Module 06: Quiz 3

- Due Mar 28 at 11:59pm
- Points 10
- Questions 2
- Time Limit 15 Minutes

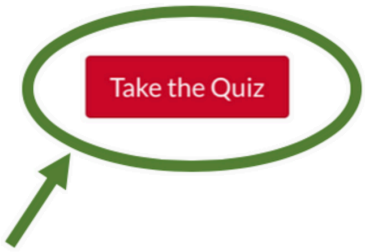
Instructions

Purpose

This quiz is over the materials for Module 06. This quiz focuses on decoding and reading network packets presented as hexadecimal values (i.e., how to parse and translate the raw data from a packet). You may want to use **RapidTables (https://www.rapidtables.com/convert/number/hex-to-decimal.html)** , open in a different tab, to help you quickly convert hexadecimal to decimal where needed. Be comfortable decoding packets before beginning this quiz, as time will pass quickly. Having a pencil and scratch paper may be helpful for this quiz.

Task

DO NOT HIT THE BUTTON UNTIL YOU'RE READY TO TAKE THE QUIZ.



- You may only take this quiz once.
- Make sure you will not be interrupted to focus on completing the quiz.
- Make sure you have a reliable internet connection.
- You have 15 minutes to complete this quiz. Once you start the quiz, you cannot stop the timer.
  - **Pay attention to the time.** The time remaining is located on a timer on the right sidebar.
  - The quiz will *automatically* submit after your time is up or if it hits the due date (whichever comes first).
  - If you accidentally navigate away from the quiz but have time remaining, you should be able to pick up where you left off.

- For multiple select questions (e.g., the 'select all that apply' questions with checkboxes), Canvas auto-grading will reduce the overall score for incorrectly selected options. Unselected options will not alter the score (you won't gain or lose points for not selecting a statement or option, regardless of whether it is correct or incorrect). Be mindful when selecting options for this style of question.
- Open book/open notes/open internet - but answers must be your own. Do not copy, plagiarize, or obtain solutions from other sources or people.
- Don't hit the button until you're ready to take the quiz!

Grading Criteria

Reminder: Pay attention to the field formatting instructions so you can format your answers in each blank to receive credit. Answer formatting on this quiz resembles the formatting requirements from other Module 06 assignments.

To complete this assignment, you will answer all of the questions. Canvas will show your scores upon submission. If you have questions about what you missed, please contact your TA.

Solutions

You will be able to see your quiz responses after submitting the quiz. Canvas will show answers with feedback. Please note this feedback and any corrections; you will only see this screen once.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	5 minutes	9.5 out of 10

⚠ Correct answers are hidden.

Score for this quiz: 9.5 out of 10
Submitted Mar 28 at 4:50pm
This attempt took 5 minutes.

Answer Formatting - the same guidelines as on previous assignments

- Use the number keys; do not spell out numbers (e.g., use '`1`', not 'one').
- Binary and hexadecimal answers should not use the `0b` and `0x` prefixes on this assignment.

- Answers may be written using uppercase or lowercase letters, but be consistent throughout the submission.
- Use the standard formatting conventions for Ethernet and IP addresses used in class.
- Leading zeros:
  - Include where necessary and customary (e.g., addresses, payload/padding).
  - Avoid with decimal values (e.g., use '`1`', not '`01`').
  - Otherwise, they can be omitted as long as it doesn't alter the value's interpretation (e.g., '`00`' and '`0x0`' can be simplified to '`0`'). Ensure consistency in omission (e.g., don't represent '`0011`' as '`011`').
- **Copy/Paste in Canvas:** Canvas may mark an answer as incorrect if it includes unintended characters like extra spaces or carriage returns at the end of your answer so be careful entering your responses. If you think Canvas counted something as incorrect due to unintended characters, contact your TA(s).

PartialQuestion 1
8.5 / 9 pts

Given the network packet in **Figure 1**, identify the appropriate values for the fields listed in **Table 1**.

```
0004 7696 7bda 0015 3321 2715 0800 4500
0049 1111 4000 4011 8201 e79c 7671 e79c
7677 0850 0035 0035 e0bf 319a 0100 0001
0000 0000 0000 0331 3438 0331 3237 0331
3834 0238 3107 696e 2d61 6464 7204 6172
7061 0000 0c00 01
```

Figure 1: Hexadecimal representation of a packet extracted from the network.

Table 1: Ethernet Frame - Hexadecimal Packet Breakdown

Layer/Protocol	Field	Answer
	Destination Address	00:04:76:96:7b:da

Ethernet	Source Address	00:15:33:21:27:15
	Type or Length (hex)	0x 0800
IP	Version (hex)	0x 4
	Header Length (decimal, in bytes)	20
	Type of Service (hex)	0x 00
	Total Length (decimal)	73
	ID (hex)	0x 1111
	Flags: bit 1	0b 0
	bit 2	0b 1
	bit 3	0b 0
	Offset	0
	TTL (decimal)	64
	Protocol (decimal)	17
	Checksum (hex)	0x 8201
	Source IP Address	231.156.118.113

	Destination IP Address	231.156.118.119
Data	Full Payload (hex)	0x 0x0850 0035 0035

Answer 1:
00:04:76:96:7b:da
Correct
Answer 2:
00:15:33:21:27:15
Correct
Answer 3:
0800
Correct
Answer 4:
4
Correct
Answer 5:
20
Correct
Answer 6:
00
Correct
Answer 7:
73
Correct
Answer 8:
1111
Correct
Answer 9:
0
Correct
Answer 10:
1
Correct

Answer 11:
0
Correct
Answer 12:
0
Correct
Answer 13:
64
Correct
Answer 14:
17
Correct
Answer 15:
8201
Correct
Answer 16:
231.156.118.113
Correct
Answer 17:
231.156.118.119
Correct
Answer 18:
0x0850 0035 0035 e0bf 319a 0100 0001 0000 0000 0000 0331 3438 0331 3237 0331 3834 0238 3107 696e 2d61 6464 7204 6172 7061 0000 0c00 01

Solution

Layer/Protocol	Field	Hex from Packet	Answer
Ethernet	Destination Address	0004 7696 7bda	00:04:76:96:7b:da *remember proper Ethernet address formatting
	Source Address	0015 3321 2715	00:15:33:21:27:15

	Type or Length (hex)	0800	0x0800 or 0x800
IP	Version (hex)	4	0x[4]
	Header Length (decimal, in bytes)	5	20 If you put 5: Remember, the field is in four-byte words (4*5=20 bytes in length)
	Type of Service (hex)	00	0x0 or 0x00
	Total Length (decimal)	0049	73
	ID (hex)	1111	0x1111
	Flags: bit 1	translate 0x4 into binary to find the three bits needed: 0x4 = 0b0100; flag values are 010	0b0
	bit 2		0b1
	bit 3		0b0
	Offset	Rest of 4000 not used by flags	0
	TTL (decimal)	0x40	64
	Protocol (decimal)	0x11	17 (UDP)
	Checksum (hex)	0x8201	0x8201
	Source IP Address	e79c 7671	231.156.118.113 *remember

			proper IP address formatting
	Destination IP Address	e79c 7677	231.156.118.119
Data	Payload (hex)	What is left in the packet	0x0850 0035 0035 e0bf 319a 0100 0001 0000 0000 0000 0331 3438 0331 3237 0331 3834 0238 3107 696e 2d61 6464 7204 6172 7061 0000 0c00 01

As always, if you notice you missed points because you accidentally transposed two numbers (e.g., typed 129.168 instead of 129.186), please let a TA know.

Question 2
1 / 1 pts

Determine the next layer's protocol type, which is currently encapsulated in the data, by referring to the 'Protocol (decimal)' information in Table 1.

What is the abbreviation for the protocol type at the next layer?

UDP

Correct

Quiz Score: 9.5 out of 10