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Assignment 3

1. Code ->

<https://github.com/AkashSinha24/INFO6205>

- *Results -> resultsAssignment3/union_find/assignment3.csv*
- *UF_HWQUPC Code*
/src/main/java/edu/neu/coe/info6205/union_find/UF_HWQUPC.java

2. Output Result:

The following table shows the of number of pairs(m) generated for the n number of objects along with the relation between the two values.

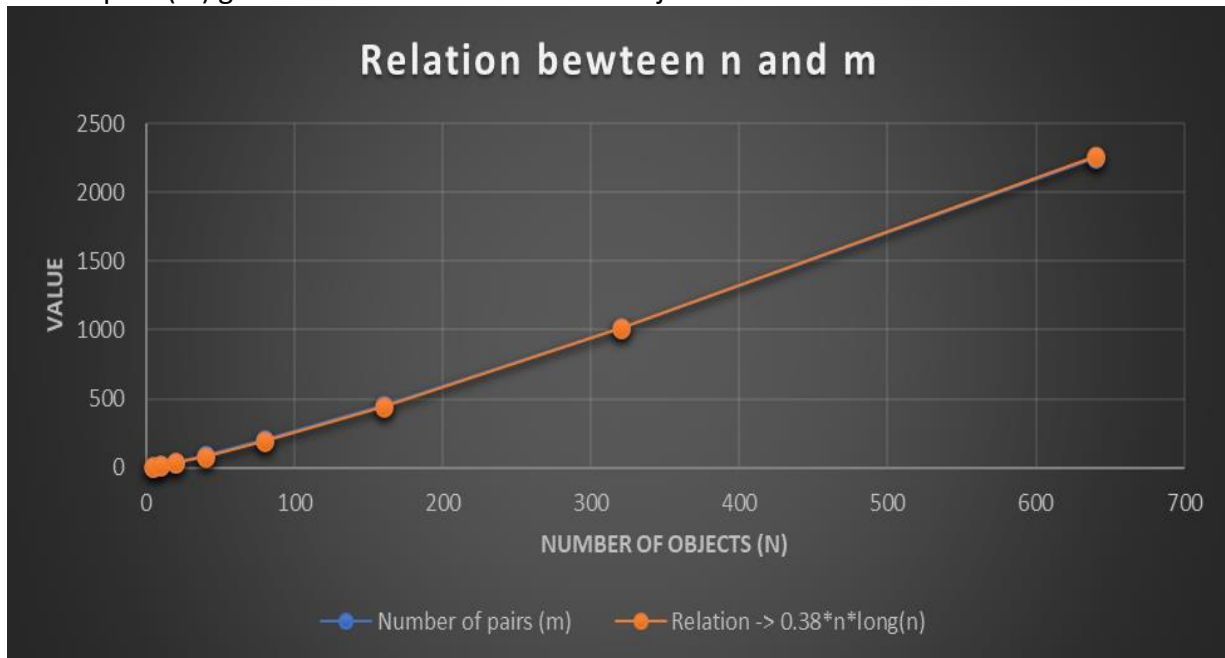
Number of Objects (n)	Number of pairs (m)	Relation -> $0.38 * n * \log(n)$
5	7	4.41166338
10	16	12.62332676
20	38	32.84665352
40	88	80.89330704
80	201	192.1866141
160	451	445.1732282
320	1020	1011.946456
640	2254	2267.092913

3. Conclusion:

- The above table is the resulting output for the Height Weight Quick Union with Path Compression algorithm
- Thus, the relation between number of pairs(m) generated for the n number of objects is
$$m = \alpha * n * \log(n)$$
where $\alpha = 0.38$

4. Screenshots of JUnit Test and Graph:

- The graph below illustrates the trend of the relation derived between number of pairs(m) generated for the n number of objects.



- Unit Tests Result screenshots HWQUPC:

