

## Importing packages

In [1]:

```
import pandas as pd
import numpy as np
```

## Added The Cleaned Dataset

In [2]:

```
file=pd.read_csv('file.csv')
```

## Printing the starting values of dataset

In [3]:

```
file.head()
```

Out[3]:

	Unnamed: 0	twitter_id	retweeted_to	time	replied_to	followers	following	entities_
0	0	PawanTo36723905	Dr_Uditraj	27/12/2018 07:18:42	NaN	1070.0	3553.0	{"hashtags": [{"text":"TripleTalaqBill","indice...
1	1	DeccanHerald	NaN	27/12/2018 07:18:42	NaN	26059.0	299.0	{"hashtags": [{"text":"LokSabha","indices":[42,
2	2	varanasi_zila	RakeshSinha01	27/12/2018 07:18:34	NaN	1000.0	116.0	{"hashtags": [{"text":"TripleTalaqBill","indice...
3	3	cypherpunkv	AsYouNotWish	27/12/2018 07:18:30	NaN	446.0	544.0	{"hashtags":[],"symbols": [],"user_mentions":[{"...
4	4	rohithreddy1011	AndhraPolls	27/12/2018 07:18:30	NaN	14.0	161.0	{"hashtags": [{"text":"AndhraPradesh","indices

NetworkX is the graph computing library in python. We can easily create the graph using networkX by reading graph files like gexf, gml, graphml, pajek net or by simply adding nodes and edges.

In [4]:

```
import networkx as nx

G = nx.Graph()
#G.add_node(twitter_id, type='repo')

for i in range(len(file)):
    G.add_node(file['twitter_id'][i],type='user')

#print nx.info(G)
```

## Added each retweeted node as a edge between twitter ids

In [5]:

```
for i in range(len(file)):
    if(pd.isnull(file.loc[i,'retweeted_to'])):
        continue
```

```
G.add_edge(file['twitter_id'][i],file['retweeted_to'][i],type='follows')
```

### Information about the Undirected Graph

Name: \_\_\_\_\_

Type: Graph

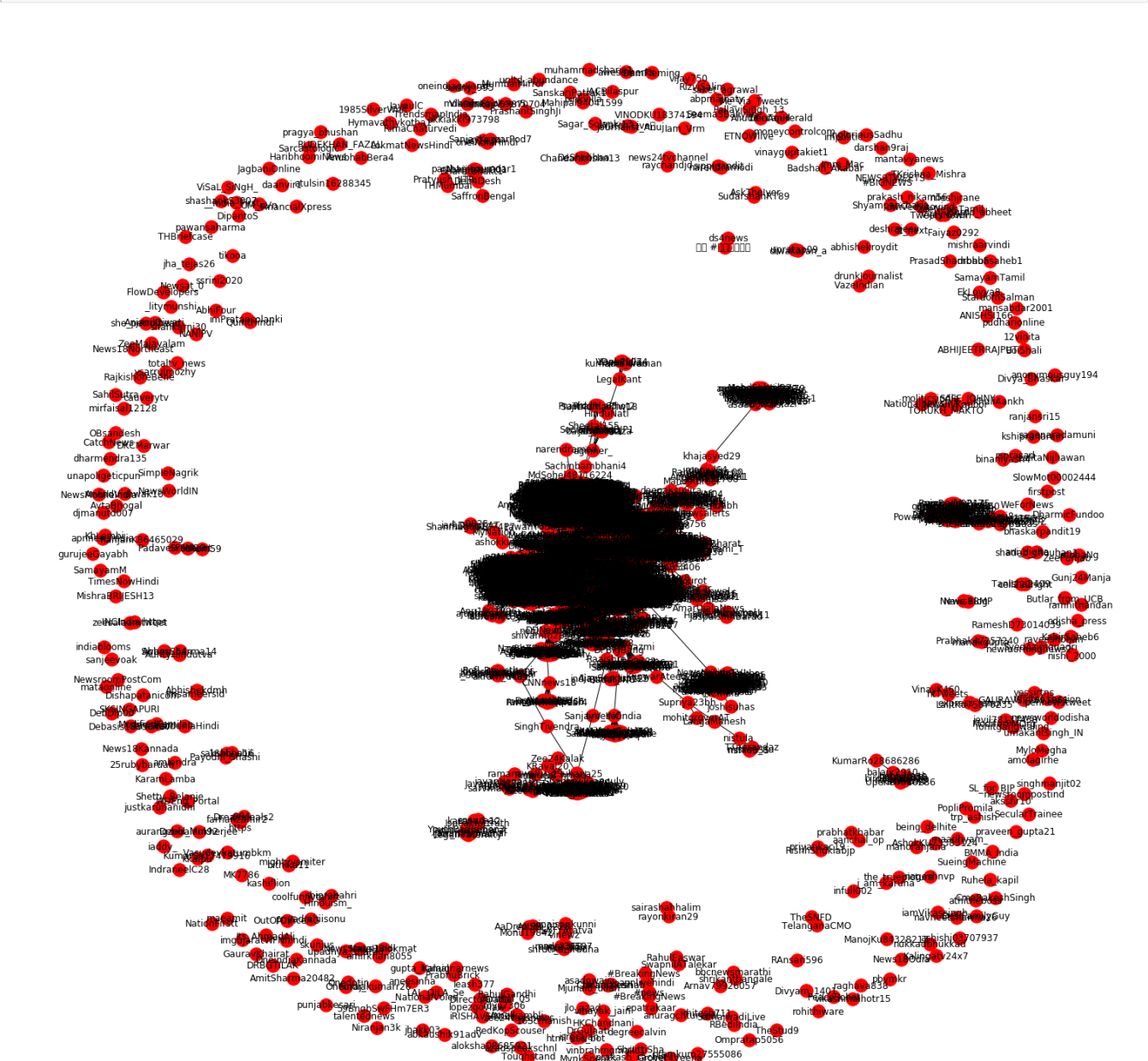
Number of nodes: 2196

```
Number of nodes: 2190
Number of edges: 2129
```

Average degree: 1.9390

## Plotted the Undirected Graph

```
import matplotlib.pyplot as plt
plt.figure(figsize=(20,20))
nx.draw(G,with_labels=True)
plt.show(G)
```



### Added each replied\_to node as a edge between twitter ids

In [8]:

```
for i in range(len(file)):
    if(pd.isnull(file.loc[i,'replied_to'])):
        continue

    G.add_edge(file['twitter_id'][i],file['replied_to'][i],type='follows')
```

## Information about the Undirected Graph

In [9]:

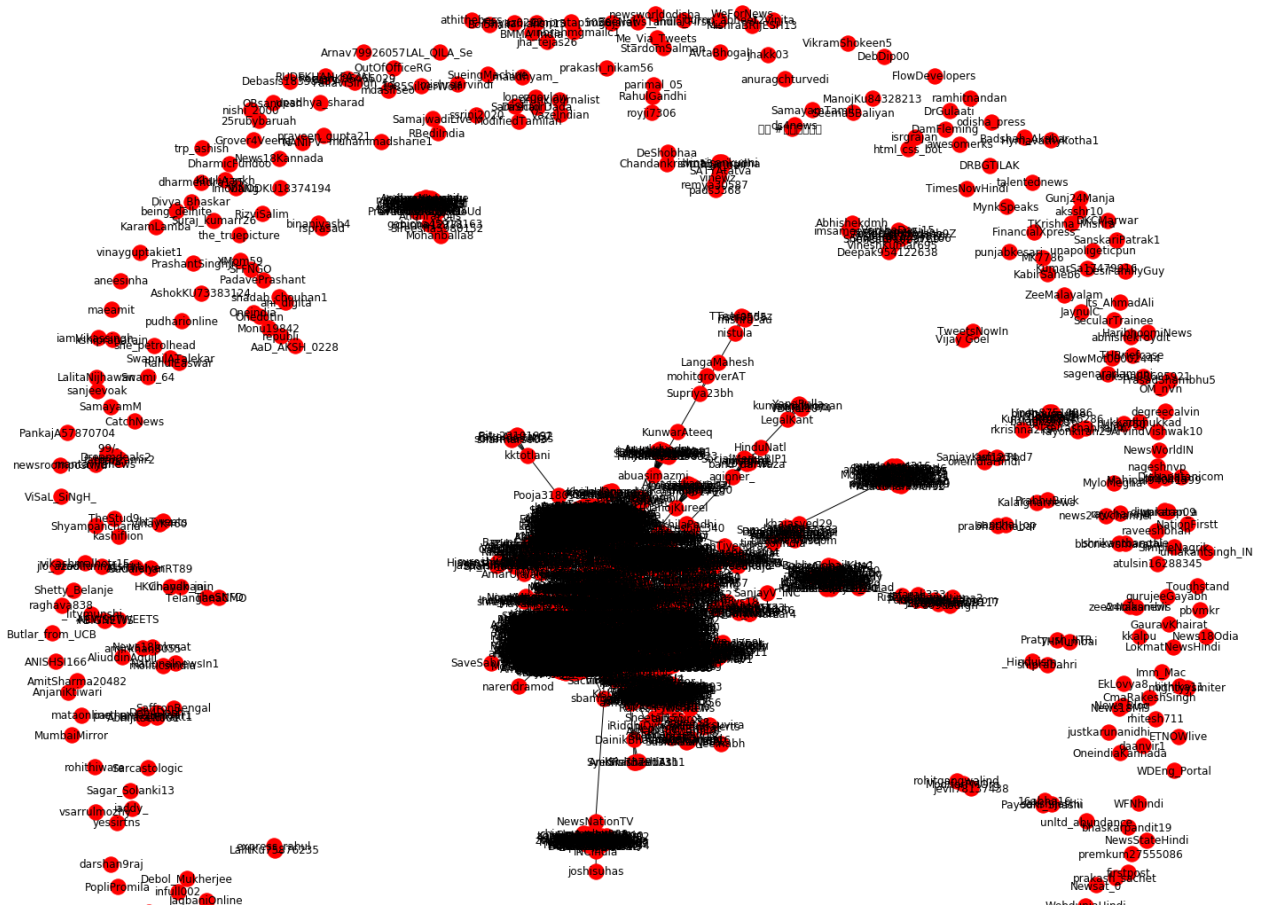
```
print(nx.info(G))
```

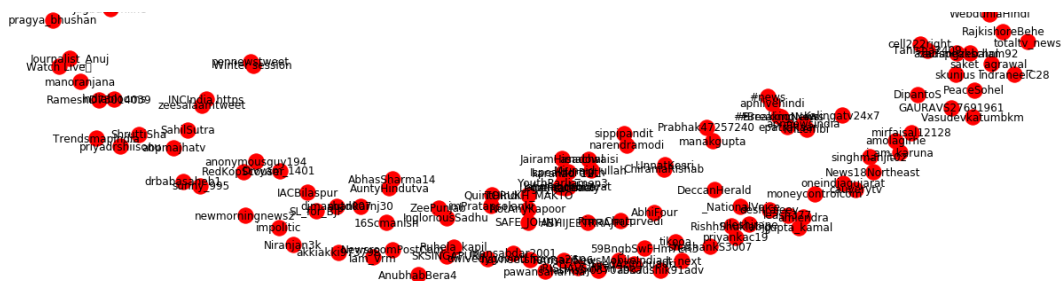
```
Name:
Type: Graph
Number of nodes: 2219
Number of edges: 2202
Average degree: 1.9847
```

## Plotted the Undirected Graph

In [10]:

```
plt.figure(figsize=(20,20))
nx.draw(G,with_labels=True)
plt.show(G)
```





```
In [11]:
```

```
file['retweeted_to'].count()
```

Out[11]:

2374

## Creating Directed Graph

In [12]:

```
import networkx as nx

G1 = nx.DiGraph()
#G.add_node(repo.name, type='repo', lang=repo.language, owner=user.login)

for i in range(len(file)):
    G1.add_node(file['twitter id'][i], type='user')
```

### Added each retweeted node as a edge between twitter ids

In [13]:

```
for i in range(len(file)):
    if(pd.isnull(file.loc[i,'retweeted_to'])):
        continue

    G1.add_edge(file['retweeted_to'][i],file['twitter_id'][i],type='follows')
```

### Also Added each replied\_to node as a edge between twitter ids

In [14]:

```
for i in range(len(file)):
    if(pd.isnull(file.loc[i,'replied_to'])):
        continue

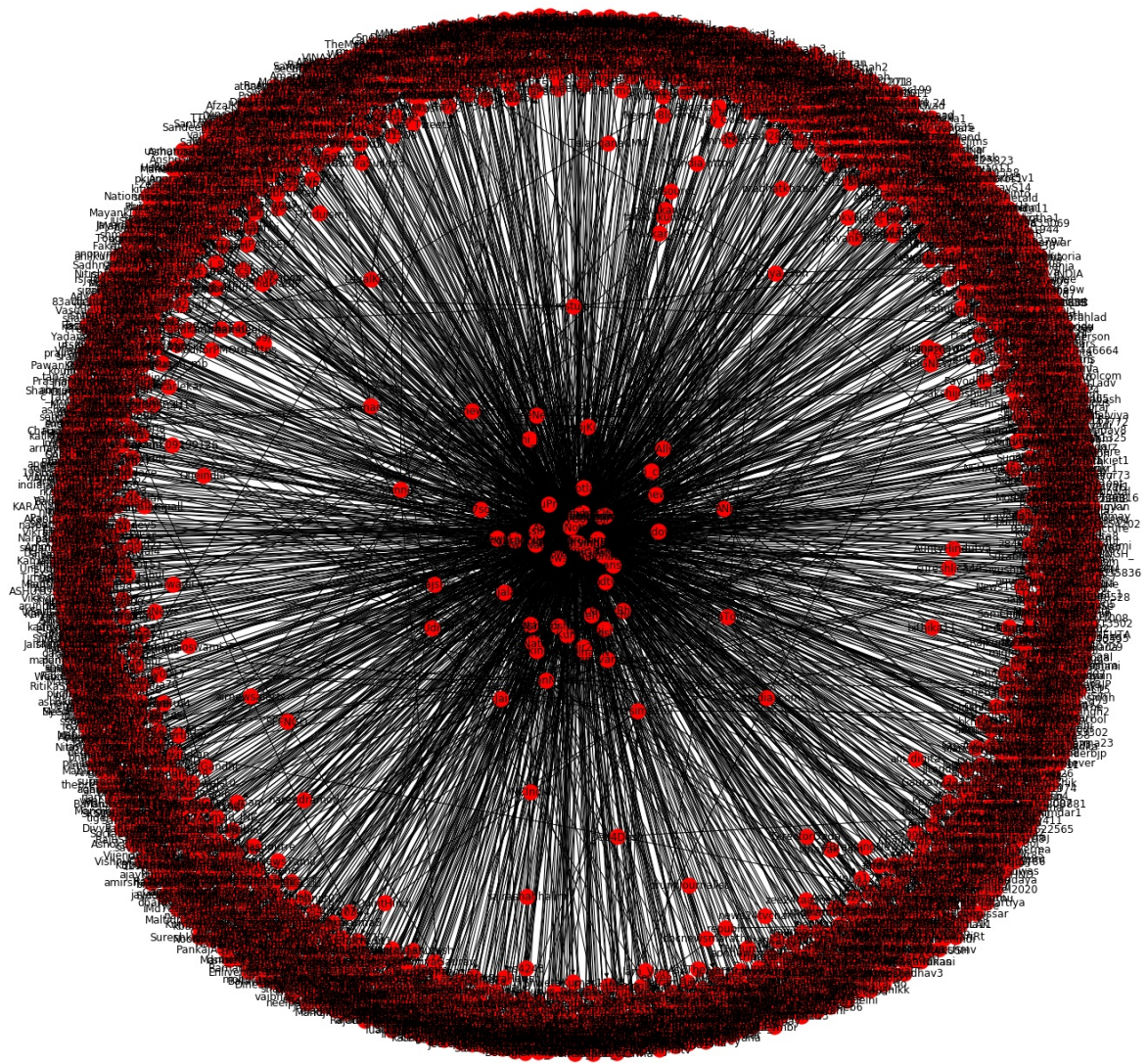
    G1.add_edge(file['replied to'][i],file['twitter id'][i],type='follows')
```

## Plotted the Directed Graph

In [15]:

```
plt.figure(figsize=(20,20))
nx.draw(G1,with_labels=True)
plt.show(G1)
```





## Information about Directed Graph

In [16]:

```
nx.info(G1)
```

Out[16]:

```
'Name: \nType: DiGraph\nNumber of nodes: 2219\nNumber of edges: 2204\nAverage in degree: 0.9932\nAverage out degree: 0.9932'
```

## Information about UnDirected Graph

In [17]:

```
nx.info(G)
```

Out[17]:

```
'Name: \nType: Graph\nNumber of nodes: 2219\nNumber of edges: 2202\nAverage degree: 1.9847'
```

## Centrality Measures

## Degree Centrality

Degree is a simple centrality measure that counts how many neighbors a node has.

In [18]:

```
dc_nodes = nx.degree_centrality(G1)
dc_nodes_sorted = sorted(dc_nodes.items(), key = lambda x:x[1], reverse=True)
print(dc_nodes_sorted[:10])
```

```
[('RakeshSinha01', 0.27817853922452657), ('AsYouNotWish', 0.19477006311992787), ('VijayGoelBJP', 0.0793507664562669), ('republic', 0.03832281334535617), ('koenamitra', 0.03742110009017132), ('ZeeNewsHindi', 0.02750225428313796), ('NewsNationTV', 0.021190261496844002), ('SwamiGeetika', 0.020739404869251576), ('mssirsa', 0.018935978358881875), ('2Suhana25', 0.018034265103697024)]
```

In [19]:

```
len(dc_nodes_sorted)
```

Out[19]:

2219

## Betweenness Centrality

Betweenness centrality measures the extent to which a vertex lies on paths between other vertices.

In [20]:

```
bc_nodes = nx.betweenness_centrality(G1)
bc_nodes_sorted = sorted(bc_nodes.items(), key = lambda x:x[1], reverse=True)
bc_nodes_sorted[:10]
```

Out[20]:

```
[('koenamitra', 1.2201803182474306e-05), ('NewsNationTV', 9.354715773230302e-06), ('eyepatiksha', 3.2538141819931484e-06), ('dinesh_chawla', 2.2369972501202896e-06), ('balajir2910', 1.4235437046220025e-06), ('ajitsourot', 1.4235437046220025e-06), ('Rishi_INC', 1.0168169318728588e-06), ('_BJP2019', 6.100901591237154e-07), ('geets71', 4.0672677274914355e-07), ('Dreamdeals2', 2.0336338637457178e-07)]
```

## Closeness Centrality

Closeness centrality measures the mean distance from a vertex to other vertices.

In [21]:

```
cc_nodes = nx.closeness_centrality(G1)
cc_nodes_sorted = sorted(cc_nodes.items(), key = lambda x:x[1], reverse=True)
cc_nodes_sorted[:10]
```

Out[21]:

```
[('avinash_mailme', 0.0031559963931469793), ('Yogi210875', 0.0031559963931469793), ('subhash49648604', 0.002705139765554554), ('AddalamarriU', 0.002705139765554554), ('UtsavPurohit4', 0.002254283137962128), ('BJPNEWS4U', 0.002254283137962128), ('KapilGurjarBJP', 0.0020288548241659153), ('pd_vanjari', 0.0018785692816351068),
```

```
('Anjan_2017', 0.0018785692816351068),  
('sbambam16', 0.0018785692816351068)]
```

## EigenVector Centrality

A node is important if it is linked to by other important nodes

In [22]:

```
centrality = nx.eigenvector_centrality(G1)  
print(['%s %0.2f'%(node,centrality[node]) for node in centrality])
```

```
['PawanTo36723905 0.00', 'DeccanHerald 0.00', 'varanasi_zila 0.00', 'cypherpunkv 0.00',  
'rohithreddy1011 0.00', 'akkiakki973798 0.00', 'PKhungai 0.00', 'AyushSi63554501 0.07',  
'yogesh76136208 0.00', 'hereisarun 0.00', 'munna_jha 0.00', 'imPk_Lucknowi 0.00', 'samir_karchuli  
0.00', 'Lalitp1204 0.00', 'aqueel_hmad 0.07', 'ModifidBhaaarat 0.00', 'Taradattsuyal 0.00', 'Rahul  
Kumar_00 0.00', 'LangaMahesh 0.00', 'shajorjita 0.00', 'KunwarAteeq 0.00', 'KhLembi 0.00', 'ashokk  
irad6 0.00', 'shiprabahri 0.00', 'HelloRRoushan 0.00', 'lazy_engineer_ 0.00', 'RS62876756 0.00', '  
vairamuthu27 0.00', 'ksanjay28904199 0.00', 'suresh_542 0.00', 'GauravKhairat 0.00', 'biren_b 0.00  
, 'Aryasatyapraka1 0.00', 'Jaypalkumar_IND 0.00', 'NikhilB15338339 0.00', 'fiery_mani 0.00', 'Sit  
uSharma7 0.07', 'Dr_Uditraj 0.00', 'swetasamadhya 0.00', 'Goutamscribel 0.00', 'BMMA_India 0.00',  
'TripRR 0.07', 'gunjan_gaikwad 0.00', 'mohitgroverAT 0.00', 'gopi2443 0.00', 'mytvtitter 0.00', 'vi  
legenius 0.00', 'PammiSi41453839 0.07', 'AlfredoSDS 0.00', 'iamsrkbhagalpur 0.00', 'ZumbaZoo123 0.  
00', 'sureshgaur22 0.00', '_BJP2019 0.29', 'jainashish1311 0.00', '_Hinduism_ 0.00', 'manjul64 0.0  
0', 'kahncoo 0.00', 'Supriya23bh 0.00', 'zeesalaamtweet 0.00', 'apnlivehindi 0.00', 'SnghVp 0.00',  
'i_am_karuna 0.00', 'samgold21 0.00', 'vishwagurul74 0.00', 'Siddheart 0.00', 'iamkaurr1 0.07', '  
she_petrolhead 0.00', 'CampChapman 0.00', 'utsavpansari 0.00', 'arvind291 0.00', 'KshatriBhunes 0  
.00', 'BhupendraShakt5 0.00', 'CrushAdharma 0.00', 'abcunlimited1 0.00', 'imlazypanda11 0.00', 'Du  
rgaal3 0.00', 'AshutoshkrUp 0.07', 'Vishal69295462 0.00', 'nilleo007 0.00', 'ranjan_abhigyan  
0.00', 'nileshagn 0.07', 'akhileshvicharm 0.00', 'ashok31768 0.00', 'MoharsinghKatal 0.00', 'kiran  
ckalluri 0.00', 'Subhojit2490 0.00', 'vijayrajtiwaril 0.00', 'SanjayV_INC 0.07', 'Raul51483112 0.0  
0', 'sarkaramartya 0.00', 'VINAYAKINAMDAR 0.00', 'ManojKureel 0.00', 'Andec_Tanker 0.00',  
'Jainpankajkasan 0.00', 'sanjeevhere 0.00', 'gmkrishna 0.00', 'SattvikHippie 0.00', 'Deekris1 0.00  
, 'Sunil961 0.00', 'cynical21 0.00', 'parimal_05 0.00', 'Eshanputra_Om 0.00', 'Avadhi_deepak 0.00  
, 'Amarkan56938069 0.00', 'Ashutos26668801 0.00', 'AbhayYa87566421 0.00', 'Ashok84175311 0.00', '  
imPavan_A 0.00', 'sandeep83khanna 0.00', 'BiharKaLal 0.00', 'spanwar25 0.00', '56perumal 0.00', 's  
ubhash49648604 0.07', 'akst19762000 0.00', 'vijendra4Bjp 0.00', 'BobbySohailKhal 0.07',  
'srisripavanji 0.00', 'ashakiranv 0.00', 'RatanRanjan016 0.00', 'vaghani_brijesh 0.00',  
'Saurabh_Rai25 0.00', 'Varada302 0.00', 'abhishek0204198 0.00', '89BHUSHAN 0.00', 'Niranjan3k 0.00  
, 'spcj008 0.00', 'shilpa_g2 0.00', 'khiladi_ravi_ 0.00', 'Vikky02145881 0.00', 'ChanukyaVs 0.00'  
, 'nageshnvp 0.00', 'paramvaibhav 0.00', 'AmitConcepts 0.00', 'raghunayak 0.00', 'mmanishgehlott 0  
.00', 'nupur11 0.00', 'ik68382 0.00', 'DharendraArora 0.00', 'mneelans 0.00', 'Param_Nand 0.00', '  
kumar_hridaya 0.00', 'shatrughanJaisw 0.00', 'Rajanku09570281 0.00', 'smartabhi1989 0.00', 'keshab  
_ray 0.00', 'addy191919 0.00', 'iArijitRoy 0.00', 'shubham_d1 0.00', 'wellglow0162 0.00', 'desiran  
cher 0.00', 'UtsavPurohit4 0.00', 'Aarushi255 0.07', 'lmt313 0.00', 'DaveRajnil 0.00', 'vkssoni75  
0.00', 'shankar02505520 0.07', 'Amar55655822 0.00', 'AshokBh03133766 0.00', 'heyasifiqubal 0.00',  
'vacha_bhavsar 0.00', 'newsanti 0.00', 'sk_panjari 0.00', 'twisted4fun 0.00', 'KamleshBansal6 0.00  
, 'VINODKU18374194 0.00', 'nehaapriya 0.00', 'aarvin23 0.00', 'pankajtiwari051 0.00',  
'VikramShokeen5 0.00', 'sshubh2 0.07', 'pd_vanjari 0.00', 'gopsec2 0.00', 'spsinghoo 0.00', 'Pawa  
n69113502 0.00', 'mssudhakar 0.00', 'KGujjain 0.00', 'PravinMehraIN 0.07', 'TheMent65336255 0.00',  
'gahlottzone 0.00', 'manojku109 0.00', 'wdamidoinhere 0.00', 'Atom_Alok 0.00', 'NarendraNathan8 0.0  
0', 'anilrajbhar2 0.00', 'awesomerks 0.00', 'nilu_soumya 0.00', 'MewaraShakti 0.00', 'dhivakarBJP  
0.00', 'surendradev 0.00', 'mahi3744 0.00', 'veer_kunwar 0.00', 'Rohitpatil_24 0.00', 'Olestoepoke  
0.00', 'Agrej8 0.00', 'Dishapatanicom 0.00', 'sandeepandey87 0.00', 'amruth_1001 0.00',  
'pappu_295 0.00', 'ravigotewal 0.00', 'be_wagh 0.00', 'lost_cuses 0.00', 'IndiaTodayFLASH 0.00',  
'Pamidipa 0.00', 'sanjeshguru 0.00', 'IMSanjayTak 0.00', 'MuralikrishnaE1 0.07', 'Arunkdyadav 0.00  
, 'atulmshr83 0.00', 'v_jai_ho 0.00', 'DevMohali 0.00', 'Pawantiwarikmh 0.00', 'IndiaToday 0.00',  
'tejnemanwar 0.00', 'AtulRohokale 0.00', 'SujitKumarTiw18 0.07', 'Praveen83035836 0.00',  
'Sandsh5503 0.00', 'PowerStar_GoUd 0.00', 'avinash_mailme 0.00', 'JugalGupta8 0.00', 'bkmodak 0.00  
, 'PrasenjitSur25 0.00', 'rajarama_m 0.00', 'harsh77710 0.00', 'SSid1308 0.00', 'Singh_Roushan96  
0.00', 'ankesh7006 0.00', 'SridharRamamur7 0.00', 'Sachink79256123 0.00', 'usmanzahidch 0.00', 'SA  
NTOSHPATILER1 0.00', 'KrishnanSulabh 0.00', 'amirkhan8055 0.00', 'pursottamlakar 0.00',  
'koulrohit2016 0.00', 'thedreamperson 0.00', 'Arnnav79926057 0.00', 'LalitKu75876235 0.00',  
'Anhudpowers 0.00', 'SanjayKumarPod7 0.00', 'Hardikkhndelwal 0.00', 'dsanjeebkumar 0.00', 'Reetesh  
777 0.00', 'ParashuRama_108 0.00', 'subsharma740 0.00', 'chandrasahp 0.00', 'harshdatt1 0.00', 'pr  
eettaam 0.00', 'SarkarJanvi 0.00', 'AnnaramD 0.00', 'AIndia247 0.00', 'DrDineshChaube1 0.07', 'Nam  
ratal6804975 0.00', 'BotsOfGold 0.00', 'mithu796311 0.00', '28496ashok 0.00', 'IdiotByChoice 0.00',  
, 'srasul329 0.00', 'SecularTweet 0.00', 'amitt31 0.00', 'M35215013 0.00', 'SalilBakshil 0.00', 'S  
urabhi41830771 0.00', 'Raj96307328 0.07', 'pandeyanant99 0.00', '_tripathi_3367 0.00',  
'Me_PoisonBerry 0.00', 'SachKarlekar 0.00', 'thegreat_guru 0.00', 'pokaabhi 0.00', 'MK7786 0.00',  
'cv_janu 0.00', 'Jago_Bharath 0.00', 'prakashbhutoria 0.00', 'this_is_Tanmay 0.00', 'AIOISOIA 0.00  
, 'gdeepak_ 0.00', 'Devadathgowda 0.00', 'iamnikhilpc 0.00', 'News18lokmat 0.00',  
'SauravShekhar23 0.00', 'rookievg7 0.29', 'SUHRUTH2007 0.00', 'nileshpandey699 0.00',
```



```
'manisha_111 0.00', 'Yadavdimplesp 0.00', 'rajeevicaktr 0.00', 'iAbhishekkBJP 0.00',
'4a8eb53ldb084f4 0.00', 'amol_chourasia 0.00', 'BurariDeepak 0.00', 'NEHARAJ68219434 0.00',
'RATHOD78846385 0.00', 'raghava838 0.00', 'NareshUpreti 0.00', 'vsarrulmozhy 0.00', 'AzazShaikhIYC
0.00', 'agarwalgopal323 0.00', 'VinayDokania 0.00', 'Kamalbaig7 0.00', 'PDrsudhakar 0.00',
'ardh_narishwar 0.00', 'ranjit0852 0.00', 'superrajj 0.00', 'SimmiAhuja_ 0.00', 'ImobaNg 0.00', 'H
Ranjan1 0.00', 'shailendra1212 0.00', 'RaiSahab20 0.00', 'pragya_bhushan 0.00', 'Deepakkhatri812 0
.00', 'DrNMNahar 0.00', 'Modified24 0.00', 'UtisthBharat 0.00', 'IaM_INDIan19 0.00', 'vinod_bansal
0.00', 'RagiSangit 0.00', 'vijyendrajadon 0.00', 'mishrapankajs 0.00', 'lalitkhurana70 0.00', 'abh
imanyuraohry 0.00', 'desainitesh6 0.00', 'chinupandey008 0.00', 'rahullmakwana 0.00',
'SudarshanRT89 0.00', 'AskTheIyer 0.00', 'Being_suchita 0.00', 'HR78854642 0.00', 'ReshmaLalwani6
0.00', 'VinodPa61834210 0.00', 'sherigara 0.00', 'hareee10 0.00', 'shekhar88yadav3 0.00',
'Subrata87928264 0.00', 'KirtiBakoriya 0.00', 'UmeshJhaJi 0.00', 'abhis4bjp 0.00', 'Manojkgoell 0.
00', 'deepakdhillon77 0.00', 'Upasnasingh1325 0.00', 'shailen_pratap 0.00', 'lindanewmai 0.00', 'f
orexmayhem 0.00', 'MayankJoshiBJP 0.00', 'AmitSharma20482 0.00', 'iamVikassingh_ 0.07',
'bharativamsi 0.00', 'sanjaygobind 0.00', 'visheshtanwar26 0.00', 'AparnaD86 0.00',
'HimangshuSarma5 0.00', 'Rajal85in 0.00', 'AnujSainiBJP 0.00', 'desaidipal 0.00', 'GauravAmrit1 0.
00', 'hitesh_jaihind 0.00', 'MayankD69421754 0.00', 'myBharatMahaan 0.00', 'RohiniShah73 0.00', 'k
pankajagrawal 0.00', 'Reema_bjp 0.00', 'ssharma27273 0.00', 'BeingGauravS14 0.00', 'iBhawnaSingh 0
.00', 'Gaurav22222222 0.00', 'PkTan9 0.00', 'gulwant_devi 0.00', 'kanchan02841767 0.00', 'raghuDz
0.00', 'pintugu90638804 0.00', 'Himanshu1112797 0.00', 'manjayk4ever 0.00', 'Harsh7tripathi 0.00',
'RajendraRail234 0.00', 'IManojkYadav 0.00', 'AjaySin75971875 0.00', 'drkcgoll 0.00',
'soniyasinhaBJP 0.00', 'SainDevenderbjp 0.00', 'HarshKumarBora2 0.00', 'dubeyback 0.00',
'GuptaBhartiya 0.00', 'SurajAga 0.00', 'kalevidyasagar 0.00', 'saurabh00151 0.00',
'Vishwan81991417 0.00', 'Iamsunnydevas 0.00', 'ajay3000us 0.00', 'Seetharamakota3 0.00',
'SushilKumar4657 0.00', 'Akg316Arvind 0.00', 'ipriyachaudhary 0.00', 'rajusin20547996 0.00', 'Vari
nde45246213 0.00', 'bubulmahata74g1 0.00', 'JTHAKOR9 0.00', 'tiwari_ashish1 0.00', 'Being_vinay82
0.00', 'AnshuSi03554166 0.00', 'samar97189157 0.00', 'anjali_basu_ 0.00', 'Bhartispeaks 0.00', 'M
ukesht27181075 0.00', 'AdarshK11988913 0.00', 'Sandeepkapoor01 0.00', 'nmatia 0.00',
'RahulMi52238858 0.00', 'Ravina73430939 0.00', 'Pratiks96171906 0.00', 'Ritika37866301 0.00', 'Twe
etsNowIn 0.00', '83acfc5d722f46f 0.00', 'OPDwivedi12 0.00', 'akarsh8085 0.00', 'VijayGoelOffice 0.
00', 'RohitYa09154480 0.00', 'VijayGoelBJP 0.00', 'yugeshtaunk 0.00', 'ashokramsingh 0.00', 'Heena
Gambhir 0.00', 'pranav9983 0.00', 'TimesNow 0.00', 'arunkum37049562 0.00', 'Remesh_Hind 0.00', 'So
nali85078801 0.00', 'SamayamM 0.00', 'PadavePrashant 0.00', 'mataonline 0.00', 'XMom59 0.00', 'INC
India https 0.00', '#news 0.00', 'narendramod 0.00', 'News Blog 0.00', 'Watch Live 0.00', ' 99/-\
nhttps 0.00', 'ani_digita 0.00', '#BreakingNews 0.00', '#BreakingNews 0.00', 'Winter session 0.00
', 'नई दिल्ली 0.00', '#BIGNEWS 0.00', 'ArnabGoswami_T 0.00', 'republi 0.00', 'Vijay Goel 0.00', 'SF
FNGO 0.00', 'OpIndia_com 0.00', 'RahulGandhi 0.00', 'DeShobhaa 0.00', 'sakshijoshii 0.00',
'ModifiedTamilan 0.00', 'INCIndia 0.00', 'priyankacl9 0.00', 'Payodhi_Shashi 0.00', 'THMumbai 0.00
', 'RahulEaswar 0.00', 'narendramodi 0.00', 'drunkJournalist 0.00', 'asadowaisi 0.00', 'manakgupta
0.00', 'bithika11 0.00', 'SamajwadiLive 0.00', 'arunjaitley 0.00', 'rsprasad 0.00', 'pinkvilla 0.0
0', 'vinayak_jain 0.00', 'rahulkanwal 0.00', 'tara65kumar16 0.00', 'TelanganaCMO 0.00']
```

In [23]:

```
mx=0
index=0;
for i in centrality:
    if(centrality[i]>mx):
        mx=centrality[i]
        index=i
```

In [24]:

```
mx
```

Out[24]:

```
0.2942839117221181
```

In [25]:

```
index
```

Out[25]:

```
'_BJP2019'
```

In [26]:

```
file[file['twitter_id']=='_BJP2019']
```

Out[26]:



	Unnamed: 0	twitter_id	retweeted_to	time	replied_to	followers	following	entities_str
58	58	_BJP2019	NaN	27/12/2018 07:15:51	OpIndia_com	7.0	123.0	{"hashtags": [{"text": "LoveJihad", "indices": [18...
613	613	_BJP2019	NaN	27/12/2018 06:45:59	_BJP2019	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
731	731	_BJP2019	NaN	27/12/2018 06:38:50	_BJP2019	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
1056	1056	_BJP2019	NaN	27/12/2018 06:20:51	_BJP2019	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
1145	1145	_BJP2019	NaN	27/12/2018 06:15:54	_BJP2019	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
1191	1191	_BJP2019	NaN	27/12/2018 06:14:23	_BJP2019	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
1331	1331	_BJP2019	NaN	27/12/2018 06:07:01	NaN	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
1655	1655	_BJP2019	NaN	27/12/2018 05:51:26	ANI	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...
1692	1692	_BJP2019	NaN	27/12/2018 05:49:13	TimesNow	7.0	123.0	{"hashtags": [{"text": "TripleTalaqbill", "indice...

## Kartz Centrality

A node is important if it is linked from other important nodes or if it is highly linked

In [27]:

```
import math
phi = (1+math.sqrt(5))/2.0 # largest eigenvalue of adj matrix
centrality = nx.katz_centrality(G1,1/phi-0.01)
for n,c in sorted(centrality.items()):
    print("%s %0.2f"%(n,c))
```

```
99/-
https 0.01
#BIGNEWS 0.01
#BreakingNews 0.01
#BreakingNews 0.01
#news 0.01
0119Arjun 0.02
01_djbhatt 0.02
129AmitMakwana 0.02
12mahendra34 0.02
12vinita 0.01
1303karan 0.02
16Scmanish 0.01
16abha16 0.03
172263bff5c8473 0.02
1985SilverWolf 0.01
1amthewolf 0.02
25rubybaruah 0.01
28496ashok 0.02
2Suhana25 0.03
30b459743d22481 0.02
46364941711745a 0.02
4a8eb531db084f4 0.02
5050politics 0.02
56perumal 0.03
59BngbSwFHm7ER3 0.01
7bZpQRPXNxU0b9Z 0.02
809asdfgh 0.02
8177sonali 0.03
```

vipinambrish 0.02  
 vipinrocs 0.02  
 vips\_cool 0.02  
 vipulananda 0.02  
 virendar1961 0.02  
 vishakhakashy18 0.02  
 vishal98865 0.02  
 vishal\_T1707 0.03  
 vishalp05695966 0.02  
 visheshtanwar26 0.02  
 vishwagurul74 0.02  
 vivek1527 0.02  
 vivekkumarnain 0.02  
 vivekmachani 0.02  
 vkssoni75 0.02  
 vndubeygkp 0.02  
 vsarrulmozhy 0.01  
 vsvs999 0.02  
 warispathan 0.02  
 wdamidoinhere 0.02  
 wellglow0162 0.02  
 yadav4indian 0.02  
 yamunaoverseas 0.02  
 yenksingh 0.02  
 yessirtns 0.01  
 yogesh26109902 0.02  
 yogesh76136208 0.02  
 yogeshparikh 0.02  
 yogiraaaaj 0.02  
 yugeshtaunk 0.02  
 yupptv 0.02  
 yvirendra 0.02  
 zara\_malik77 0.03  
 zee24taasnews 0.01  
 zeasalaamtweet 0.02  
 zohebamedsyed 0.02  
 नई #दिल्ली 0.01

In [28]:

```
val=0
i=0
for k,v in centrality.items():
    if v>val:
        val=v
        kval=k
print(kval,val)
```

BJP2019 0.08588284733017189

In [29]:

```
sorted(centrality.values(), reverse=True)
```

Out[29]:

[0.08588284733017189,  
0.0738975714423772,  
0.06664976914502367,  
0.0649077416944531,  
0.0641394404381113,  
0.06265467718242544,  
0.058538910852486914,  
0.05656107469084713,  
0.05656107469084713,  
0.05540687488507191,  
0.05372018253402411,  
0.05138586329397479,  
0.05138586329397479,  
0.04972509057142589,  
0.0493132723934936,  
0.04890145421556131,  
0.04890145421556131,  
0.04890145421556131,