Tutorial - sheet - 4

Computer Networks

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① Ans) for subnet 1

we need to have support of all the 60 interface and $(2)^6 > = 60$ so the prefix for subnet is 32 - 6 - 26 for subnet 1 = 223.1.170.126 It has 64 different values from 0-63 (64 different value)

for subnet 2

we need to have support of at least 12 interfa and $(2^4 > 12$ - so prefix for subnet 3 is 32-4 = 8, A so subnet 3 = 223.1.17.191.|28

Ans

a.) Subnet A — 214.97.255/24 (256 address)

subnet B — 214.97.255.0|25 - 214.97.35.0|21

Subnet C — 214.97.254.128 |28 (128 address)

subnet D — 214.97.254.D|31 (2 address)

subnet E - 214.97.254.2|31 (2 address)

Subnet F — 214.97.254.430 (4 address)

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(2) Ans

Route 1

longest prefix Match	outgoing Interface
00001110 01100001 11111111	subnet A
00001110 01100000 11111100	subnet D
00001110 01100001 11111101	subnet F

Route 2

longest prefix Match	outgoint Interface
00001110 0110 0001 1111 1111	subnet D
00001110 0110 0001 11111100	subnet B
00001110 0110 0001 11111101	subnet E

Route 3

longest prefix Match	outgoint Interface
00001110 01100001 11111111	subnet F
00001110 01100001 11111100	subnet F
00001110 01100001 11111101	subnet C

Assuming that no datagrams have router interface as ultimate destination and also labeling D, E, F for the upper-right, bottom and upper left interior subnet respectinally

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3.)

a.) Cost of the network links from given figure 0

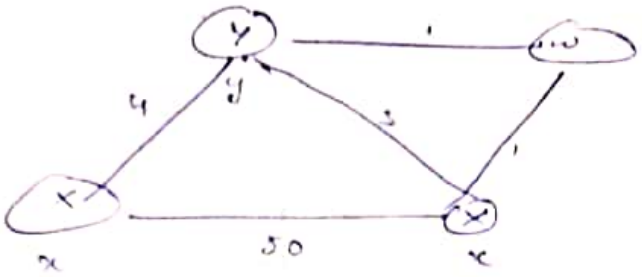
$n(x,z) = 50$

$n(x,y) = 4$

$n(y,z) = 3$

$n(y,w) = 1$

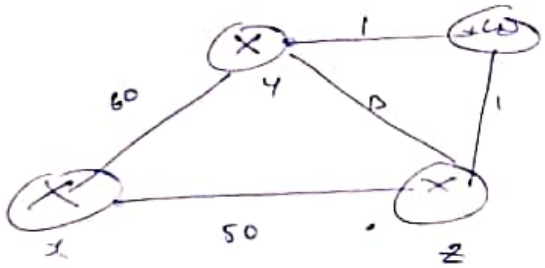
$n(z,w) = 1$



the distence value (D) do they tell each other as

Router z	Informs w $D_z(x) = D$
Router w	Inform y $D_w(x) = 1+1+1 = 6$
Router y	connect y, $D_w(x) = D$
	connect x, $D_w(x) = 5$
	connect w, $D_y(x) = 4$
	connat z $D_y(x) = 4$

b.)



considering that link b/w x and y increased to 60, then there be a count-to-infinity problem even if poisoned reverse is used is used as routing coverging proceed And the core of the count-to-infinity problem is that if A tells B that it has a path some where, there is no way for B to know if the path has B as a path of it

Routing converging process Table follow link change occurs b/w to and t1

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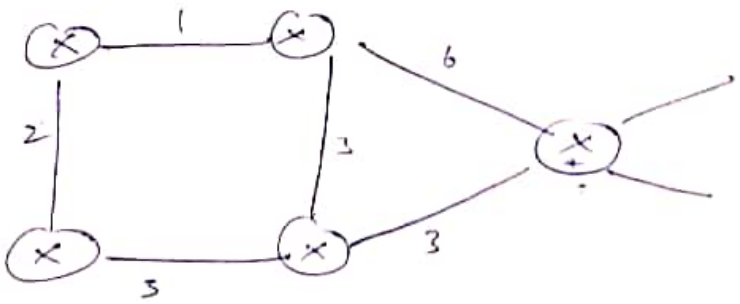
time	to	t1	t2	t3	t4
z	→ w, D(x) = 6 → y, D(x) = 6	NO change	w, D(x) = D → y, D(x) = 11		
w	→ y, D(x) = D → z, D(x) = 5	→ y, D(x) = D → z, D(x) = 10		NO change	
y	→ w, D(x) = 4 → z, D(x) = 4		NO change	→ w, D, b - D - → z, D -	

loops continue, message exchange b/w coy. t

4.)

Ans



step	N'	D(v), p(v)	D(w), p(w)	D(x), p(x)	D(y), p(y)	D(z), p(z)
0	x	∞	∞	3, x	6, x	6, x	3, x
1	x y	7, y	6, y	3, x	6, x	6, x	3, x
2	x y v	7, y	6, v	3, x	6, x	6, x	3, x
3	x y v w	7, y	6, v	3, x	6, x	6, x	3, x
4	x y v w y	7, v	6, v	3, x	6, x	6, x	3, x
5	x y v w y	7, v	6, v	3, x	6, x	6, x	3, x
6	x y v w y z	7, y	6, v	3, x	6, x	6, x	3, x