Step1:

passed all tests;

Graphical user interface, text

Description automatically generated

Print the number of connections generated for each n sites.

Text

Description automatically generated

A picture containing text

Description automatically generated

I expected the relationship between the number of sites n and the number of connections generated m is very close to:

m = 0.5 \* n \* lg(n)

And the table below is the outputs for different sites n and has shown this relationship. For each number of sites n, “Connections” means the mean number of connections generated after 100 times running, “Expected” means we expect the connections should be 0.5 \* n \* lg(n). We can clearly see that the ratio between “Connections” and “Expected” is really close to 1. Therefore, the test results could verify my conclusion:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sites | Connections | Expected | Ratio | Times |
| 100 | 262.07 | 230.2585 | 1.138 | 100 |
| 200 | 576.69 | 529.8317 | 1.088 | 100 |
| 400 | 1296.1 | 1198.2929 | 1.082 | 100 |
| 800 | 2933.6 | 2673.8447 | 1.097 | 100 |
| 1600 | 6394.41 | 5902.2071 | 1.083 | 100 |
| 3200 | 13697.98 | 12913.4497 | 1.061 | 100 |
| 6400 | 30134.89 | 28044.9705 | 1.075 | 100 |