COP 5615 - Project 2 (Bonus)

Program to measure Gossip algorithm performance for various topologies under a Failure model.

Group Info

Shashi Prakash UFID-(5891-2989)
Shivam Agarwal UFID-(0319-3956)

Instructions

NOTE: The bonus has been coded in the same project . It can be run by adding a 4th optinal parameter as shown below.

Sample Input:

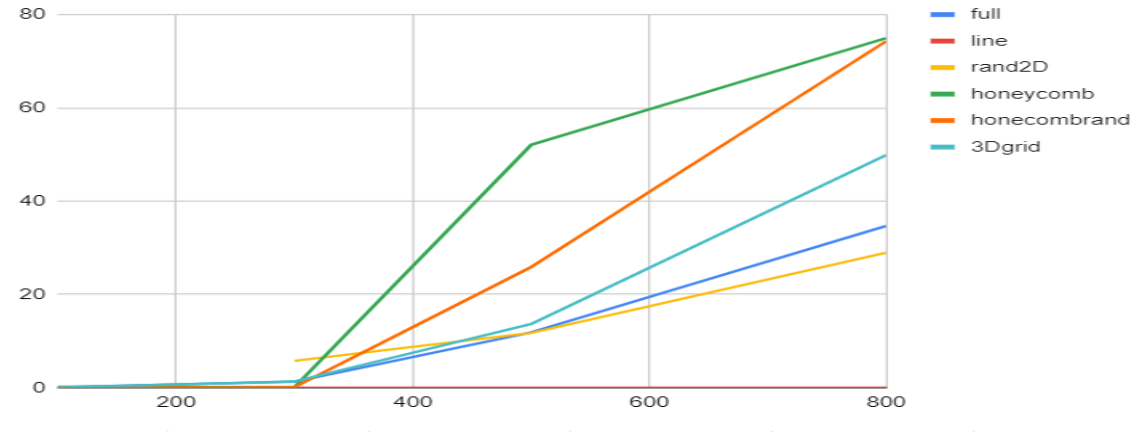
mix run project2.exs 800 randhoneycomb gossip 10
here 10 denotes the percentage of faulty nodes.
Output is in the same format as without failure modes.

Working:

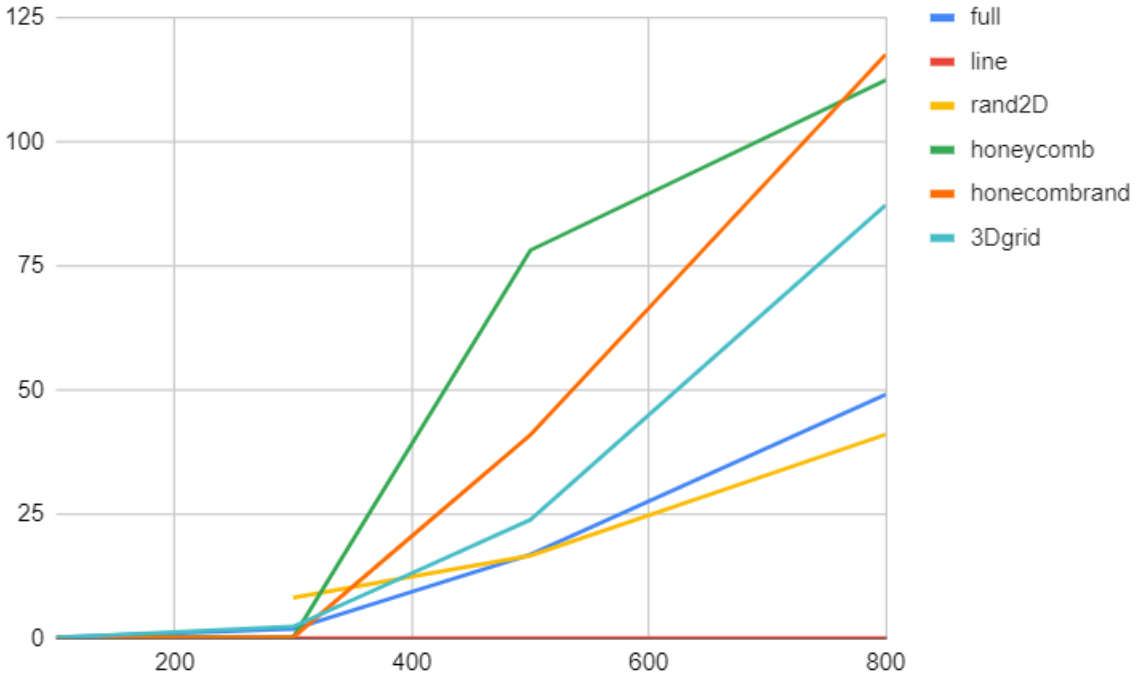
- The failure percentage is taken as fourth arguemnt after algorithm from the user. eg. 10, 20, 30
- Said percentage of nodes are randomly removed (disabled) from the topology.
- The disabled nodes do not transmit messages further to other nodes.
- Spread is defined as (Number of nodes that reached convergence / Total number of active and inactive nodes) * 100 %

Observation:

For 10% faulty nodes



For 15% faulty nodes



Note: Instances where the rumour was sent to a node having no neighbours stopped immediately and were not taken into consideration for the observations

Conclusions:

- Full topology shows max spread (approximately equal to number of active nodes). On increasing execution time all active nodes reach convergence.

- Line is very erratic in failure model as the faulty neighbours are random. Thereby, meaningful observations could not be made with respect to varying degree of failure

- It was hard to acheive 70 percent consensus after increasing the failure percent after 20