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Program Structures & Algorithms
Fall 2020
Assignment 3

For Part 1 and part 2 code has been pushed to github.com

Link: https://github.com/Sunil-Y/INFO6205/tree/Assignment3

- ## Task

Determine the relationship between the number of objects (n) and the number of pairs (m)

- ## Output

```
C:\Users\yadav\.jdks\openjdk-15\bin\java.exe "-javaagent:C:\Program Fil
        n           count        (1/2)*n*ln(n)
==========================================
      100            242               230
      200            566               529
      400           1221              1198
      800           2756              2673
     1600           6100              5902
     3200          11788             12913
     6400          30329             28044
    12800          60098             60526
    25600         129211            129924
    51200         311613            277593
   102400         796135            590676
   204800        1205909           1252330
   409600        2719466           2646617
   819200        6087243           5577147

Process finished with exit code 0
```
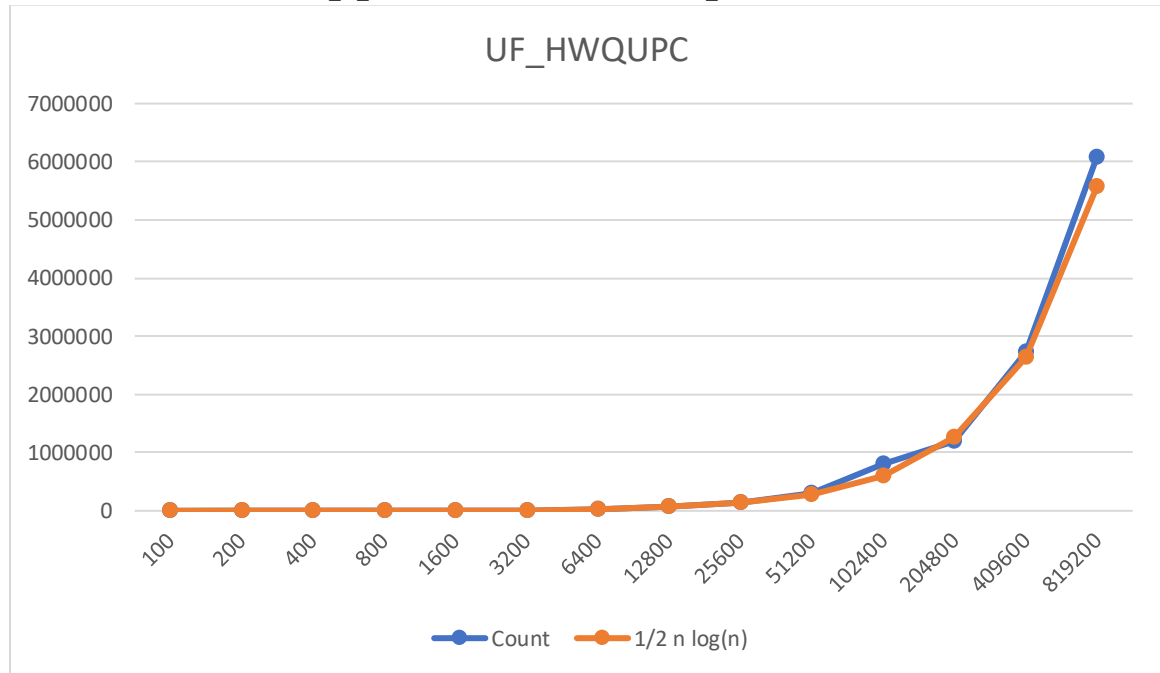
- # **Relationship conclusion**

  Run the program for multiple times, with different n value.
  From the above output we can conclude that the relationship $count \sim \frac{1}{2}\, n \log(n)$
  is correct.

- # **Evidence to support relationship**

UF_HWQUPC

The blue line is count, the orange line is **1/2 n ln n**
From the above chart, we can conclude that they are very close and similar.
So, we can draw a conclusion that the relationship **count~ 1/2 n ln n** is correct.

- # **Screenshot of Unit test passing**