Lesson 1: Internet addresses

Year 6 – Computing systems and networks – Communication and collaboration

National Centre for Computing Education

Raspberry Pi

Lesson 1: Internet addresses

To explain the importance of internet addresses

- I can recognise that data is transferred using agreed methods
- I can explain that internet devices have addresses
- I can describe how computers use addresses to access websites

Internet data transfer

Every time you access a website, send a message, or watch a video online, data is transferred over the internet.

How do you use the internet?

Computers **communicate** with each other over the internet.

How do you **communicate** with someone successfully in person?

Communicating

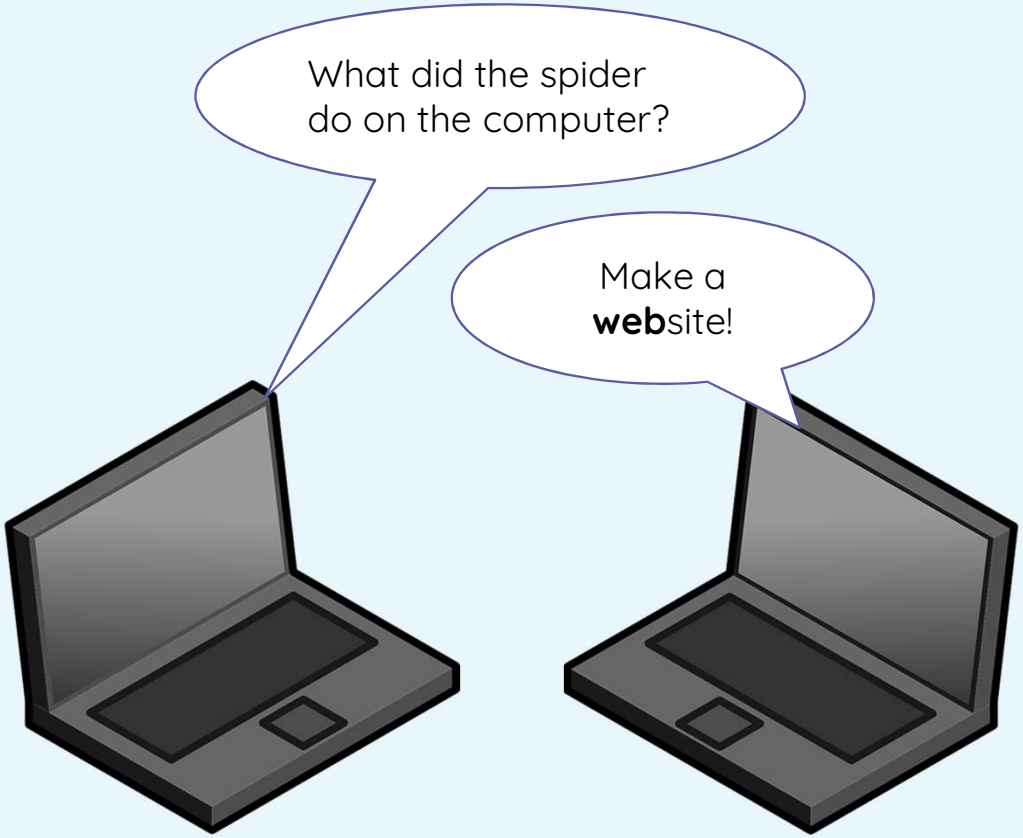
- A message
- From someone, to someone
  (e.g. a speaker and a listener)
- Taking turns
- Understanding
  (same language)

Protocols are like rules. They are an agreed way of doing something.

Can you think of any **protocols** or rules you follow in school?

Communicating

- A message
- From someone, to someone
  (e.g. a speaker and a listener)
- Taking turns
- Understanding
  (same language)



Computers communicate using agreed **protocols.**

To send a message to someone who is somewhere else, you need their address.

J Smith
256 High
Bigton

256 High Street
BI6 1ON

J Smith
BI6 1ON

J Smith
256 High Street

J Smith
256 High Street
Bigton
BI6 1ON

J Smith
High Street
Bigton
BI6 1ON

Which of these do you think will reach the person at their destination?

J Smith
256 High
Bigton

256 High Street

BI6 1ON

J Smith

BI6 1ON

J Smith
256 High Street

J Smith
256 High Street
Bigton
BI6 1ON

J Smith
High Street
Bigton
BI6 1ON

This one will definitely get to the person at their house. It has a name, street address, town, and postcode. Some of the others **might** get there.

Networked computers use special addresses called IP addresses, which are structured like this:

192.168.1.200

IP stands for **Internet Protocol.**

```
From: 192.168.1.200
To:     192.168.1.21
```

When a message is sent from one computer to another over a network, both the destination and start address are included. Why do you think that is?

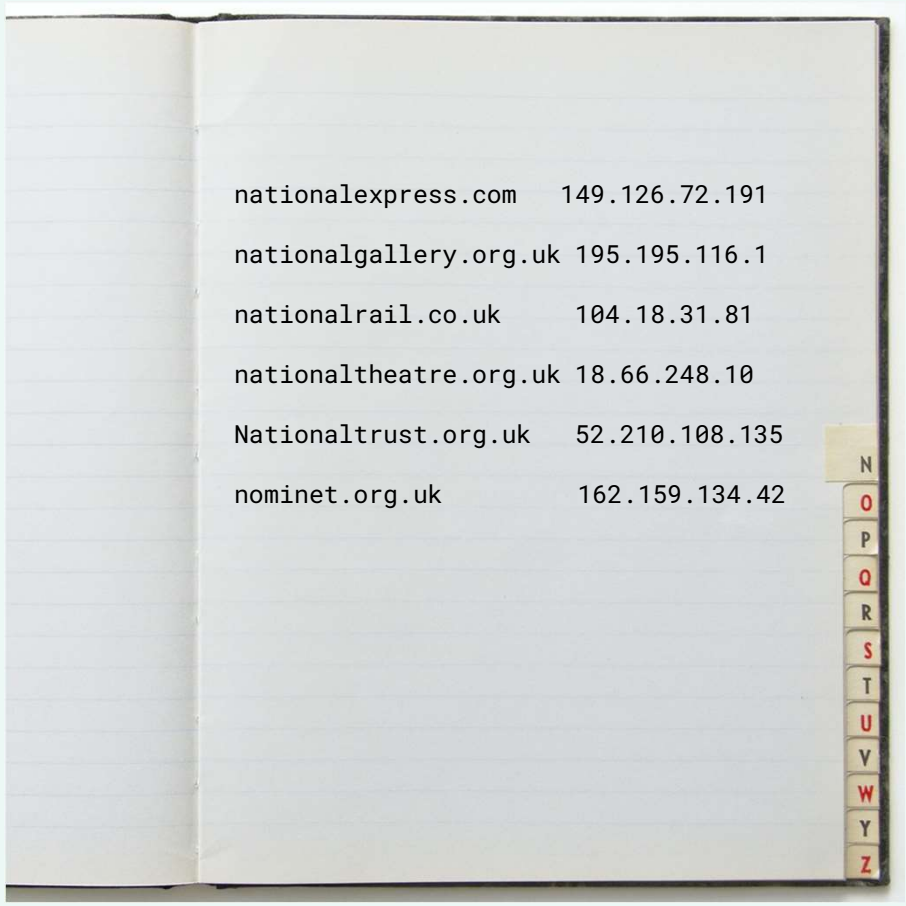
Remembering random numbers

- You will be given a number. Remember the number you are given and as many others as you can.
- Move to another part of the classroom.
- Can you remember the number of the person you are now next to?
- Can you remember their name?
- Why is it difficult to remember a random number but easy to remember a name?

Domain Name Server (DNS)

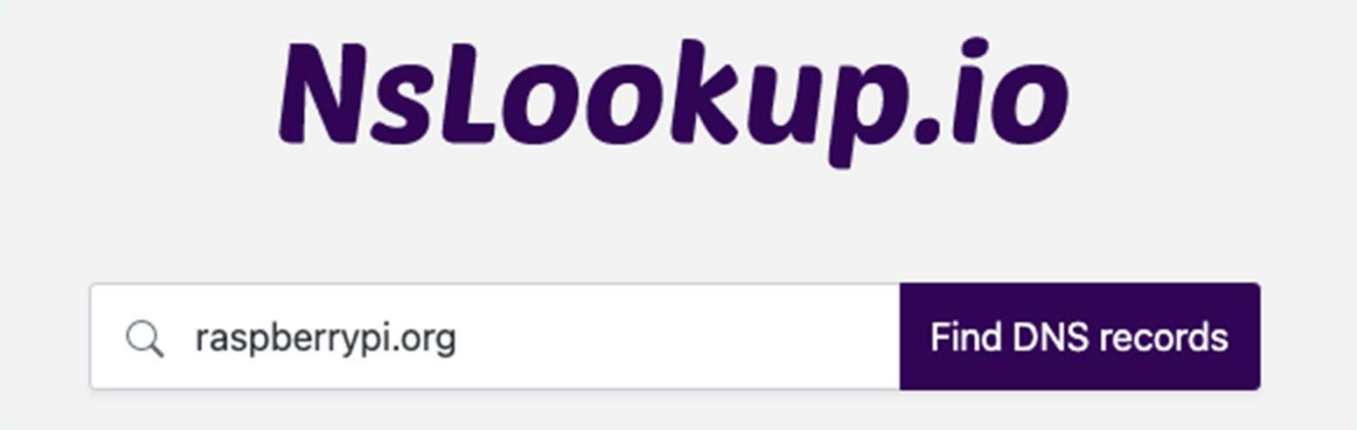
- A **website** address is known as its **domain name**
- Each **website** is hosted on a **web server**
- Each **web server** has an **IP address**

A **Domain Name Server** is a computer, but it works like an address book: it matches IP addresses to the domains.



Finding a website's IP address

If I go to nslookup.io and type in www.raspberrypi.org, then click on 'Find DNS records'...

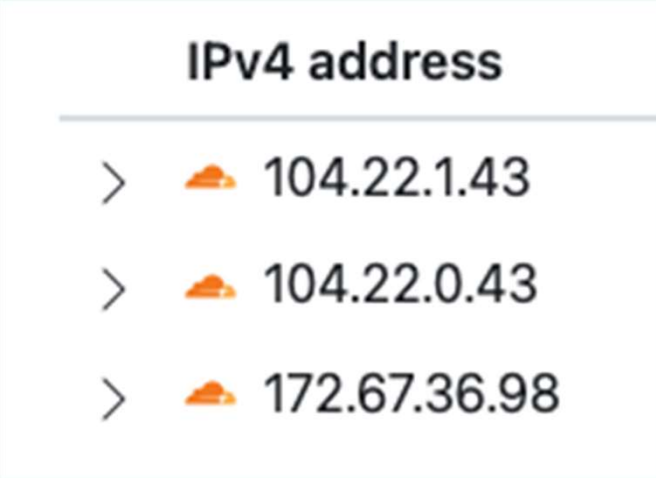


Finding a website's IP address

My lookup will return a result that looks like this:

These are the IP addresses for the raspberrypi.org website.

When you navigate to raspberrypi.org, a DNS server looks up the IP address and directs your computer to the website's server.



IP addresses

Every time you access a website, send a message, or watch a video online:

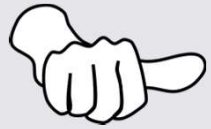
- You use an address (e.g. website or email)
- A DNS translates it into an IP address
- Your computer sends and receives data from another computer

How confident are you? (1–3)

- I can recognise that data is transferred using agreed methods
- I can explain that internet devices have addresses
- I can describe how computers use addresses to access websites

3 – Very confident

2 – Unsure



1 – Not confident

Next lesson

In this lesson, you...

Learned how information is transferred between systems

Explored the important things needed for communication in systems to work

Next lesson, you will...

Learn how data is transferred over the internet