

CS314 Assignment 1 – Check points and Marking Allocations

General:

If answers are bad (e.g. informal sentences, wrong answers), then it is likely to get small marks.

If answers are vague, then instead of 1 (one mark), students get 0.5 (half mark)

1 mark Bonus can be awarded if answers are very good (Max 1 mark per section)

Question 1

a)

1 mark for explanation of what “packet” is

(**bonus:** Not only explaining the general term, but also explaining detailed answer such as, what a packet is in terms of “layer3” OSI/TCP-IP model (network layer, covering logical address), because a packet usually refers to layer3. (explaining a packet as a basis of simple IP protocol doesn’t show any understandings).

Frame and packet is same in terms of Source/Destination, etc. but a frame word is used in layer2 concept, (Datalink layer, covering physical address)

1 mark for explain/example of packet usage.

E.G Each packet is sent separately, rather than sending all the data in a continuous flow, this is from the router/switch/nodes point of view, where they are connected with multiple nodes like spider-web. From the host point of view, host sends to next node (usually a fixed link)

b)

1 mark for “address” concept (e.g. IP address, or MAC address -> SRC/DEST addressing)

1 mark for “how it sends” concept (e.g. routing table, switching table)

Forwarding table is pretty much a CAM (content address memory) or Hash memory in the router/switch/node which has its mappings to its next best node (VCI/VPI, metric, costs, etc)

It doesn’t care if it reached to next hop or how the next hop handle it.

c)

1 mark for checking for “header”

A word “header” must be included, not just “address in the packet...”

1 mark for checking for “source address” from that packet header to send out as destination (like a mail/email address, From/To)

d) (2 marks max)

1 mark for travel (propagation)

1 mark for router/switch/nodes processing power (latency),

1 mark for queuing stuffs (due to processing power, etc)

E.G. a packet takes time to reach to router, (propagation, 1 sec)

then router strips off (or just read) header to check for its destination, does table matching, sends to its next hop (processing, 1 sec), but if there were already lots of packets, the packet may be put onto queue, (queue, idle 1sec), total = 3 seconds

(**bonus:** if students mention 3 or more points)

e) (2 marks max)

No.

1 mark for explaining queuing,

1 mark for explaining network traffic,

1 mark for prediction, variations, packet loss/damage (resending), etc

Question 2 (must show assumption, working, explanation on what they are doing)

a)

1 mark for formula

1 mark for calculation

1 mark for correct answer with correct unit

b)

1 mark for using the 50Mb/s with correct formula, (e.g. data / links-speed)

1 mark for byte -> bit (e.g. 1500 x 8)

1 mark for correct answer with correct unit

c)

1 mark for converting ms -> sec of (a) (in this case, it was 50ms) (or converting 50Mb/s -> ms)

1 mark for performing a calculation

e.g. $0.05\text{sec} * 6.25\text{MB} \rightarrow 0.3125\text{MB} \rightarrow 312.5\text{KB}$

1 mark for correct answer with correct unit (must be Byte)

Question 2: penalties

-1 for no assumption, e.g. 1k = 1000bytes or 1k=1024bytes

-1 for no explanations on what they are doing

-1 for no unit

No marks at all with just single answer.

e.g. $(1024 \times 8) / 50 / 10^{-5} * 0.02 * 20 / 1024 * 32 = \text{answer} \rightarrow \text{what's this?} \rightarrow 0 \text{ mark}$

Bonus: if students mention about their answer is +/- approx with valid reasons, e.g. question said "...a distance is about 10,000km." so it will take +/- 50ms, etc

Question 3

a)

1 mark for start bit

1 mark for start bit concept

b)

1 mark for sending STX concept (start)

1 mark for sending ETX concept (end)

STX.....data.....ETX STX.....data.....ETX, etc...

c)

1 mark for how it syncs

1 mark for supporting their answer, example of self-sync method, like Manchester/Diff Manchester.

d)

1 mark how receiver looks for SYN or FLAG

1 mark for 2 SYN or FLAGs followed by STX,

-0.5 if student mention only one, char/bit

e) (2 marks max)

1 mark for one point (must be valid !!!)

1 mark for explaining about the point. (explaining why it is an advantage)