```matlab
% Grid size
nRows = 5; % Change this value as per your requirement
nCols = 10; % Change this value as per your requirement

% Number of nodes
N = nRows * nCols;

% Weights for each edge
weights = rand(N, 1) * 10;

% Adjacency matrix
adjMatrix = zeros(N);

for i = 1:nRows
    for j = 1:nCols
        node = (i - 1) * nCols + j;
        if i > 1 % North
            adjMatrix(node, node - nCols) = weights(node);
            adjMatrix(node - nCols, node) = weights(node);
        end
        if i < nRows % South
            adjMatrix(node, node + nCols) = weights(node);
            adjMatrix(node + nCols, node) = weights(node);
        end
        if j > 1 % West
            adjMatrix(node, node - 1) = weights(node);
            adjMatrix(node - 1, node) = weights(node);
        end
        if j < nCols % East
            adjMatrix(node, node + 1) = weights(node);
            adjMatrix(node + 1, node) = weights(node);
        end
    end
end

G = graph(adjMatrix);

% Visualization
nodeColor = 'red';
figure;
plot(G, 'NodeColor', nodeColor);

% Create a matrix of node positions
Y = repelem((1:nRows)', nCols);
X = repmat(1:nCols, nRows, 1);
positions = [X(:), Y(:)];

figure;
plot(G, 'NodeColor', nodeColor, 'XData', positions(:, 1), 'YData', positions(:, 2));
p.NodeLabel = {};
text(positions(:, 1)+0.3, positions(:, 2), p.NodeLabel, 'VerticalAlignment', 'Bottom', 'HorizontalAlignment', 'Right')

% Calculate Degree Centrality
degreeCentrality = centrality(G, 'degree');
disp('Degree Centrality:');
disp(degreeCentrality);

%Calculate ShortestPath
shortestPaths = distances(G);
disp('Shortest Paths:');
disp(shortestPaths);

%Calculate Betweenness Centrality
betweennessCentrality = centrality(G, 'betweenness');
disp('Betweenness Centrality:');
```

```matlab
    disp(betweennessCentrality);

    %Calculate Network Diameter
    diameter = max(max(shortestPaths));
    disp('Network Diameter:');
    disp(diameter);

    %Calculate Closeness Centrality
    closenessCentrality = centrality(G, 'closeness');
    disp('Closeness Centrality:');
    disp(closenessCentrality);

    %Example groups
    group = ones(1, N);

    %Calculate Network Modularity
    [Q,Qv] = modularity(adjMatrix,group);
    disp('Modularity:');
    disp(Q);

    %Calculate Network Resilience
    resilience = zeros(N, 1);
    for i = 1:N
        tempAdjMatrix = adjMatrix;
        tempAdjMatrix(i, :) = 0;  % Remove node i and its connections
        tempAdjMatrix(:, i) = 0;
        [bins, ~] = conncomp(graph(tempAdjMatrix));
        resilience(i) = max(bins);  % Measure connectivity
    end

    disp('Resilience Index:');
    disp(resilience);
```

```
Degree Centrality:
     2
     3
     3
     3
     3
     3
     3
     3
     3
     2
     3
     4
     4
     4
     4
     4
     4
     4
     4
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     3
     3
     4
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     4
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     4
     4
     4
     4
     3
     3
```

```
          4
          4
          4
          4
          4
          4
          4
          4
          3
          2
          3
          3
          3
          3
          3
          3
          3
          3
          2

Shortest Paths:
  Columns 1 through 7

          0     6.9595    13.9584    20.3437    20.6797    21.3678    24.5638
     6.9595         0     6.9989    13.3842    13.7202    14.4083    17.6043
    13.9584    6.9989         0     6.3853     6.7213     7.4094    10.6054
    20.3437   13.3842     6.3853         0     0.3360     1.0241     4.2201
    20.6797   13.7202     6.7213     0.3360         0     0.6881     3.8841
    21.3678   14.4083     7.4094     1.0241     0.6881         0     3.1960
    24.5638   17.6043    10.6054     4.2201     3.8841     3.1960         0
    29.8724   22.9129    15.9140     9.5287     9.1927     8.5046     5.3086
    36.4169   29.4574    22.4585    16.0732    15.7372    15.0491    11.8531
    40.4931   33.5336    26.5347    20.1494    19.8134    19.1253    15.9293
     8.1998   12.9214    19.5079    20.4481    20.7841    20.4988    23.6948
    13.9377    7.1836    14.1825    17.7834    18.1194    17.8341    21.0301
    18.0212   14.3403     9.6865    10.6267    10.9627    10.6774    13.8734
    23.3345   18.6975    11.6986     5.3133     5.6494     5.3640     8.5600
    23.4804   16.5209     9.5220     3.1367     2.8006     2.1126     5.3086
    22.4241   15.4646     8.4657     2.0804     1.7444     1.0563     4.2523
    28.5337   21.5742    14.5753     8.1900     7.8539     7.1659     6.1096
    36.3217   29.3622    22.3633    15.9780    15.6420    14.9539    13.0967
    40.5562   33.5967    26.5978    20.2125    19.8765    19.1884    16.0876
    41.4013   34.4418    27.4429    21.0576    20.7216    20.0335    16.8375
    10.8645   10.2567    16.8432    17.7834    18.1194    17.8341    21.0301
    12.4011    8.7202    15.3066    16.2468    16.5828    16.2975    19.4935
    15.2111   11.5302    12.4965    13.4367    13.7728    13.4874    16.6834
    19.6120   15.9311    16.0995     9.7142    10.0502     9.7649    12.9609
    24.8834   21.2025    14.7934     8.4081     8.0721     7.3840    10.5800
    26.9983   20.0388    13.0399     6.6546     6.3186     5.6305     8.8265
    35.3096   28.3501    21.3512    14.9659    14.6299    13.9418    14.8633
    39.7255   32.7660    25.7671    19.3818    19.0457    18.3577    18.2772
    41.6583   34.6989    27.7000    21.3147    20.9786    20.2906    22.5719
    47.7784   40.8189    33.8200    27.4347    27.0987    26.4106    23.2146
    17.2152   13.5343    20.1207    21.0609    21.3970    21.1116    24.3076
    14.8082   11.1272    17.7137    18.6539    18.9899    18.7046    21.9006
    21.5694   17.8885    19.2578    15.4955    15.8315    15.5462    18.7422
    22.5026   18.8217    18.9901    12.6048    12.9409    12.6555    15.8515
    29.2207   25.5398    21.5115    15.1262    14.7902    14.1021    17.2981
    33.9497   26.9902    19.9913    13.6060    13.2700    12.5819    15.7779
    34.6296   27.6702    20.6713    14.2860    13.9499    13.2619    15.5432
    37.1775   30.2181    23.2192    16.8339    16.4978    15.8098    18.0911
    39.4179   32.4585    25.4596    19.0743    18.7382    18.0502    20.3315
    46.0963   39.1368    32.1379    25.7526    25.4166    24.7285    27.0099
    21.6974   18.0165    24.6029    25.5431    25.8791    25.5938    28.7898
    18.2528   14.5719    21.1583    22.0985    22.4345    22.1492    25.3452
    26.0580   22.3770    27.0630    22.0138    21.6778    20.9897    24.1857
```

```
29.2560   25.5750   21.6458   15.2605   14.9245   14.2364   17.4324
29.2879   25.6069   21.5787   15.1933   14.8573   14.1692   17.3652
35.3096   31.6286   26.0131   19.6277   19.2917   18.6036   21.7996
38.4974   31.5379   24.5390   18.1537   17.8176   17.1296   19.4109
39.4410   32.4815   25.4826   19.0973   18.7613   18.0732   20.3546
39.4295   32.4700   25.4711   19.0858   18.7497   18.0617   20.3430
44.0540   37.0945   30.0956   23.7103   23.3742   22.6862   24.9675


Columns 8 through 14

29.8724   36.4169   40.4931    8.1998   13.9377   18.0212   23.3345
22.9129   29.4574   33.5336   12.9214    7.1836   14.3403   18.6975
15.9140   22.4585   26.5347   19.5079   14.1825    9.6865   11.6986
 9.5287   16.0732   20.1494   20.4481   17.7834   10.6267    5.3133
 9.1927   15.7372   19.8134   20.7841   18.1194   10.9627    5.6494
 8.5046   15.0491   19.1253   20.4988   17.8341   10.6774    5.3640
 5.3086   11.8531   15.9293   23.6948   21.0301   13.8734    8.5600
      0    6.5445   10.6206   29.0034   26.3387   19.1820   13.8687
 6.5445        0    4.0762   35.5479   32.8832   25.7265   20.4131
10.6206    4.0762        0   39.3911   36.7264   29.5697   24.2564
29.0034   35.5479   39.3911        0    5.7378    9.8214   15.1347
26.3387   32.8832   36.7264    5.7378        0    7.1567   12.4700
19.1820   25.7265   29.5697    9.8214    7.1567        0    5.3133
13.8687   20.4131   24.2564   15.1347   12.4700    5.3133        0
10.6172   17.1617   21.0049   18.3862   15.7215    8.5648    3.2515
 9.5609   16.1054   19.9486   19.4425   16.7778    9.6211    4.3077
11.4182   16.2571   13.8390   25.5521   22.8873   15.7307   10.4173
 7.7880    8.4691    6.0510   33.3401   30.6754   23.5187   18.2054
10.7790    4.2345    1.8165   37.5746   34.9099   27.7532   22.4399
11.5289    4.9844    0.9082   38.4828   35.8181   28.6615   23.3481
26.3387   32.8832   36.7264    2.6647    3.0731    7.1567   12.4700
24.8021   31.3466   35.1898    4.2013    1.5366    5.6201   10.9334
21.9921   28.5365   32.3797    7.0113    4.3466    2.8101    8.1234
18.2695   24.8140   28.6572   11.4122    8.7475    7.2109    4.4009
15.8887   22.4331   26.2763   16.6836   14.0189   12.4823    8.5229
14.1352   20.6796   23.9587   21.2579   18.5931   14.1953    8.8820
18.1491   18.8301   16.4120   29.3322   26.6675   22.5066   17.1933
12.9685   13.6496   11.2315   33.7480   31.0833   26.9225   21.6091
19.9972   13.6708   11.2527   35.6809   33.0162   28.8554   23.5420
17.9060   11.3615    7.2853   42.0580   39.3933   35.0385   29.7252
29.6163   36.1607   40.0039    9.0154    6.3507   10.4342   15.7476
27.2092   33.7537   37.5969    6.6084    3.9436    8.0272   13.3405
24.0508   30.5953   33.5674   13.3696   10.7049    9.5713   10.1821
21.1602   27.7046   30.6767   14.3028   11.6381   10.1016    7.2915
22.6067   26.3767   23.9587   21.0209   18.3562   16.8196   14.0096
18.7443   19.4253   17.0072   27.9723   25.3076   21.1467   15.8334
18.0643   18.7454   16.3273   28.6522   25.9875   21.8267   16.5133
15.5164   16.1975   13.7794   31.2001   28.5354   24.3746   19.0612
17.7568   15.9112   13.4931   33.4405   30.7758   26.6150   21.3016
24.4352   18.0398   13.9637   40.1189   37.4542   33.2933   27.9800
34.0984   40.6429   42.0961   13.4976   10.8329   14.9164   20.2298
30.6538   37.1983   38.6515   10.0530    7.3883   11.4718   16.7851
29.4944   33.2643   30.8463   17.8582   15.1935   17.3765   17.9873
22.7410   26.5110   24.0930   21.0562   18.3914   16.8549   14.0448
22.6739   26.4439   24.0258   21.0881   18.4234   16.8868   14.0767
24.7660   25.4470   23.0290   27.1098   24.4451   22.9085   20.0984
21.9321   22.6131   20.1950   30.9775   28.3128   25.6944   20.3810
17.7799   15.9342   13.5161   33.4636   30.7989   26.6380   21.3246
17.7684   15.9227   13.5046   33.4521   30.7873   26.6265   21.3131
22.3928   20.5472   18.1291   38.0766   35.4118   31.2510   25.9376


Columns 15 through 21

23.4804   22.4241   28.5337   36.3217   40.5562   41.4013   10.8645
16.5209   15.4646   21.5742   29.3622   33.5967   34.4418   10.2567
 9.5220    8.4657   14.5753   22.3633   26.5978   27.4429   16.8432
```

```
   3.1367     2.0804     8.1900    15.9780    20.2125    21.0576    17.7834
   2.8006     1.7444     7.8539    15.6420    19.8765    20.7216    18.1194
   2.1126     1.0563     7.1659    14.9539    19.1884    20.0335    17.8341
   5.3086     4.2523     6.1096    13.0967    16.0876    16.8375    21.0301
  10.6172     9.5609    11.4182     7.7880    10.7790    11.5289    26.3387
  17.1617    16.1054    16.2571     8.4691     4.2345     4.9844    32.8832
  21.0049    19.9486    13.8390     6.0510     1.8165     0.9082    36.7264
  18.3862    19.4425    25.5521    33.3401    37.5746    38.4828     2.6647
  15.7215    16.7778    22.8873    30.6754    34.9099    35.8181     3.0731
   8.5648     9.6211    15.7307    23.5187    27.7532    28.6615     7.1567
   3.2515     4.3077    10.4173    18.2054    22.4399    23.3481    12.4700
        0     1.0563     7.1659    14.9539    19.1884    20.0967    15.7215
   1.0563          0     6.1096    13.8976    18.1321    19.0404    16.7778
   7.1659     6.1096          0     7.7880    12.0226    12.9308    22.8873
  14.9539    13.8976     7.7880          0     4.2345     5.1428    30.6754
  19.1884    18.1321    12.0226     4.2345          0     0.9082    34.9099
  20.0967    19.0404    12.9308     5.1428     0.9082          0    35.8181
  15.7215    16.7778    22.8873    30.6754    34.9099    35.8181          0
  14.1849    15.2412    21.3508    29.1388    33.3733    34.2816     1.5366
  11.3748    12.4311    18.5407    26.3287    30.5633    31.4715     4.3466
   7.6523     8.7086    14.8182    22.6062    26.8407    27.7490     8.7475
   5.2714     6.3277    12.4373    20.2253    24.4599    25.3681    14.0189
   5.6305     4.5742    10.6838    17.9077    22.1422    23.0504    18.5931
  13.9418    12.8855     8.7537    10.3610    14.5956    15.5038    26.6675
  18.3577    17.3014    12.9685     5.1805     9.4151    10.3233    31.0833
  20.2906    19.2343    16.4623    12.2092     9.4362    10.3445    33.0162
  26.4738    25.4175    19.3079    11.5199     7.2853     6.3771    39.3933
  18.9990    20.0553    26.1649    33.9529    38.1875    39.0957     6.3507
  16.5920    17.6483    23.7579    31.5459    35.7804    36.6886     3.9436
  13.4336    14.4899    20.5995    27.5164    31.7509    32.6591    10.7049
  10.5430    11.5992    17.7088    24.6257    28.8603    29.7685    11.6381
  11.9895    13.0458    17.0650    17.9077    22.1422    23.0504    18.3562
  12.5819    11.5256    10.1136    10.9563    15.1908    16.0990    25.3076
  13.2619    12.2056     9.4336    10.2763    14.5109    15.4191    25.9875
  15.8098    14.7535    11.9815     7.7284    11.9630    12.8712    28.5354
  18.0502    16.9939    14.2219     9.9688    11.6766    12.5849    30.7758
  24.7285    23.6722    20.9003    16.6472    13.9637    13.0554    37.4542
  23.4812    24.5375    30.6471    36.0451    40.2796    41.1879    10.8329
  20.0366    21.0929    27.2025    32.6005    36.8350    37.7432     7.3883
  18.8771    19.9334    23.9526    24.7953    29.0298    29.9380    15.1935
  12.1238    13.1801    17.1993    18.0420    22.2765    23.1847    18.3914
  12.0567    13.1130    17.1321    17.9748    22.2093    23.1176    18.4234
  18.0784    17.5474    16.1353    16.9780    21.2125    22.1207    24.4451
  17.1296    16.0733    13.3014    14.1440    18.3786    19.2868    28.3128
  18.0732    17.0169    14.2450     9.9918    11.6996    12.6079    30.7989
  18.0617    17.0054    14.2335     9.9803    11.6881    12.5964    30.7873
  22.6862    21.6299    18.8579    14.6048    16.3126    17.2209    35.4118


Columns 22 through 28

  12.4011    15.2111    19.6120    24.8834    26.9983    35.3096    39.7255
   8.7202    11.5302    15.9311    21.2025    20.0388    28.3501    32.7660
  15.3066    12.4965    16.0995    14.7934    13.0399    21.3512    25.7671
  16.2468    13.4367     9.7142     8.4081     6.6546    14.9659    19.3818
  16.5828    13.7728    10.0502     8.0721     6.3186    14.6299    19.0457
  16.2975    13.4874     9.7649     7.3840     5.6305    13.9418    18.3577
  19.4935    16.6834    12.9609    10.5800     8.8265    14.8633    18.2772
  24.8021    21.9921    18.2695    15.8887    14.1352    18.1491    12.9685
  31.3466    28.5365    24.8140    22.4331    20.6796    18.8301    13.6496
  35.1898    32.3797    28.6572    26.2763    23.9587    16.4120    11.2315
   4.2013     7.0113    11.4122    16.6836    21.2579    29.3322    33.7480
   1.5366     4.3466     8.7475    14.0189    18.5931    26.6675    31.0833
   5.6201     2.8101     7.2109    12.4823    14.1953    22.5066    26.9225
  10.9334     8.1234     4.4009     8.5229     8.8820    17.1933    21.6091
  14.1849    11.3748     7.6523     5.2714     5.6305    13.9418    18.3577
  15.2412    12.4311     8.7086     6.3277     4.5742    12.8855    17.3014
```

```
21.3508    18.5407    14.8182    12.4373    10.6838     8.7537    12.9685
29.1388    26.3287    22.6062    20.2253    17.9077    10.3610     5.1805
33.3733    30.5633    26.8407    24.4599    22.1422    14.5956     9.4151
34.2816    31.4715    27.7490    25.3681    23.0504    15.5038    10.3233
 1.5366     4.3466     8.7475    14.0189    18.5931    26.6675    31.0833
      0     2.8101     7.2109    12.4823    17.0566    25.1309    29.5468
 2.8101          0     4.4009     9.6723    14.2465    22.3208    26.7367
 7.2109     4.4009          0     5.2714     9.8457    17.9200    22.3359
12.4823     9.6723     5.2714          0     4.5742    12.8855    17.3014
17.0566    14.2465     9.8457     4.5742          0     8.3113    12.7271
25.1309    22.3208    17.9200    12.8855     8.3113          0     5.1805
29.5468    26.7367    22.3359    17.3014    12.7271     5.1805          0
31.4797    28.6696    24.2688    19.2343    14.6600     7.7086     7.0287
37.8568    35.0467    30.6459    25.6114    21.0371    14.0857    13.4058
 4.8141     7.6242    12.0250    17.2965    21.8707    27.0883    31.5042
 2.4071     5.2171     9.6180    14.8894    19.4636    24.6812    29.0971
 9.1683     6.7612     5.7813    11.0527    15.6270    17.9200    22.3359
10.1016     7.2915     2.8906     8.1621    12.7363    15.0293    19.4452
16.8196    14.0096     9.6087     6.7181    11.2923     8.3113    12.7271
23.7710    20.9610    16.5601    11.5256     6.9514     1.3599     5.7757
24.4510    21.6409    17.2401    12.2056     7.6313     0.6799     5.0958
26.9989    24.1888    19.7880    14.7535    10.1792     3.2278     2.5479
29.2393    26.4292    22.0284    16.9939    12.4196     5.4682     4.7883
35.9176    33.1075    28.7067    23.6722    19.0980    12.1466    11.4666
 9.2963    12.1064    16.5072    21.7787    26.3529    26.4487    30.8646
 5.8517     8.6617    13.0626    18.3340    22.9083    23.0041    27.4200
13.6569    14.5664    13.5865    13.6057    18.1800    15.1989    19.6148
16.8549    14.0448     9.6440     6.8524    11.4266     8.4456    12.8614
16.8868    14.0767     9.6759     6.7852    11.3595     8.3784    12.7943
22.9085    20.0984    15.6976    12.8069    12.9731     7.3816    11.7974
26.7762    23.9661    19.5653    16.0733    11.4990     4.5476     8.9635
29.2623    26.4522    22.0514    17.0169    12.4427     5.4913     4.8113
29.2508    26.4407    22.0399    17.0054    12.4311     5.4797     4.7998
33.8753    31.0652    26.6644    21.6299    17.0556    10.1042     9.4243


Columns 29 through 35


41.6583    47.7784    17.2152    14.8082    21.5694    22.5026    29.2207
34.6989    40.8189    13.5343    11.1272    17.8885    18.8217    25.5398
27.7000    33.8200    20.1207    17.7137    19.2578    18.9901    21.5115
21.3147    27.4347    21.0609    18.6539    15.4955    12.6048    15.1262
20.9786    27.0987    21.3970    18.9899    15.8315    12.9409    14.7902
20.2906    26.4106    21.1116    18.7046    15.5462    12.6555    14.1021
22.5719    23.2146    24.3076    21.9006    18.7422    15.8515    17.2981
19.9972    17.9060    29.6163    27.2092    24.0508    21.1602    22.6067
13.6708    11.3615    36.1607    33.7537    30.5953    27.7046    26.3767
11.2527     7.2853    40.0039    37.5969    33.5674    30.6767    23.9587
35.6809    42.0580     9.0154     6.6084    13.3696    14.3028    21.0209
33.0162    39.3933     6.3507     3.9436    10.7049    11.6381    18.3562
28.8554    35.0385    10.4342     8.0272     9.5713    10.1016    16.8196
23.5420    29.7252    15.7476    13.3405    10.1821     7.2915    14.0096
20.2906    26.4738    18.9990    16.5920    13.4336    10.5430    11.9895
19.2343    25.4175    20.0553    17.6483    14.4899    11.5992    13.0458
16.4623    19.3079    26.1649    23.7579    20.5995    17.7088    17.0650
12.2092    11.5199    33.9529    31.5459    27.5164    24.6257    17.9077
 9.4362     7.2853    38.1875    35.7804    31.7509    28.8603    22.1422
10.3445     6.3771    39.0957    36.6886    32.6591    29.7685    23.0504
33.0162    39.3933     6.3507     3.9436    10.7049    11.6381    18.3562
31.4797    37.8568     4.8141     2.4071     9.1683    10.1016    16.8196
28.6696    35.0467     7.6242     5.2171     6.7612     7.2915    14.0096
24.2688    30.6459    12.0250     9.6180     5.7813     2.8906     9.6087
19.2343    25.6114    17.2965    14.8894    11.0527     8.1621     6.7181
14.6600    21.0371    21.8707    19.4636    15.6270    12.7363    11.2923
 7.7086    14.0857    27.0883    24.6812    17.9200    15.0293     8.3113
 7.0287    13.4058    31.5042    29.0971    22.3359    19.4452    12.7271
      0     6.3771    33.4371    31.0300    24.2688    21.3781    14.6600
```

```
   6.3771        0   39.8141   37.4071   30.6459   27.7552   21.0371
  33.4371   39.8141        0    2.4071    9.1683   12.0589   18.7770
  31.0300   37.4071    2.4071        0    6.7612    9.6519   16.3700
  24.2688   30.6459    9.1683    6.7612        0    2.8906    9.6087
  21.3781   27.7552   12.0589    9.6519    2.8906        0    6.7181
  14.6600   21.0371   18.7770   16.3700    9.6087    6.7181        0
   7.7086   14.0857   25.7284   23.3214   16.5601   13.6695    6.9514
   7.0287   13.4058   26.4084   24.0013   17.2401   14.3494    7.6313
   4.4808   10.8579   28.9563   26.5492   19.7880   16.8973   10.1792
   2.2404    8.6175   31.1967   28.7896   22.0284   19.1377   12.4196
   8.9187    6.6783   37.8750   35.4679   28.7067   25.8160   19.0980
  32.7975   39.1746    8.4439    6.8892   13.6505   16.5411   18.1374
  29.3529   35.7299    5.8517    3.4446   10.2058   13.0965   14.6928
  21.5477   27.9248   13.6569   11.2498    7.8052   10.6958    6.8876
  14.7943   21.1714   18.8123   16.4052    9.6440    6.7533    0.1343
  14.7272   21.1043   18.8442   16.4371    9.6759    6.7852    0.0672
  13.7303   20.1074   24.8659   22.4588   15.6976   12.8069    6.0889
  10.8964   17.2735   28.7336   26.3265   19.5653   16.6747    9.9566
   2.2634    8.6405   31.2197   28.8126   22.0514   19.1607   12.4427
   2.2519    8.6290   31.2082   28.8011   22.0399   19.1492   12.4311
   6.8764   11.3028   35.8327   33.4256   26.6644   23.7737   17.0556
```

Columns 36 through 42

```
  33.9497   34.6296   37.1775   39.4179   46.0963   21.6974   18.2528
  26.9902   27.6702   30.2181   32.4585   39.1368   18.0165   14.5719
  19.9913   20.6713   23.2192   25.4596   32.1379   24.6029   21.1583
  13.6060   14.2860   16.8339   19.0743   25.7526   25.5431   22.0985
  13.2700   13.9499   16.4978   18.7382   25.4166   25.8791   22.4345
  12.5819   13.2619   15.8098   18.0502   24.7285   25.5938   22.1492
  15.7779   15.5432   18.0911   20.3315   27.0099   28.7898   25.3452
  18.7443   18.0643   15.5164   17.7568   24.4352   34.0984   30.6538
  19.4253   18.7454   16.1975   15.9112   18.0398   40.6429   37.1983
  17.0072   16.3273   13.7794   13.4931   13.9637   42.0961   38.6515
  27.9723   28.6522   31.2001   33.4405   40.1189   13.4976   10.0530
  25.3076   25.9875   28.5354   30.7758   37.4542   10.8329    7.3883
  21.1467   21.8267   24.3746   26.6150   33.2933   14.9164   11.4718
  15.8334   16.5133   19.0612   21.3016   27.9800   20.2298   16.7851
  12.5819   13.2619   15.8098   18.0502   24.7285   23.4812   20.0366
  11.5256   12.2056   14.7535   16.9939   23.6722   24.5375   21.0929
  10.1136    9.4336   11.9815   14.2219   20.9003   30.6471   27.2025
  10.9563   10.2763    7.7284    9.9688   16.6472   36.0451   32.6005
  15.1908   14.5109   11.9630   11.6766   13.9637   40.2796   36.8350
  16.0990   15.4191   12.8712   12.5849   13.0554   41.1879   37.7432
  25.3076   25.9875   28.5354   30.7758   37.4542   10.8329    7.3883
  23.7710   24.4510   26.9989   29.2393   35.9176    9.2963    5.8517
  20.9610   21.6409   24.1888   26.4292   33.1075   12.1064    8.6617
  16.5601   17.2401   19.7880   22.0284   28.7067   16.5072   13.0626
  11.5256   12.2056   14.7535   16.9939   23.6722   21.7787   18.3340
   6.9514    7.6313   10.1792   12.4196   19.0980   26.3529   22.9083
   1.3599    0.6799    3.2278    5.4682   12.1466   26.4487   23.0041
   5.7757    5.0958    2.5479    4.7883   11.4666   30.8646   27.4200
   7.7086    7.0287    4.4808    2.2404    8.9187   32.7975   29.3529
  14.0857   13.4058   10.8579    8.6175    6.6783   39.1746   35.7299
  25.7284   26.4084   28.9563   31.1967   37.8750    8.4439    5.8517
  23.3214   24.0013   26.5492   28.7896   35.4679    6.8892    3.4446
  16.5601   17.2401   19.7880   22.0284   28.7067   13.6505   10.2058
  13.6695   14.3494   16.8973   19.1377   25.8160   16.5411   13.0965
   6.9514    7.6313   10.1792   12.4196   19.0980   18.1374   14.6928
        0    0.6799    3.2278    5.4682   12.1466   25.0889   21.6442
   0.6799        0    2.5479    4.7883   11.4666   25.7688   22.3242
   3.2278    2.5479        0    2.2404    8.9187   28.3167   24.8721
   5.4682    4.7883    2.2404        0    6.6783   30.5571   27.1125
  12.1466   11.4666    8.9187    6.6783        0   37.2354   33.7908
  25.0889   25.7688   28.3167   30.5571   37.2354        0    3.4446
  21.6442   22.3242   24.8721   27.1125   33.7908    3.4446        0
```

13.8390	14.5190	17.0669	19.3073	25.9856	11.2498	7.8052
7.0857	7.7656	10.3135	12.5539	19.2323	18.0031	14.5585
7.0186	7.6985	10.2464	12.4868	19.1651	18.0703	14.6257
6.0217	6.7016	9.2495	11.4899	18.1683	24.0920	20.6474
4.5476	3.8677	6.4156	8.6560	15.3343	27.9597	24.5151
5.4913	4.8113	2.2634	0.0230	6.7013	30.5801	27.1355
5.4797	4.7998	2.2519	0.0115	6.6898	30.5686	27.1240
10.1042	9.4243	6.8764	4.6360	4.6245	35.1931	31.7485

Columns 43 through 49

26.0580	29.2560	29.2879	35.3096	38.4974	39.4410	39.4295
22.3770	25.5750	25.6069	31.6286	31.5379	32.4815	32.4700
27.0630	21.6458	21.5787	26.0131	24.5390	25.4826	25.4711
22.0138	15.2605	15.1933	19.6277	18.1537	19.0973	19.0858
21.6778	14.9245	14.8573	19.2917	17.8176	18.7613	18.7497
20.9897	14.2364	14.1692	18.6036	17.1296	18.0732	18.0617
24.1857	17.4324	17.3652	21.7996	19.4109	20.3546	20.3430
29.4944	22.7410	22.6739	24.7660	21.9321	17.7799	17.7684
33.2643	26.5110	26.4439	25.4470	22.6131	15.9342	15.9227
30.8463	24.0930	24.0258	23.0290	20.1950	13.5161	13.5046
17.8582	21.0562	21.0881	27.1098	30.9775	33.4636	33.4521
15.1935	18.3914	18.4234	24.4451	28.3128	30.7989	30.7873
17.3765	16.8549	16.8868	22.9085	25.6944	26.6380	26.6265
17.9873	14.0448	14.0767	20.0984	20.3810	21.3246	21.3131
18.8771	12.1238	12.0567	18.0784	17.1296	18.0732	18.0617
19.9334	13.1801	13.1130	17.5474	16.0733	17.0169	17.0054
23.9526	17.1993	17.1321	16.1353	13.3014	14.2450	14.2335
24.7953	18.0420	17.9748	16.9780	14.1440	9.9918	9.9803
29.0298	22.2765	22.2093	21.2125	18.3786	11.6996	11.6881
29.9380	23.1847	23.1176	22.1207	19.2868	12.6079	12.5964
15.1935	18.3914	18.4234	24.4451	28.3128	30.7989	30.7873
13.6569	16.8549	16.8868	22.9085	26.7762	29.2623	29.2508
14.5664	14.0448	14.0767	20.0984	23.9661	26.4522	26.4407
13.5865	9.6440	9.6759	15.6976	19.5653	22.0514	22.0399
13.6057	6.8524	6.7852	12.8069	16.0733	17.0169	17.0054
18.1800	11.4266	11.3595	12.9731	11.4990	12.4427	12.4311
15.1989	8.4456	8.3784	7.3816	4.5476	5.4913	5.4797
19.6148	12.8614	12.7943	11.7974	8.9635	4.8113	4.7998
21.5477	14.7943	14.7272	13.7303	10.8964	2.2634	2.2519
27.9248	21.1714	21.1043	20.1074	17.2735	8.6405	8.6290
13.6569	18.8123	18.8442	24.8659	28.7336	31.2197	31.2082
11.2498	16.4052	16.4371	22.4588	26.3265	28.8126	28.8011
7.8052	9.6440	9.6759	15.6976	19.5653	22.0514	22.0399
10.6958	6.7533	6.7852	12.8069	16.6747	19.1607	19.1492
6.8876	0.1343	0.0672	6.0889	9.9566	12.4427	12.4311
13.8390	7.0857	7.0186	6.0217	4.5476	5.4913	5.4797
14.5190	7.7656	7.6985	6.7016	3.8677	4.8113	4.7998
17.0669	10.3135	10.2464	9.2495	6.4156	2.2634	2.2519
19.3073	12.5539	12.4868	11.4899	8.6560	0.0230	0.0115
25.9856	19.2323	19.1651	18.1683	15.3343	6.7013	6.6898
11.2498	18.0031	18.0703	24.0920	27.9597	30.5801	30.5686
7.8052	14.5585	14.6257	20.6474	24.5151	27.1355	27.1240
0	6.7533	6.8205	12.8422	16.7099	19.3303	19.3188
6.7533	0	0.0672	6.0889	9.9566	12.5770	12.5655
6.8205	0.0672	0	6.0217	9.8894	12.5098	12.4983
12.8422	6.0889	6.0217	0	3.8677	11.5130	11.5014
16.7099	9.9566	9.8894	3.8677	0	8.6790	8.6675
19.3303	12.5770	12.5098	11.5130	8.6790	0	0.0115
19.3188	12.5655	12.4983	11.5014	8.6675	0.0115	0
23.9433	17.1899	17.1228	16.1259	13.2920	4.6360	4.6245

Column 50

44.0540
37.0945

```
    30.0956
    23.7103
    23.3742
    22.6862
    24.9675
    22.3928
    20.5472
    18.1291
    38.0766
    35.4118
    31.2510
    25.9376
    22.6862
    21.6299
    18.8579
    14.6048
    16.3126
    17.2209
    35.4118
    33.8753
    31.0652
    26.6644
    21.6299
    17.0556
    10.1042
     9.4243
     6.8764
    11.3028
    35.8327
    33.4256
    26.6644
    23.7737
    17.0556
    10.1042
     9.4243
     6.8764
     4.6360
     4.6245
    35.1931
    31.7485
    23.9433
    17.1899
    17.1228
    16.1259
    13.2920
     4.6360
     4.6245
          0

Betweenness Centrality:
     3.5531
    40.1283
    64.0095
    78.5705
    85.4886
    85.4886
    78.5705
    64.0095
    40.1283
     3.5531
    24.8528
    88.5934
   136.0646
   167.6177
   183.3715
   183.3715
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  167.6177
  136.0646
   88.5934
   24.8528
   30.3469
  102.8739
  158.8836
  197.0362
  216.3593
  216.3593
  197.0362
  158.8836
  102.8739
   30.3469
   24.8528
   88.5934
  136.0646
  167.6177
  183.3715
  183.3715
  167.6177
  136.0646
   88.5934
   24.8528
    3.5531
   40.1283
   64.0095
   78.5705
   85.4886
   85.4886
   78.5705
   64.0095
   40.1283
    3.5531

Network Diameter:
   47.7784

Closeness Centrality:
    0.0031
    0.0035
    0.0039
    0.0043
    0.0044
    0.0044
    0.0043
    0.0039
    0.0035
    0.0031
    0.0034
    0.0039
    0.0044
    0.0049
    0.0051
    0.0051
    0.0049
    0.0044
    0.0039
    0.0034
    0.0035
    0.0041
    0.0047
    0.0051
    0.0054
    0.0054
    0.0051
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    0.0047
    0.0041
    0.0035
    0.0034
    0.0039
    0.0044
    0.0049
    0.0051
    0.0051
    0.0049
    0.0044
    0.0039
    0.0034
    0.0031
    0.0035
    0.0039
    0.0043
    0.0044
    0.0044
    0.0043
    0.0039
    0.0035
    0.0031

Modularity:
    4.4409e-16

Resilience Index:
    2
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