PROJECT-2

Team Members:
Shweta Tyagi(UFID:13089395)
Utkarsh Ruchir(UFID:47301236)

Input:

To run the project in terminal, you are required to enter the following statement

```
dotnet fsi --langversion:preview project2.fsx 100 Line Gossip
```

100 refers to the number of nodes which can be changed accordingly.
Line refers to the topology can be replaced with 3D, Imperfect3D, FullNetwork.
Gossip refers to the Gossip algorithm and can be replaced with Pushsum.

- What is working?

  We have implemented all the required functions. The implemented topologies are Line, Full network, 3D and Imperfect 3D. All the topologies work for two different algorithms Gossip and Push Sum.

- What is the largest network you managed to deal with for each type of topology and algorithm?

Number of nodes

	Gossip	Push Sum
Line	870	500
Full Network	65,000	50,000
3D	720	600
Imperfect 3D	950	1200

- **GRAPHS:**

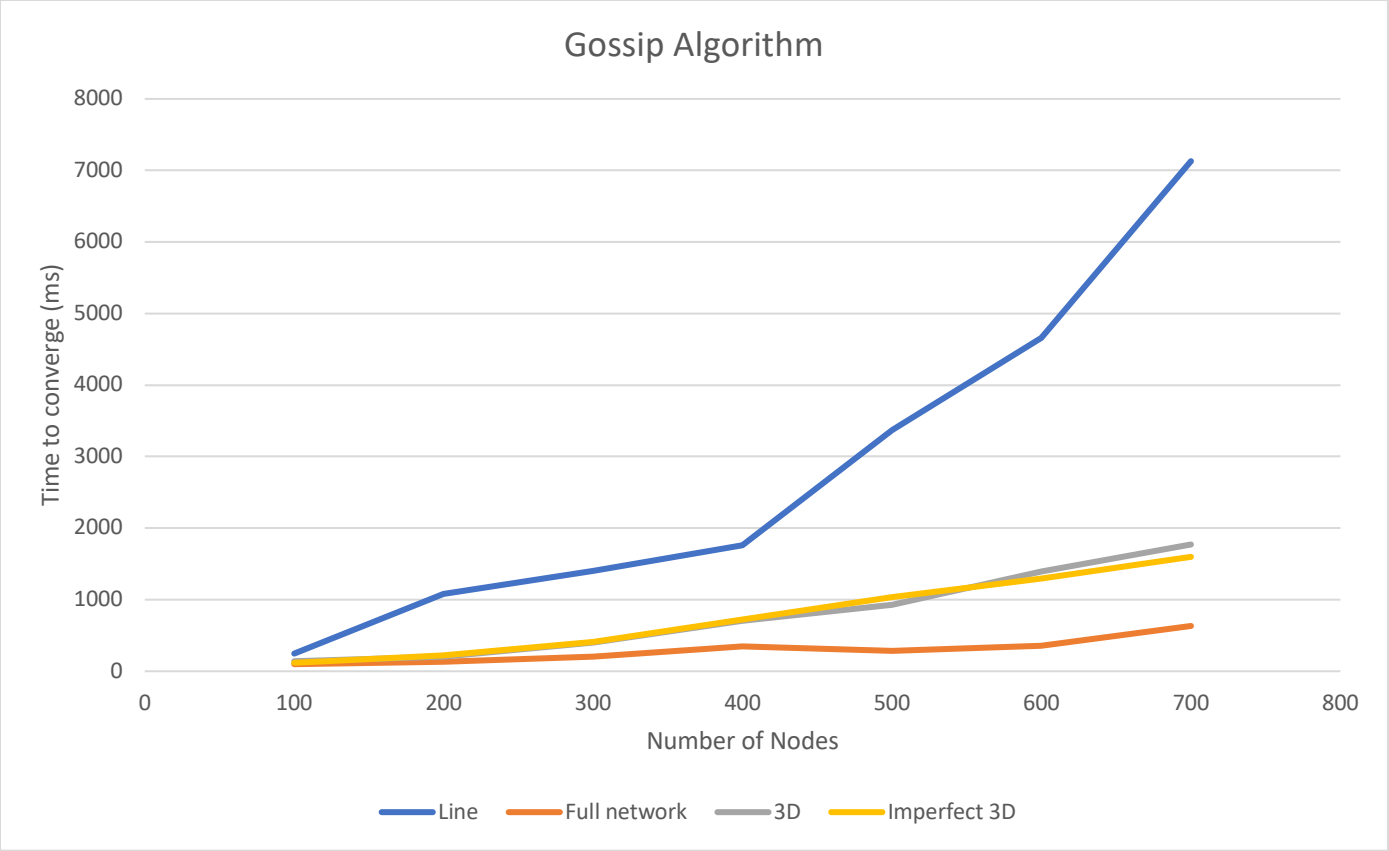

Figure 1:Gossip Algorithm graph for number of nodes VS time taken to converge those node

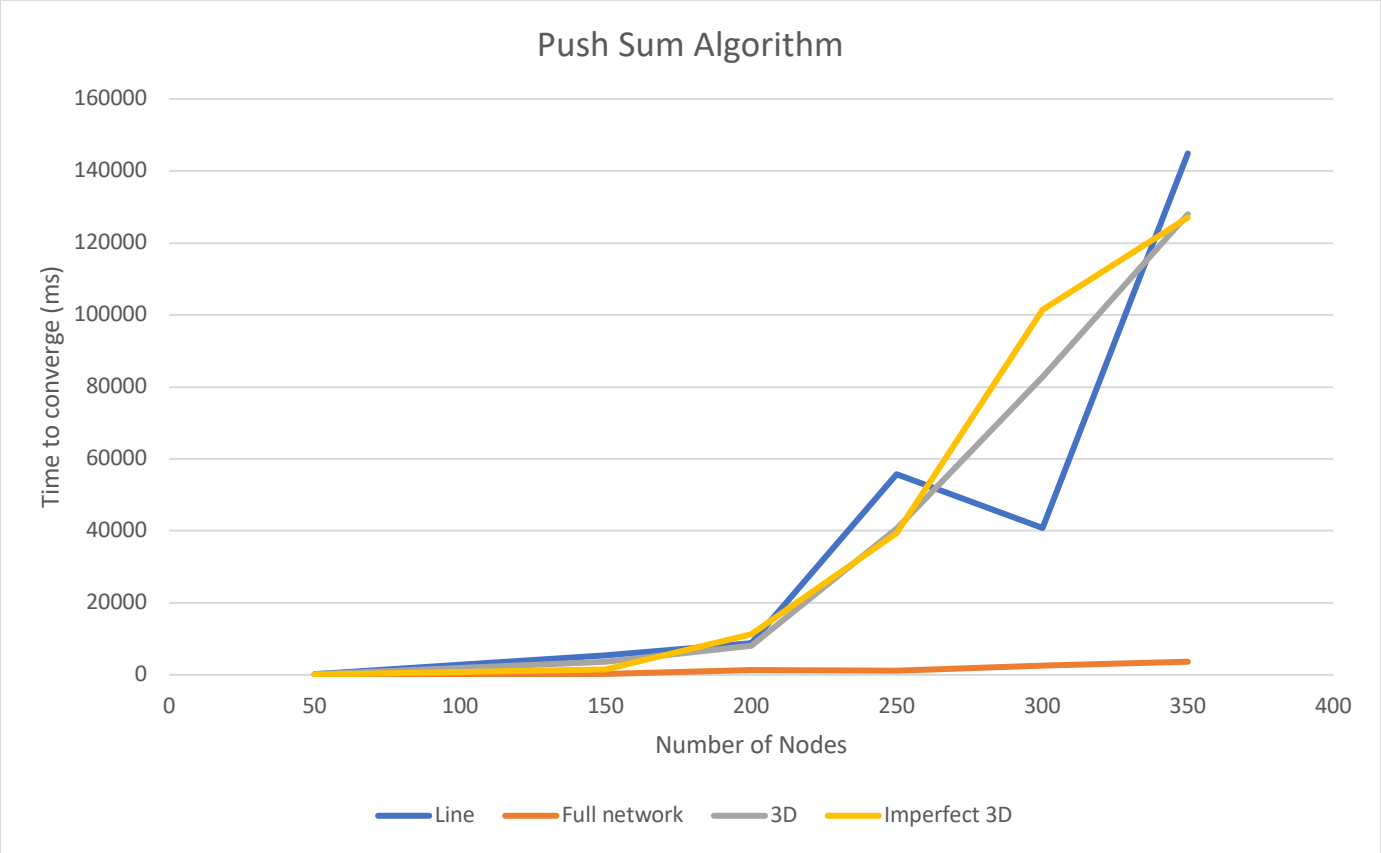

Figure 2: Push Sum Algorithm graph for number of nodes VS time taken to converge those node

Interesting Findings:

Gossip algorithm:

- Line topology takes the longest time to converge nodes than any other topology.
- Imperfect 3D and 3D almost took the same time.
- Full network topology works faster among all four topologies.

Push Sum algorithm:

- Push Sum algorithm takes more time than Gossip algorithm.
- Full network topology works faster among all four topologies.
- Line topology takes the longest time to converge nodes on higher number of nodes otherwise it takes almost similar time if compared to 3D and Imperfect 3D.
- Imperfect 3D and 3D almost took the same time to converge nodes.