The Network Layer

Total points 2

1. Please select all of the valid IP addresses. Check all that apply. **1 / 1 point**

- [ ] 123.456.123.456
- [x] 8.8.8.8

Correct
Nice job! 8.8.8.8 is a valid IP address.

- [x] 192.168.1.1

Correct
Great work! 192.168.1.1 is a valid IP address.

- [ ] 257.70.312.49

2. How many IP addresses does a class C network have? **1 / 1 point**

- ( ) 65,536 addresses
- ( ) 16,777,216 addresses
- (•) 256 addresses
- ( ) 1 address

Correct
Wohoo! You're correct.

Additional Temporal Figures Quiz

Total points 4

1. What is the correct geom for filling in the area underneath a line in a line plot? **1 / 1 point**

- ○ geom_fill_line()
- ○ geom_stack_line()
- ◉ geom_area()

Correct
Correct!

2. What structure do you need your data to be in to make a dumbbell plot? **1 / 1 point**

- ○ Nested
- ◉ Wide
- ○ Long
- ○ Tibble

Correct
Correct. Unlike many of the figures we have made in this class, the method we use for making dumbbell plots requires wide data.

3. Using the ggalt package, what is the geom used to draw a dumbbell chart? **1 / 1 point**

- ◉ geom_dumbbell()
- ○ geom_point() and geom_segment()
- ○ geom_line()

Correct
Correct!

4. What is the aes() that you need to set in order to create a stacked area chart? 1 / 1 point

- ○ stack
- ○ linetype
- ◉ fill
- ○ color

Correct
Correct!

Flows and Circles Quiz

Total points 3

1. Which of these geoms is required to create a complete alluvial diagram? 1 / 1 point

- ☐ geom_line()
- ☐ geom_area()
- ☑ geom_stratum()

Correct
Correct!

- ☑ geom_alluvium()

Correct
Correct!

2. In conjunction with ggplot and packcircles, what geoms are used to make a labelled packed circle plot? 1 / 1 point

- [ ] geom_point()
- [x] geom_polygon()

Correct
Correct!

- [ ] geom_area()
- [x] geom_text()

Correct
Correct!

3. Which function do you use to create a pie chart in Base R? 1 / 1 point

- (•) pie()
- ( ) pie_plot()
- ( ) piechart()
- ( ) plot()

Correct
Correct!

Subnetting

Total points 3

1. What does CIDR stand for? 1 / 1 point

- (•) Classless Inter-Domain Routing
- ( ) Classless Internet Destination Routing
- ( ) Classfull Inter-Destination Routing
- ( ) Classfull Identification Routing

Correct
Yep! CIDR stands for Classless Inter-Domain Routing.

2. Which of the following is a correct form of CIDR notation? **1 / 1 point**

- ○ 192.168.1.0\24
- ○ 192.168.1.0 + 255.255.255.0
- ◉ 192.168.1.0/24
- ○ 192.168.1.0:24

Correct
Awesome job! CIDR notation uses a forward slash and then lists the numbers of bits in the subnet mask.

3. How many octets does a subnet mask have? **1 / 1 point**

- ○ 1
- ○ 2
- ○ 3
- ◉ 4

Correct
Great work! A subnet mask is the same length as an IP address.

Routing

Total points 3

1. Select examples of routing protocols. Check all that apply. **1 / 1 point**

- [ ] Transmission Control Protocol
- [x] Routing Information Protocol

Correct
Nice job! You're correct.

- [ ] Hypertext Transfer Protocol
- [x] Border Gateway Protocol

Correct
Nice job! You're correct.

- [ ] User Datagram Protocol

2. Who is permitted to use non-routable address space? **1 / 1 point**

- ( ) It's for testing purposes only
- (•) Anyone
- ( ) The IETF
- ( ) The IANA

Correct
Awesome! Anyone can use non-routable address space.

3. A typical routing table may contain which of the following? Check all that apply. **1 / 1 point**

- [x] Destination network

  Correct
  You nailed it! A routing table entry has to be tied to a specific destination network.

- [ ] Destination address

- [x] Total hops

  Correct
  Way to go! A routing table entry needs to know how many hops away a destination network is.

- [ ] TTL

The Network Layer

Latest Submission Grade 80%

1. Question **1 / 1 point**

ARP stands for _____.

- Anonymous Resource Protocol
- Augmented Resolution Picture
- Address Resolution Protocol
- Aggressive Resource Protection

Expand

Correct
Nice job! ARP is used to discover what MAC address is associated with a specific IP address.

2. Question **1 / 1 point**

A subnet ID is calculated via a _____.

- subnet mask
- demarcation point
- router
- routing protocol

Expand

Correct
Wohoo! A subnet mask is also a way to determine the size of a subnet.

3. Question

1 / 1 point

RFC stands for _____.

- Routing Frequency Control
- Request For Comments
- Realtime Frame Check
- Redundant Frame Controller

Expand

Correct
That's right! RFCs have long been used to help establish agreed-upon standards and protocols.

4. Question

1 / 1 point

A _____ is where one network ends and another begins.

- subnet mask
- routing table
- demarcation point
- routing protocol

Expand

Correct
You got it! It's important to know about demarcation points so that you understand where responsibility of the operation of a network begins and ends.

5. Question

1 / 1 point

Using logical operators, 1 AND 0 = ____.

- True
- False
- 1
- 2

Expand

Correct
Nice job! Using the AND operator, the result is only 1, or true, if both sides are also 1, or true.

6. Question

1 / 1 point

A single octet in an IP address represents what range of decimal numbers?

- 1-255
- 0-155
- 0-255
- 0-250

Expand

Correct
Great work! Eight bits of data, or a single octet, can represent all decimal numbers from 0-255.

10. Question

1 / 1 point

Which IP address is Class C?

- 132.26.144.52
- 224.24.45.69
- 128.42.39.72
- 192.37.48.98

Expand

Correct
Well done! Class C addresses begin with a first octet value of 192 through 223.

11. Question

1 / 1 point

What protocol is used to discover the hardware address of a node with a certain IP address?

- Subnet mask
- SQL database
- ARP table
- CIDR, or Classless Inter-Domain Routing

Expand

Correct
You got it! An ARP table is just a list of IP addresses and the MAC addresses associated with them.

12. Question

1 / 1 point

Which octet of the subnet mask 255.255.255.0 will tell the router the corresponding host ID?

- ○ The first octet
- ○ The middle two octets
- ○ The first and last octet
- ◉ The last octet

Expand

Correct

Well done! The size of a subnet is entirely defined by its subnet mask. So for example, with a subnet mask of 255.255.255.0, we know that only the last octet is available for host IDs, regardless of what the size the network and subnet IDs are.

13. Question

1 / 1 point

What is the maximum decimal number possible to represent with 16 bits?

- ○ 16
- ○ 256
- ◉ 65536
- ○ 1600

Expand

Correct

Woohoo! If you have a 16-bit number, you can just perform the math 2^16 which would be 65536 numbers.

14. Question

1 / 1 point

How many possible host IDs do you always lose per network?

- 4
- 12
- 8
- 2 (selected)

Expand

Correct

Right on! You always lose two host IDs per network. So, if a /24 network has 2^8 or 256 potential hosts, you really only have 256 - 2 = 254 available IPs to assign.

15. Question

1 / 1 point

Which are a type of interior gateway protocol? (Check all that apply)

- [ ] TFTP (Trivial File Transfer Protocol)
- [x] Distance-vector protocols

Correct

Well done! A router using a distance vector protocol basically just takes its routing table, which is a list of every network known to it and how far away these networks are in terms of hops. Then the router sends this list to every neighboring router, which is basically every router directly connected to it.

- [ ] RDP (Remote Desktop Protocol)
- [x] Link state routing protocols

Correct

Well done! Link state protocols get their name because each router advertises the state of the links of each of its interfaces. This information about each router is propagated to every other router on an autonomous system.

Expand

Correct

Great, you got all the right answers.