OVERALL ANALYSIS Solution Report

All Correct Answers Wrong Answers Not Attempted Questions

Q.1) Max Marks: 1

When we received the three duplicate ACK in the TCP congestion control?

A It tells the strong possibility of congestion.

B It tells the weak possibility of congestion. Correct Option

Solution: (B)
Explanation:
Three duplicate ACK tells the weak possibility of congestion.
After three duplicate ACK the new sender window size will follow congestion avoidance.

C The new sender window size will follow the slow start mechanism.

D None of these

Q.2) Max Marks: 1

Which protocol below uses TCP port 443 at layer 4?

A HTTP

B HTTPS Correct Option

Solution: (B)
Explanation:
Port 443 is the standard port for all secured HTTP traffic, meaning it's absolutely essential for most modern web activity.

C TFTP

D TELNET

Q.3) Max Marks: 1

Consider the effect of using slow start on a line with a 10-msec round-trip time and no congestion. The receiver window is 24 KB and the maximum segment size is 2 KB. The initial sender window size (SWS) is 2KB. How long in msec does it take before the first full window can be sent?

Correct Answer

Solution: (40)
Ans 40
Sol: Initial sender window size =2 KB
After first RTT SWS= 4KB
After second RTT SWS= 8KB
After third RTT SWS = 16KB
After fourth RTT SWS = 24KB
So after the fourth RTT SWS reaches to 24 KB. Hence 40 msec is the answer.

Q.4) Max Marks: 1

The ability to inject packets into the Internet with a false source address is known as

A Man-in-the-middle attack

B IP phishing

C IP sniffing

D IP spoofing Correct Option

Solution: (D)
Explanation :
IP address spoofing or IP spoofing is the creation of Internet Protocol packets with a false source IP address, for the purpose of impersonating another computing system.

Q.5) Max Marks: 1

Pick up the correct statement

St 1: Port address is used to deliver a message to the correct application program running on a host.

St 2: The port number used by DHCP is 53 and DNS is 67.

St 3: Internet mail accessing protocol (IMAP) is more powerful and contain more features than POP3

A Only statement 2 is correct.

B Only statements 1 and 3 are correct. Correct Option

Solution: (B)

Explanation:

Yes, a true port address is used to deliver a message to the correct program.

The port no of DHCP is 67 and DNS is 53.

True, IMAP is more powerful and contain more features than POP3.

C All statements are correct.

D Only statements 1 and 2 are correct.

Q.6) Max Marks: 1

For what total length bits used in the UDP header?

A It denotes the size of the header

B It denotes the size of the data

C It denotes the size of the datagram Correct Option

Solution: (C)

Explanation:

The size of header + data = datagram

The total length bits are 16 bit used to denote the size of a datagram.

For ex: 0000000011100000= size of datagram= 224 byte

D It is used for providing priority to the datagram.

Q.7) Max Marks: 1

Which of the following statements is true?

A Flow control in TCP requires feedback from the receiver. Correct Option

Solution: (A)

Explanation:

a. Yes in TCP flow control we use ACK for the feedback.

b. Not required for congestion control. It will automatically drop the packet when congestion is there.

c. Congestion window rise on the basis of traffic and advertised window size of the receiver. There is no relation with RTT

B Congestion control in TCP requires explicit feedback from network routers.

C The greater the round trip time of the connection, the more rapid is the linear rise of the congestion window.

D None of these

Q.8) Max Marks: 1

The unaltered message and the uninterpreted message respectively hold for?

A Confidentiality and message integrity

B Authenticity and confidentiality

C Message integrity and confidentiality Correct Option

Solution: (C)

Explanation:

In network communications, there are several desirable security properties. For example, con?dentiality is the property that the original plaintext message cannot be determined by an attacker who intercepts the cipher text-encryption of the original plaintext message. Another important property is message integrity. This means that the receiver can detect whether the message sent (regardless if it was encrypted) was altered in transit.

D Message integrity and authenticity.

Q.9) Max Marks: 1

What are the reasons for DNS using UDP as the transport layer?

1. UDP is much faster than TCP because TCP requires a three-way handshake for connection establishment.
2. UDP datagram is smaller and can easily fit for DNS requests.
3. UDP does not require to keep the connections.
4. There is no need for a connection to be established for a long time as we have only need of the one-time service for getting the hostname.

A Only 3

B Only 1,3,4

C Only 1,2

D All of the above Correct Option

Solution: (D)
Explanation:
1. Three-way handshake will take a lot of time for DNS
2. Yes, true UDP datagrams are smaller than TCP
3. This is also one of the reasons that it is not required to keep the connection for DNS.
4. True

Q.10) Max Marks: 1

What is the order of the flow of the DNS query for resolving the DNS request?

A Cache DNS server-> Root server->Top level DNS server->Authorative server Correct Option

Solution: (A)
Explanation:
The correct flow of the DNS query is first it will look in the Cache DNS server if not available then it moves to the root server afterwards it moves to top-level DNS server and at last it reaches to an authoritative server.

B Cache DNS server->Top level DNS server-> Root server->Authorative server

C Top-level DNS server-> Authorative server->cache DNS server->Authorative server

D Cache DNS server->Authorative Server->Top level DNS server->Root server

Q.11) Max Marks: 2

Consider an instance of TCP's Additive Increase Multiplicative Decrease(AIMD) algorithm where the window size at the start of the slow start phase is 2 MSS and the threshold at the start of the first transmission is 10 MSS. Assume that time out occurs during the eighth transmission. Find the threshold window size if the timeout occurs at the twelfth transmission.

A 4 MSS Correct Option

Solution: (A)
Explanation:
Since Slow Start is used, the window size is increased by the number of segments successfully sent. This happens until either threshold value is reached or time out occurs.
In both of the above situations, AIMD is used to avoid congestion. If the threshold is reached, the window size will be increased linearly. If there is a timeout, the window size will be reduced to half.
Window size for 1st transmission = 2 MSS
Window size for 2nd transmission = 4 MSS
Window size for 3rd transmission = 8 MSS
threshold reached, increase linearly (according to AIMD)
Window size for 4th transmission = 10 MSS(since 16 MSS isn't permissible anymore)
Window size for 5th transmission = 11 MSS
Window size for 6th transmission = 12 MSS
Window size for 7th transmission = 13 MSS
Window size for 8th transmission = 14 MSS
Timeout occurs new threshold= 14/2= 7MSS. Now resend window with slow start
Window size for 9th transmission = 2 MSS
Window size for 10th transmission = 4 MSS
Threshold reached, increase linearly (according to AIMD)
Window size for 11th transmission = 7 MSS (since 8 MSS isn't permissible anymore)
Window size for 12th transmission = 8 MSS(Time out occurs)
Threshold window after twelfth transmission is 8/2= 4 MSS.

B 5 MSS

C 7 MSS

D 10 MSS

Q.12) Max Marks: 2

If the TCP round-trip time, RTT, is currently 30 msec and the following acknowledgments come in after 26, 32, and 24 msec, respectively, what is the new RTT estimate using the Jacobson algorithm? Use α=0.9 [correct up to two places of decimal]

Correct Answer

Solution: (29.26)

Explanation:

IRTT = 30 msec

NRTT= 26, 32,24

ERTT= α * IRTT (1 - α) * NRTT

ERTT1 = 0.9 * 30 + (1 – 0.9) * 26 = 29.6

ERTT2 = 0.9 * 29.6 + (1 – 0.9) * 32 = 29.84

ERTT3 = 0.9 * 29.84 + (1- 0.9) * 24 = 29.256

The new round trip time is 29.256 msec

Q.13)

Max Marks: 2

Consider the effect of using slow start on a line with 12 msec round trip time. The sender side initial threshold is set to 16 KB. After 8 transmissions a time-out occurs, after time out the time taken to send first full window of 16 KB is (in msec). ? [Assume window size at the start of the slow start phase is 2 KB]

A 36 msec

B 48 msec

C 60 msec Correct Option

Solution: (C)
Sol:
First transmission: 2 KB
Second transmission: 4 KB
Third transmission: 8 KB
Forth transmission: 16 KB (Threshold reached)
Fifth transmission: 18 KB
Sixth transmission: 20 KB
Seventh transmission: 22 KB
Eighth transmission: 24 KB (Time out occurs, New threshold = 24/2 = 12 KB)
Ninth transmission: 2 KB (Slow start)
Tenth transmission: 4 KB
Eleventh Transmission: 8 KB
Twelfth transmission: 12 KB
Thirteenth transmission: 14 KB
Fourteenth transmission: 16 KB
It takes 5 round trip time after the timeout to reach the 16 KB= 5 x 12 msec = 60 msec

D 24 msec

Q.14)

Max Marks: 2

We use two prime numbers p=17, q=19 to generate the public and private keys for the RSA algorithm. If the public key is 17 what is the private key?

Correct Answer

Solution: (17)

Ans 17

Sol: phi(n)= (p-1) x (q-1)

= (17 -1) x (19 -1)

= 16 x 18

= 288

For finding private key in RSA

(d x e) mod phi(n) = 1

(d x 17) mod 288 = 1

d= 17

Q.15)

Max Marks: 2

Authentication in RSA can be provided based on:

A **The sender encrypts with its own private key and receiver decrypts with the sender's public key.** Correct Option

Solution: (A)

Explanation:

Authentication means something which is sent by the correct sender. If the sender wants to authenticate with the receiver. The sender must encrypt with its own private key so that the receiver gets to ensure that thing is generated by the sender only. Decryption will happen using the public key of the sender which is known to the receiver.

B **The sender encrypts with the public key of receiver and receiver decrypts with the private key of the sender.**

C **Sender's encrypts with the public key of receiver and receiver decrypts with its own private key.**

D **None of the above**

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