

Computer Networks 2021 Quiz 2

FAN: whit1248

NOTE: Each student's work unit is unique. You must use the work that has been generated for your FAN. If you do not, then you will fail this work unit.

NOTE: You must record your answers in the answer file EXACTLY as required, and commit and make sure your changes have been pushed to the github server, as they will otherwise not be counted.

NOTE: The topic coordinator will periodically run the automatic marking script, which will cause a file called quiz2-results.pdf to be updated in your repository. You should check this file to make sure that your answers have been correctly counted. That file will contain the time and date that the marking script was last run, so that you can work out if it has been run since you last changed your answers. You are free to update your answers as often as you wish, until the deadline for the particular work unit.

1 Quiz#2: Chapters 4 – 6

For each question, you must record your answer in the quiz2-answers.txt file in your git repository. Each statement is either true or false. You must record 't' if you think the statement is true, or 'f', if you think that the statement is false. Your answer must be lower case. Uppercase answers will be marked incorrect. For example, if you believed that the answer to the following question was potato, you would put the word potato at the end of the rj= line in the file quiz2-answers.txt.

Question#	Description
rj	The potato is a white-flesh starchy vegetables from which hot chips are made

The entry in quiz2-answers.txt would thus look like:

```
# Question 'rj': The potato is a white-flesh starchy vegetables from which hot chips are made
rj=t
```

Templates for each answer are provided in `quiz2-answers.txt` for your convenience.

Are the following statements true or false?

1.1 Question ab: True or False?

TCP normally buffers enough bytes to fill a reasonable sized packet on the receive side, to reduce the number of times an application must poll for data

1.2 Question ac: True or False?

The role of Quality-of-Service is to ensure that sufficient bandwidth is available to network applications that have special needs, even if it means that latency must increase

1.3 Question ad: True or False?

Multicast in IP is structured as a many-to-many system

1.4 Question ae: True or False?

The Karn/Partridge algorithm discriminates between transmissions and retransmissions by setting a flag in the TCP header

1.5 Question af: True or False?

Each Autonomous System has exactly one border gateway

1.6 Question ag: True or False?

Rate-based networking approaches seek to limit data transmission to a particular data rate, based on an feed-back of the data rate that the network and/or receiver can handle.

1.7 Question ah: True or False?

Unlike Randomised Early Detection (RED), DECBit is able to be used with TCP

1.8 Question ai: True or False?

Assuming a 10ms RTT, the 16-bit advertised window field of the TCP header is sufficient to keep a network link of upto about 26Mbit/sec full

1.9 Question aj: True or False?

Transit traffic is traffic that transits into an Autonomous System to reach a destination in that Autonomous System

1.10 Question ak: True or False?

Packet Scheduling is typically the mechanism by which Quality-of-Service policies are put into effect

1.11 Question al: True or False?

Transport protocols often have to contend with networks dropping messages

1.12 Question am: True or False?

TCP will typically send a segment when it has the number of bytes required to fill a packet, the application has specifically requested it, or a timeout has occurred

1.13 Question an: True or False?

UDP allows the multiplexing of traffic from multiple applications on a single host

1.14 Question ao: True or False?

The Internet's topology in the early 1990s was a full-mesh network

1.15 Question ap: True or False?

Nagle's Algorithm is used in TCP to determine the optimal MSS for a connection

1.16 Question aq: True or False?

Congestion control exists to prevent senders from overrunning the capacity of receivers

1.17 Question ar: True or False?

Routers maintain a table of which specific port each multicast group's traffic should be forwarded to

1.18 Question as: True or False?

Routing Domains are typically placed within Autonomous Systems

1.19 Question at: True or False?

The DEC Bit with a queue length of 1 is used to attempt to optimise the power of the network

1.20 Question au: True or False?

The peak power of a network typically occurs well below the maximum load the network can handle

1.21 Question av: True or False?

Routing Areas refer to the different algorithm areas in routing protocol design

1.22 Question aw: True or False?

Border Gateway Protocol is the only inter-domain routing protocol

1.23 Question ax: True or False?

Border Gateway Protocol speakers can cancel previously advertised paths

1.24 Question ay: True or False?

Whenever a congestion window's worth of data has been acknowledged, the TCP congestion protocol will add one congestion window's worth of bytes to the congestion window size

1.25 Question az: True or False?

The TCP source port field is at offset 0 in the TCP header

1.26 Question ba: True or False?

The SYN and FIN flags are used when establishing and terminating a TCP connection

1.27 Question bb: True or False?

TCP practices Congestion Avoidance rather than Congestion Control

1.28 Question bc: True or False?

Differentiated Services typically uses a label in a packet header to identify the traffic class

1.29 Question bd: True or False?

TCP uses a Congestion Window to limit how much data can be transmitted at a given time

1.30 Question be: True or False?

The congestion control protocol of TCP communicates the congestion window by setting the advertised window and flags in the TCP header to indicate that the value is for the congestion window

1.31 Question bf: True or False?

Network flows are streams of related packets that flow through a given router

1.32 Question bg: True or False?

The UDP header contains source port, destination port, checksum and length fields

1.33 Question bh: True or False?

"Differentiated Services" is a coarse-grained quality-of-service approach

1.34 Question bi: True or False?

Source-based Congestion Avoidance works by having routers provide a separate packet queue for each source

1.35 Question bj: True or False?

Modern routers allow setting the Jain's Fairness Index to control the fairness of congestion control

1.36 Question bk: True or False?

The RSpec of a flow is easier to define correctly than the TSpec

1.37 Question bl: True or False?

Admission Control is a mechanism in RSVP where the network decides if it can satisfy a request for a given quality-of-service. If not, the access is not permitted

1.38 Question bm: True or False?

Transport protocols typically allow the receiver to apply flow control

1.39 Question bn: True or False?

Multi-provider Internet topologies typically involve peering points

1.40 Question bo: True or False?

If the TCP Slow Start algorithm is re-started, the Congestion Threshold is reset to 0

1.41 Question bp: True or False?

Inter-domain routing exists to find optimal routes among the many supplied paths between destinations

1.42 Question bq: True or False?

Voice, video and remote control are examples of network applications where Quality-of-Service should work to minimise latency

1.43 Question br: True or False?

Mobile IP requires the use of tunnels or care-of addresses to deliver packets to mobile nodes

1.44 Question bs: True or False?

Distance-Vector Multicast forwards received multicast packets received from any router on all outgoing links

1.45 Question bt: True or False?

Source-based Congestion Avoidance can also use other algorithms that rely on more than just the RTT, such as the advertised window size

1.46 Question bu: True or False?

Reverse Path Broadcast is used to prune networks that contain no members in a given multicast group

1.47 Question bv: True or False?

The Karn/Partridge algorithm works well only when there is sufficient variance in RTT times

1.48 Question bw: True or False?

The UDP protocol demultiplexes packets arriving at a host into separate queues for each application

1.49 Question bx: True or False?

Silly Window Syndrome occurs when a TCP implementation sends many very small segments, instead of waiting to collect enough data to fill a larger segment

1.50 Question by: True or False?

Quality-of-Service implies that some packets will be treated differently to others

1.51 Question bz: True or False?

Large corporations are required to connect to multiple backbones to provide redundancy

1.52 Question ca: True or False?

The TSpec of a Flowspec describes the network service that has been requested

1.53 Question cb: True or False?

Multicast allows a sender to send only one packet, and have it be received by multiple recipients

1.54 Question cc: True or False?

Fair Queuing performs bit-by-bit interleaving of packets to ensure fair allocation of network bandwidth

1.55 Question cd: True or False?

Soft-state of network flows helps routers to better handle traffic from that flow

1.56 Question ce: True or False?

RPC is a protocol that sits on top of IP, similar to TCP and UDP

1.57 Question cf: True or False?

Congestion Collapse was implemented in TCP to improve network performance

1.58 Question cg: True or False?

Fairness of resource allocation in a network is often as important as effective utilisation of the network

1.59 Question ch: True or False?

Packets contend for a place in the transmission queue of a router

1.60 Question ci: True or False?

IPv6 addresses are not allocated on a geographic basis, because IPv6 offers enough addresses that this is not necessary

1.61 Question cj: True or False?

UDP provides a simple demultiplexer to support end-to-end communications

1.62 Question ck: True or False?

Multicast routing is the process by which multicast distribution trees are determined

1.63 Question cl: True or False?

Congestion in networks often occurs because a connected host has a faster local connection than some other part of the network, which then acts as a bottle-neck

1.64 Question cm: True or False?

Fair-Queuing maintains separate queues per network flow, to improve fairness

1.65 Question cn: True or False?

"Integrated Services" is a quality-of-service scheme for packet switched IP networks. It does not support reservations

1.66 Question co: True or False?

Internet Group Management Protocol (IGMP) is used to signal the intent to join or leave a multicast group on IPv4

1.67 Question cp: True or False?

Source Specific Multicast offers improved one-to-many multicast support for IP

1.68 Question cq: True or False?

RSVP can be used for both unicast and multicast flows

1.69 Question cr: True or False?

The Jacobson/Karels algorithm uses a retransmission delay close to the estimated RTT when RTT variance is small, but which grows quickly as the variation in RTT grows

1.70 Question cs: True or False?

IPv6 headers are longer than IPv4 headers

1.71 Question ct: True or False?

TCP Fast Retransmit works by reducing the TCP retransmission timeout

1.72 Question cu: True or False?

Controlled Load Service in RSVP means that the network should control the volume of packets of that service that are admitted to the network

1.73 Question cv: True or False?

In FIFO queuing, the first packet received will be the first to be transmitted

1.74 Question cw: True or False?

Whenever the loss of a packet is detected, the TCP congestion control protocol will halve the congestion window size, but never reducing it below one full packet's worth of data

1.75 Question cx: True or False?

Congestion control and resource allocation can be viewed as different perspectives of the same problem