Quiz Submissions - Test 2

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Attempt 1

Written: Nov 3, 2021 7:30 PM - Nov 3, 2021 9:00 PM

Submission View

Your quiz has been submitted successfully.

Question 1 **4 / 10 points**

Consider the following communication graph. Perform:

i) GFG using both right-hand and left-hand rule

ii) GOAFR (Greedy Other Adaptive Face Routing) using both right-hand and left-hand rule to a find path from **S** to **M**.

Give the edges (or list of nodes) in each case in the space provided. Identify the nodes where recovery begins. Use the example format below to show your answer:

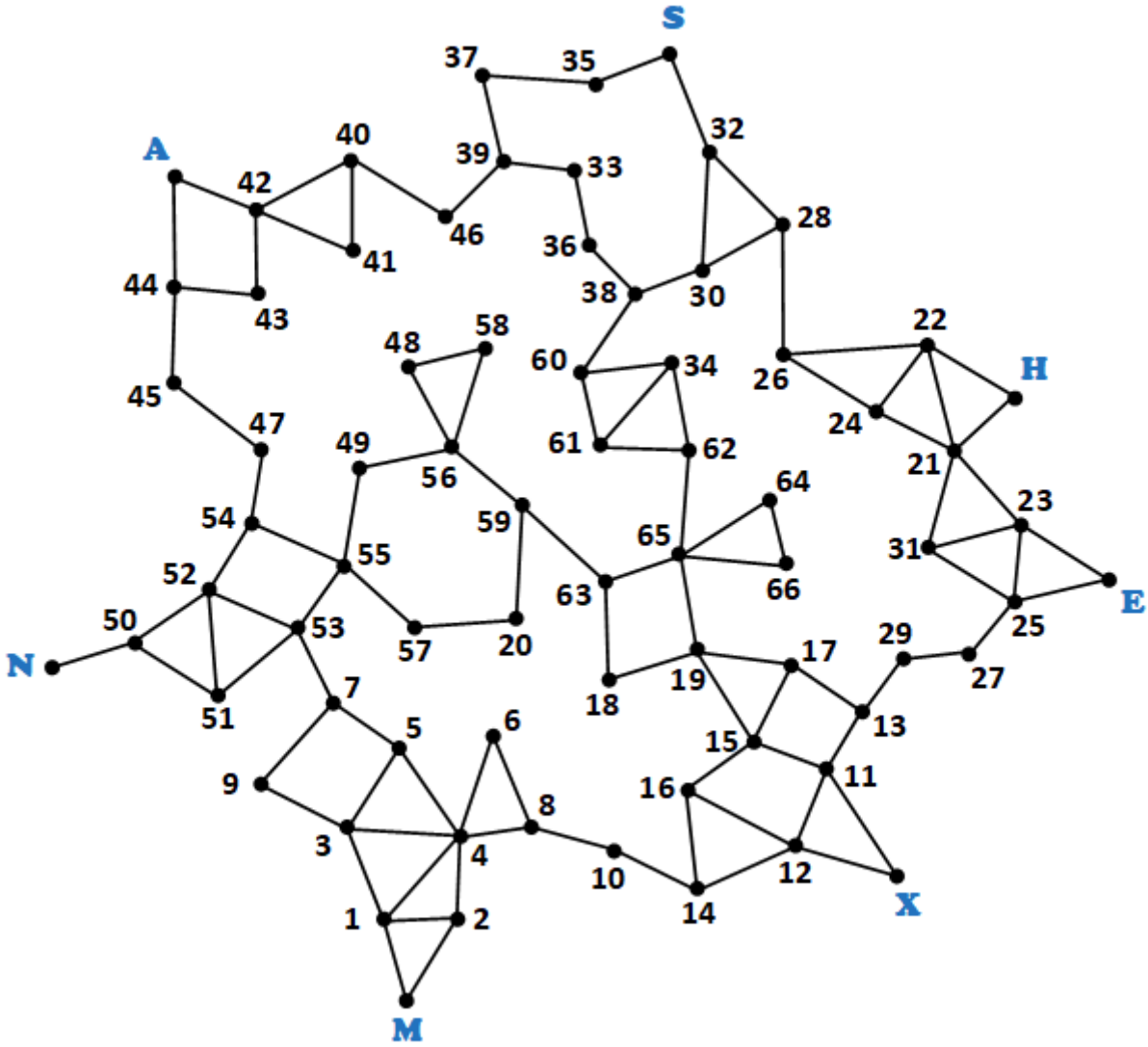
GFG/GOAFR

(LHR): Greedy: S, 2, 5; Face: 5, 6, 7, 8, 14; . . .

Recovery Points:

(RHR): Greedy: S, 2, 5; Face: 5, 4, 10, 11; . . .

Recovery Points:



GFG

- **LHR:** S,32,30,38,60,61,62,65,63,18,19,15,16,14,10,8,4,2,M
- **RHR:** S,35,37,39,46,40,41,42,43,44,45,47,54,55,53,7,9,3,1,M

GOAFR

- **LHR:** S,32,30,38,60,61,62,65,63,18,19,15,16,14,10,8,4,2,M
- **RHR:** S,35,37,39,33,36,38,60,61,62,65,63,59,20,57,55,53,7,5,4,2,M

The correct answer is not displayed for Written Response type questions.

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You have no clue on how GFG and GOAFR work.

GFG LHR: Greedy: S, 32, 30, 38, 60, 61; Face: 61, 62, 65; Greedy: 65, 63, 18; Face: 18, 19, 15, 16; Greedy: 16, 14, 10, 8, 4, 1, M
Recovery points: 61, 65, 18, 16

GFG RHR: Greedy: S, 32, 30, 38,60, 61; Face: 61, 60, 38, 36, 33, 39, 46, 40, 41, 42, 43, 44, 45, 47; Greedy: 47, 54, 55, 53, 7, 5, 4, 1, M

Recovery points: 61, 47

GOAFR LHR: Greedy: S, 32, 30, 38, 60, 61; Face: 61, 62, 65, 63; Greedy: 63, 18; Face: 18, 19, 15, 16, 14, 10, 8, 6, 4; Greedy: 4, 1, M

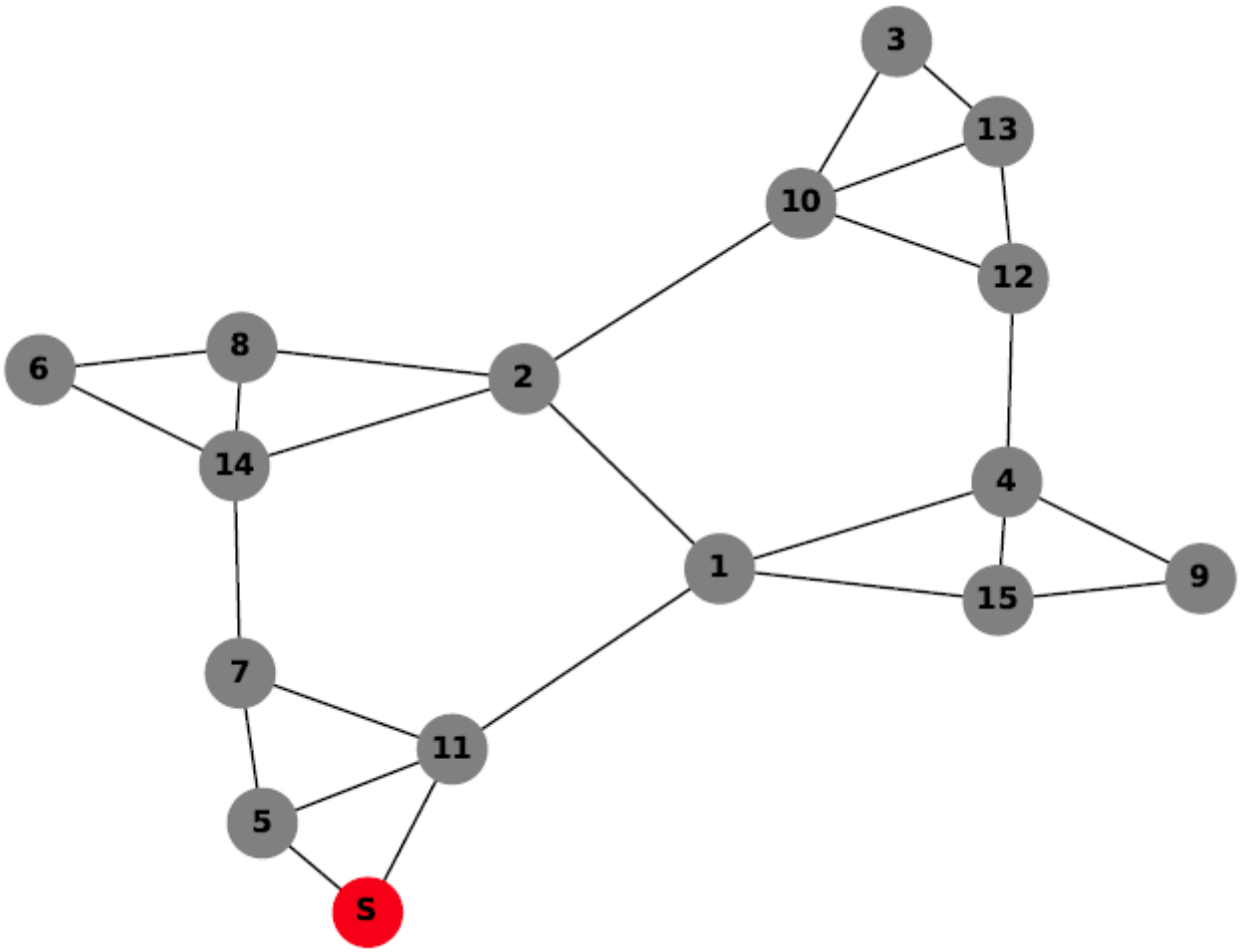
Recovery points: 61, 63, 18, 4

GOAFR RHR: Greedy: S, 32, 30, 38, 60, 61; Face: 61, 60, 38, 36, 33, 39, 46, 40, 41, 42, 43, 44, 45, 47, 54, 55; Greedy: 55, 57; Face: 57, 55, 53, 7, 5, 4; Greedy: 4, 1, M

Recovery points: 61, 55, 57, 4

Question 2 **2 / 8 points**

Follow neighbor elimination based broadcasting on the figure below, with **S** as the source node. The key for timeout comparisons is *(timeout, lowest ID);* that is, if timeouts are same, node with lower ID number will transmit first. For timeout, use formula *timeout = 1 / (number of uncovered neighbors).* Showing the timer values, list nodes that will retransmit in the process, in the order of retransmissions. You will only receive marks up to the last correct node in order.



S,11,

S transmits- 5: 1, 11: 1/2

11 transmits- 1: 1/3, 7: 1/2

1 transmits: 15 out, 2: 1/3, 4: 1/2

The correct answer is not displayed for Written Response type questions.

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S transmits: 5: 1; 11: 1/2;
11 transmits: 1: 1/3; 7: 1;
1 transmits: 7: 2/3; 15: 1; 4: 1/2; 2: 1/3;
2 transmits: 7: 1/3; 15: 2/3; 4: 1/6; 10: 1/3; 8: 1; 14: 1/2;
4 transmits: 7: 1/6; 10: 1/6; 8: 5/6; 14: 1/3; 12: 1/2;
7 transmits: 10: 0; 8: 2/3; 14: 5/6; 12: 1/3;
10 transmits: 8: 2/3; 14: 5/6;
8 transmits.

Question 3 **1 / 2 points**

Would it be appropriate to use a probability-based or area-based broadcast scheme in a dense static ad hoc network? Explain with reason.

It would be appropriate to use probability-based broadcast schemes in a dense static ad hoc network because of the following reasons:

1. Multiple nodes can share similar transmission coverage areas and hence **some nodes need not retransmit**. This results in lesser power usage of the overall network.
2. In a dense network, **nodes are placed close to each other** and hence if we use an area-based scheme then the **coverage** of node(s) is very **small**. Thus, prefer a probability-based scheme and NOT an area-based scheme.

The correct answer is not displayed for Written Response type questions.

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The area-based and probability-based schemes are considered as **flooding-based mechanism**. Although they provide good reachability in the case of the sparse network, in the dense topology, they are considered a resource wasting mechanism. Therefore, the area-based and probability-based schemes are **undesirable** in dense static ad hoc networks.

Question 4 **2 / 2 points**

Explain how the contention-based forwarding scheme works.

Contention-based forwarding works based on timer(s).

When a **forwarder** node **has more than one candidate**, to forward a message to, this scheme comes into the picture. **Neighbors/candidates make** a **selection within themselves** to receive the forwarder node's message.

Each neighbor sets a **timer proportional to** the **distance from** the **destination** node. Whichever timer goes off first, is the first one to acknowledge and receive the forwarder's message. As soon as the forwarder starts to send data to the selected node, other neighbors cancel their timers.

The correct answer is not displayed for Written Response type questions.

Question 5 **2 / 2 points**

Compare Distance Routing Effect Algorithm for Mobility (DREAM) with Location Aided Routing (LAR). Also, what do they have in common?

In **DREAM**, each node **periodically advertises its location** to the network through hello messages whereas in **LAR** there is a specific **request zone and** an **expected zone** defined.

In **DREAM**, the node **sends** the **packet to all 1-hop neighbors** in direction of the destination whereas in **LAR RREQ packet is only sent to nodes present within** the **request zone.**

DREAM and LAR have one thing in common, which is creating a **specific zone for destination** and also **usage of flooding**.

The correct answer is not displayed for Written Response type questions.

Question 6 **2 / 2 points**

What is the difference between dominant pruning and multipoint replay with respect to the selection of forwarding nodes?

1. In Dominant Pruning forwarding nodes are selected by neighbors whereas In Multipoint relay forwarding nodes are selected by upstream senders.
2. In Dominant pruning, 2-hop neighbors are precalculated and the decision to retransmit is based on the message. If the message contains the address of the current node then compute neighbors, include in the packet, and retransmit else don't transmit. In Multipoint relay, if receiving node is a member of the MPR set then only retransmission through it is allowed.

The correct answer is not displayed for Written Response type questions.

Question 7 **1 / 2 points**

Probability method-based broadcast is better than neighbor knowledge-based broadcast. Explain with reason if you agree or disagree.

I agree with the above statement.

Probability-based methods broadcast only with predetermined probabilities. In a network, randomly having some nodes not rebroadcast saves network and node resources without harming delivery effectiveness, whereas in Knowledge-based broadcast, knowledge of 1-

hop neighbors is required which is calculated using periodic hello packets and hence using more network resources.

The correct answer is not displayed for Written Response type questions.

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Disagree. Neighbor knowledge-based broadcast defers rebroadcast by overhearing packets from its neighbors first.

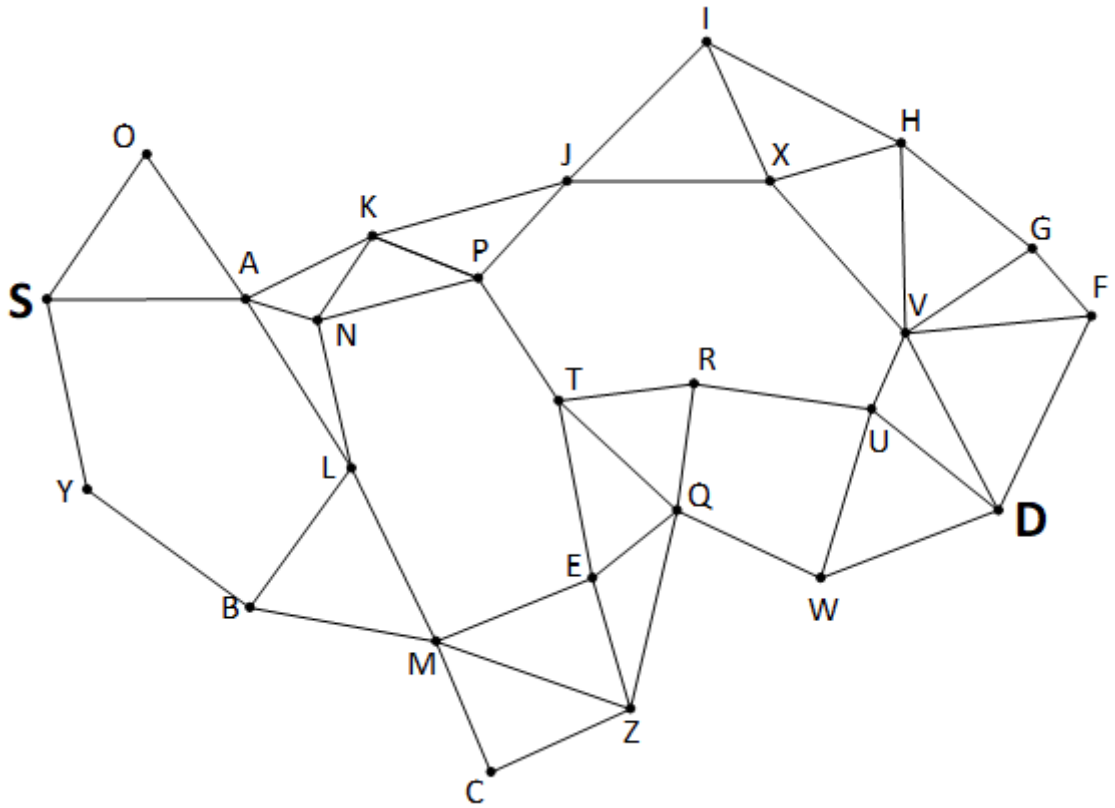
It does not introduce extra transmission overhead. **(less overhead)**

It reduces more unnecessary transmissions than probabilistic broadcast. **(less retransmissions)**

Therefore, neighbor knowledge-based broadcast is better in terms of achieving higher delivery ratio and lower transmission overhead.

Question 8 — 0 / 2 points

An alternative to Most Forward within Radius (MFR) is Nearest with Forward Progress (NFP) in which each node sends the packet to the nearest neighbor with forward progress. Find the route from S to D in the following topology using NFP.



Route: S, A, N, P, T, R, U, D

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S-O-A-N-K-P-J-X-H-G-F-D

Attempt Score:14 / 30 - E

Overall Grade (highest attempt)**:**14 / 30 - E

Done