Quiz 2 -- Link Layer

f20212732@goa.bits-pilani.ac.in Switch account

* Indicates required question

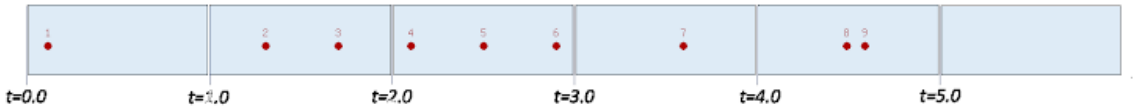
Email *

- [x] Record **f20212732@goa.bits-pilani.ac.in** as the email to be included with my response

Which of the following are concerns with the "polling" protocol

- [x] There is latency as nodes have to wait for their turn to transmit
- [x] It is possible to have a single point of failure
- [ ] There can be collision of the data packets transmitted
- [ ] The same channel is shared by multiple users at the same time for data transfer

Consider the figure below, which shows the arrival of 9 messages for transmission at 9 different multiple access wireless nodes at times t = <0.1, 1.3, 1.7, 2.1, 2.5, 2.9, 3.6, 4.5, 4.6> and each transmission requires exactly one time unit. Do not worry about retransmission in case of collision.



- [x] Message 2 will be transmitted at t=1.3 in pure Aloha protocol
- [ ] Message 2 will be transmitted at t=1.3 in slotted Aloha protocol
- [ ] If the protocol used is CSMA, and it takes t=0.4 for a node to receive another node's transmission, then message 3 will be transmitted, but message 2 will not be transmitted.
- [x] If the protocol used is CSMA, and it takes t=0.4 for a node to receive another node's transmission, then message 2 will be transmitted, but message 3 will not be transmitted.

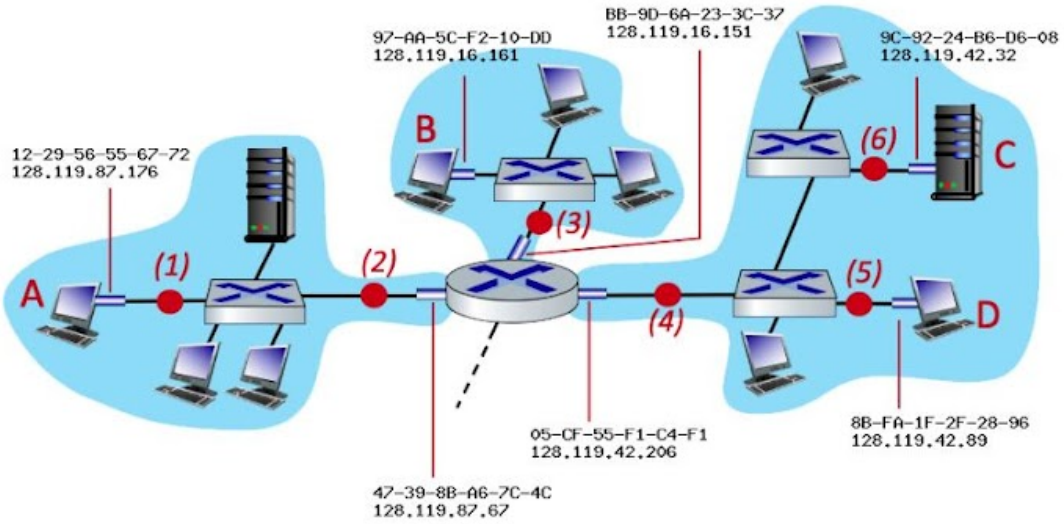
Consider the generator, G=x^4+x+1, and suppose that D has the value 10101010. What is the value of R?

- [x] None of the options are correct
- [ ] 1101
- [ ] 0100
- [ ] 1001

Select all True statements. In the Ethernet protocol the receiving NIC sends

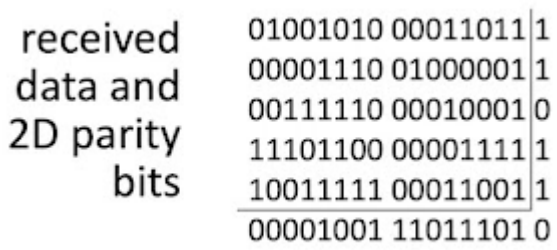
- [ ] only ACKS to sending NIC.
- [ ] only NACKS to sending NIC.
- [ ] both ACKS and NACKS to sending NIC.
- [x] neither ACKS or NACKS to the sending NIC.

Consider the figure below. The IP and MAC addresses are shown for nodes A, B, C and D, as well as for the router's interfaces. Consider an IP datagram being sent from node D to node A.



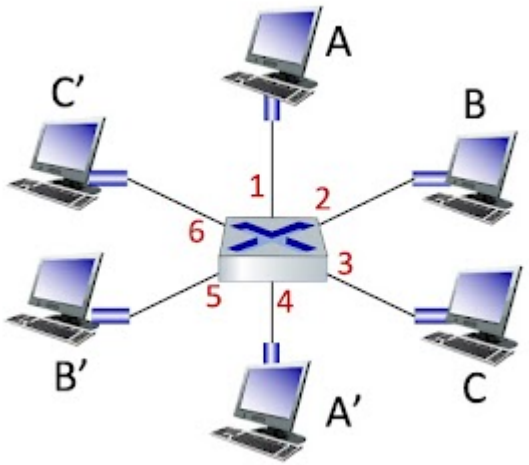
- [x] The source MAC address at point (1) is 47-39-8B-A6-7C-4C
- [ ] The source MAC address at point (1) is 8B-FA-1F-2F-28-96
- [x] The destination MAC address at point (1) is 12-29-56-55-67-72
- [ ] The destination MAC address at point (1) is 47-39-8B-A6-7C-4C

Suppose that a packet's payload consists of 10 eight-bit values (e.g., representing ten ASCII-encoded characters) shown below. (Here, we have arranged the ten eight-bit values as five sixteen-bit values). The received data (including parity) bits are shown. Even parity is used. One received data bit has been flipped. Which one is it? (row and column numbering start at 1)



- [ ] Error is in Row 1
- [x] Error is in Row 3
- [ ] Error is in Column 1
- [ ] Error is in Column 3

Consider the network below with six nodes, star-connected into an Ethernet switch. Suppose that A sends a frame to A', A' replies to A, then B sends a message to B' and B' replies to B, and then A sends to B and B replies to A. In this sequence of frame transmissions, how many frames have appeared at the interface at C'? Assume that the switch's table is initially empty.



- [ ] None of these frames appear at C's interface, since none of the fames were addressed to C'.
- [x] Two frames appear at the C' interface.
- [ ] Five frames appear at the C' interface.
- [ ] Not possible to estimate without the routing table

The hamming distance between two code words C1 = [1101 0011] and C2 = [1011 0011] is

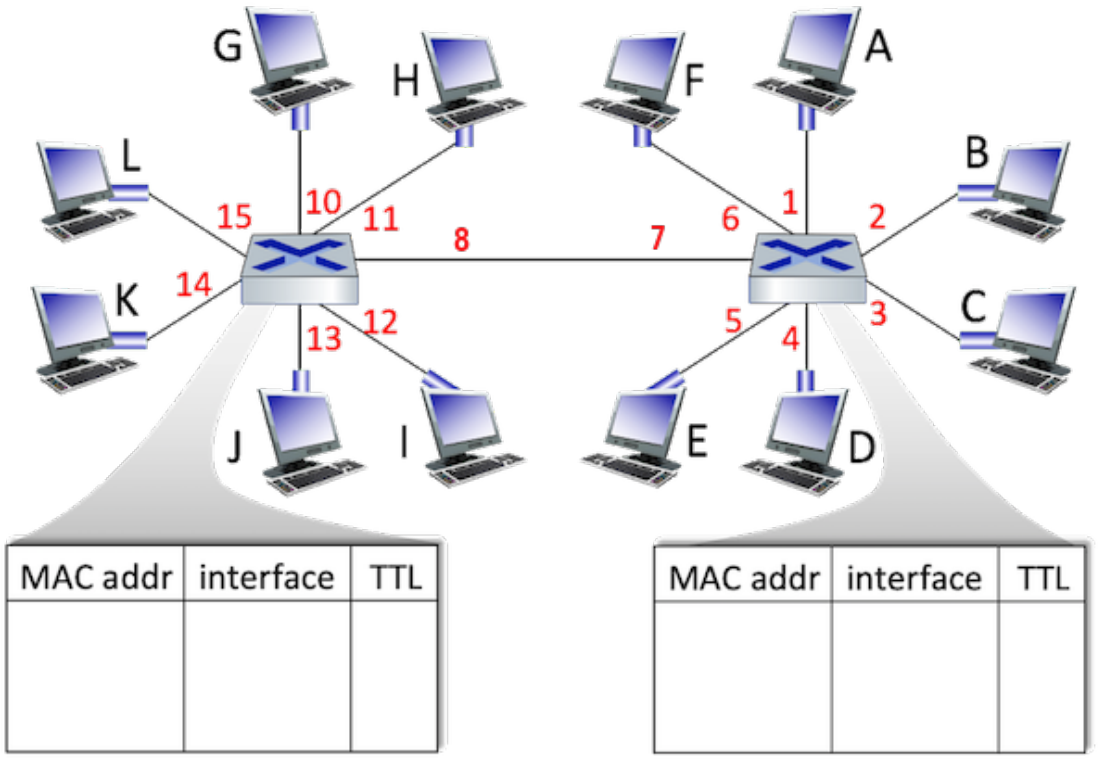
- [x] 2
- [ ] 4
- [ ] 6
- [ ] 0

Which of the following can be part of a data centre

- [x] TOR switches
- [x] Blade servers
- [x] Load Balancers
- [x] Border Router

Consider the LAN below consisting of 10 computers connected by two self-learning Ethernet switches (Switch 1 has interfaces 1 to7, switch 2 has interfaces 8 to 15 (except 9)).
At t=0 the switch table entries for both switches are empty. At t = 1, 2, 3, and 4, a source node sends to a destination node as shown below, and the destination replies immediately (well before the next time step). Select the correct answers based on the exchange described below: (You may ignore the TTL values)

t==1 B--> J
t==2 D--> C
t==3 B--> I
t==4 K--> C



- [ ] At the end of t==1, switch 1's entries are (B,2), (J,13)
- [x] At the end of t==1, switch 1's entries are (B,2), (J,7)
- [ ] At the end of t ==2, (D,8) is added to switch 2's table
- [x] At the end of t ==2, (D,4) is added to switch 2's table

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