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Due: 7:00PM, Thursday, 4/30/2016

CSC645 Computer Networks

Homework 3

1. Slow start is used by a sender to control transmission rate. It is sender based flow control of the return rate of acks from a receiver. If the congestion window becomes too large, packets might get dropped, which triggers a timeout for the sender triggering congestion avoidance, which slows the transmission rate.
2. When you move packets from a router's input to the appropriate router output, that is called forwarding. When you determine the route taken by packets from source to destination, that is called routing. The difference between them is that routing takes into account the entire path from host to host, while forwarding only determines next node.
3.
    a.

Prefix match	Link interface
11100000 00	0
11100000 01000000	1
11100000	2
11100001 0	2
otherwise	3

    b.
        i. 11001000 10010001 01010001 01010101 prefix matches 5th entry: link interface 3
        ii. 11100001 01000000 11000011 00111100 prefix matches 4th entry: link interface 2

iii. 11100001 10000000 00010001 01110111 prefix matches 5th entry: link interface 3

c.

Prefix match	Link interface
11100000 00 (224.0/10)	0
11100000 01000000 (224.64/16)	1
11100000 (224/8)	2
11100001 0 (225.0/9)	2
otherwise	3

4.

Destination address range	Link interface
00000000 through 00111111	0
01000000 through 01111111	1
10000000 through 10111111	2
11000000 through 11111111	3

5. Max size of data field in each fragment is 680. The number of fragments is (2400-20)/680 = 4. Each fragment will have an ID number of 422 and each fragment except the last one, which will be 700 bytes.The last datagram will be 360 bytes. The offsets of the 4 fragments will be 0, 85, 170, and 255. Each of the first 3 fragments will have flag = 1 and the last fragment has flag = 0.

6.

Step	N’	D(t), p(t)	D(u), p(u)	D(v), p(v)	D(w), p(w)	D(y), p(y)	D(z), p(z)
0	x	Infinite	Infinite	3, x	6, x	6, x	8, x
1	xv	7, v	6, v	3, x	6, x	6, x	8, x
2	xvu	7, v	6, v	3, x	6, x	6, x	8, x
3	xvuw	7, v	6, v	3, x	6, x	6, x	8, x
4	xvuwy	7, v	6, v	3, x	6, x	6, x	8, x
5	xvuwyt	7, v	6, v	3, x	6, x	6, x	8, x
6	xvuwytz	7, v	6, v	3, x	6, x	6, x	8, x

7.

Step 1

	Destination					
Source		u	v	x	y	z
	v	Infinite	Infinite	Infinite	Infinite	Infinite
	x	Infinite	Infinite	Infinite	Infinite	Infinite
	z	Infinite	6	2	Infinite	0

Step 2

	Destination					
Source		u	v	x	y	z
	v	1	0	3	Infinite	6
	x	Infinite	3	0	3	2
	z	7	5	2	5	0

Step 3

	Destination					
Source		u	v	x	y	z
	v	1	0	3	3	5
	x	4	3	0	3	2
	z	6	5	2	5	0