Test 1

|  |  |  |  |
| --- | --- | --- | --- |
| Num Nodes | Num Edge | K | PairWise |
| 50 | 40 | 5 | 0 |
| 50 | 50 | 5 | 28 |
| 50 | 60 | 5 | 1081 |
| 50 | 70 | 5 | 0 |
| 50 | 80 | 5 | 946 |
| 100 | 100 | 5 | 4656 |
| 100 | 130 | 5 | 4753 |
| 100 | 150 | 5 | 4851 |
| 100 | 170 | 5 | 4851 |
| 100 | 200 | 5 | 4851 |
| 200 | 200 | 5 | 19306 |
| 200 | 250 | 5 | 19503 |
| 200 | 300 | 5 | 0 |
| 200 | 400 | 5 | 19701 |
| 200 | 450 | 5 | 19701 |
| 300 | 300 | 5 | 43956 |
| 300 | 320 | 5 | 44253 |
| 300 | 340 | 5 | 44551 |
| 300 | 360 | 5 | 44551 |
| 300 | 380 | 5 | 44551 |
| 400 | 400 | 5 | 78606 |
| 400 | 420 | 5 | 79003 |
| 400 | 440 | 5 | 79401 |
| 400 | 460 | 5 | 79401 |
| 400 | 480 | 5 | 79401 |
| 500 | 500 | 5 | 123753 |
| 500 | 520 | 5 | 124251 |
| 500 | 540 | 5 | 123753 |
| 500 | 560 | 5 | 121771 |
| 500 | 580 | 5 | 124251 |

Test 2

|  |  |  |  |
| --- | --- | --- | --- |
| Num Nodes | Num Edge | K | PairWise |
| 100 | 100 | 5 | 4656 |
| 100 | 110 | 5 | 1653 |
| 100 | 120 | 5 | 4753 |
| 100 | 130 | 5 | 1378 |
| 100 | 140 | 5 | 4851 |
| 100 | 100 | 10 | 0 |
| 100 | 110 | 10 | 0 |
| 100 | 120 | 10 | 2628 |
| 100 | 130 | 10 | 4753 |
| 100 | 140 | 10 | 4851 |
| 100 | 100 | 20 | 0 |
| 100 | 110 | 20 | 0 |
| 100 | 120 | 20 | 2628 |
| 100 | 130 | 20 | 4371 |
| 100 | 140 | 20 | 0 |
| 100 | 100 | 30 | 0 |
| 100 | 110 | 30 | 0 |
| 100 | 120 | 30 | 0 |
| 100 | 130 | 30 | 0 |
| 100 | 140 | 30 | 0 |
| 100 | 100 | 40 | 0 |
| 100 | 110 | 40 | 0 |
| 100 | 120 | 40 | 0 |
| 100 | 130 | 40 | 0 |
| 100 | 140 | 40 | 0 |
| 100 | 100 | 50 | 0 |
| 100 | 110 | 50 | 0 |
| 100 | 120 | 50 | 0 |
| 100 | 130 | 50 | 0 |
| 100 | 140 | 50 | 0 |

The algorithm I used was to find the node with the greatest number of edges and remove it. While doing this I quickly realized that depending on how well connected the graph is removing a node with a greedy solution the number of connections doesn’t decrease significantly. On the other hand, on a sparsely connected graph this algorithm is devastating to the pairwise connection. For some random connections I ended up with a very low number sometimes even 0. But being a random graph sometimes the graph doesn’t always end up being sparsely connected. One main problem that I faced while I doing this project was getting the connected components to print out properly. I feel that the way I have implemented the Connected Pairwise function it doesn’t work to the fullest extent. I feel that with more nodes deleted the more destruction can occur to the graph.