For the "Which Layer" Questions below, answer using the layer number (1-7)

Answer the questions below

Which layer would choose to send data over TCP or UDP?

| 4 | | ✓ Correct Answer |

Which layer checks received information to make sure that it hasn't been corrupted?

| 2 | | ✓ Correct Answer |

In which layer would data be formatted in preparation for transmission?

| 2 | | ✓ Correct Answer |

Which layer transmits and receives data?

| 1 | | ✓ Correct Answer |

Which layer encrypts, compresses, or otherwise transforms the initial data to give it a standardised format?

| 6 | | ✓ Correct Answer |

Which layer tracks communications between the host and receiving computers?

| 5 | | ✓ Correct Answer |

Which layer accepts communication requests from applications?

| 7 | | ✓ Correct Answer |

Which layer handles logical addressing?

| 3 | | ✓ Correct Answer |

When sending data over TCP, what would you call the "bite-sized" pieces of data?

| Segments | | ✓ Correct Answer |

[Research] Which layer would the FTP protocol communicate with?

| 7 | | ✓ Correct Answer | 💡 Hint |

Which transport layer protocol would be best suited to transmit a live video?

| UDP | | ✓ Correct Answer |

Task 3 ◯ Encapsulation   ⌄

International Organisation for Standardisation (ISO); however, it's mainly used as a more comprehensive guide for learning, as the TCP/IP model is still the standard upon which modern networking is based.
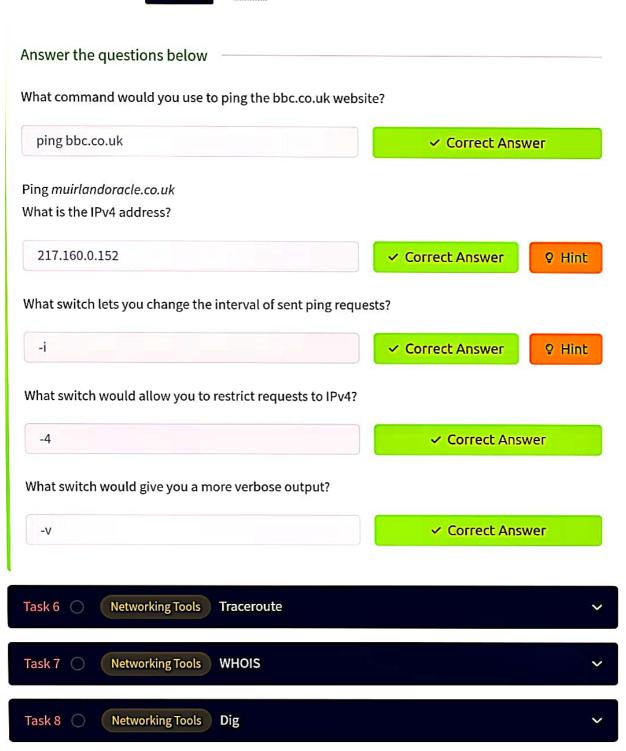
Answer the questions below

Which model was introduced first, OSI or TCP/IP?

TCP/IP	✓ Correct Answer

Which layer of the TCP/IP model covers the functionality of the Transport layer of the OSI model **(Full Name)**?

Transport	✓ Correct Answer

Which layer of the TCP/IP model covers the functionality of the Session layer of the OSI model **(Full Name)**?

Application	✓ Correct Answer

The Network Interface layer of the TCP/IP model covers the functionality of two layers in the OSI model. These layers are Data Link, and?.. **(Full Name)**?

Physical	✓ Correct Answer

Which layer of the TCP/IP model handles the functionality of the OSI network layer?

Internet	✓ Correct Answer

What kind of protocol is TCP?

Connection-based	✓ Correct Answer	💡 Hint

What is SYN short for?

Synchronise	✓ Correct Answer	💡 Hint

What is the second step of the three way handshake?

SYN/ACK	✓ Correct Answer

What is the short name for the "Acknowledgement" segment in the three-way handshake?

ACK	✓ Correct Answer

Task 5 ✅   Networking Tools   Ping   ⌄

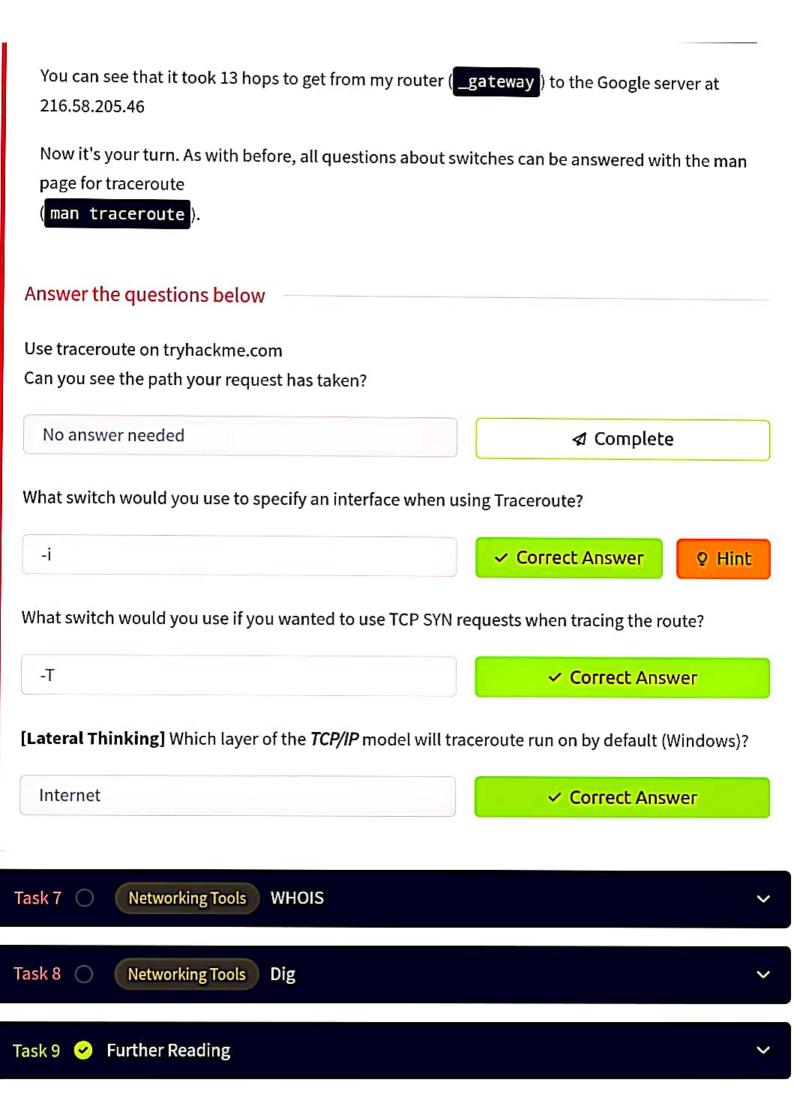possible. Usually this will be a website on the internet, but it could also be for a computer on your home network if you want to check if it's configured correctly. Ping works using the ICMP protocol, which is one of the slightly less well-known TCP/IP protocols that were mentioned earlier. The ICMP protocol works on the Network layer of the OSI Model, and thus the Internet layer of the TCP/IP model. The basic syntax for ping is `ping <target>`. In this example we are using ping to test whether a network connection to Google is possible:

```
              ~$ ping google.com
PING google.com (216.58.198.174) 56(84) bytes of data.
```

Notice that the ping command actually returned the IP address for the Google server that it connected to, rather than the URL that was requested. This is a handy secondary application for ping, as it can be used to determine the IP address of the server hosting a website. One of the big advantages of ping is that it's pretty much ubiquitous to any network enabled device. All operating systems support it out of the box, and even most embedded devices can use ping!

Have a go at the following questions. Any questions about syntax can be answered using the man page for ping (`man ping` on Linux).

Answer the questions below

What command would you use to ping the bbc.co.uk website?

ping bbc.co.uk	✔ Correct Answer

Ping *muirlandoracle.co.uk*
What is the IPv4 address?

217.160.0.152	✔ Correct Answer	⚡ Hint

What switch lets you change the interval of sent ping requests?

-i	✔ Correct Answer	⚡ Hint

What switch would allow you to restrict requests to IPv4?

-4	✔ Correct Answer

What switch would give you a more verbose output?

-v	✔ Correct Answer

Task 6 ◯ (Networking Tools) Traceroute ⌄

Task 7 ◯ (Networking Tools) WHOIS ⌄

Task 8 ◯ (Networking Tools) Dig ⌄

You can see that it took 13 hops to get from my router (`_gateway`) to the Google server at 216.58.205.46

Now it's your turn. As with before, all questions about switches can be answered with the **man** page for traceroute
(`man traceroute`).

Answer the questions below

Use traceroute on tryhackme.com
Can you see the path your request has taken?

No answer needed	⬧ Complete

What switch would you use to specify an interface when using Traceroute?

-i	✓ Correct Answer	💡 Hint

What switch would you use if you wanted to use TCP SYN requests when tracing the route?

-T	✓ Correct Answer

[**Lateral Thinking**] Which layer of the *TCP/IP* model will traceroute run on by default (Windows)?

Internet	✓ Correct Answer

Task 7 ◯ (Networking Tools) WHOIS ⌄

Task 8 ◯ (Networking Tools) Dig ⌄

Task 9 ✓ Further Reading ⌄

This is comparatively a very small amount of information as can often be found. Notice that we've got the domain name, the company that registered the domain, the last renewal, and when it's next due, and a bunch of information about nameservers (which we'll look at in the next task).

Your Turn

Answer the questions below

Perform a whois search on `facebook.com`

No answer needed	◁ Complete

What is the registrant postal code for facebook.com?

94025	✓ Correct Answer

When was the facebook.com domain first registered (Format: DD/MM/YYYY)?

29/03/1997	✓ Correct Answer

Perform a whois search on `microsoft.com`

(Note: Please ensure you have read the task above before attempting the next questions.)

No answer needed	◁ Complete

Which city is the registrant based in?

Redmond	✓ Correct Answer

[OSINT] What is the name of the golf course that is near the registrant address for microsoft.com?

Bellevue Golf Course	✓ Correct Answer

What is the registered Tech Email for microsoft.com?

msnhst@microsoft.com	✓ Correct Answer

Task 8 ○ Networking Tools Dig ⌄

That's us completed our whirlwind tour of networking basics. Hopefully you've found it informative!

Networking is one of those things that you just need to learn. We've covered the very basics, but it would be a very good idea to continue to learn by yourself.

In terms of further information, feel free to reach out in the TryHackMe Discord if you want any help with the contents of this room. Additionally, if you want to expand your knowledge of networking theory, the CISCO Self Study Guide by Steve McQuerry is a great resource to work from. There may be a more up to date version available; however, this edition is cheap, readily available, and most importantly, still very relevant. Whilst it is designed to as a study guide for the CCNA exam, that book serves equally well as a very rounded introduction to networking principles.

Answer the questions below

Read the final thoughts

| No answer needed | ✓ Correct Answer |