Program Structures and Algorithms
Fall 2022(SEC 06)

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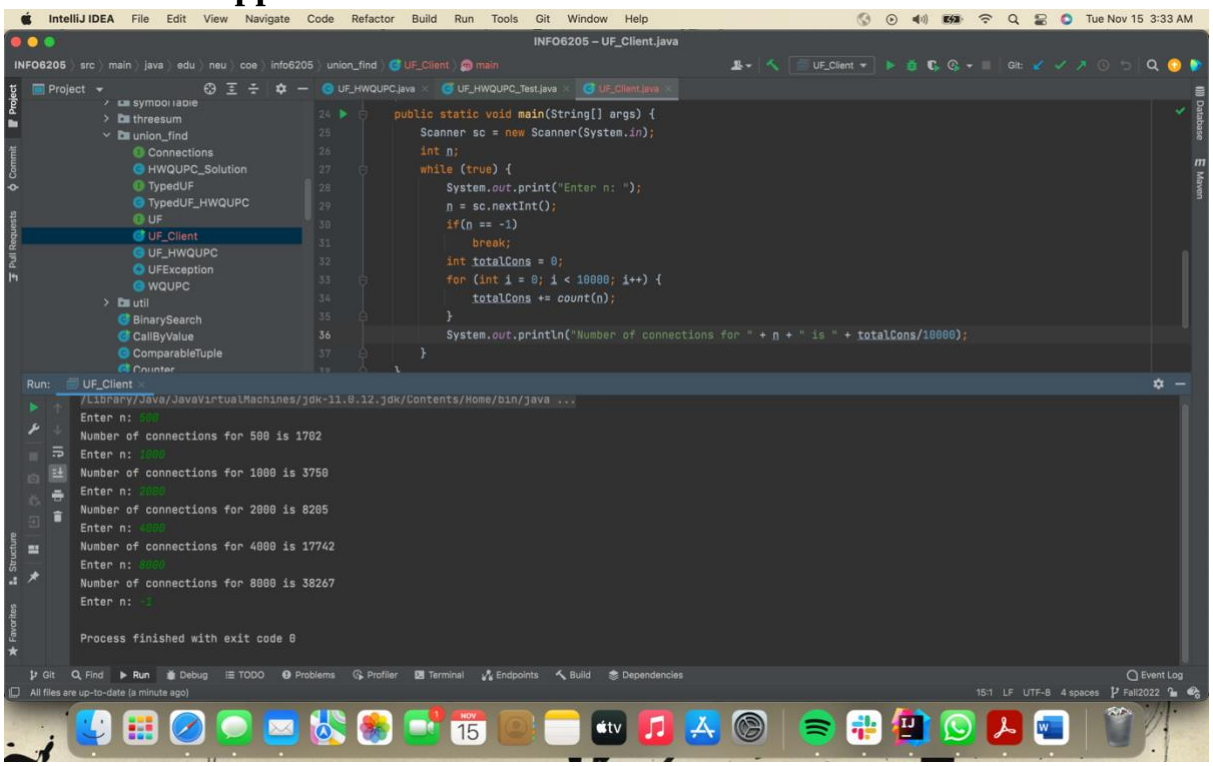
Task:

- Implement height-weighted Quick Union with Path Compression
- Use my implementation of UF_HWQUPC, develop a UF client that takes an integer value of n from the command line to determine the number of "sites"
- Determine the relationship between the number of objects (n) and the number of pairs (m) generated to accomplish this.

Relationship Conclusion:

The number of pairs(m) is approximately n + nlog(n), where n is the number of object/nodes

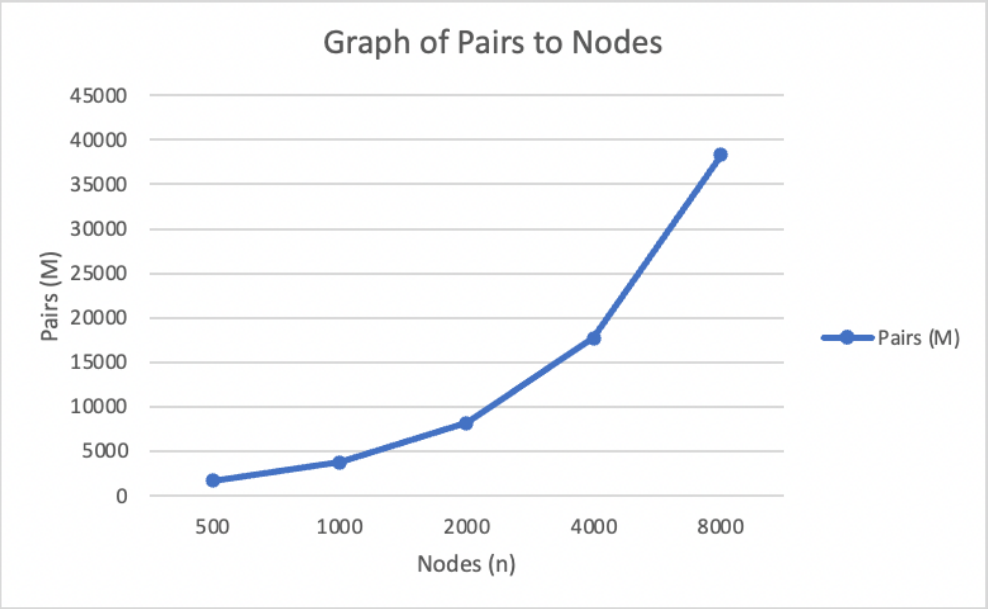
Evidence to support that conclusion:



Nodes (n)	Pairs (M)	n*lg(n)
500	1702	1349.485
1000	3750	3000
2000	8205	6602.05999
4000	17742	14408.24
8000	38267	31224.7199

Graphical Representation:

Graph of Pairs to Nodes



Unit Test Screenshots: