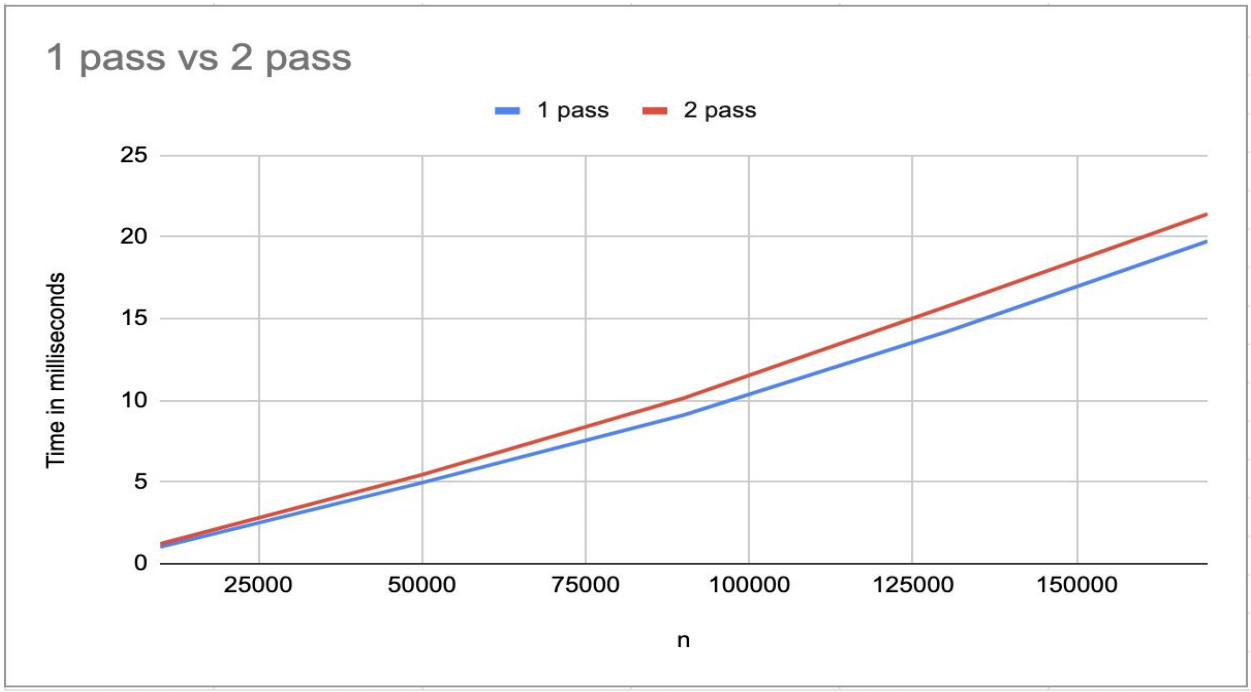
RELATIONSHIPS AND CONCLUSIONS

Part1: When we use depth and Size, the depth of a root is always 0, so I considered the max depth of any node in the tree, which is height. On benchmarking this with various n values, I can conclude that **it doesn't affect the run time** on either of these cases.

Part2: For 1 pass, we update the parent of the node as grandparent during the find operation and 2 pass where we write a 2nd loop on the function to update the parent of every element from the given to the root. Judging by the values, **1 pass looked faster than 2 pass**, but on a small margin.

EVIDENCE FOR THE CONCLUSIONS





- Files added in union_find folder: UF_alternatives1_benchmarking, WQU_SIZE, UF_alternatives2_benchmarking, WQUPC_SIZE