

INFO 6205 – Assignment 4

Union Find Algorithm

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Quick Union with Depth

Refer to WeightQuickUnionHeight.java class

Benchmarks

2021-02-27 18:40:51 INFO Benchmark_Timer - Begin run: input size: 16000 with 100 runs

9.36

2021-02-27 18:40:52 INFO Benchmark_Timer - Begin run: input size: 32000 with 100 runs

20.05

2021-02-27 18:40:54 INFO Benchmark_Timer - Begin run: input size: 64000 with 100 runs

45.68

2021-02-27 18:40:59 INFO Benchmark_Timer - Begin run: input size: 128000 with 100 runs

106.12

2021-02-27 18:41:10 INFO Benchmark_Timer - Begin run: input size: 256000 with 100 runs

235.52

Quick Union with Path Compression – Intermediate Node to Root Connection

Refer to WeightQuickUnionWithPathCompression.java class

Benchmarks

2021-02-27 18:40:44 INFO Benchmark_Timer - Begin run: input size: 16000 with 100 runs

7.63

2021-02-27 18:40:45 INFO Benchmark_Timer - Begin run: input size: 32000 with 100 runs

17.99

2021-02-27 18:40:46 INFO Benchmark_Timer - Begin run: input size: 64000 with 100 runs

40.73

2021-02-27 18:40:47 INFO Benchmark_Timer - Begin run: input size: 128000 with 100 runs

88.68

2021-02-27 18:40:49 INFO Benchmark_Timer - Begin run: input size: 256000 with 100 runs

194.03

Quick Union with Path Compression – Assignment 3 Implementation

Refer to UF_HWQUPC.java class

Benchmarks

2021-02-27 18:41:36 INFO Benchmark_Timer - Begin run: input size: 16000 with 100 runs

8.66

2021-02-27 18:41:37 INFO Benchmark_Timer - Begin run: input size: 32000 with 100 runs

18.94

2021-02-27 18:41:39 INFO Benchmark_Timer - Begin run: input size: 64000 with 100 runs

40.62

2021-02-27 18:41:43 INFO Benchmark_Timer - Begin run: input size: 128000 with 100 runs

96.78

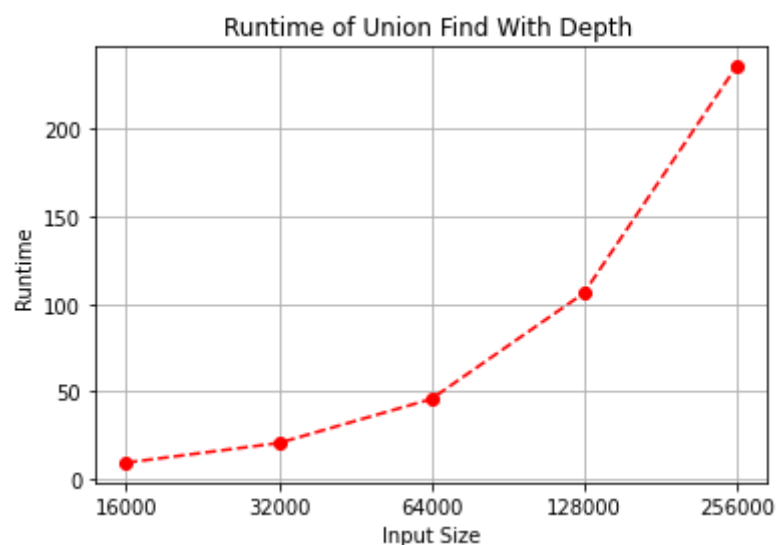
2021-02-27 18:41:52 INFO Benchmark_Timer - Begin run: input size: 256000 with 100 runs

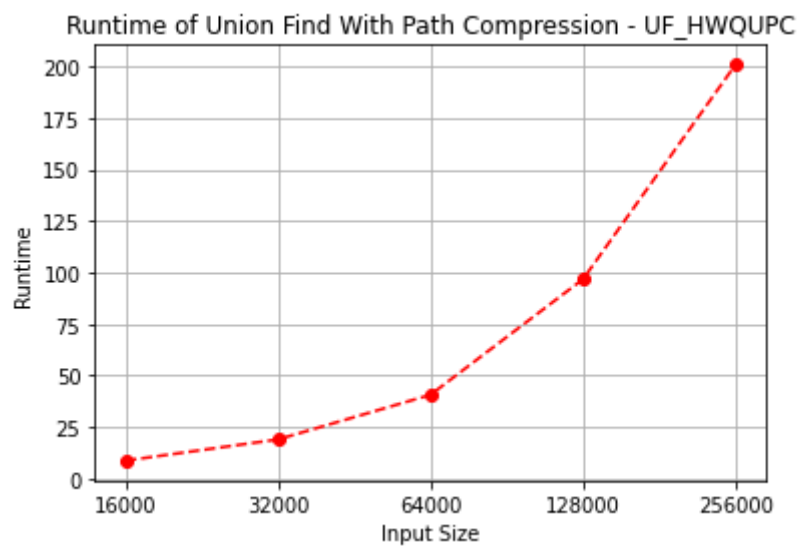
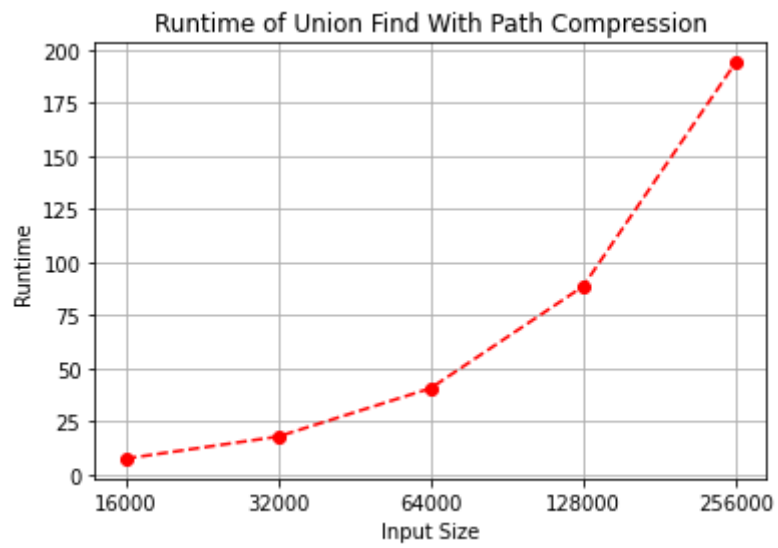
200.99

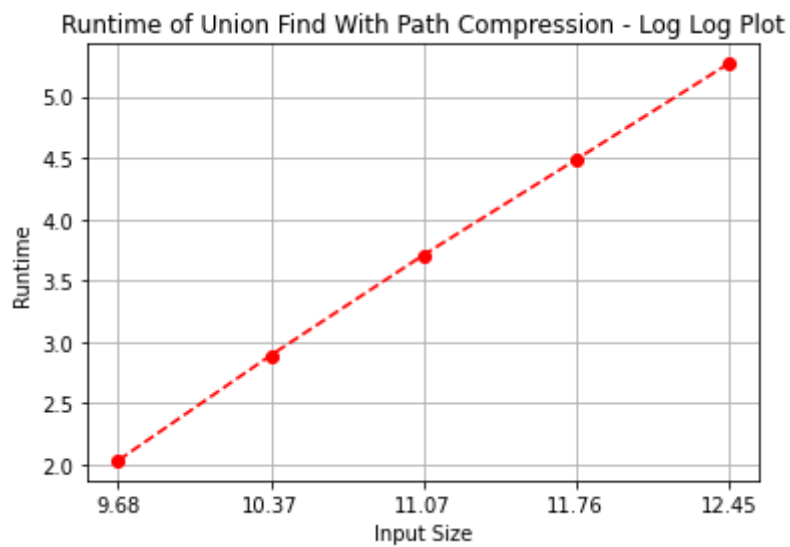
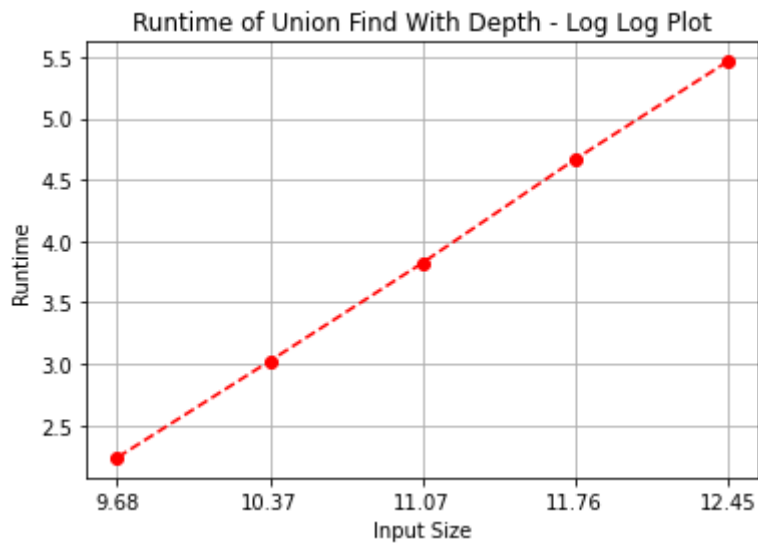
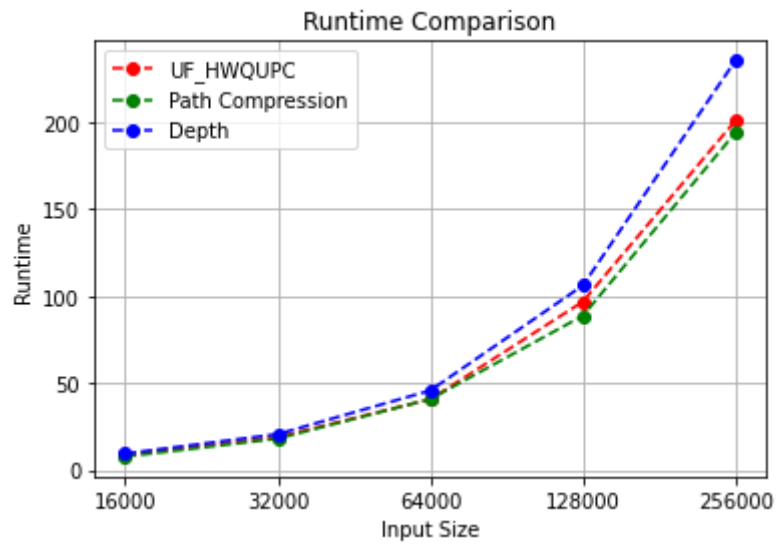
Runtime of Weighted Quick Union with Depth

Runtime of weighted quick union with depth will be higher than the other algorithms in question as it deals with a larger tree. This is proven in the benchmarks run in the next section.

Graphs







Runtime of Union Find With Path Compression - UF_HWQUPC - Log Log Plot

