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Program Structures & Algorithms

Fall 2021

Assignment 3

1. Tasks Performed in the Assignment :

- Implemented the code for find(), mergeComponents(), doPathCompression() methods mentioned in UF_HWQUPC class
- Created the **UFClient** class to test the **UF_HWQUPC** code for large values of n (number of objects).

File Path: src/main/java/edu/neu/coe/info6205/union_find/UFClient.java

- Plotted the excel graph for Number of Object vs Number of Pairs
- Ensured that all the test cases ran successfully in UF_HWQUPC_Test class

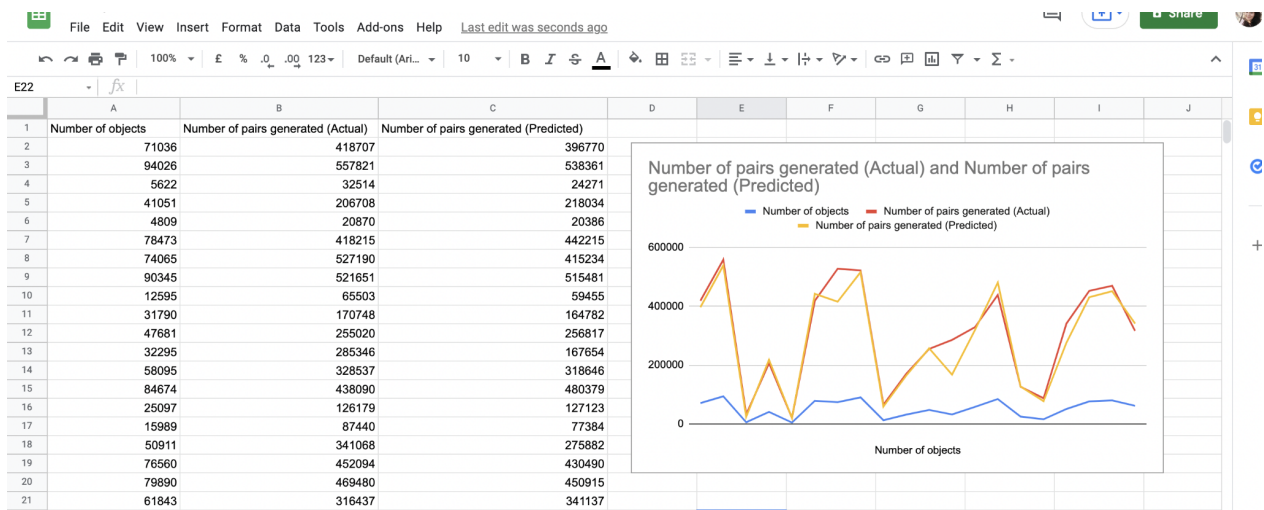
2. Relationship conclusion:

The relationship between number of Objects (n) and number of pairs (m) generated to reach to single component i.e all objects should be connected is mentioned below:

Let **n** be number of objects

Let **m** be number of pairs generated to connect those objects

$$m \sim 0.5 * n \log n$$



3. Evidence to support conclusion

