Assignment 3

Report

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* When n = 100, we reduce the number of components from 100 to 1, and the outcome is as bellow:

A screen shot of a computer screen

Description automatically generated with medium confidence

Text

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Based on the outcome, we could find that as the number of objects decreases, generally, the number of pairs also shows a downward trend. I think the reason is because although Random function generates random pairs, the number is always in the middle of the range and seldom generates extreme values.

* Evidence to support the conclusion:

A screenshot of a computer

Description automatically generated with medium confidence

Hence, the linear relationship between m and n is: m = 3.3316\*n – 33.881(n represents the number of sites and m represents the number of pairs)

* I also used the other method. When n = 300, 250, 200, 150,100 and 50, I runed each of them 100 times. The outcome is as bellow:

A screenshot of a computer

Description automatically generated with medium confidence

Text

Description automatically generated with medium confidence

n = 300, the average number of pairs is 949

n = 250, the average number of pairs is 740

n = 200, the average number of pairs is 580

n = 150, the average number of pairs is 425

n = 100, the average number of pairs is 261

n = 50 , the average number of pairs is 112

* Evidence to support the conclusion:

Chart, line chart

Description automatically generated

Hence, the linear relationship between m and n is: m = 3.3011\*n – 66.533(n represents the number of sites and m represents the number of pairs)

Test result:Graphical user interface, text

Description automatically generated

Text

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