Assignment – 3

Program Structure and Algorithms

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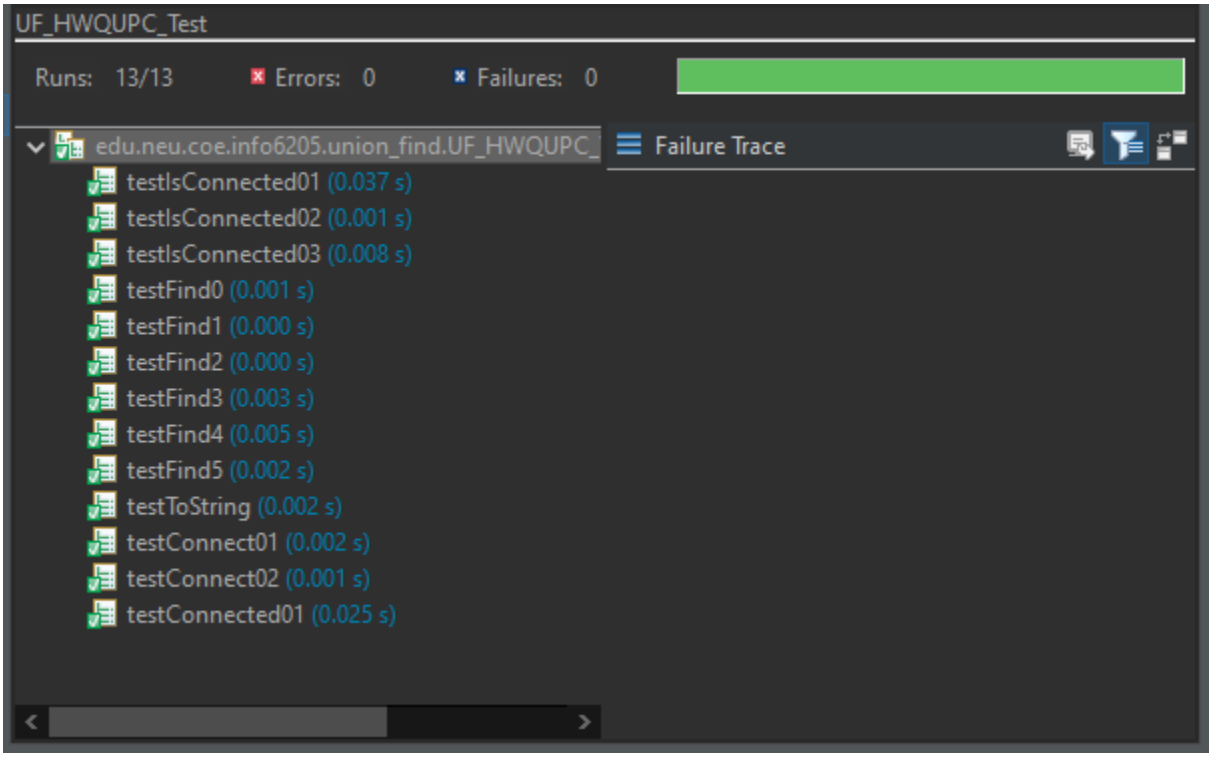
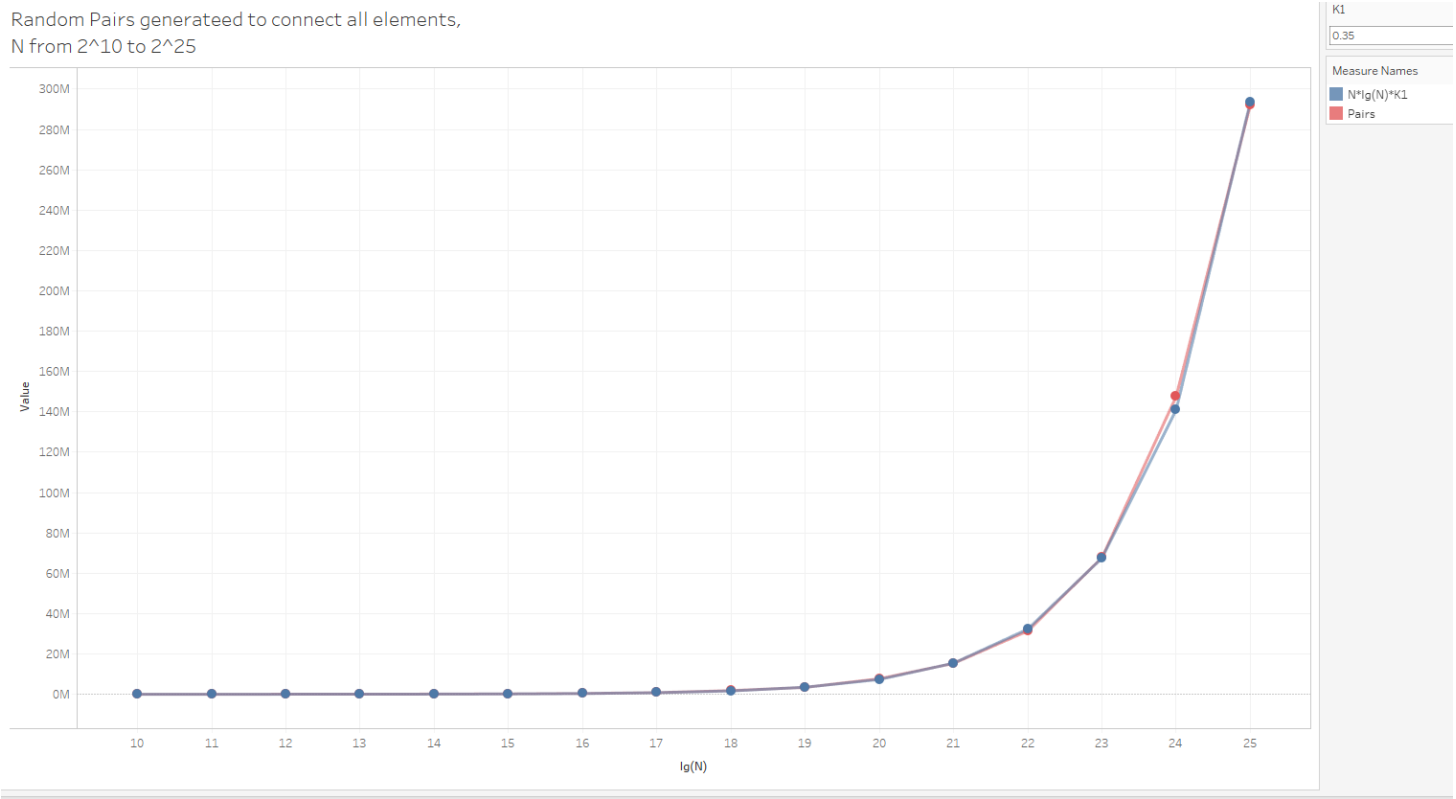
1. Unit Test –

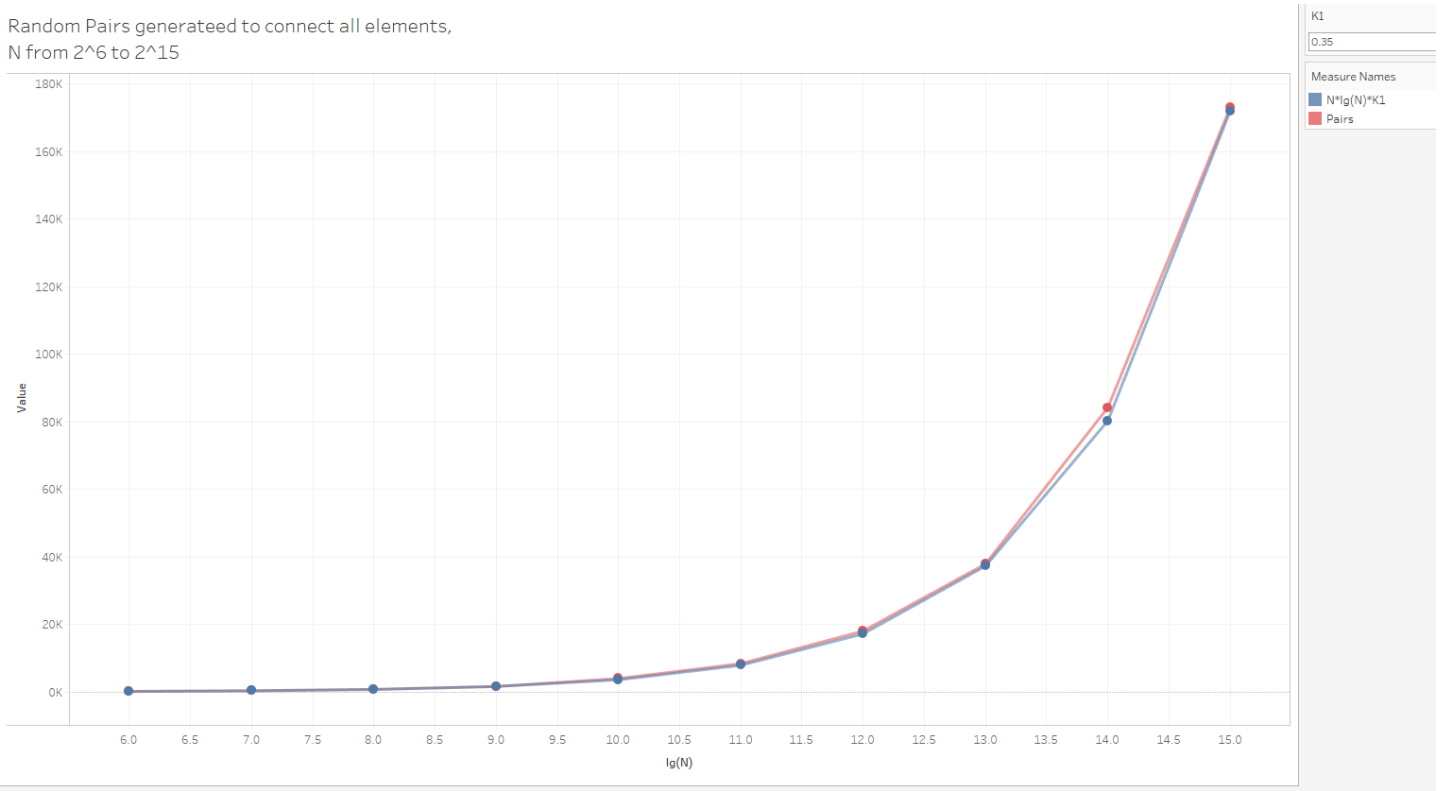


2. Results –

# data.csv N	# data.csv Pairs	=# Calculation N*lg(N)*K1
64	158	134.40
128	356	313.60
256	752	716.80
512	1,606	1,612.80
1,024	3,961	3,584.00
2,048	8,375	7,884.80
4,096	18,056	17,203.20
8,192	37,901	37,273.60
16,384	84,206	80,281.60
32,768	173,043	172,032.00

(K1 = 0.35)





3. Observations from table and graphs–

- The number of random pairs needed to connect all elements grows with N as –
  Pairs = N*lg(N)*0.35

4. Notes regarding assignment –

- Graphs have been shown for 2 ranges of N, 2^10 to 2^25 and 2^6 to 2^15 .
- Each cell in the table is the average pairs needed in 10 runs.
- Output of the assignment is stored in results/union_find/data.csv
- You can edit the parameters of the run by changing the constants in the assignment file.
- Assignment file is Assignment3.java , in the union find folder.