

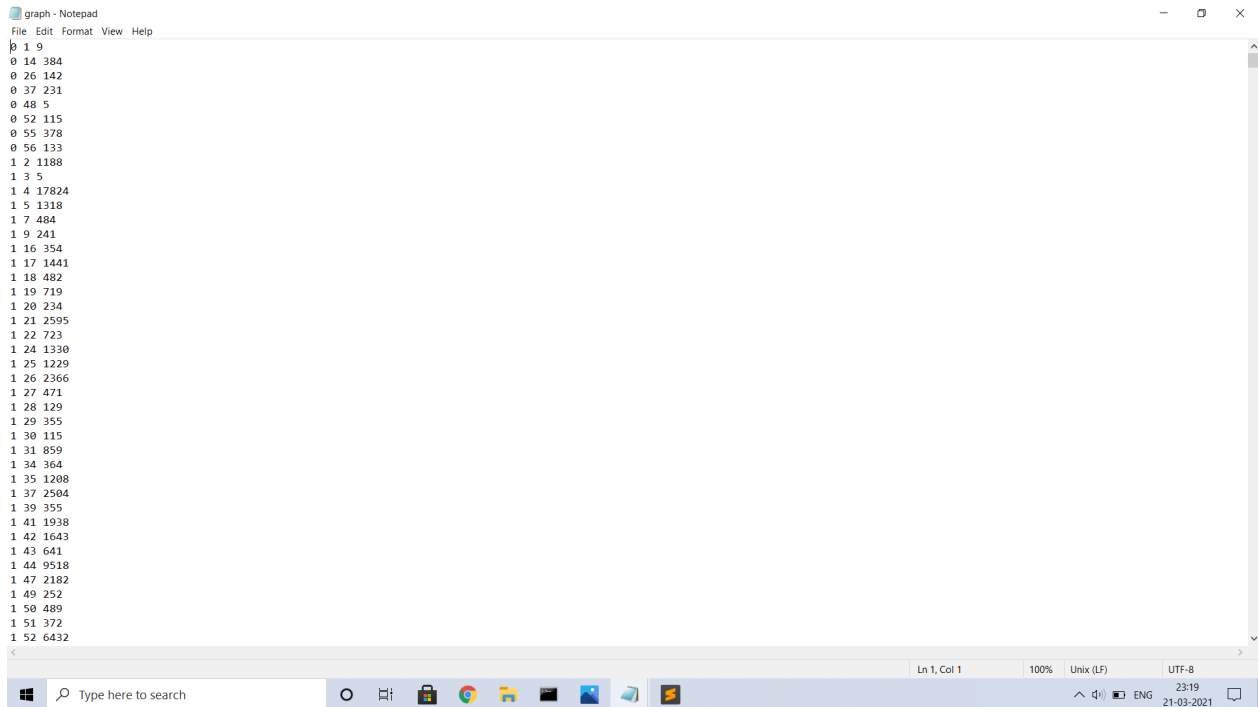
IT350 : Data Analytics

Lab Assignment 3

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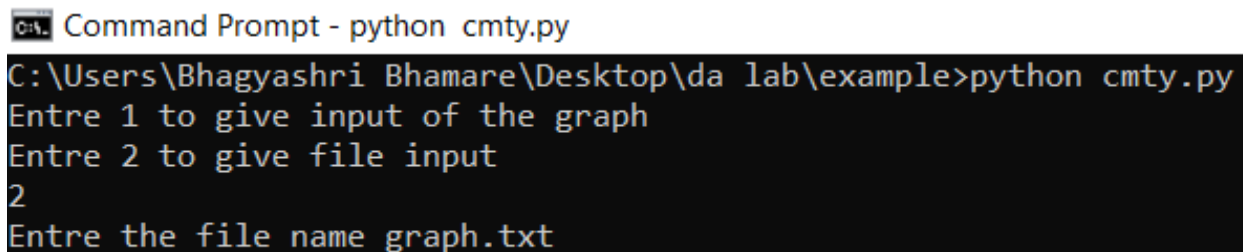
Roll No:181IT111

Supervised (social network) dataset and cluster it using the Girvan Newman technique.



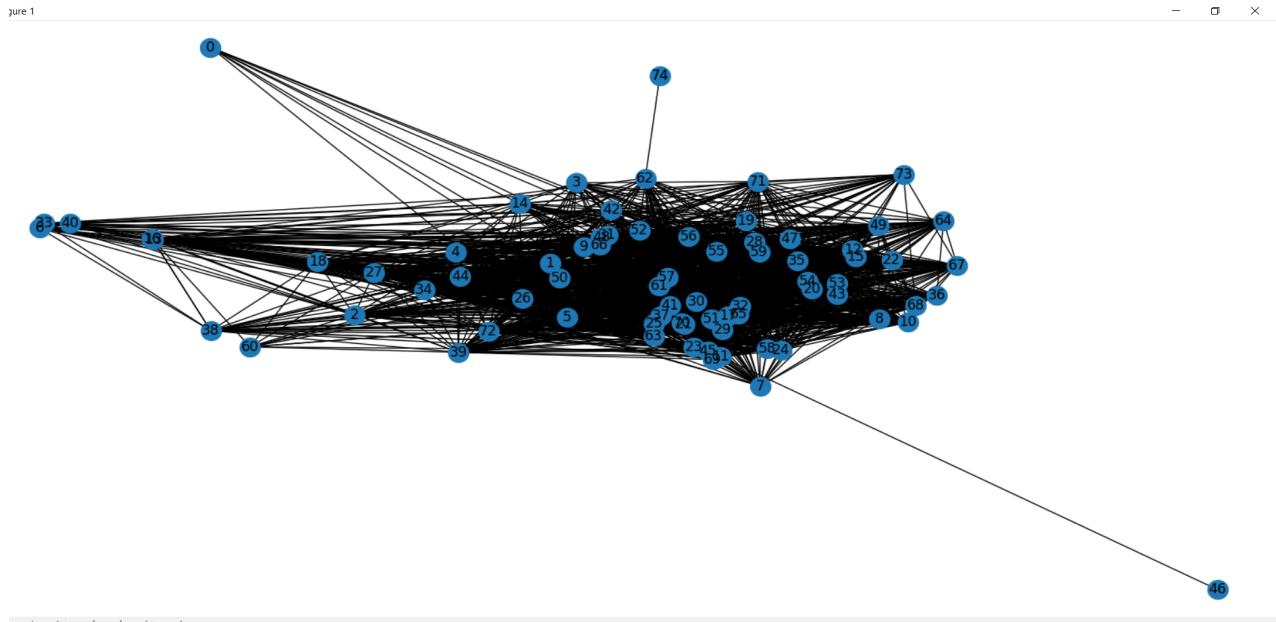
```
graph - Notepad
File Edit Format View Help
0 1 9
0 14 384
0 26 142
0 37 231
0 48 5
0 52 115
0 55 378
0 56 133
1 2 1188
1 3 5
1 4 17824
1 5 1318
1 7 484
1 9 241
1 16 354
1 17 1441
1 18 482
1 19 719
1 20 234
1 21 2595
1 22 723
1 24 1330
1 25 1229
1 26 2366
1 27 471
1 28 129
1 29 355
1 30 115
1 31 859
1 34 364
1 35 1208
1 37 2504
1 39 355
1 41 1938
1 42 1643
1 43 641
1 44 9518
1 47 2182
1 49 252
1 50 489
1 51 372
1 52 6432
```

2)Graph file input



```
Command Prompt - python cmtty.py
C:\Users\Bhagyashri Bhamare\Desktop\da lab\example>python cmtty.py
Entre 1 to give input of the graph
Entre 2 to give file input
2
Entre the file name graph.txt
```

Initial representation of the graph



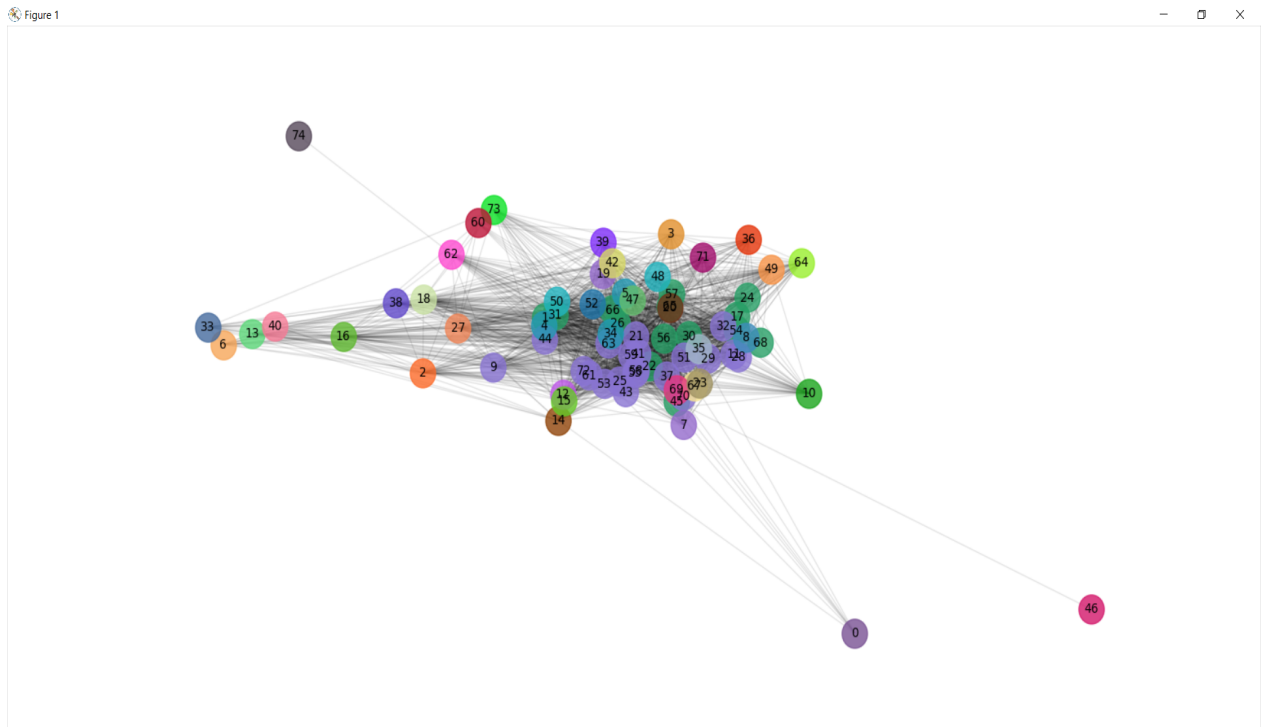
Betweenness

```
Select Command Prompt - python cmty.py
2
Entre the file name graph.txt
Betweenness : {(1, 17): 0.00036036036036036037, (1, 54): 0.00036036036036036037, (1, 57): 0.00036036036036036037, (26, 30): 0.00036036036036036037, (26, 65): 0.00036036036036036037, (26, 68): 0.00036036036036036037, (37, 25): 0.00036036036036036037, (37, 41): 0.00036036036036036037, (48, 50): 0.00036036036036036037, (56, 22): 0.00036036036036036037, (56, 45): 0.00036036036036036037, (4, 5): 0.00036036036036036037, (4, 34): 0.00036036036036036037, (5, 34): 0.00036036036036036037, (7, 19): 0.00036036036036036037, (9, 51): 0.00036036036036036037, (9, 61): 0.00036036036036036037, (17, 54): 0.00036036036036036037, (17, 57): 0.00036036036036036037, (22, 45): 0.00036036036036036037, (24, 66): 0.00036036036036036037, (25, 41): 0.00036036036036036037, (30, 65): 0.00036036036036036037, (30, 68): 0.00036036036036036037, (51, 61): 0.00036036036036036037, (53, 11): 0.00036036036036036037, (54, 57): 0.00036036036036036037, (63, 32): 0.00036036036036036037, (65, 68): 0.00036036036036036037}
Max modularity found (Q): 0.01837279215837773
number of communities: 39
```

Communities

```
Graph communities:
{0}
{1, 65, 66, 68, 45, 17, 30, 54, 22, 56, 57, 26, 24, 31}
{14}
{9, 11, 21, 25, 28, 29, 32, 37, 41, 43, 44, 51, 53, 55, 58, 59, 61, 63, 70, 72}
{48, 50}
{52}
{2}
{3}
{34, 4, 5}
{19, 7}
{16}
{18}
{20}
{27}
{35}
{39}
{42}
{47}
{49}
{62}
{67}
{69}
{71}
{73}
{6}
{12}
{13}
{15}
{33}
{38}
{40}
{60}
{64}
{8}
{10}
{23}
{36}
{46}
{74}
```


Graph



Part-2

Extend the code and consider to accept that the user can give any input network (Max 10 nodes and 20 Edges) and draw the betweenness value and the communities automatically

Input from user for unweighted graph-

 Command Prompt - python cmtty.py

```
C:\Users\Bhagyashri Bhamare\Desktop\da lab\example>python cmtty.py
Entre 1 to give input of the graph
Entre 2 to give file input
1
Entre 1 to give input of the weighted graph
Entre 2 to give input of unweighted graph
2
Enter the number of nodes 10
Enter the number of edges 12

add edge
Entre the node one _
```

Edge input from User-

```
cmd Command Prompt
Enter the number of edges 12

add edge
Entre the node one 1
Entre the node two 2

add edge
Entre the node one 1
Entre the node two 3

add edge
Entre the node one 2
Entre the node two 3

add edge
Entre the node one 2
Entre the node two 7

add edge
Entre the node one 4
Entre the node two 5

add edge
Entre the node one 5
Entre the node two 6

add edge
Entre the node one 6
Entre the node two 4

add edge
Entre the node one 6
Entre the node two 7

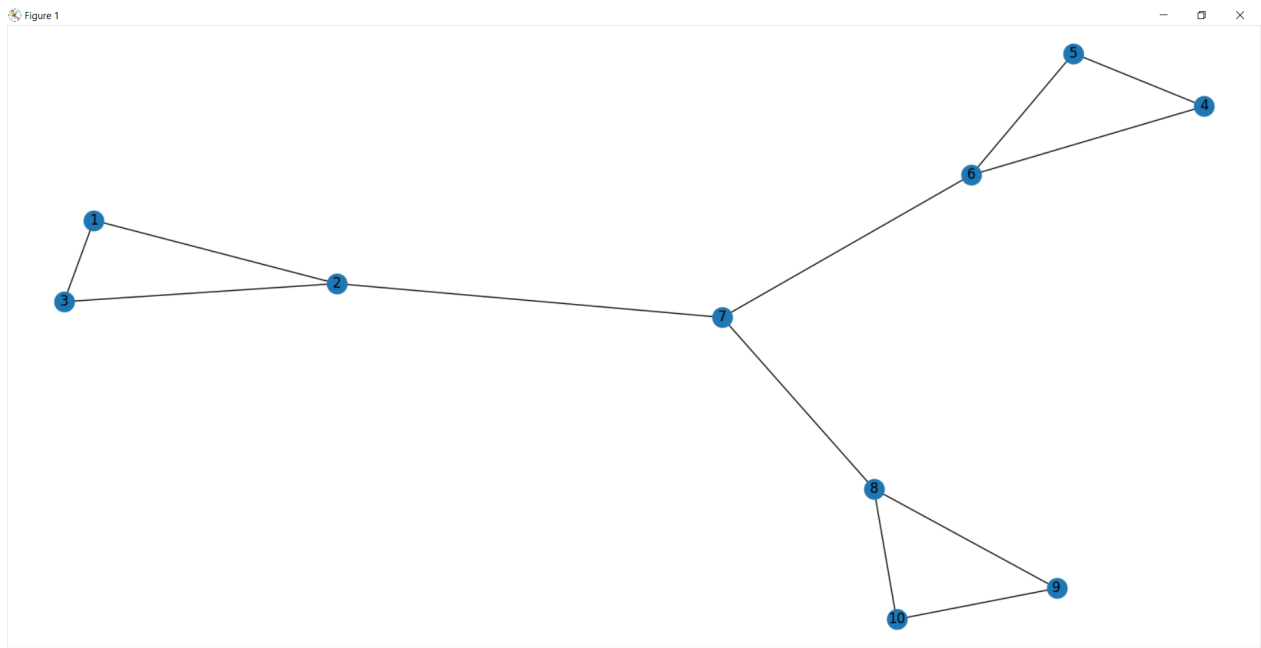
add edge
Entre the node one 9
Entre the node two 10

add edge
Entre the node one 10
Entre the node two 8

add edge
Entre the node one 8
Entre the node two 9

add edge
Entre the node one 8
Entre the node two 7
```

Initial graph-



Betweenness and communities-

```
Command Prompt
Betweenness : {(1, 2): 0.022222222222222223, (1, 3): 0.022222222222222223, (2, 3): 0.022222222222222223, (4, 5): 0.022222222222222223, (4, 6): 0.022222222222222223, (5, 6): 0.022222222222222223, (9, 10): 0.022222222222222223, (9, 8): 0.022222222222222223, (10, 8): 0.022222222222222223}
Max modularity found (Q): 0.4791666666666667
number of communities: 4
Graph communities:
{1, 2, 3}
{7}
{4, 5, 6}
{8, 9, 10}
C:\Users\Bhagyashri Bhamare\Desktop\da lab\example>
```

Graph-

Figure 1

