INFO 6205 Assignment 4 Report

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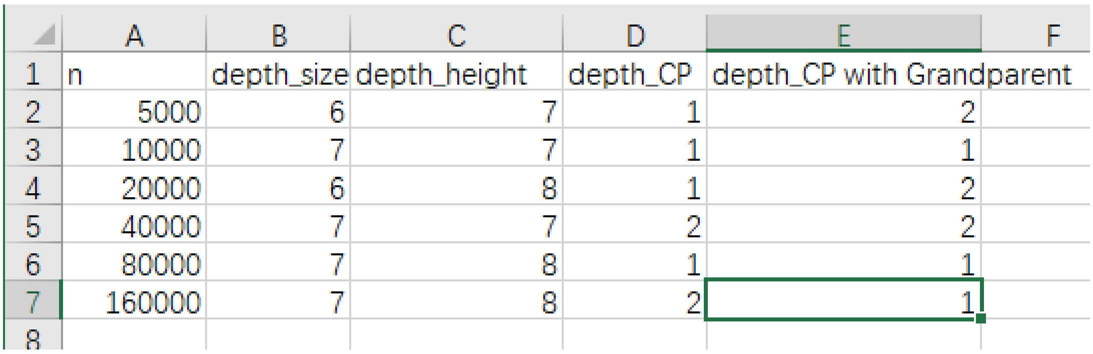
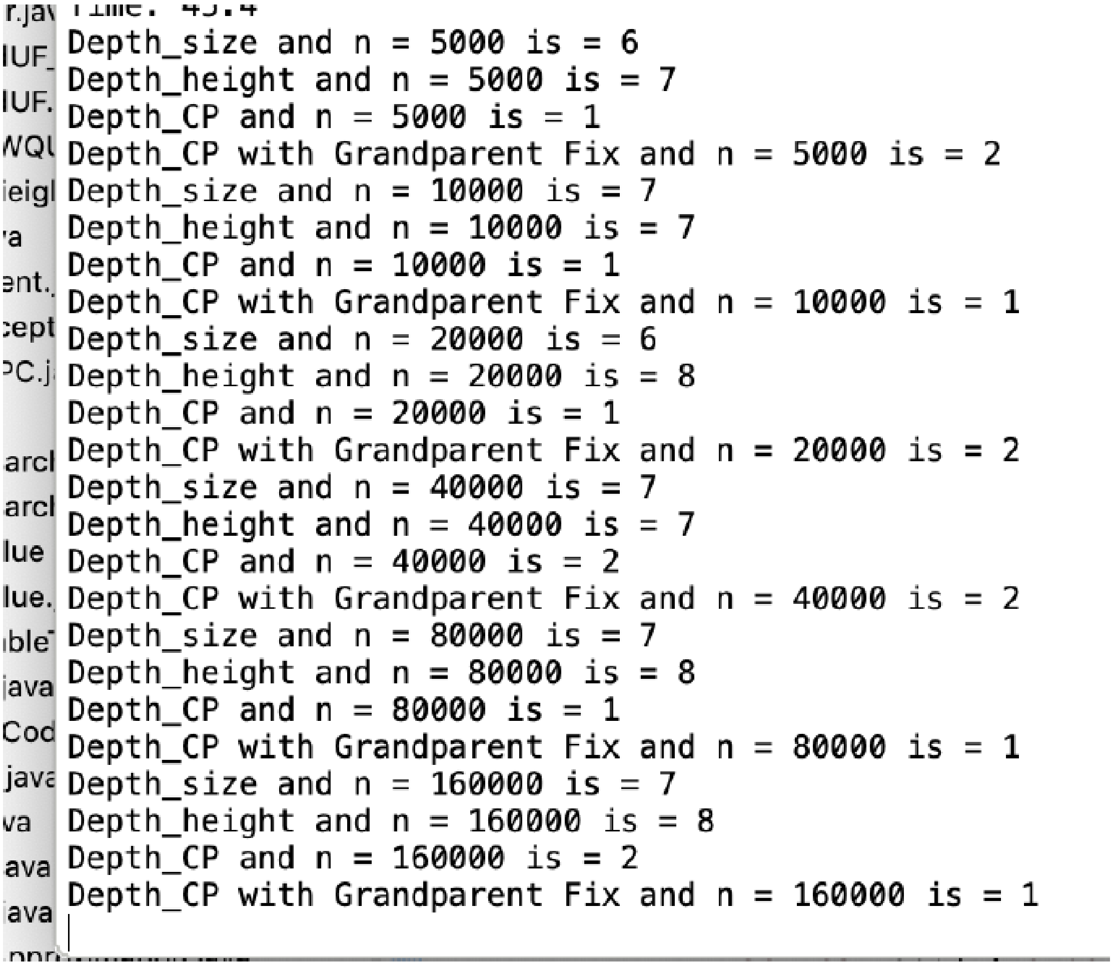
Task:

For weighted quick union, store the depth rather than the size. For weighted quick union with path compression, do two loops, so that all intermediate nodes point to the root, not just the alternates. For both of these, code the alternative and benchmark it against the implementation in the repository.

Output:



n	depth_size	depth_height	depth_CP	depth_CP with Grandparent
5000	6	7	1	2
10000	7	7	1	1
20000	6	8	1	2
40000	7	7	2	2
80000	7	8	1	1
160000	7	8	2	1



```
Time: 45.4
Depth_size and n = 5000 is = 6
Depth_height and n = 5000 is = 7
Depth_CP and n = 5000 is = 1
Depth_CP with Grandparent Fix and n = 5000 is = 2
Depth_size and n = 10000 is = 7
Depth_height and n = 10000 is = 7
Depth_CP and n = 10000 is = 1
Depth_CP with Grandparent Fix and n = 10000 is = 1
Depth_size and n = 20000 is = 6
Depth_height and n = 20000 is = 8
Depth_CP and n = 20000 is = 1
Depth_CP with Grandparent Fix and n = 20000 is = 2
Depth_size and n = 40000 is = 7
Depth_height and n = 40000 is = 7
Depth_CP and n = 40000 is = 2
Depth_CP with Grandparent Fix and n = 40000 is = 2
Depth_size and n = 80000 is = 7
Depth_height and n = 80000 is = 8
Depth_CP and n = 80000 is = 1
Depth_CP with Grandparent Fix and n = 80000 is = 1
Depth_size and n = 160000 is = 7
Depth_height and n = 160000 is = 8
Depth_CP and n = 160000 is = 2
Depth_CP with Grandparent Fix and n = 160000 is = 1
```

Relationship Conclusion

The depth height and depth size of weighted quick union has no big difference since they are in the same upper bounds.