16-124-836
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8.1 Difference between pro-active and reactive routing. Give a scenario where each routing approach could be suitable.

In pro-active routing the routing tables are precalculated and the updated each time there is a change. On the other hand reactive routing establishes routes on-demand.
Because of the need ot precalculation for the pro-active approach, it is not as suitable for networks with a lot of nodes, because the overhead and the storage requirement for storing all routing tables become very high. Therefore for a network with many nodes a reactive approach is much more suitable.
For a scenario with only a few nodes but with a high demand of a low delay level between the nodes a pro-active approach is much more suitable, because in a reactive approach the routes are computed on-demand and therefore the delay level is mich higher than for the pro-active routing.

8.2 Given the probabilty of packet loss in a WSN is 0.12 (both directions)[assume 1-hop communication].

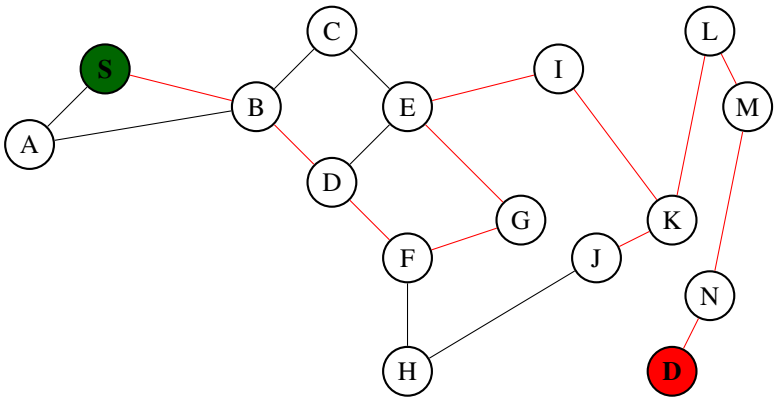
8.2.1 What is the probability for non-successful packet transmission?

$$p = 1 - (1 - 0.12) \times (1 - 0.12) = 1 - 0.88 \times 0.88 = 0.2256$$

8.2.2 What is the probability of successful packet delivery after 5 attempts?

$$s(5) = 0.2256^{5-1} \times (1 - 0.2256) = 2.006 \times 10^{-3}$$

8.3 Given the following network (not to scale):



Derive the path that a packet is routed from the source (S) to the destination (D) with the GPSR algorithm. Quote the state (greedy | perimeter) on each node for forwarding packets.
Assuming that distance (K, **D**estination) is bigger than distance (J, **D**estination):
Source (greedy) → B (greedy) → D (greedy) → F (greedy) → G (perimeter) → E (perimeter) → I (perimeter) → K (greedy) → J (perimeter) → K (perimeter) → L (perimeter) → M (perimeter) → N (greedy) → **D**estination