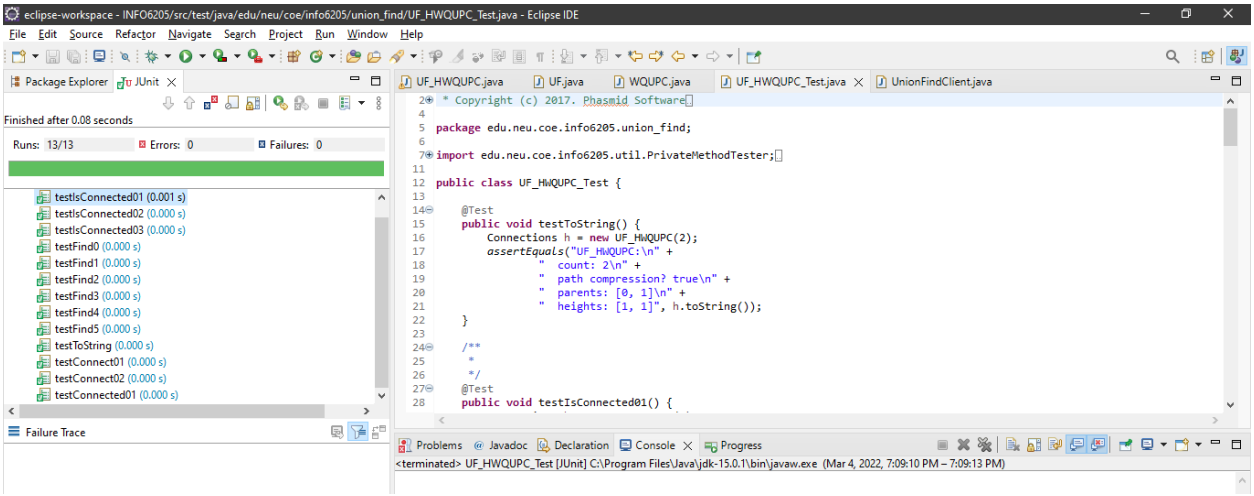
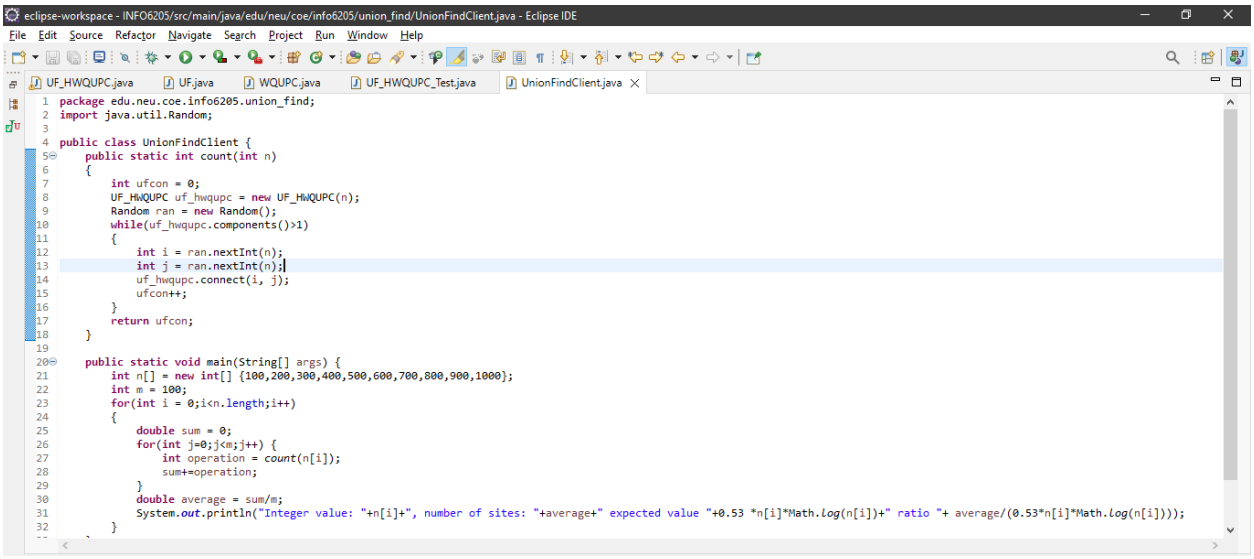
Step: 1 Implementation of height-weighted Quick Union with Path Compression.

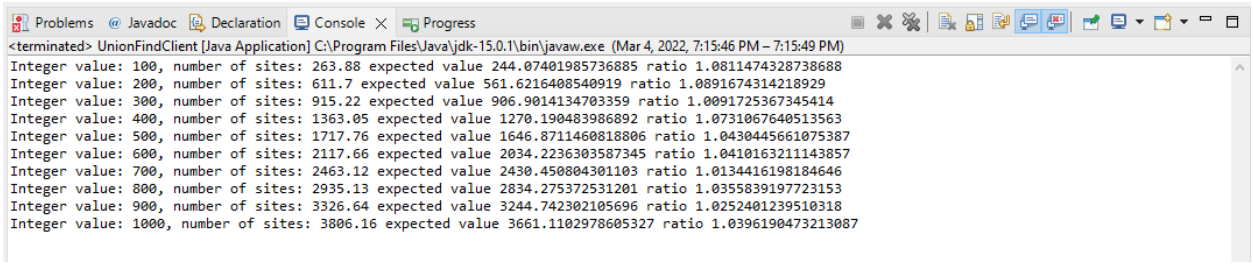
Test Case Screenshot:



Step 2 : Implementation of UF_HWQUPC, develop a UnionFindClient file.



Result:



Conclusion:

The relationship between number of objects(n) and number of pairs(m):
m = 0.53* n * lg(n)

Below table and graph shows relationship between number of pairs and expected value. It depicts that the relationship between number of pairs and expected values is almost 1.

Number of pairs	Expected Value
263.88	244.074
611.7	561.621
915.22	906.901
1363.05	1270.19
1717.76	1646.871
2117.66	2034.223
2463.12	2430.45
2935.13	2834.275
3326.64	3244.742
3806.16	3661.11