

INFO 6205

Program Structures & Algorithms

Fall 2020

Assignment No 4

Output

The screenshot shows an IDE with the Package Explorer on the left, the Benchmark_Timer.java file open in the editor, and the Console window at the bottom. The Package Explorer shows a project structure with various packages and classes. The Benchmark_Timer.java file contains code for benchmarking different union-find algorithms. The Console window shows the output of the program, including the start and end times for each test run.

```
2020-10-13 15:07:08 INFO Benchmark_Timer - Begin run: Test weighted quick union, store the size with 1,000 runs
time: 0.141
2020-10-13 15:07:08 INFO Benchmark_Timer - Begin run: Test weighted quick union, store the depth with 1,000 runs
time: 0.138
2020-10-13 15:07:08 INFO Benchmark_Timer - Begin run: Test weighted quick union with path compression, do two l
time: 0.108
2020-10-13 15:07:08 INFO Benchmark_Timer - Begin run: Test weighted quick union, with path cpmression with 1,0
time: 0.079
```

I implemented for types of weighted quick union

- 1) Weighted quick union (Store the size)
- 2) Weighted quick union (Store the depth)
- 3) Weighted quick union with path compression
- 4) Weighted quick union with two path compression

I conclude that for the weighted quick union the runtime of whether storing the size or the depth are roughly the same.

The runtime of weighted quick union with two path compression is faster than weighted quick union with path compression.