Bonus Report for Gossip and Push-sum algorithms

Sample

Input

For input n = 1200, topology = Imperfect Line and algorithm= Push sum

'Elixir lib/topologies.ex 400 rand2D gossip'

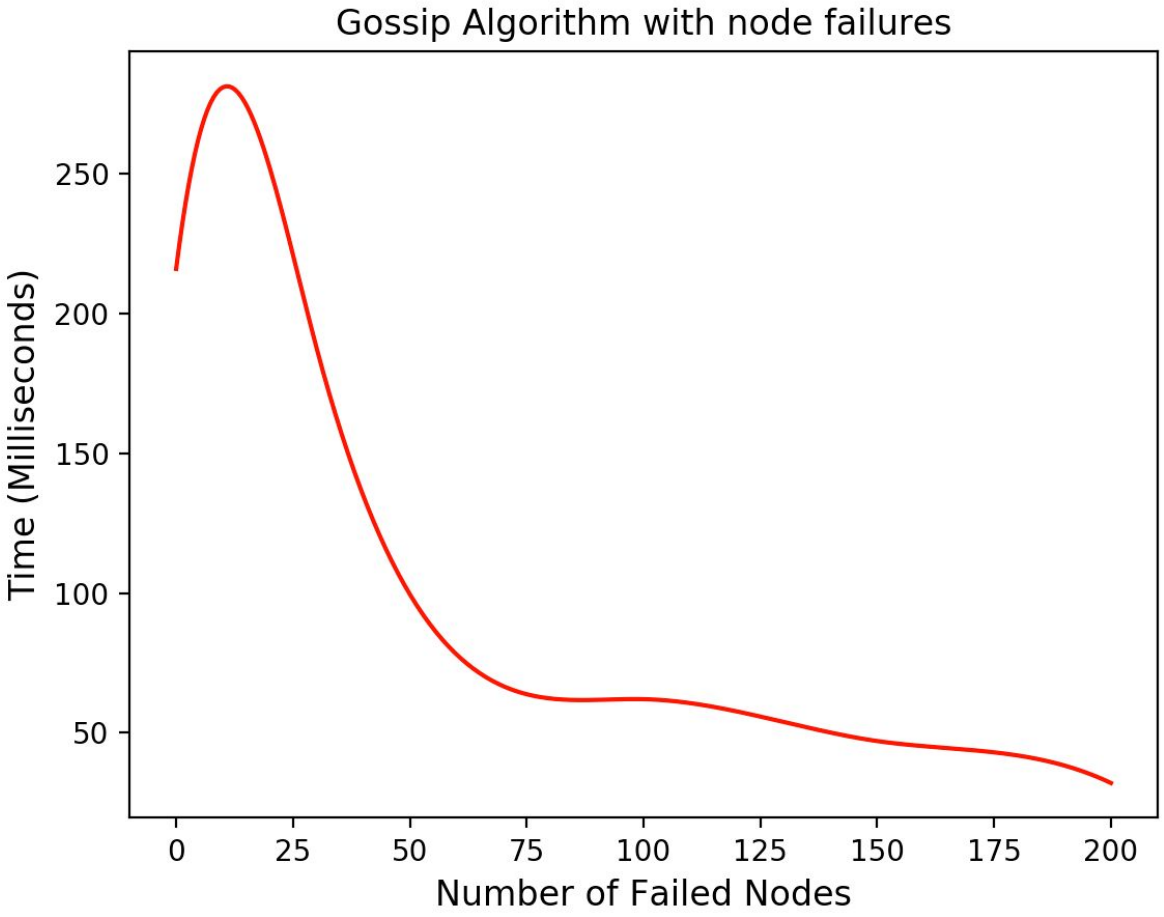
Output

Convergence time for push-sum for 400 nodes was achieved in 421 Milliseconds

Explanation

- For rand2D, Gossip Algorithm for network size of 400, observations were recorded in case of no failure.
- The control parameter for the experiment was taken as the number of failed nodes.
- Experimentally numbers of nodes failed were taken as:
    - [5, 8, 10, 12, 15, 20]
- Convergence time in all the above cases was noted and plotted for analysis.

Graph



Observations Table:

Active Nodes	**Failed Nodes**	**Convergence Time(ms)**
400	0	**219**
390	10	**281**
370	30	**188**
340	60	**78**
300	100	**62**
250	150	**47**
200	200	**32**

Observations:

1. Initially when a few nodes fail, the time for convergence increases until a given number of node failures.
2. After this point, that is when the number of node failures increases beyond this point, the convergence time decreases linearly as the number of nodes to transmit to, also decrease.
3. As we can see, when the number of failed nodes becomes half of the total number of nodes, the convergence time decreases drastically.