

# Computer Networks 2021 Exercises - Unit 5

## FAN: daym0019

*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 unit5-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 TCP/IP And Related Protocol Packet Formats and Header Fields

*For each question, you must record your answer in the unit5-answers.txt file in your git repository. Templates for each answer are provided in unit5-answers.txt for your convenience.*

*You will find information on the packet header formats in many places, including:*

- *[https://en.wikipedia.org/wiki/Ethernet\\_frame#Header](https://en.wikipedia.org/wiki/Ethernet_frame#Header)*
- *<https://en.wikipedia.org/wiki/IPv4#Header>*
- *[https://en.wikipedia.org/wiki/Address\\_Resolution\\_Protocol](https://en.wikipedia.org/wiki/Address_Resolution_Protocol)*
- *[https://en.wikipedia.org/wiki/Transmission\\_Control\\_Protocol#TCP\\_segment\\_structure](https://en.wikipedia.org/wiki/Transmission_Control_Protocol#TCP_segment_structure)*
- *[https://en.wikipedia.org/wiki/User\\_Datagram\\_Protocol#UDP\\_datagram\\_structure](https://en.wikipedia.org/wiki/User_Datagram_Protocol#UDP_datagram_structure)*

Considering the following packet:

```
# 0x0000: 1cab d70b 31f8 5ceb dd16 a603 8848 0000 ....1.\.....H..
# 0x0010: 7bf4 4500 0083 0000 0000 0f11 0000 c83c {.E.....<
# 0x0020: 580f 9bd1 9dbd b31e 3c3f 010c 2664 6d55 X.....<?...&dmU
# 0x0030: b450 af61 9561 06ea c7b8 43a4 f48a e1cc .P.a.a....C....
# 0x0040: 0843 2d38 52cc cb30 e0ca 4597 c51d a552 .C-8R..0..E....R
# 0x0050: ba4e 5bab 994d a723 c4b8 c327 829e 9fd0 .N[...M.#...'.
# 0x0060: f061 6d22 ec01 ea48 0528 f272 6357 f70f .am"...H.(.rcW..
# 0x0070: b50e 0376 89ef 609d 3624 88b2 ae3e 63ce ...v...`.6$...>c.
# 0x0080: 746c 38a4 fcc2 5692 c59b 7b53 a2e9 0c3e t18...V...{S...>
# 0x0090: 8514 16ec b9 .....

```

Find the value of the following fields:

Question ID	Field	Type
ab	IP FLAGS	Integer: Answer with the decimal value of the field.
ac	ETH frame type	Four-digit Hex: Answer with the four digit hexadecimal value of the field, e.g., 02AF. Do not put a leading 0x or \$ on the front of the hexadecimal number.
ad	IP Don't Frag	Boolean: Answer Y or N
ae	UDP source port	Integer: Answer with the decimal value of the field.
af	ETH source address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
ag	ETH destination address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00

Considering the following packet:

```
# 0x0000: 6c58 f40a 6890 0f8d 0a4e 6f88 88a8 422d  1X..h....No...B-
# 0x0010: 0806 0001 0800 0604 0001 4b99 bd7e 28c2  ....K...~(.
# 0x0020: ea68 06a6 e19d edaf a8d9 791a e3d2 61b8  .h.....y...a.
# 0x0030: 131f fc32 7c0b 7158 7ba1 2790 0ea6 edf4  ...2|.qX{.'.....
# 0x0040: c89d 61c6 3d5c a802 eb31 cbd4 7b42 bbe1  ..a.=\...1...{B..
# 0x0050: a3f1 c124 8fd0 30eb 9381 a319 de50 9301  ...$.0.....P..
# 0x0060: 6004 1e3b 7177 3717 b689 189a 9fca 207f  `...;qw7.....
# 0x0070: 62f0 f3a4 3daf 4879 a253 86dd f08f e325  b...=.Hy.S.....%
# 0x0080: 93a6 045a c1ae fe1c e94e 7a20 68      ...Z.....Nz.h
```

Find the value of the following fields:

Question ID	Field	Type
ah	ETH source address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
ai	ARP target MAC	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
aj	ARP HTYPE	Integer: Answer with the decimal value of the field.
ak	ARP request	Boolean: Answer Y or N
al	Frame is 802.1q	Boolean: Answer Y or N
am	Frame is 802.1ad	Boolean: Answer Y or N

Considering the following packet:

```
# 0x0000: 8b83 ab23 02fa d46f b8f9 2d81 8847 0000 ...#...o...-..G..
# 0x0010: 0fb6 4500 0051 0000 4000 2306 0000 47c7 ..E..Q...@.#...G.
# 0x0020: 5bc4 0a7e ecd0 f496 7099 6a32 3a04 00c6 [...~....p.j2:...
# 0x0030: 8b94 5025 02f2 0000 0004 45ae 5452 1425 ..P%.....E.TR.%
# 0x0040: 16ea bad3 38fd 779c 92fd 0150 3656 58da ....8.w....P6VX.
# 0x0050: d77c 0a95 e51a 3af8 17f3 9a2e 3c2a 6b43 .|....:.....<*kC
# 0x0060: b1bd 5b                                     ..[
```

Find the value of the following fields:

Question ID	Field	Type
an	MPLS last label?	Boolean: Answer Y or N
ao	IP TTL	Integer: Answer with the decimal value of the field.
ap	IP More Fragments	Boolean: Answer Y or N
aq	IP ToS	Integer: Answer with the decimal value of the field.
ar	TCP ACK	Boolean: Answer Y or N
as	ETH frame type	Four-digit Hex: Answer with the four digit hexadecimal value of the field, e.g., 02AF. Do not put a leading 0x or \$ on the front of the hexadecimal number.

Considering the following packet:

```
# 0x0000: 4853 7658 e670 0212 e5b9 3e3f 8100 7340 HSvX.p....>?...s@
# 0x0010: 0800 4500 0091 0000 4000 3206 0000 0a74 ..E.....@.2....t
# 0x0020: e690 e658 9b53 61de a0f7 2056 54af 76e5 ...X.Sa....VT.v.
# 0x0030: 49d3 5032 b93a 0000 0000 a6ed 4fd0 5469 I.P2.:.....0.Ti
# 0x0040: 86f3 3b73 f7b4 0853 6555 f01c 322c 1569 ..;s...SeU..2,.i
# 0x0050: 95b0 33ff 1f72 e20d 3ed6 99e6 4a61 2e13 ..3..r...>...Ja..
# 0x0060: fc86 6aa4 4fb3 6249 23c4 06c8 9765 3696 ..j.0.bI#....e6.
# 0x0070: 90c1 1c12 340c 7458 8c38 b737 65a8 a858 ....4.tX.8.7e..X
# 0x0080: 37b7 4105 8f9e 435b 2ca1 9201 d575 797e 7.A...C[,....uy~
# 0x0090: 8d10 9edb 7f3c a155 d30f 8e0d 70f1 1632 .....<.U....p..2
# 0x00a0: 28a3 c2                                     (..
```

Find the value of the following fields:

Question ID	Field	Type
at	TCP ACK sequence number	Integer: Answer with the decimal value of the field.
au	ETH frame type	Four-digit Hex: Answer with the four digit hexadecimal value of the field, e.g., 02AF. Do not put a leading 0x or \$ on the front of the hexadecimal number.
av	IP More Fragments	Boolean: Answer Y or N
aw	TCP URG	Boolean: Answer Y or N
ax	TCP FIN	Boolean: Answer Y or N
ay	ETH destination address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00

Considering the following packet:

```
# 0x0000:  daf8 5d2a 0b1b bdce 3822 cb85 88a8 4796  ..]*....8"....G.
# 0x0010:  0800 4500 0061 0000 4000 2e11 0000 e620  ..E..a..@.....
# 0x0020:  c4f7 a17a be34 fb71 d4c4 006f 00eb a0e5  ...z.4.q...o....
# 0x0030:  ca24 f5d4 1a14 654e d8e1 b50a 7d0d 3eec  .$....eN....}.>.
# 0x0040:  d2d8 c806 b4d3 2b9f 5156 293a e47b f0f6  ....+..QV):.{..
# 0x0050:  0ae1 6ecc 3b84 99ce 63a7 cc91 3b66 24cc  ..n.;...c...;f$.
# 0x0060:  23f5 db15 82d5 7616 72ad 4aee 710e 883e  #....v.r.J.q..>
# 0x0070:  a6ea 32                                     ..2
```

Find the value of the following fields:

Question ID	Field	Type
az	IP TTL	Integer: Answer with the decimal value of the field.
ba	Frame is 802.1ad	Boolean: Answer Y or N
bb	IP TTL	Integer: Answer with the decimal value of the field.
bc	IP source address	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
bd	IP destination address	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
be	ETH frame type	Four-digit Hex: Answer with the four digit hexadecimal value of the field, e.g., 02AF. Do not put a leading 0x or \$ on the front of the hexadecimal number.



Considering the following packet:

```
# 0x0000: 6d7c 6c2b c179 2a76 878a 9b96 0806 0001 m|l+.y*v.....
# 0x0010: 0800 0604 0002 6920 0f70 aacb 51cf fc3e .....i..p..Q..>
# 0x0020: cd4f 4648 9812 6132 2b1a 29ec f057 677e .OFH..a2+.)..Wg~
# 0x0030: 3e4a 2440 8adb 965b 87c7 8254 95d3 ba2a >J$@...[...T...*
# 0x0040: 4cdd f1b0 b030 c3c7 e0d2 8572 191d 5afd L....0.....r..Z.
# 0x0050: c048 aa2f 54ce d932 32af 9a6a 86dd 399c .H./T..22..j..9.
# 0x0060: 2dc1 ece8 4ff1 426e b868 171c 5c12 5391 -...0.Bn.h..\S.
```

Find the value of the following fields:

Question ID	Field	Type
bf	ARP PTYPE	Integer: Answer with the decimal value of the field.
bg	Frame is MPLS	Boolean: Answer Y or N
bh	Frame is 802.1ad	Boolean: Answer Y or N
bi	ARP reply	Boolean: Answer Y or N
bj	ETH frame type	Four-digit Hex: Answer with the four digit hexadecimal value of the field, e.g., 02AF. Do not put a leading 0x or \$ on the front of the hexadecimal number.
bk	ARP source MAC	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00

Considering the following packet:

```
# 0x0000: 4a12 2b2e fad4 8a32 a28f c4fe 0806 0001 J.+....2.....
# 0x0010: 0800 0604 0001 bf8d 26a5 6269 5572 052e .....&.biUr..
# 0x0020: 9be0 af22 09c0 3f60 aa7e d362 df2e c941 ..."?`~.b...A
# 0x0030: 3a0c e62c fa39 88da 13f5 fbb2 c6a7 1ecb :...9.....
# 0x0040: 2fe1 7fd3 0722 81c9 66a5 999e f4bd 5b0d /...."..f.....[.
# 0x0050: 11ac a420 2693 df61 2f54 94fb 783c 4c5c ....&...a/T..x<L\
# 0x0060: da5c 523d bcdb 30c8 b1db 42e6 acaf 69f1 .\R=..0...B...i.
# 0x0070: 8611 41c4 648b cd33 db57 af1c 62ef 0a9d ..A.d..3.W..b...
# 0x0080: a076 0df4 2a55 85cb 2f93 7dba 2858 b0c2 .v...*U../.}(X..
# 0x0090: adb6 f730 af76 84bf f5c0 12c5 4f93 90ab ...0.v.....0...
# 0x00a0: 4c                                     L
```

Find the value of the following fields:

Question ID	Field	Type
b1	ARP HTYPE	Integer: Answer with the decimal value of the field.
bm	ARP target MAC	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
bn	ARP source MAC	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
bo	ETH source address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
bp	ARP source IP	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
bq	ARP request	Boolean: Answer Y or N

Considering the following packet:

```
# 0x0000:  4077 a88b 8ccb 8225 c520 ce9a 8848 0000  @w.....%.....H..
# 0x0010:  45f5 4500 006f 0000 4000 1a06 0000 8cc9  E.E...o...@.....
# 0x0020:  daf4 430e e6ae 7451 7616 357f 55d3 6c8f  ..C...tQv.5.U.1.
# 0x0030:  df25 50bc 1895 0000 000d c0a5 960e d6ff  .%P.....
# 0x0040:  d6b8 72b2 c91e cd06 e2c9 c038 eab9 930e  ..r.....8....
# 0x0050:  d7eb 79dc 3ea6 8af1 23b2 cf97 381d 8d23  ..y.>...#...8..#
# 0x0060:  ef54 e5c3 3b03 45aa df07 a5db e1a8 95fb  .T...;E.....
# 0x0070:  add2 524d 83d8 228c 79b1 0a15 2e38 3e2b  ..RM...".y....8>+
# 0x0080:  19                                     .
```

Find the value of the following fields:

Question ID	Field	Type
br	TCP sequence number	Integer: Answer with the decimal value of the field.
bs	Frame is 802.1q	Boolean: Answer Y or N
bt	Frame is MPLS	Boolean: Answer Y or N
bu	Frame is 802.1ad	Boolean: Answer Y or N
bv	MPLS label	Integer: Answer with the decimal value of the field.
bw	IP TTL	Integer: Answer with the decimal value of the field.

Considering the following packet:

```
# 0x0000: 639b 56a0 198f 1c31 2c9a 5cbf 0806 0001  c.V....1,.\....
# 0x0010: 0800 0604 0002 afb3 a2eb 591c 2e36 bb0b  ....Y..6..
# 0x0020: 2f3d 6e95 77db c4a5 4d76 0e64 45dd 958d  /=n.w...Mv.dE...
# 0x0030: 6167 6ee8 aace 2d32 8891 04e9 c33e 7c0b  agn...-2.....>|.
# 0x0040: bed1 db86 fd9e db70 0531 ceb7 7c2e 1f79  ....p.1...y
# 0x0050: bda0 ba78 469c 2e9f cec6 6db8 7faa      ...xF.....m...
```

Find the value of the following fields:

Question ID	Field	Type
bx	ETH destination address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
by	ARP HTYPE	Integer: Answer with the decimal value of the field.
bz	ARP reply	Boolean: Answer Y or N
ca	ARP source MAC	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
cb	ARP source IP	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
cc	ARP target IP	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21

Considering the following packet:

```
# 0x0000: c15b 899e f064 d0f7 ddf9 7608 88a8 2d92  .[...d....v...-.
# 0x0010: 0800 4500 0085 0000 0000 2611 0000 f54d  ..E.....&....M
# 0x0020: bec2 d817 1c7b dfb5 8770 0026 564b d92f  ....{...p.&VK./
# 0x0030: c273 d4a1 d895 30c8 de6f 91ac 72cc c810  .s....0...o...r...
# 0x0040: 0af5 e016 f9e2 072f a948 dc4d 0966 5a21  ....../.H.M.fZ!
# 0x0050: 9a3f 7010 b6c1 3632 fdc5 e461 c2d3 30f3  .?p...62...a...0.
# 0x0060: fcfe 0fca 39be 535b 3f76 f3e8 cb1b b08a  ....9.S[?v.....
# 0x0070: 89af da84 c371 4e9c 0311 31ce d732 e432  ....qN...1..2.2
# 0x0080: c551 77dd 7fdd 6857 aad8 3741 9201 b005  .Qw...hW..7A....
# 0x0090: ec69 3527 6d3d 6b                .i5'm=k
```

Find the value of the following fields:

Question ID	Field	Type
cd	IP Don't Frag	Boolean: Answer Y or N
ce	UDP source port	Integer: Answer with the decimal value of the field.
cf	Frame is 802.1q	Boolean: Answer Y or N
cg	IP TTL	Integer: Answer with the decimal value of the field.
ch	IP length	Integer: Answer with the decimal value of the field.
ci	IP ToS	Integer: Answer with the decimal value of the field.

Considering the following packet:

```
# 0x0000: 56cd 357f 66d9 5e82 b47f 46f9 8848 0000  V.5.f.^...F..H..
# 0x0010: 334a 4500 0072 0000 0000 1506 0000 a6f7  3JE..r.....
# 0x0020: 234b c792 90cf 8b5e 98bd 6060 ce8f 0790  #K.....^...`....
# 0x0030: 4d66 500e e4a1 0000 0009 0ff1 174b 2067  MfP.....K.g
# 0x0040: 0c13 459a ded6 ffa6 76ab 1e07 0994 37c7  ..E.....v.....7.
# 0x0050: 7a18 d1ab fc29 f699 22c4 d0b0 3e0d 2172  z....)..."....>.!r
# 0x0060: 356f 9a38 6054 876e a28a d042 1a1e f5ce  5o.8`T.n...B....
# 0x0070: 1ca8 b563 0732 c872 85c3 8ecc d8b2 d8fd  ...c.2.r.....
# 0x0080: 0f46 b0f1                                .F..
```

Find the value of the following fields:

Question ID	Field	Type
cj	IP FLAGS	Integer: Answer with the decimal value of the field.
ck	IP TTL	Integer: Answer with the decimal value of the field.
cl	Frame is 802.1ad	Boolean: Answer Y or N
cm	TCP PSH	Boolean: Answer Y or N
cn	IP ToS	Integer: Answer with the decimal value of the field.
co	IP Don't Frag	Boolean: Answer Y or N

Considering the following packet:

```
# 0x0000: 8b84 221b ceba 42a2 e7af e4f6 8100 08f2  .."...B.....
# 0x0010: 0800 4500 005e 0000 4000 1011 0000 76b7  ..E..^...@.....v.
# 0x0020: f128 c827 d36e dd20 b78d 0063 c108 eaff  .(.'.n.....c....
# 0x0030: aeda e6fc bc8e a232 2211 f84f b217 3725  ....2"...0..7%
# 0x0040: 403d 7ecc d3ca 4ee8 02d2 90bc ac10 19b2  @=~...N.....
# 0x0050: 1d58 5a8a 6c91 3ad3 5fe0 178d d7fa a674  .XZ.l.:._.....t
# 0x0060: 69b4 7eeb c87c 5845 267f a3fa f3c0 5893  i.~...|XE&....X.
```

Find the value of the following fields:

Question ID	Field	Type
cp	UDP destination port	Integer: Answer with the decimal value of the field.
cq	IP FLAGS	Integer: Answer with the decimal value of the field.
cr	IP Protocol of payload	Integer: Answer with the decimal value of the field.
cs	IP ECN	Integer: Answer with the decimal value of the field.
ct	IP TTL	Integer: Answer with the decimal value of the field.
cu	IP length	Integer: Answer with the decimal value of the field.



Considering the following packet:

```
# 0x0000:  e489 e691 535b 0f9c 0b3b 0813 8100 271e  ....S[...;....'.
# 0x0010:  0800 4500 0081 0000 4000 2306 0000 8501  ..E.....@.#.....
# 0x0020:  f358 76c0 f9a8 766f 44fa 71b2 6867 72f8  .Xv...voD.q.hgr.
# 0x0030:  ba2a 5092 b3c6 0000 0005 8036 6e95 45c8  .*P.....6n.E.
# 0x0040:  703b b92e 5f42 aa6c 812d a939 8ec2 92ec  p;..._B.l.-.9....
# 0x0050:  e40d 39ed b95e 3274 75ea f1a5 250a 0f42  ..9..^2tu...%..B
# 0x0060:  db77 83f3 c17d c247 9fe7 a7a1 de84 b3f7  .w...}.G.....
# 0x0070:  54db bb45 e948 83d0 c5e7 96e3 2e98 bee8  T..E.H.....
# 0x0080:  b506 317a dddb a0fe 0923 eee7 30d8 3c0f  ..1z.....#..0.<.
# 0x0090:  f273 c1                                     .s.
```

Find the value of the following fields:

Question ID	Field	Type
cv	Frame is 802.1q	Boolean: Answer Y or N
cw	TCP ACK	Boolean: Answer Y or N
cx	TCP CWR	Boolean: Answer Y or N
cy	IP length	Integer: Answer with the decimal value of the field.
cz	IP DSCP	Integer: Answer with the decimal value of the field.
da	IP FLAGS	Integer: Answer with the decimal value of the field.

Considering the following packet:

```
# 0x0000: 84c8 2481 3a8b 4b44 ee8f 1ccf 0806 0001 ..$.:KD.....
# 0x0010: 0800 0604 0001 4f43 73aa 3fcf 904c 68cb .....0Cs?.Lh.
# 0x0020: de56 14e2 4ca1 5c83 252a 06d4 2b5f 40e6 .V..L.\.%*...+_@.
# 0x0030: 9210 21ea 8e5a c388 ccf8 71bd 0cd4 37e9 ...!...Z....q...7.
# 0x0040: b401 25c9 aa52 dece 4ea6 9344 cd30 c5a8 ..%..R..N..D.0..
# 0x0050: 82c7 2605 8ecb 170e ec9d 8623 2036 c4ea ..&.....#.6..
# 0x0060: 57d2 ebdb 0438 3b0a d963 7f24 aefd 827c W....8;..c.$...|
# 0x0070: 395b ee7f df7a                               9[...z
```

Find the value of the following fields:

Question ID	Field	Type
db	ARP target MAC	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
dc	ETH source address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
dd	Frame is MPLS	Boolean: Answer Y or N
de	ARP source IP	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
df	ARP target IP	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
dg	Frame is 802.1q	Boolean: Answer Y or N

Considering the following packet:

```
# 0x0000: 0838 cb16 766c 57e5 fa17 48e8 8100 16d9 .8..v1W...H....
# 0x0010: 0800 4500 004c 0000 4000 2d06 0000 282c ..E..L..@.-...(),
# 0x0020: 9557 3272 0688 acc1 ed8b 02d1 a7cf 1a0e .W2r.....
# 0x0030: 140d 500d b1be 0000 0002 e405 36bb e29f ..P.....6...
# 0x0040: 0946 f87d 2944 a3f7 a947 d0ea 5f03 1b00 .F.})D...G.._...
# 0x0050: 618a 497d f288 7c4f 8129 2397 b29c      a.I}..|0.)#...
```

Find the value of the following fields:

Question ID	Field	Type
dh	IP destination address	IPv4 address. Answer in dotted quad notation, e.g., 129.96.1.21
di	TCP URG	Boolean: Answer Y or N
dj	ETH destination address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00
dk	TCP window size	Integer: Answer with the decimal value of the field.
dl	Frame is 802.1ad	Boolean: Answer Y or N
dm	ETH source address	Ethernet MAC Address. Answer in the customary format, retaining leading zeroes, e.g., 02:ca:fe:f0:0d:00

## 2 Lecture Material Comprehension

The following questions are designed with two purposes in mind:

1. To help you engage with the lecture materials; and
2. To help generate a wide range of questions for the quizzes in this topic.

The second goal is not mandatory for you. However, if you are willing for the answers you provide to the questions in this section to be used in future quizzes in this topic, you are requested to answer the following question as follows *you will not be penalised if you do not give this permission*

Question#	Description
dn	Are you willing to release your following answers in this section from all copyrights, i.e., release them into the public domain, including so that they can be included in quizzes in this topic? <i>you will not be penalised or treated any differently if you do not choose to give this permission</i>

It is important that you answer this question with 'y', if you do decide that you would like to do this (but again, you have no obligation to do so, and you will not be treated differently whether or not you give permission).

The entry in `unit5-answers.txt` would thus look like:

```
# Question 'dn': Do you commit the following answers to the public domain
# and disclaim all copyrights in them?
dn=y
```

*For each question, you must record your answer in the `unit5-answers.txt` file in your git repository. For each question, you are required to write a statement that is either true or false about the material in the indicated lecture slide.*

*For example, if you were asked 'write a **true** statement about the content of Slide 2 of Chapter 1', you would put the statement at the end of the `rx=` line in the file `unit5-answers.txt`. For example, if your statement was 'One of the problems addressed in this chapter is how to build*

scalable networks', you would write:

Question#	Description
pz	Write a <b>true</b> statement about the content of Slide 2 of Chapter 1

The entry in `unit5-answers.txt` would thus look like:

```
# Question 'pz': Write a true statement about the content of Slide 2 of Chapter 1
pz=One of the problems addressed in this chapter is how to build scalable networks
```

Templates for each answer are provided in `unit5-answers.txt` for your convenience.

If you are asked to write a statement that is false, i.e., untrue, think about statements that someone who has not worked through the material might think would be true. Be creative! Be devious!

Question#	Description
do	Write a <b>false</b> statement about the content of Slide 50 of Chapter 8
dp	Write a <b>true</b> statement about the content of Slide 118 of Chapter 3
dq	Write a <b>true</b> statement about the content of Slide 28 of Chapter 2
dr	Write a <b>false</b> statement about the content of Slide 67 of Chapter 8
ds	Write a <b>true</b> statement about the content of Slide 63 of Chapter 8
dt	Write a <b>true</b> statement about the content of Slide 6 of Chapter 5
du	Write a <b>false</b> statement about the content of Slide 46 of Chapter 4
dv	Write a <b>false</b> statement about the content of Slide 17 of Chapter 2
dw	Write a <b>true</b> statement about the content of Slide 111 of Chapter 3
dx	Write a <b>false</b> statement about the content of Slide 94 of Chapter 6