

Victoria University of
Bangladesh

CSE-323 Final Exam - 2024

Computer Networks

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Ans to the Qs no - 1 (a)Q] Difference between dynamic Vs static routing

Here are some of the main differences between static and dynamic routing.

① Path selection: Static routing was a single preconfigured route to send traffic to its destination, while dynamic routing provides multiple available routes to the destination.

② Ability to update routes: Network Ad-ministrators must manually reconfigure static routes in order to adjust routes, Dynamic routing was algorithms to automatically update with the preferred route change.

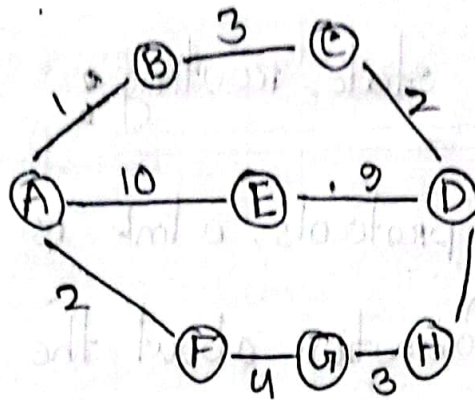
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③ Routing tables : Static Routing has a similar routing table with only one entry for each destination, while dynamic routing requires routers to send out their entire routing tables to identify route availability.

④ Use of protocols and Algorithms : Static Routing doesn't use protocols or complex routing algorithm Dynamic routing uses distance vector protocols.

⑤ Computation And Bandwidth : Static routing requires less computer power and bandwidth and Dynamic routing needs more.

Ans to the Q no: 1 (b)



	A	B	C	D	E	F	G	A
A	0A	1A	∞A	∞A	10A	2A	∞A	∞A
B	0A	1A	4B	∞A	10A	2A	∞A	∞A
F	0A	1A	4B	∞A	10A	2A	6F	∞A
C	0A	1A	4B	6C	10A	2A	6F	∞A
D	0A	1A	4B	6C	10A	2A	6F	∞A
G	0A	1A	4B	6C	10A	2A	6F	
A	0A	1A	4B	6C	10A	2A	6F	

As per question
Source is A and
destination is D.
The shortest path
is, A → B → C → D = 6

Ans to the Qs No- 2 (a)

A

A	8
B	20
C	17
D	12
E	10
F	0
G	6

• A is Answer

B

A	21
B	8
C	7
D	19
E	14
F	0
G	22

C

A	8
B	20
C	17
D	12
E	10
F	16
G	6

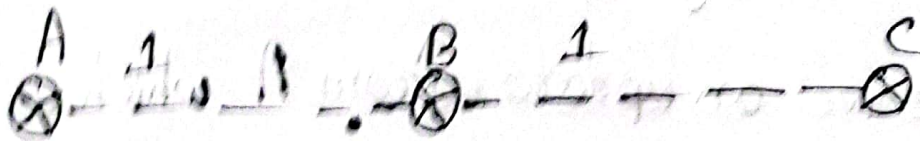
D

A	8
B	8
C	7
D	12
E	10
F	0
G	8

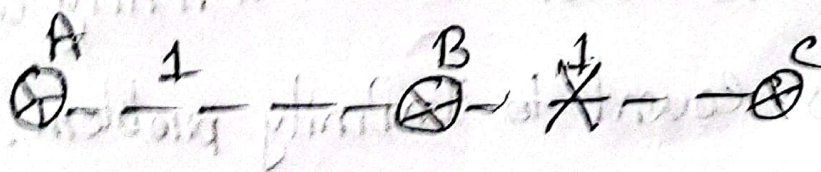
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Ans to the Qs No-2 (b)

Cont
counting to infinity problem:



So this is example, the Bellman-Ford algorithm will coverage for each others router, they will have entires for each other, B will know that it can get to C at a cost of 1, and A will know that it can get to C via B at a cost of 2.



If the link between B and C is disconnected, then B will know that it can

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no longer get to C via that link and will remove it from its table. Before it can send any updates it's possible that it will receive an update from A which will be advertising that it can get to C at a cost of 2. B can get to A at a cost of 1, so it will update a route to C via A at a cost of 3. A will then receive updates from B later and update its cost to 4. They will then go on feeding each other bad information toward infinity which is called as Count to Infinity problem.

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Ans to the Qs No - 3 - (A)

Process of link state routing

With link state protocols, a link is an interface on a router. Information about the state of these link is known as link states.

All routers in an OSPF area will complete the following generic link state routing process to reach a state of convergence:

- ① Each router learns about its own links and its own directly connected networks. This is done by detecting that an interface is in the up state.
- ② Each router is responsible for meeting its neighbors on directly connected networks. Link-state routers do this by exchanging hello packets with others.

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link-state routers on directly connected networks,

③ Each router builds a link state packet (LSP) containing the state of each directly connected link. This is done by recording all the pertinent information about each neighbour including neighbor ID link type and bandwidth.

④ Each router floods the LSP to all neighbors. These neighbors store all LSPs received in a database. They then flood the LSPs to their neighbors until all routers in the area have received the LSPs. Each router stores a copy of each LSP received from its neighbors in a local database.

⑤ Each router uses the database to construct a complete map of the topology and computes the best path to each destination network. Like having a road map, the router now has a complete map of all destinations in

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the topology and the routes to reach them. The SPF algorithm is used to construct the map of the topology and to determine the best path to each network.

Ans to the Qs No- 3 (-b)

□ We use hierarchical routing because in hierarchical routing the routers are divided into regions. Each router has complete details about how to route packets to destination within its own region. In both LS and DV algorithms, every router needs to save some information about other routers. The number of routers will increase as the network size grows. Therefore, with the growing size of routing table, routers can't handle network traffic as efficiently. To overcome this problem we use hierarchical routing.

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Ans to the Qs. No. - 3 - (c)

Network Congestion:

Network congestion refers to a reduction in quality of service (QoS) that causes packet loss, queuing delay, or the blocking of new connections. Typically, network congestion occurs in cases of traffic overloading when a link or network node is handling data in excess of its capacity.

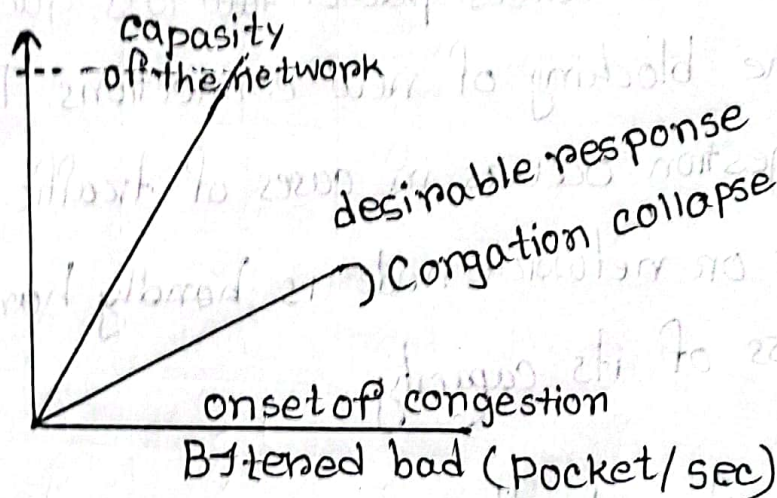
Ans to the Qs No. - 4 - (a)

Token bucket Algorithm:

Token bucket Algorithm is one of the techniques for congestion control algorithm. The network layer and transport layer share the responsibility for handling congestions. One of the most effective ways to control congestion is trying

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to reduce the load that transport layer is placing on the network. To maintain this network and transport layers have to work together. Here is a diagrammatic resp representation of TBA :-



with too much traffic, performance drops sharply.

Comparision :-

Leaky bucket :- Working steps

- ① When the host has to send a packet, packet is thrown in bucket.
- ② Bucket leaks at constant rate.
- ③ Bursty traffic is converted into uniform traffic by leaky bucket.

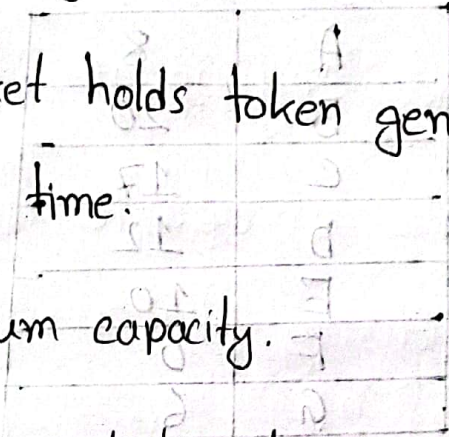
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④ In practise bucket is a finite queue outputs at finite rate.

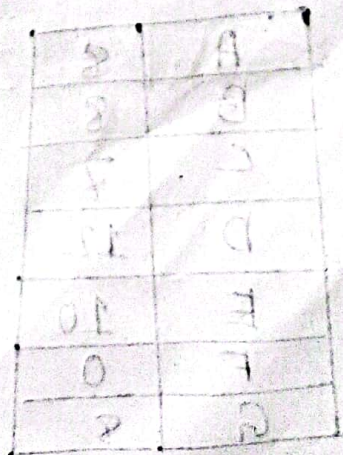
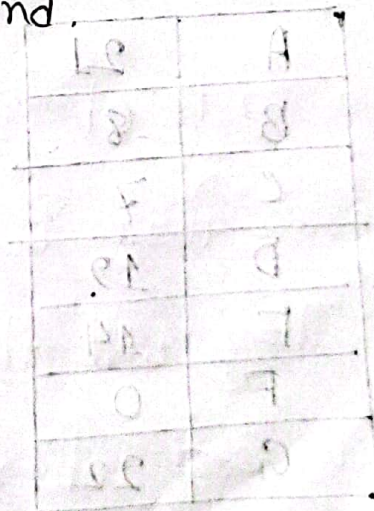
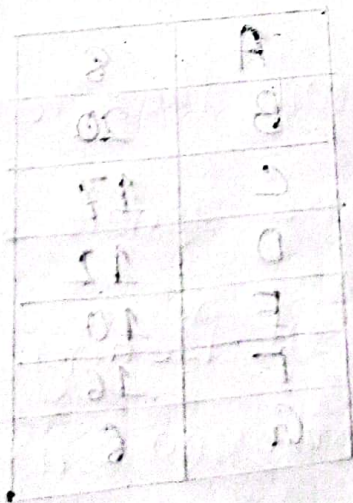
Token bucket : Working Steps

① In this leaky bucket holds token generated at regular intervals of time.



② Bucket has maximum capacity.

③ If there is a ready packet, a token is removed from bucket and packet is send.



Ans to the Qs No. 4 (b)

▣ Difference between classful and classless addressing :-

▣ Definition : Classful Addressing is an IP address allocation method that ~~add~~ allocates IP addresses according to five ~~major~~ major classes classless addressing is an IP address allocation method that is designed to replace classful addressing. This is the main difference between them.

▣ Usefulness :- classless addressing is more practical and useful than classful Addressing.

▣ Network ID and Host ID :- In classful addressing the network ID and host ID changes depending

on the classes. However in classless addressing there is no boundary on network or host ID.

Conclusion: In brief, classless addressing can avoid running out of IP addressing that can occur in classful addressing.