INFO6205

Assignment 3

Name: Yumeng Zhang

NU ID: 001543248

* 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

Description automatically generated

Text

Description automatically generated

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

Description automatically generated