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Program Structures & Algorithms

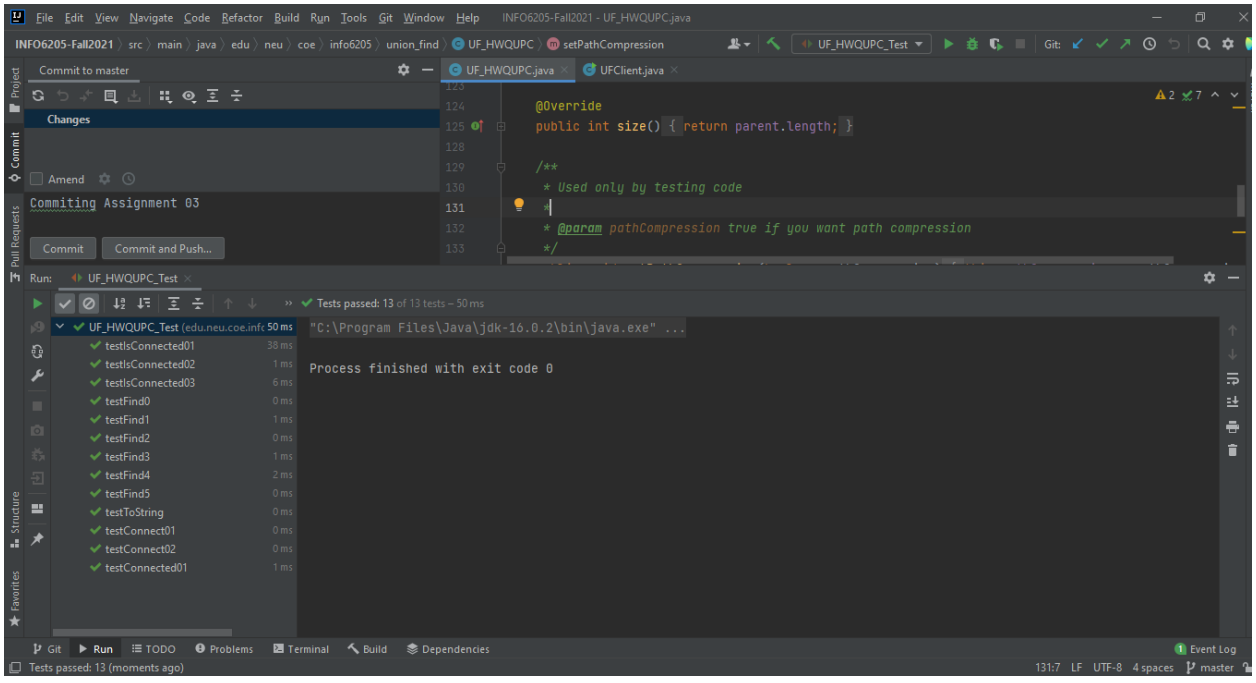
Fall 2021

Assignment No. 03

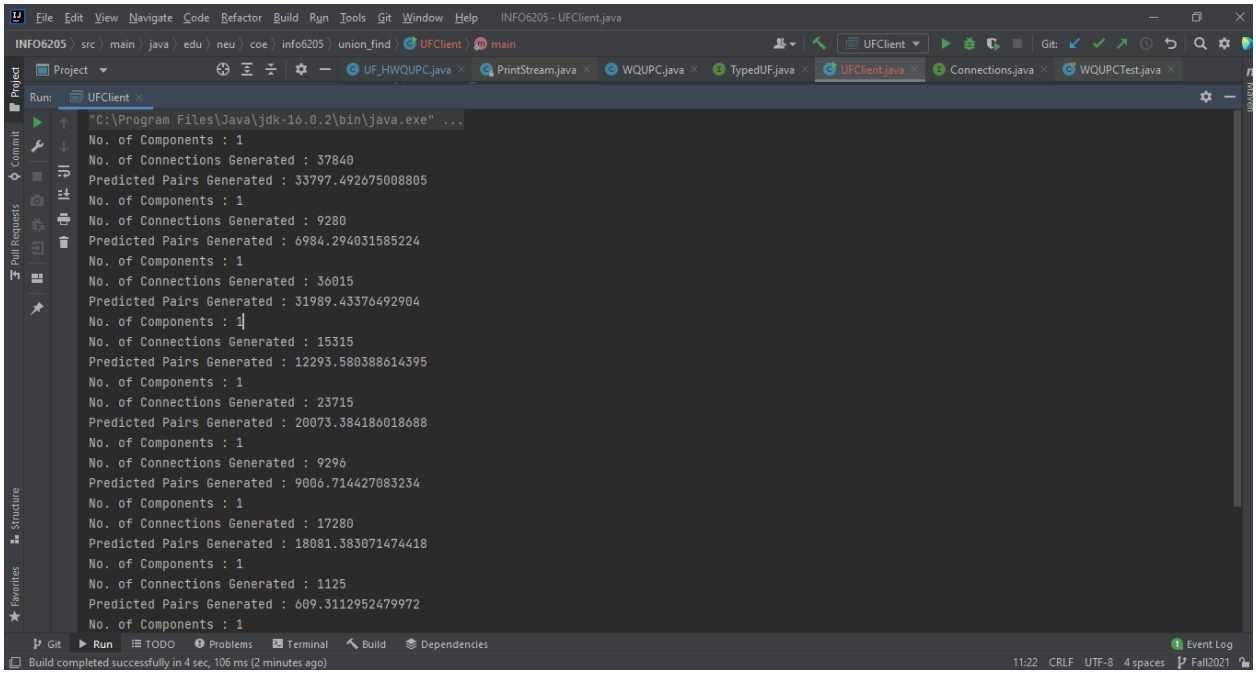
Tasks Performed :

- ➢ Implemented find, mergeComponents, pathCompression Functions in UF_HWQUPC class to implement height-weighted Quick Union with Path Compression. Successfully executed UF_HWQUPC_Test to run Unit Tests.
- ➢ Implemented the Union-Find Client class to generate random integer pairs and check if they are connected by path compression.
- ➢ From the arrived values predicted the relation between the number of objects(n) and number pairs generated(m).

Successful Execution of UnitTests of UF_HWQUPC_Test



Execution of UFClient.java



Evidence : It is observed that, from the values obtained from the execution of height-weight quick union graph with path compression, the relationship between the number of objects(components) **n** and the number of pairs generated **m** can be deduced as m = (0.5) n (ln n)