National University
Of Computer and Emerging Sciences

Assignment-04

In partial
fulfillment of the requirements
for the course of

FA2024-CS3001

Computer Networks

By:

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Question:01

(1)

Match	Action
Source IP 10.1.0.1, Dest IP= 102.0.3	Forward
Src IP 10.1.0.1, IP Dest =10.2.0.4	Forward
Src IP 10.3.0.6, IP Dest=10.2.0.3	Forward
Src IP 10.3.0.6, IP Dest= 10.2.0.4	Forward
Src IP 10.1.0.2 , IP Dest=10.2.0.*	Drop
Src IP 10.3.0.5 , IP Dest =10.2.0.*	Drop

(2)

Match	Action
protocol=TCP, Destination IP 10.2.0.3	Forward
protol= TCP, Dest IP: 10.2.0.4, src:x.x.x.x	Forward
protocol=UDP, src ip: *.x.x.x, dest ip: *.x.*.x	Drop.

(3)

Match	Action
IP src= *.*.*.* , destIP: 10.2.0.3	Forward
IP src=*.*.*.* , dest IP: 10.2.0.4	Drop

(4)

Match	Action
IP src= 10.1.0.1 ,Dest IP: 10.2.0.3, IP protocol: UDP	Forward
Any other traffic	Drop

Question:02

(a)

t=10 Message sent to A, B and C. According to Dijikstra, message sent to D only.

t=110

S sends message to both A and B.

<u>t=210</u>

B sends message to C

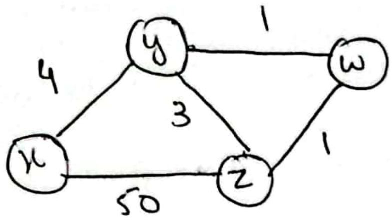
S: 10S
A: 110S
B: 110S
C: 210S

(b)

S→D as it is common for every source's path to destination.

Question:03

(a)



Router z → Connect w, $D_z(x) = \infty$
Connect y, $D_z(x) = 6$

Router w → Connect y, $D_w(x) = \infty$
Connect z, $D_w(x) = 5$

Router y → Connect w, $D_y(x) = 4$
Connect z, $D_y(x) = 4$

(b)

Consider that the link cost between x and y increases to 60. Then there be a count-to-infinity problem even if poisoned reverse is used as routing converging process.

Routing converging process table:

Time	t_0	t_1	t_2	t_3	t_4
z	Connect w, $D_z(x)=\infty$ Connect y, $D_z(x)=6$			Connect w, $D_z(x)=\infty$ ~~Connect~~ y, $D_z(x)=11$	

Time	t_0	t_1	t_2	t_3	t_4
w	Connect y, $D_w(x)=\infty$ Connect z, $D_w(x)=5$		~~Connect~~ y, $D_w(x)=\infty$ ~~connect~~ z, $D_w(x)=10$		NO change
y	Connect w, $D_y(x)=4$ Connect z, $D_y(x)=4$	Connect w, $D_y(x)=9$ z, $D_y(x)=\infty$			Connect w, $D_y(x)=14$ Connect z, $D_y(x)=\infty$

(c)

if link between router of c(y,x) changes is removed then there is no count to infinity problem even if the cost of link changes from 4 to 60.

(Question:04)

$y = 1169$

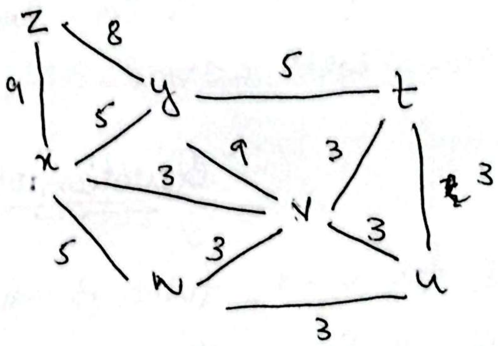
$a = 0 + 8 = 8$

$b = 4 + 5 = 9$

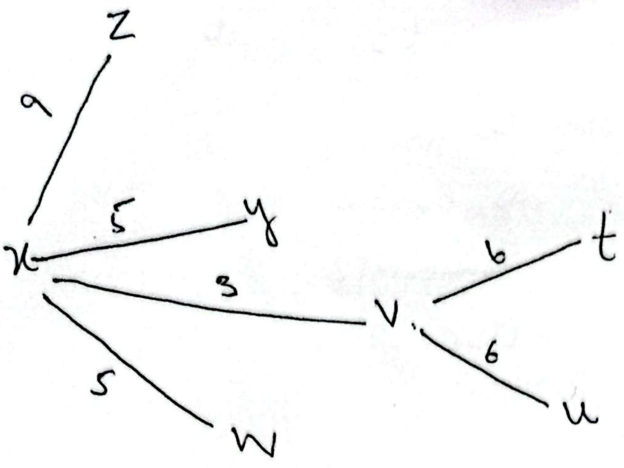
$c = 1 + 4 = 5$

$d = 1 + 3 = \cancel{3}4$

$e = 1 + 2 = 3$

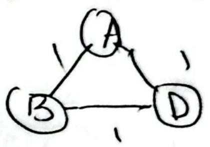


Step	N	z ✓	y ✓	w	v ✓	u	t
0	x	9, x	5, x	5, x	3, x	∞	∞
1	x, z		5, x	5, x	3, x	∞	∞
2	x, z, v		5, x	5, x	~~3, x~~	6, v	6, v
3	x, z, v, y			5, x		6, v	6, v
4	x, z, v, y, w					6, v	6, v
5	x, z, v, y, w, t					6, v	
6	x, z, v, y, w, t, u						



Question: 05

(a) All except SecondMinCost will work fine. Consider a triangle topology with 3 nodes, A, B, D, and equal cost on all links. The second route at A to D is via B, and the second best route at B to D is via A, resulting in a routing loop.



(b) Add the square of the linked cost to any route costs advertised over that link.

Question: 06

One way for C to force B to hand over all of B's traffic to D on the east coast is for C to only advertise its route to D via its east coast peering point with C.