Started on	Wednesday, 20 October 2021, 4:26 PM
State	Finished
Completed on	Friday, 22 October 2021, 3:33 PM
Time taken	1 day 23 hours
Marks	98.67/100.00
Grade	**9.87** out of 10.00 (**99**%)

Question **1**

Correct

Mark 2.00 out of 2.00

What does TCP use to multiplex/demultiplex between applications?

Penalty regime: 50%, 100%

Select one:

- a. Src and dst port numbers. ✔
- b. Src and dst MAC addresses
- c. Options

Your answer is correct.

The correct answer is: Src and dst port numbers.

Correct

Marks for this submission: 2.00/2.00.

Question **2**

Correct

Mark 2.00 out of 2.00

Why does TCP not have a payload length field, like UDP?

Penalty regime: 33%, 66%, 100%

Select one:

- a. TCP negotiates the size of TCP segments in the handshake.
- b. The TCP packet size is always four times the header size.
- c. IP stores the length meaning TCP doesn't need to.
- d. TCP sends a byte stream and therefore no distinction is made between TCP segments. ✔

Your answer is correct.

The correct answer is: TCP sends a byte stream and therefore no distinction is made between TCP segments.

Correct

Marks for this submission: 2.00/2.00.

Question **3**

Correct

Mark 2.00 out of 2.00

A UDP socket is identified by:

Penalty regime: 33%, 66%, 100%

Select one or more:

- a. source IP address
- b. destination IP address ✔
- c. source port number
- d. destination port number ✔

Your answer is correct.

The correct answers are: destination IP address, destination port number

Correct

Marks for this submission: 2.00/2.00.

Question **4**

Correct

Mark 2.00 out of 2.00

A TCP socket is identified by:

Penalty regime: 33%, 66%, 100%

Select one or more:

- a. source port number ✔
- b. source IP address ✔
- c. destination IP address ✔
- d. destination port number ✔

Your answer is correct.

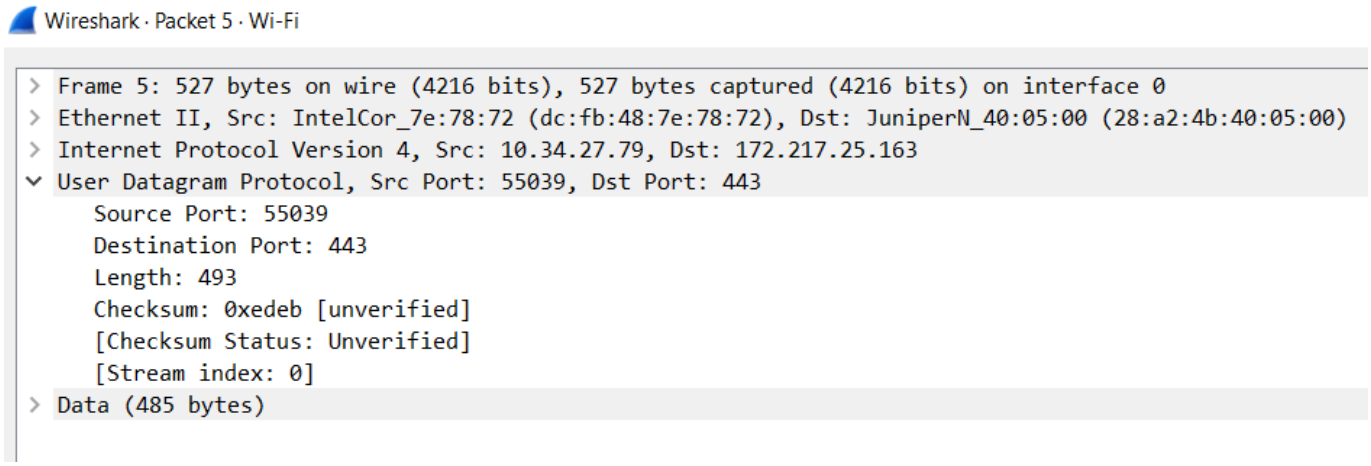
The correct answers are: destination IP address, source IP address, destination port number, source port number

Correct

Marks for this submission: 2.00/2.00.

Information

A screenshot of a UDP segment captured by WireShark is given below. Please answer the following questions based on this figure.



Question **5**

Correct

Mark 4.00 out of 4.00

The source port number in this UDP segment is

55039

✔ .

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 4.00/4.00.

Question **6**

Correct

Mark 4.00 out of 4.00

The destination port number of this UDP segment is

443

✔ .

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 4.00/4.00.

Question **7**

Correct

Mark 4.00 out of 4.00

The length of this UDP segment is

493

✔ ; the size of its data field is

485

✔ . Therefore the UDP header occupies

8

✔ bytes.

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 4.00/4.00.

Information

A screenshot of a TCP segment (captured by Wireshark) is given below. Please answer the following questions based on this figure.

Wireshark · Packet 3 · Wi-Fi

```
> Frame 3: 54 bytes on wire (432 bits), 54 bytes captured (432 bits) on interface 0
> Ethernet II, Src: JuniperN_40:05:00 (28:a2:4b:40:05:00), Dst: IntelCor_7e:78:72 (dc:fb:48:7e:78:72)
> Internet Protocol Version 4, Src: 132.181.109.99, Dst: 10.34.27.79
v Transmission Control Protocol, Src Port: 443, Dst Port: 50437, Seq: 3220251529, Ack: 190380565, Len:
    Source Port: 443
    Destination Port: 50437
    [Stream index: 1]
    [TCP Segment Len: 0]
    Sequence number: 3220251529
    [Next sequence number: 3220251529]
    Acknowledgment number: 190380565
    0101 .... = Header Length: 20 bytes (5)
  > Flags: 0x010 (ACK)
    Window size value: 23768
    [Calculated window size: 23768]
    [Window size scaling factor: -1 (unknown)]
    Checksum: 0x8bc9 [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
  > [SEQ/ACK analysis]
  > [Timestamps]
```

Question **8**

Correct

Mark 2.00 out of 2.00

The source port number and destination port number in this segment are

443

✔ and

50437

✔ respectively.

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 2.00/2.00.

Question **9**

Correct

Mark 2.00 out of 2.00

The sequence number and ACK number in this TCP segment are

3220251529

✔ and

190380565

✔ respectively.

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 2.00/2.00.

Question **10**

Correct

Mark 4.00 out of 4.00

The size of receive window of this TCP segment is

23768

✔ .

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 4.00/4.00.

Question **11**

Correct

Mark 4.00 out of 4.00

In TCP 3-way handshaking, the client-side TCP first sends a SYN segment to the server-side TCP. Suppose the client randomly chooses an initial sequence number, *client_isn*. What is the ACK number in the corresponding SYNACK segment generated by the server?

Penalty regime: 33%, 66%, 100%

Select one:

- a. *client_isn +1* ✔
- b. Another random number
- c. *client_isn*
- d. 0

Your answer is correct.

The correct answer is: *client_isn +1*

Correct

Marks for this submission: 4.00/4.00.

Question **12**

Correct

Mark 2.67 out of 4.00

Suppose the sequence number of the SYNACK segment (generated by the server) is *server_isn*. After receiving the SYNACK segment, the client sends back another segment acknowledging this reception. What is the sequence number of this segment?

Penalty regime: 33%, 66%, 100%

Select one:

- a. *server_isn*
- b. *client_isn +1* ✔
- c. *server_isn +1*
- d. *client_isn*

Your answer is correct.

The correct answer is: *client_isn +1*

Correct

Marks for this submission: 4.00/4.00. Accounting for previous tries, this gives **2.67/4.00**.

Question **13**

Correct

Mark 4.00 out of 4.00

Following the last question, what is the ACK number in the segment sent by the client after receiving the SYNACK segment from the server?

Penalty regime: 33%, 66%, 100%

Select one:

- a. *client_isn +1*
- b. *server_isn*
- c. *client_isn*
- d. *server_isn +1* ✔

Your answer is correct.

The correct answer is: *server_isn +1*

Correct

Marks for this submission: 4.00/4.00.

Question **14**

Correct

Mark 2.00 out of 2.00

Which of the following applications need reliable data transfer?

Select one or more:

- a. File transfer ✔
- b. Video streaming
- c. Instant messaging ✔
- d. Email ✔

Your answer is correct.

The correct answers are: Email, File transfer, Instant messaging

Correct

Marks for this submission: 2.00/2.00.

Question **15**

Correct

Mark 2.00 out of 2.00

Which of the following applications have tight timing constraints on data delivery?

Select one or more:

- [ ] a. File transfer
- [x] b. Internet telephony ✔
- [x] c. Teleconferencing ✔
- [ ] d. Email

Your answer is correct.

The correct answers are: Internet telephony, Teleconferencing

Correct

Marks for this submission: 2.00/2.00.

Question **16**

Correct

Mark 4.00 out of 4.00

In HTTP version 1.1, what is the first field below the request line?

Select one:

- ( ) a. User-agent.
- (•) b. Any of these, HTTP is structured in plain-text. ✔
- ( ) c. Connection.
- ( ) d. Accept-language.

Correct, unlike protocols like IP and TCP, HTTP does not structure its fields depending on their byte position in the packet. Rather, a HTTP packet is structured in plain-text with delimiters (sp, cr, and lf) separating header lines, field names, and values.

The correct answer is: Any of these, HTTP is structured in plain-text.

Correct

Marks for this submission: 4.00/4.00.

Question **17**

Correct

Mark 2.00 out of 2.00

What are the benefits of web caching?

Select one or more:

- [x] a. Reduces network traffic.
- [ ] b. Requested data will be up to date.
- [x] c. Reduces latency experienced by clients.
- [x] d. Lowers bandwidth costs.

Your answer is correct.

The correct answers are: Reduces latency experienced by clients., Lowers bandwidth costs., Reduces network traffic.

Correct

Marks for this submission: 2.00/2.00.

Question **18**

Correct

Mark 2.00 out of 2.00

HTTP is a stateless protocol although many sites desire to identify and track their users. These cookies are often used to track and add a state to HTTP. Where are cookies stored?

Select one:

- (•) a. Both client and server side.
- ( ) b. Server side

Your answer is correct.

The correct answer is: Both client and server side.

Correct

Marks for this submission: 2.00/2.00.

Information

Suppose you, as a server, receive the following HTTP message from a client browser:

GET /cosc264/index.html HTTP/1.1<cr><lf>Host:cosc.canterbury.ac.nz<cr><lf>User-Agent: Mozilla/5.0 (Windows;U; Windows NT 5.1; en-US; rv:1.7.2) Gecko/20040804 Netscape/7.2 (ax) <cr><lf>Accept:ext/xml, application/xml, application/xhtml+xml, text/html;q=0.9, text/plain;q=0.8,image/png,*/*;q=0.5<cr><lf>
Accept-Language: en-gb;q=0.4, en-nz;q=0.5<cr><lf>Accept-Encoding: zip, deflate<cr><lf>Accept-Charset:ISO-8895-1,utf-8;q=0.7,*q=0<cr><lf>
keep-Alive: 300<cr><lf>Connection:keep-alive<cr><lf><cr><lf>

Question **19**

Correct

Mark 2.00 out of 2.00

Was this HTTP message sent from a client or server?

Penalty regime: 100%

Select one:

- a. Client ✔
- b. Server

Your answer is correct.

The correct answer is: Client

Correct

Marks for this submission: 2.00/2.00.

Question **20**

Correct

Mark 2.00 out of 2.00

What is the preferred language? (The answer is the language code, e.g., en-gb.)

Penalty regime: 50%, 100%

Answer: en-nz ✔

Correct, en-nz has a higher weighting than en-gb.

The correct answer is: en-nz

Correct

Marks for this submission: 2.00/2.00.

Question **21**

Correct

Mark 2.00 out of 2.00

Is this packet part of a persistent connection?

Penalty regime: 100%

Select one:

- True ✔
- False

The correct answer is 'True'.

Correct

Marks for this submission: 2.00/2.00.

Question **22**

Correct

Mark 2.00 out of 2.00

Which of the following protocols is the principle application-layer protocol for Email?

Penalty regime: 33%, 66%, 100%

Select one:

- a. SMTP ✔
- b. HTTP
- c. TCP
- d. UDP

Your answer is correct.

The correct answer is: SMTP

Correct

Marks for this submission: 2.00/2.00.

Question **23**

Correct

Mark 2.00 out of 2.00

Which transport-layer protocol is used by SMTP?

Penalty regime: 33%, 66%, 100%

Select one:

- a. UDP
- b. TCP ✔

Your answer is correct.

The correct answer is: TCP

Correct

Marks for this submission: 2.00/2.00.

Question **24**

Correct

Mark 2.00 out of 2.00

Which data format can only be accepted by SMTP?

Penalty regime: 33%, 66%, 100%

Select one:

- a. base64
- b. 8-bit ASCII
- c. any non-ASCII
- d. 7-bit ASCII ✔

Your answer is correct.

The correct answer is: 7-bit ASCII

Correct

Marks for this submission: 2.00/2.00.

Question **25**

Correct

Mark 2.00 out of 2.00

Which of the following mail access protocols can allow users to organise messages in folders?

Penalty regime: 33%, 66%, 100%

Select one:

- a. POP3
- b. IMAP ✔

Your answer is correct.

The correct answer is: IMAP

Correct

Marks for this submission: 2.00/2.00.

Question **26**

Correct

Mark 2.00 out of 2.00

Which transport-layer protocol does DNS typically run over?

Penalty regime: 33%, 66%, 100%

Select one:

- a. TCP
- b. UDP ✔

Your answer is correct.

The correct answer is: UDP

Correct

Marks for this submission: 2.00/2.00.

Question **27**

Correct

Mark 4.00 out of 4.00

What are the main services provided by DNS?

Penalty regime: 33%, 66%, 100%

Select one or more:

- a. Mail server aliasing ✔
- b. Load distribution ✔
- c. Hostname to IP translation ✔
- d. Host aliasing ✔

Your answer is correct.

The correct answers are: Hostname to IP translation, Host aliasing, Mail server aliasing, Load distribution

Correct

Marks for this submission: 4.00/4.00.

Question **28**

Correct

Mark 4.00 out of 4.00

DNS servers are organised in a hierarchy. Which of the following servers are the main servers in DNS?

Penalty regime: 33%, 66%, 100%

Select one or more:

- [x] a. Top-Level Domain Servers
- [ ] b. Local DNS Servers
- [x] c. Root DNS servers
- [x] d. Authoritative DNS Servers

Your answer is correct.

The correct answers are: Root DNS servers, Top-Level Domain Servers, Authoritative DNS Servers

Correct

Marks for this submission: 4.00/4.00.

Information

Below is a screenshot of a DNS message captured by Wireshark. Please answer the following questions.

Wireshark · Packet 282 · Wi-Fi

```
▾ Domain Name System (query)
    Transaction ID: 0x12f1
  ▾ Flags: 0x0100 Standard query
      0... .... .... .... = Response: Message is a query
      .000 0... .... .... = Opcode: Standard query (0)
      .... ..0. .... .... = Truncated: Message is not truncated
      .... ...1 .... .... = Recursion desired: Do query recursively
      .... .... .0.. .... = Z: reserved (0)
      .... .... ...0 .... = Non-authenticated data: Unacceptable
    Questions: 1
    Answer RRs: 0
    Authority RRs: 0
    Additional RRs: 0
  ▾ Queries
    ▾ static.canterbury.ac.nz: type A, class IN
        Name: static.canterbury.ac.nz
        [Name Length: 23]
        [Label Count: 4]
        Type: A (Host Address) (1)
        Class: IN (0x0001)
    [Response In: 286]
```

```
0000  28 a2 4b 40 05 00 dc fb  48 7e 78 72 08 00 45 00   (·K@···· H~xr··E·
0010  00 45 74 10 00 00 80 11  00 00 0a 22 1b 4f 84 b5   ·Et····· ···"·O··
0020  02 e1 f6 d3 00 35 00 31  ad 49 12 f1 01 00 00 01   ·····5·1 ·I······
0030  00 00 00 00 00 00 06 73  74 61 74 69 63 0a 63 61   ·······s tatic·ca
0040  6e 74 65 72 62 75 72 79  02 61 63 02 6e 7a 00 00   nterbury ·ac·nz··
0050  01 00 01                                          ···
```

Question **29**

Correct

Mark 2.00 out of 2.00

Is this DNS message a query or a reply?

Penalty regime: 33%, 66%, 100%

Select one:

- a. Query ✔
- b. Reply

Your answer is correct.

The correct answer is: Query

Correct

Marks for this submission: 2.00/2.00.

Question **30**

Correct

Mark 4.00 out of 4.00

What type of DNS records is being after?

Penalty regime: 33%, 66%, 100%

Select one:

- a. A ✔
- b. MX
- c. CNAME
- d. NS

Your answer is correct.

The correct answer is: A

Correct

Marks for this submission: 4.00/4.00.

Question **31**

Correct

Mark 4.00 out of 4.00

What is the **Name** field in this DNS message ?

Penalty regime: 33%, 66%, 100%

static.canterbury.ac.nz ✔

Correct

Marks for this submission: 4.00/4.00.

Information

Below is a screenshot of a DNS message captured by Wireshark. Please answer the following questions.

Wireshark · Packet 286 · Wi-Fi

```
> Frame 286: 175 bytes on wire (1400 bits), 175 bytes captured (1400 bits) on interface 0
> Ethernet II, Src: JuniperN_40:05:00 (28:a2:4b:40:05:00), Dst: IntelCor_7e:78:72 (dc:fb:48:7e:78:72)
> Internet Protocol Version 4, Src: 132.181.2.225, Dst: 10.34.27.79
> User Datagram Protocol, Src Port: 53, Dst Port: 63187
v Domain Name System (response)
    Transaction ID: 0x12f1
  v Flags: 0x8580 Standard query response, No error
      1... .... .... .... = Response: Message is a response
      .000 0... .... .... = Opcode: Standard query (0)
      .... .1.. .... .... = Authoritative: Server is an authority for domain
      .... ..0. .... .... = Truncated: Message is not truncated
      .... ...1 .... .... = Recursion desired: Do query recursively
      .... .... 1... .... = Recursion available: Server can do recursive queries
      .... .... .0.. .... = Z: reserved (0)
      .... .... ..0. .... = Answer authenticated: Answer/authority portion was not authenticated by t
      .... .... ...0 .... = Non-authenticated data: Unacceptable
      .... .... .... 0000 = Reply code: No error (0)
    Questions: 1
    Answer RRs: 1
    Authority RRs: 2
    Additional RRs: 2
  > Queries
  v Answers
    v static.canterbury.ac.nz: type A, class IN, addr 132.181.109.79
        Name: static.canterbury.ac.nz
        Type: A (Host Address) (1)
        Class: IN (0x0001)
        Time to live: 86400
        Data length: 4
        Address: 132.181.109.79
  v Authoritative nameservers
    > canterbury.ac.nz: type NS, class IN, ns intdns1.canterbury.ac.nz
    > canterbury.ac.nz: type NS, class IN, ns intdns2.canterbury.ac.nz
  v Additional records
    > intdns2.canterbury.ac.nz: type A, class IN, addr 132.181.39.50
    > intdns1.canterbury.ac.nz: type A, class IN, addr 132.181.2.225
    [Request In: 282]
    [Time: 0.002236000 seconds]
```

Question **32**

Correct

Mark 2.00 out of 2.00

Is this DNS message a query or a reply?

Penalty regime: 33%, 66%, 100%

Select one:

- a. Reply ✔
- b. Query

Your answer is correct.

The correct answer is: Reply

Correct

Marks for this submission: 2.00/2.00.

Question **33**

Correct

Mark 4.00 out of 4.00

Based on this DNS message, we know that IP address of the host static.canterbury.ac.nz is

132.181.109.79 ✔ .

(You can ping this host and check whether its IP has changed.)

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 4.00/4.00.

Question **34**

Correct

Mark 4.00 out of 4.00

Based on this message, there are

2 ✔ authoritative nameservers listed. (Please input a number.)

Penalty regime: 33%, 66%, 100%

Correct

Marks for this submission: 4.00/4.00.

Question **35**

Correct

Mark 4.00 out of 4.00

What is the IP address of the DNS nameserver "intdns2.canterbury.ac.nz"?

Penalty regime: 33%, 66%, 100%

Select one:

- a. 132.181.109.79
- b. 132.181.2.225
- c. 132.181.39.50 ✔
- d. 132.181.2.225

Your answer is correct.

The correct answer is: 132.181.39.50

Correct

Marks for this submission: 4.00/4.00.

◄ Superquiz (RDT protocols) (copy)

Jump to...

Quiz: Web and HTTP (practice copy) ►