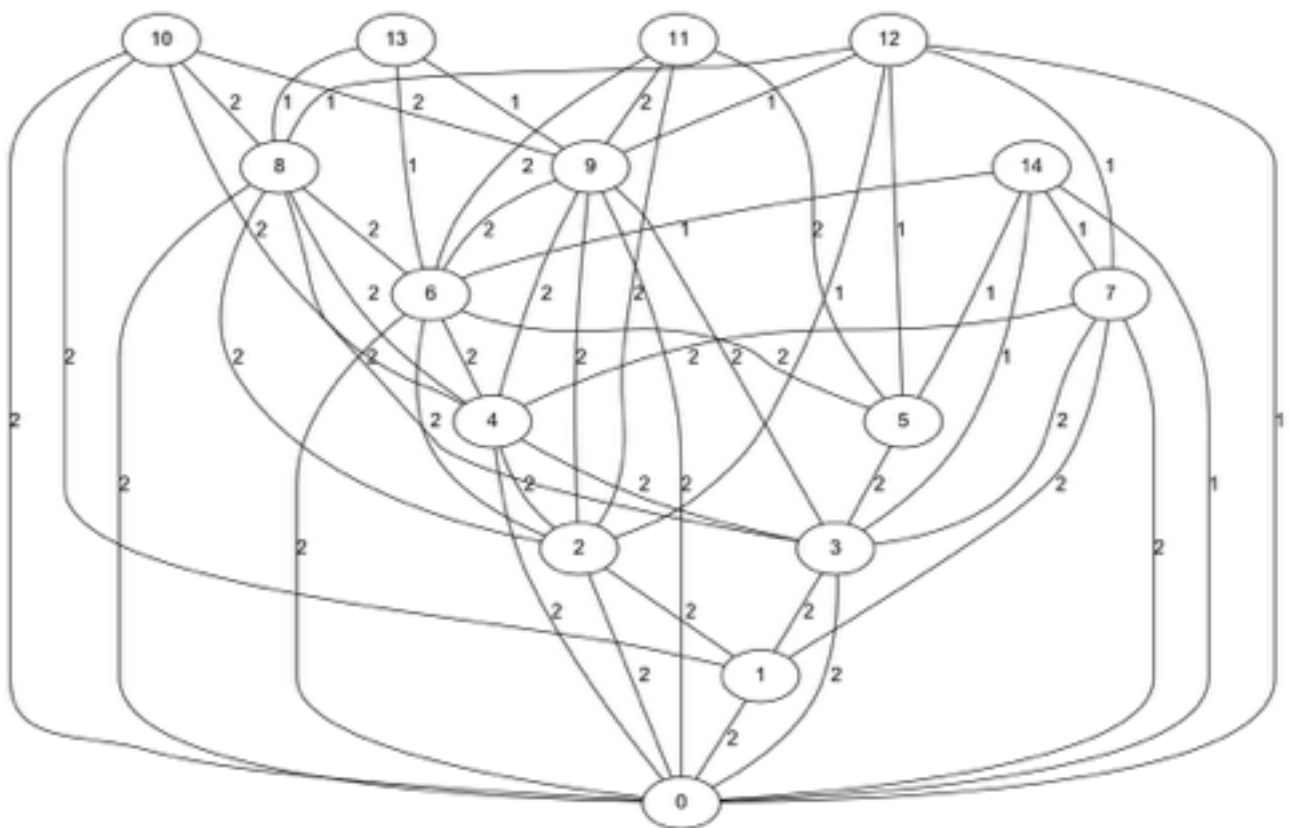# ASSIGNMENT - 1

**MILAN(2015MCS2347)**
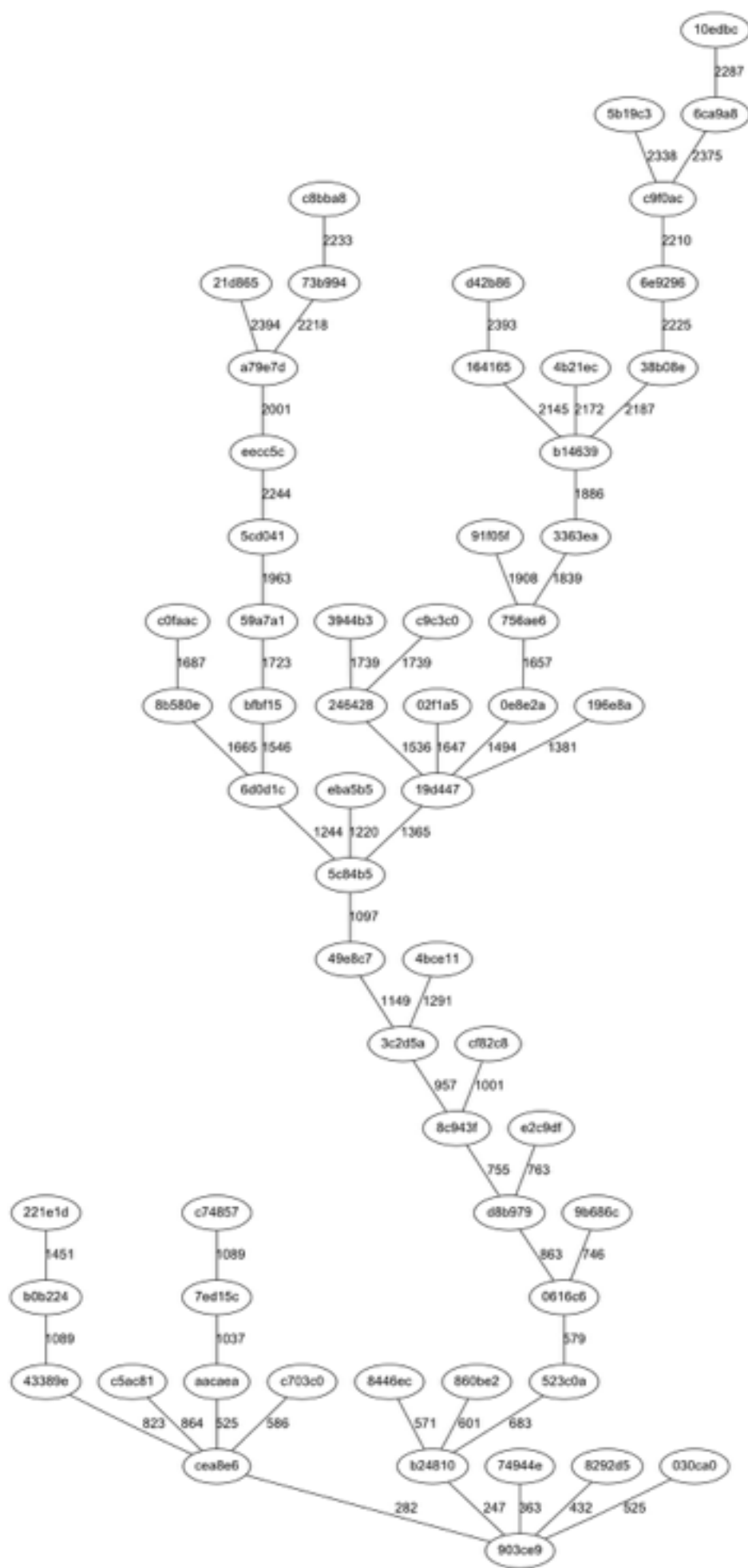**VAMSI(2015MCS2358)**
**SREENIVASULU(2016MCS2549)**

Graph Taken:

There are 15 nodes taken in the below example numbered 0 - 14. The nodes are connected between randomly generated edges. Edges are marked by randomly choosing the speed of the edges(slow-1 or fast-2).



Block Chain:

With the above graph the simulation was run for t=2500 sec (logical time). The below image shows the block chain perceived by node 9 (connected on high speed network) and node 14(connected on low speed network). The nodes are the blocks received by the node and edges denote the time of receive of the block. Likewise all the nodes perceive different views of the same block chain depending on the arrival of the blocks at the nodes.

c8bba8

10edbc

2287

5b19c3    6ca9a8

2233

21d865    73b994

2338    2375

c9f0ac

2394    2218

2210

d42b86    a79e7d    6e9296

2393    2001    2225

164165    4b21ec    38b08e

eecc5c

2145    2172    2187

2244

b14639

5cd041

1886

1963    91f05f    3363ea

c0faac    59a7a1    3944b3    c9c3c0    756ae6

1908    1839

1687    1723    1739    1739    1657

8b580e    bfbf15    246428    02f1a5    0e8e2a    196e8a

1665    1546    1536    1647    1494    1381

6d0d1c    eba5b5    19d447

1244    1220    1365

5c84b5

1097

49e8c7    4bce11

1149    1291

3c2d5a    cf82c8

957    1001

8c943f    e2c9df

755    763

d8b979    9b686c

863    746

221e1d    c74857    0616c6

1451    1089    579

b0b224    7ed15c

1089    1037

43389e    c5ac81    aacaea    c703c0    8446ec    860be2    523c0a

823    864    525    586    571    601    683

cea8e6    b24810    74944e    8292d5    030ca0

282    247    363    432    525

903ce9

node9

6ca9a8 — 2325 — c9f0ac — 2366 — 6e9296 — 2225 — 38b08e

73b994 — 2261 — a79e7d — 2122 — eecc5c

38b08e — 2272 — b14639
4b21ec — 2097 — b14639
164165 — 2149 — b14639
b14639 — 1863 — 3363ea

91f05f — 1812 — 756ae6
3363ea — 1939 — 756ae6
756ae6 — 1731 — 0e8e2a

c9c3c0 — 1974 — 246428
3944b3 — 1842 — 246428

5cd041 — 2401 — 59a7a1 — 2012 — bfbf15
c0faac — 1839 — 8b580e

196e8a — 1717 — 19d447
02f1a5 — 1736 — 19d447
0e8e2a — 1615 — 19d447
246428 — 1588 — 19d447

bfbf15 — 1756 — 6d0d1c
8b580e — 1574 — 6d0d1c

6d0d1c — 1327 — 5c84b5
19d447 — 1559 — 5c84b5
eba5b5 — 1579 — 5c84b5

5c84b5 — 1399 — 49e8c7

49e8c7 — 1150 — 3c2d5a
4bce11 — 1326 — 3c2d5a

3c2d5a — 1060 — 8c943f
cf82c8 — 1044 — 8c943f

8c943f — 909 — d8b979
e2c9df — 1073 — d8b979

d8b979 — 958 — 0616c6
9b686c — 652 — 0616c6

0616c6 — 723 — 523c0a

c74857 — 1217 — 7ed15c — 1037 — aacaea

221e1d — 1380 — b0b224 — 780 — 43389e

aacaea — 647 — cea8e6
c5ac81 — 816 — cea8e6
43389e — 595 — cea8e6
c703c0 — 637 — cea8e6

8446ec — 673 — b24810
860be2 — 770 — b24810
523c0a — 736 — b24810

cea8e6 — 408 — 903ce9
8292d5 — 378 — 903ce9
b24810 — 380 — 903ce9
030ca0 — 470 — 903ce9
74944e — 595 — 903ce9

node14

Slow Connected Edge : The blocks generated by a slow connected edges have less probability to be included in the longest chain because the receiving time of the block by other nodes is very high comparatively.
Example : node 14, 13 , 15

In node 14 there is and independent component indicating that a block is not received and is still waiting due to slow connectivity.

Fast Connected Edge : The blocks generated are highly likely to be in the longest chain as it is received by neighbours fast.
Example : node 9, 1 , 3.

Node 9 is connected on high speed net and hence it is fully connected to block chain.

High CPU Power : The block chain generated with different CPU powers for 250 sec (logical time is observed) and is shown under remaining parameters remaining constant.

No. of Nodes - 15
z % - 80%
Transaction time mean - 300 sec (logical)
Bottleneck time - 5 sec

with

Block generation time low indicating high  CPU power in proof of work system.

Time = 10 sec -  Num of blocks in longest chain = 13
Time = 100 sec -  Num of blocks in longest chain = 6
Time = 1000 sec -  Num of blocks in longest chain = 2