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Program Structures & Algorithms

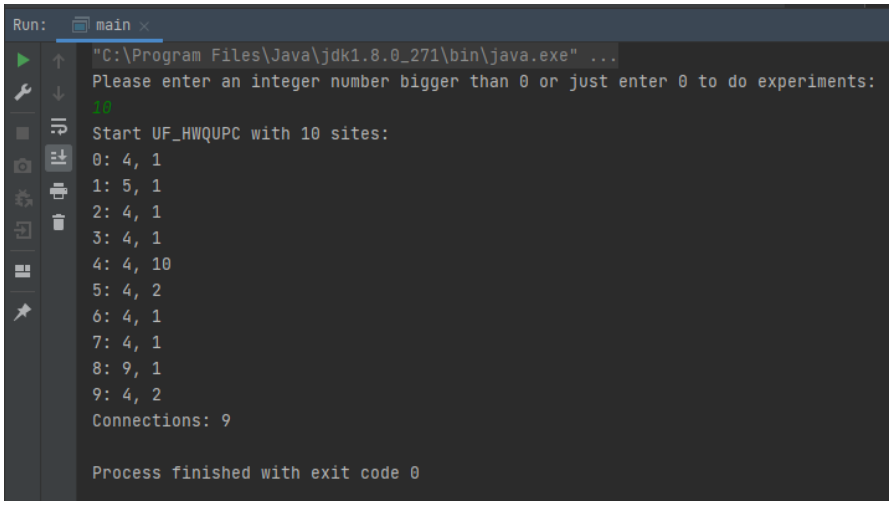
Assignment NO.3

1. Task

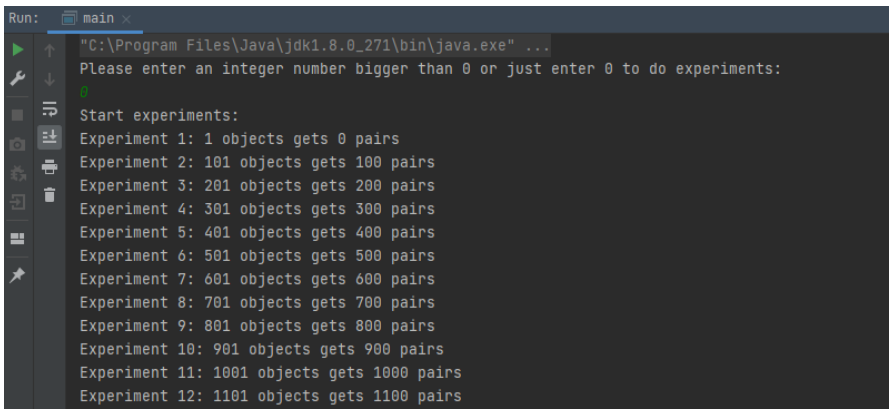
- Implement height-weighted Quick Union with Path Compression in the class called UF_HWQUPC.
- Develop a UF client using UF_HWQUPC by requirements.
- Determine the relationship between the number of objects (n) and the number of pairs (m) from those experiments.

2. Output

- Take an integer value from command line to do a UF_HWQUPC:



- Doing experiments (n from 1 to 10000, some are not shown in screenshot):

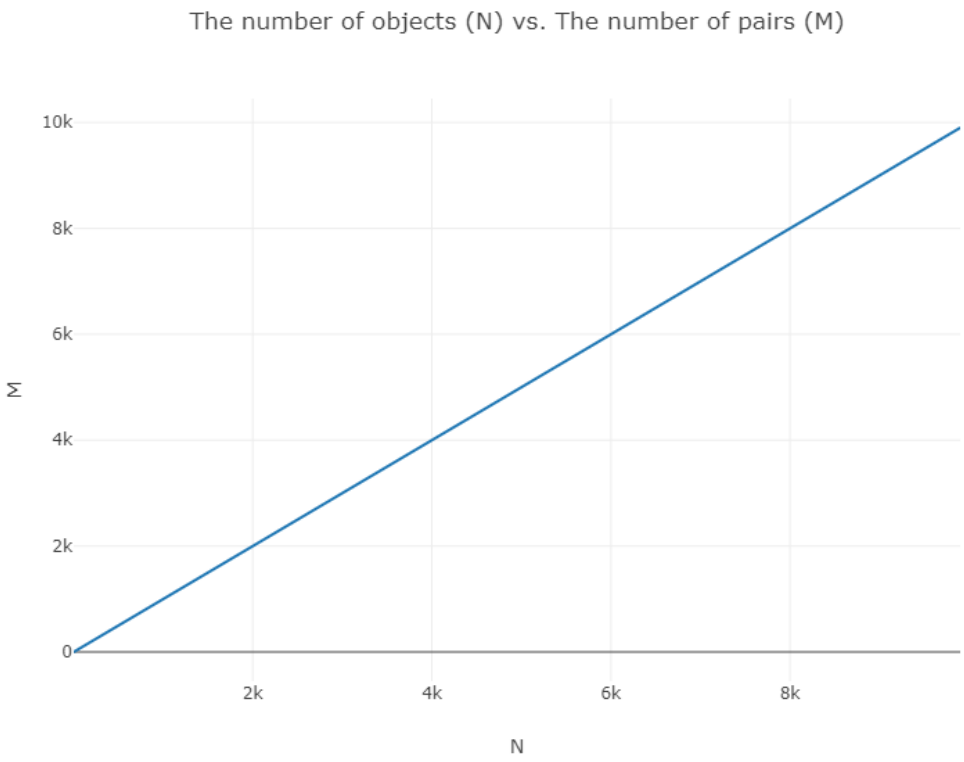


3. Relationship Conclusion

$$N = M - 1$$

4. Evidence to support the conclusion:

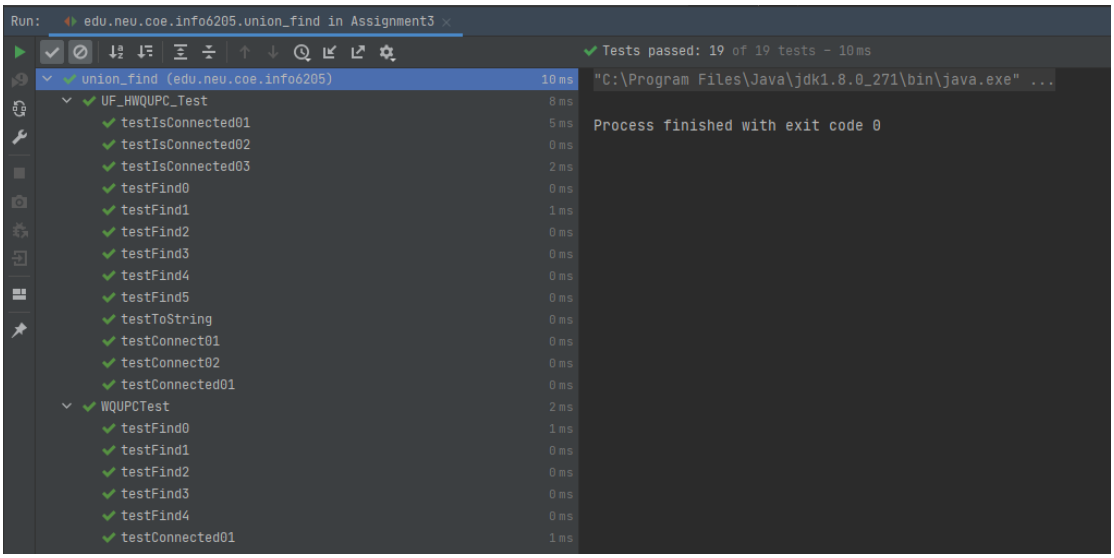
- Chart



- Table (full version is under zip file named **Results**)

N	M
1	0
101	100
201	200
301	300
401	400
501	500
601	600
701	700

5. Unit test results



6. Code

The project of this assignment is called **Assignment3** in the zip file.