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CSE 160-02L

Proj 1 Questions

1) Designing the logic and functionality of a program becomes simple in event driven programming because you can choose what to define as an event and how each event will occur. It also gives you greater abstraction like scaling your system. A con would be that it is harder to code because you run into the issue of having to do a lot of linking or “plumbing” to connect all relevant events.

2) The benefit of both is obviously the ability to have two methods of checking for circulating packets. Flooding checks allows nodes to always check if they have seen a packet more than once and thus will not rebroadcast if already seen. TTL will decrement every time its packet is rebroadcast and once TTL is equal to 0, the packet is dropped. Both methods stop a packet from circulating indefinitely. If we only had flooding checks, in worse situations, we could have a huge spread out and well connected network that allows nodes to always rebroadcast a packet forward and no flooding check will occur allowing the packet to get very far from its destination. Only TTL checks will cause packets to be passed along until TTL =0 causing network congestion until the packets “die out”. Both methods work hand in hand together.

3) In best case, all nodes are connected in a line, limiting how many packets can circulate through the network because of the absence of loops and only two directions the packet is able to go. So we have n nodes. This is the best case because since a packet can only go forward and backward, it will continue to go forward until it reaches it’s destination and will always get stopped immediately whenever the packet tries going backwards because of packet checks. Each node will then see the same packet twice, one when first receiving and when the packet goes backwards.

In worst case, every node in the network is connected to every other node, so each node will have n-1 connections and every time a node sends out a packet, it sends it out to n-1 nodes causing major network congestion. Each node sends a packet to n-1 nodes and will see a packet n-1 times causing congestion, collisions and lost of packets.

4) To reduce congestion, instead of sending packets with the AM broadcast address, nodes can send packets individually to each neighbor by iterating through them and staggering the packets. Congestion is reduced because the signal is not broadcasted to every node in range and stops the use of the broadcast channel by every node.

5) One design decision I could’ve done differently was my implementation of neighbor discovery, I was thinking about how to incorporate a “life” with a neighbor node that would allow nodes to check if their neighbors are still their neighbors or not. I was going to use the given hash data structure for this but what I did was create a struct called neighbors that had two values, node and life and it allowed me to be more flexible in my implementation but it did cause a lot of segmentation faults I had to figure out.