

PROJECT 2 – GOSSIP SIMULATOR BONUS

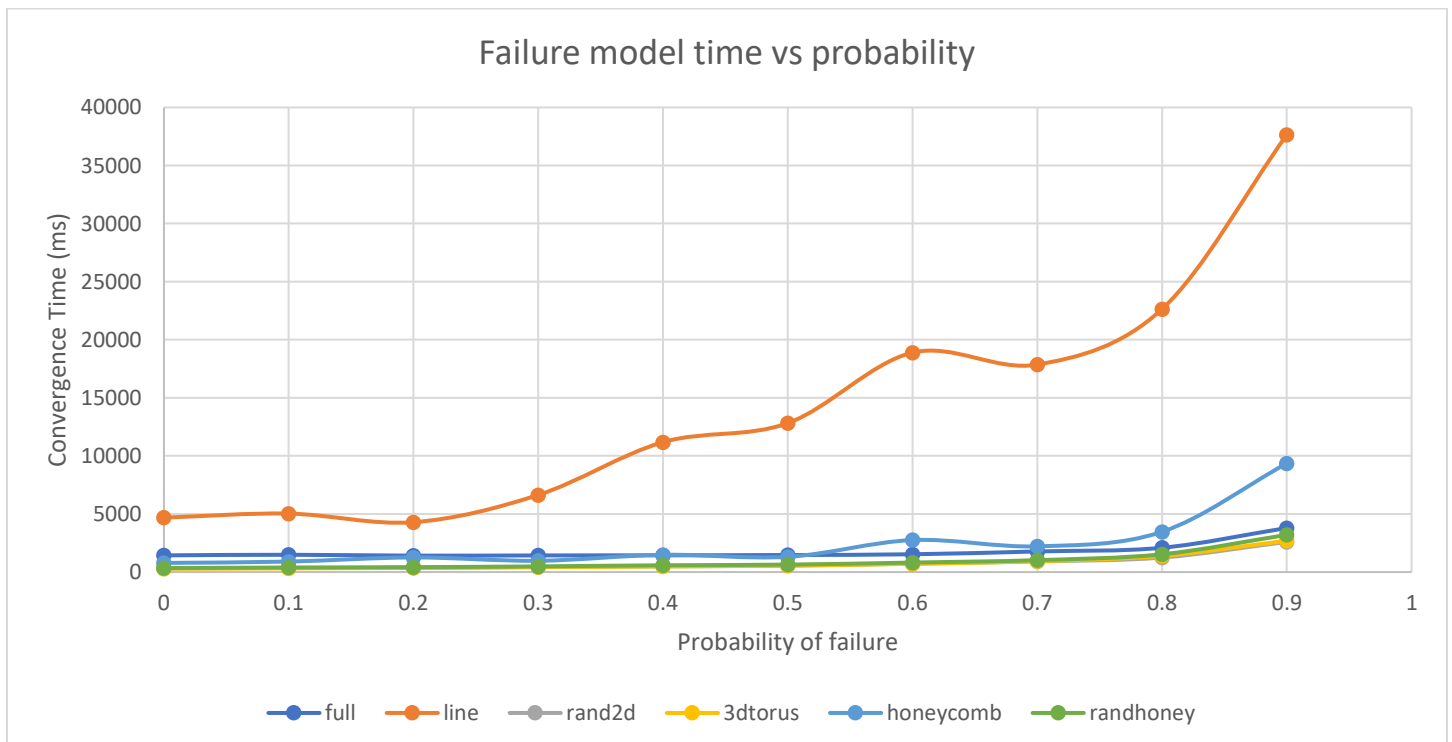
(September 10, 2019 – October 01, 2019)

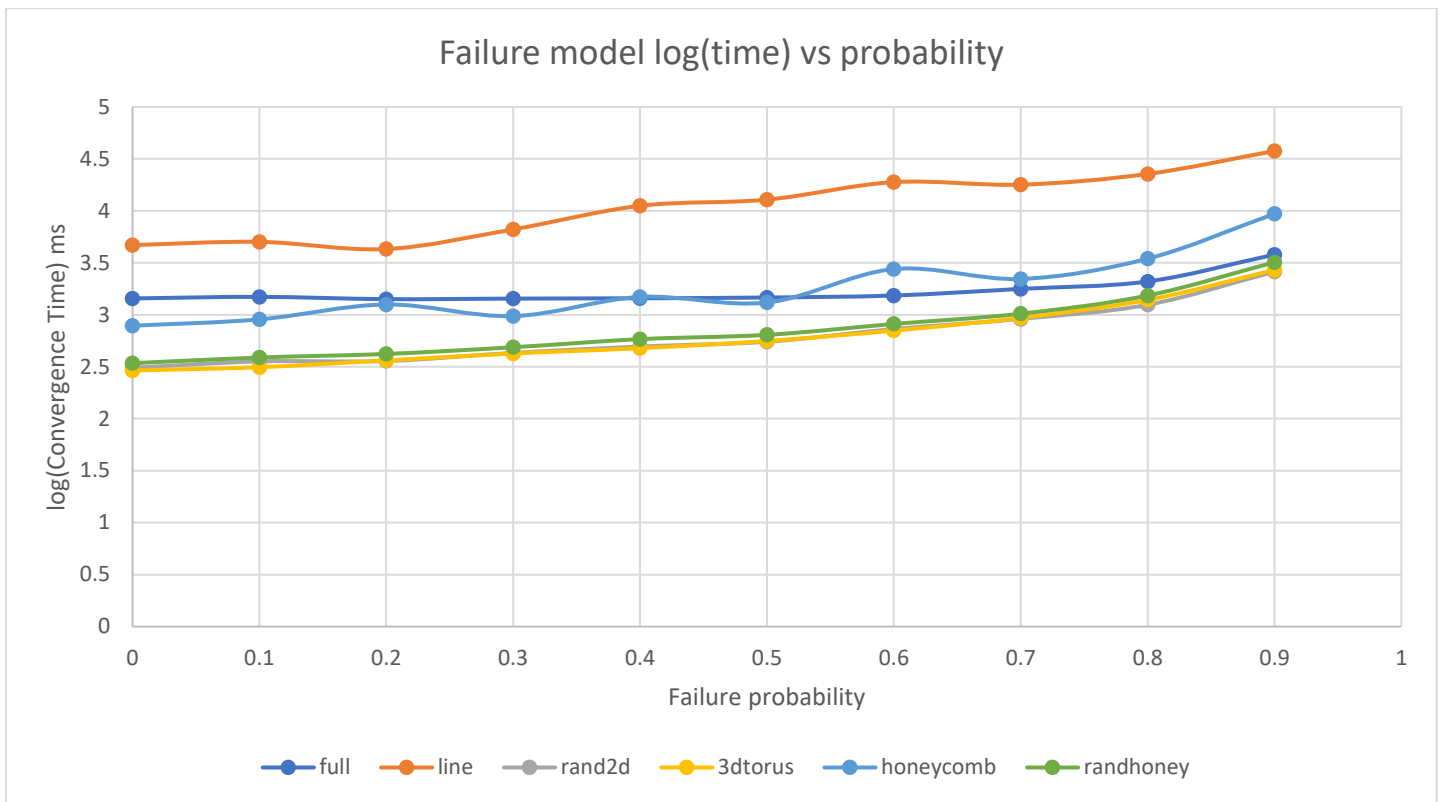
GROUP MEMBERS

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FAILURE MODEL

- Implementation –
 - We have implemented a failure model wherein ever message sent has a probability “p” of getting lost. This can simulate a connection failing temporarily or a message getting lost in routing in the real world.
 - To run the program, supply the failure probability (between 0 and 1) as another argument at the end. Use the command –
./proj2 numNodes topology algorithm failure_prob
 - We have run both the protocols for different values of the failure probability ranging from 0 to 1.
- Gossip protocol observations –
 - Below is the convergence time graph and a log time graph for different failure probabilities and the number of nodes set as 1000.





- These graphs are as expected, the time taken to converge increases as the failure probability increases because more messages get lost in the network.
- There is a big shoot up near the end of the graph because only a very small percentage of messages get transmitted.
- However, the gossip protocol still survives and overcomes the failure because of the high volume of messages in the network. If, by chance, the failure was to occur at the start of the protocol for the first message, then the gossip protocol would not complete.
- Push Sum protocol observations –
 - Since the push sum protocol is like a linear propagation of messages, that is, there is only one message in the network at one time. So, if a failure occurs, the entire transmission chain is broken, and the network must terminate even if it is not converged.
 - Hence a push sum protocol is not able to recover from a failure model where a message may get lost.