

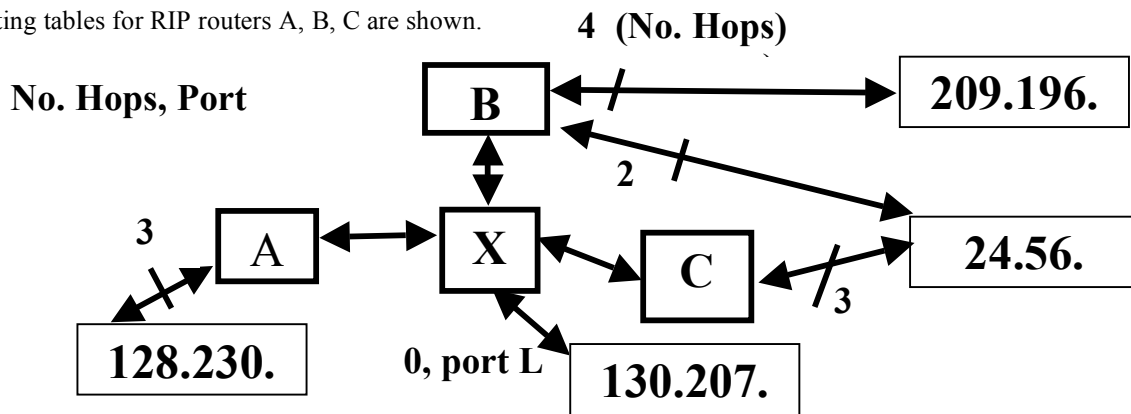
ECE3076 QUIZ 2 ANSWERS
April 6, 2007

RULES.

- i This quiz is **not** open book. One original sheet of hand-written notes may be used. Calculators are ok.
- ii Answer all questions and show all work to receive full credit. Use back of sheets only if necessary.
- iii Please do not ask the proctors any questions during the exam about exam questions. Part of the test is understanding the question, as written, without supplemental information. If you feel additional data is needed to solve the problem, make (and state) an assumption and then work the problem.
- iv This is a time-limited test. All papers must be turned in 90 minutes after the start. If you find you are taking more than 10 minutes on a particular problem, move on and come back to that problem after finishing the others.
- v The Georgia Tech Honor Code applies (see last page).

Question 1 – Routing, Distance Vector, RIP (Bellman-Ford Algorithm) (20 points)

The routing tables for RIP routers A, B, C are shown.



Router A Table		
Prefix	Distance	Port*
128.230.	3	N
130.207.	1	X
209.196.	6	X
24.56.	4	X

Router B Table		
Prefix	Distance	Port*
128.230.	5	X
130.207.	1	X
209.196.	4	M
24.56.	2	Q

Router C Table		
Prefix	Distance	Port*
128.230.	5	X
130.207.	1	X
209.196.	6	X
24.56.	3	P

Construct the Routing Table for Router X

Router X Table		
Prefix	Distance	Port*
128.230.	4	A
130.207.	0	L
209.196.	5	B
24.56.	3	B

Using Poison Reverse (max = 15), construct the Updates sent from Router X to A,B,C.

Update, X to A Table	
Prefix	Distance
128.230.	15
130.207.	0
209.196.	5
24.56.	3

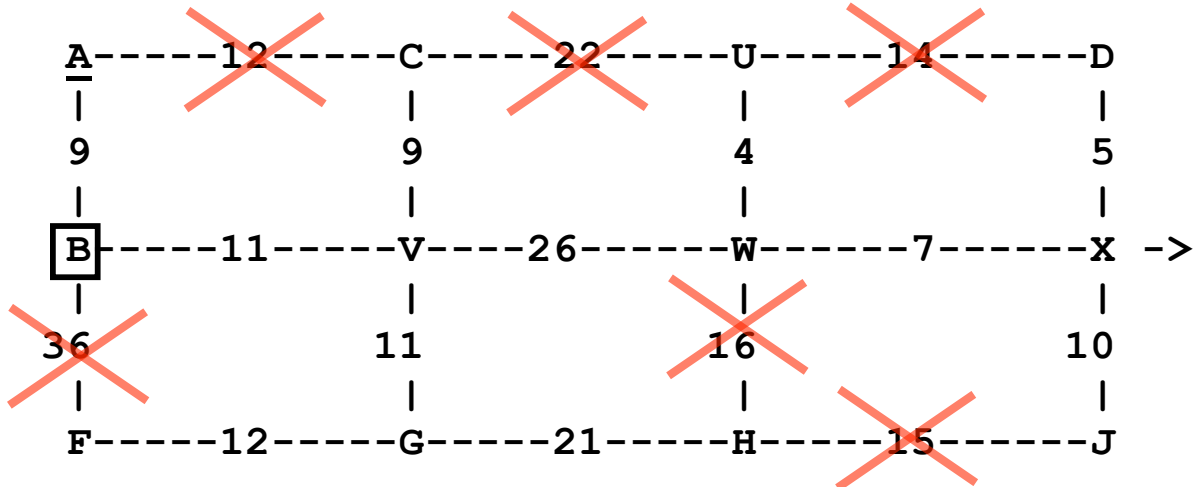
Update X to B Table	
Prefix	Distance
128.230.	4
130.207.	0
209.196.	15
24.56.	15

Update X to C Table	
Prefix	Distance
128.230.	4
130.207.	0
209.196.	5
24.56.	3

Question 2– Routing, Link State, OSPF (25 points)

Every router (A, B, ..., J) has advertised the costs (delays) to all the other nodes
 Based on all the advertisement messages, the network topology and link costs can be mapped. The letters below represent the nodes (routers) on the network. The numbers represent costs (delay-times) on the links between them. For simplicity, we assume the costs are the same in each direction of a link.

These nodes are all routers (no networks) and for simplicity routes have the same cost in both directions.



A. Using Dijkstra's technique, calculate the minimum cost values of routes from node "B" to the following.

F-[34], G-[22], D-[49], X-[44], J-[54]

B. Cross out (X) the links that are not on the sink tree for node B.

C. Fill in the Routing Table for Node B (* indicate Port by the node to which it connects).

Node B Table	
Destination	Port*
A	A
F	V
D	V
J	V

Question 3. Aggregate the following routing table into two lines. Put them in the correct order (so that the first match will be the correct one). (10 points)

Sub-net	Physical Port
10.25.16.0 / 24	A
10.25.17.0 / 24	B
10.25.18.0 / 24	A
10.25.19.0 / 24	A

Sub-net	Physical Port
10.25.17.0 / 24	B
10.25.16.0 / 22	A

Question 4. Calculate the CRC using the Generator Polynomial 1101 for a bit stream 101001 . (10 points)
Show calculation below.

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[**001**] write CRC here.

Question 5. Answer the following with: **H** for hub, **S** for switch, **B** for both, **N** for neither **Ethernet** device. (21 points)

- [**S**] Send most Ethernet frames out only one port.
- [**H**] Sends all Ethernet frames out every port, except the arrival port.
- [**S**] Learns which port addresses are on by looking at frame source addresses.
- [**H**] For WiFi connected hosts, a Wireless Access Port behaves like a _____(H or S).
- [**B**] Sends MAC-layer broadcast frames out every port, except the arrival port.
- [**N**] Sends ARP packets to link IP addresses with Ethernet addresses.
- [**H**] Cheapest way to connect several computers in a room to a single Ethernet wall socket.
- [**S**] Can be used to partition an Ethernet network into multiple collision domains.

Question 6. Name that Protocol (15 points)

- [**OSPF**] Broadcasts information only about delays on links connected to itself.
- [**RIP**] Sends network neighbors information about hop-counts to all nodes in network.
- [**DHCP**] Uses UDP to negotiate a lease for network configuration information.
- [**IP**] Allows packets to be split into a series of smaller packets.
- [**ARP**] Sends MAC broadcast frames to discover Ethernet addresses.

Honor Code - I affirm that I have obeyed the rules of the Georgia Tech Honor Code*.

Signature _____

*Basically, I did not cheat, and I reported any observed cheating. A grade will not be recorded if there is no signature.