What is a network?

- When computers are connected together they form a network .

- Connections can be made using
  - Cables (E.g. Ethernet, fibre optic)

  or

  - Radio signals (wifi)

You must understand what protocols are and why they are used.

- Protocols are very important in computer networking.
  - The computer hardware and software that people, organisations and countries use is often different.
  - Data can be passed from one computer to another through a network very easily using cables and radio signals but it is difficult for a computer to make sense of what all this binary data actually means.
- If every computer follows the same rules communication becomes possible. Therefore a protocol is an **agreed set of rules** to allow different devices to communicate.
- There are lots of internet protocols E.g. **IP, URL, HTML HTTP** etc.

The birth of the internet

- The Internet became possible when Tim Berners-Lee had an idea that an Internet Protocol (IP) could be used to exchange information between different types of network .
- His rules for giving computers unique IP addresses, (a bit like their own post code), together with rules for routing of data from one network to another enabled internetworking and essentially established the Internet.

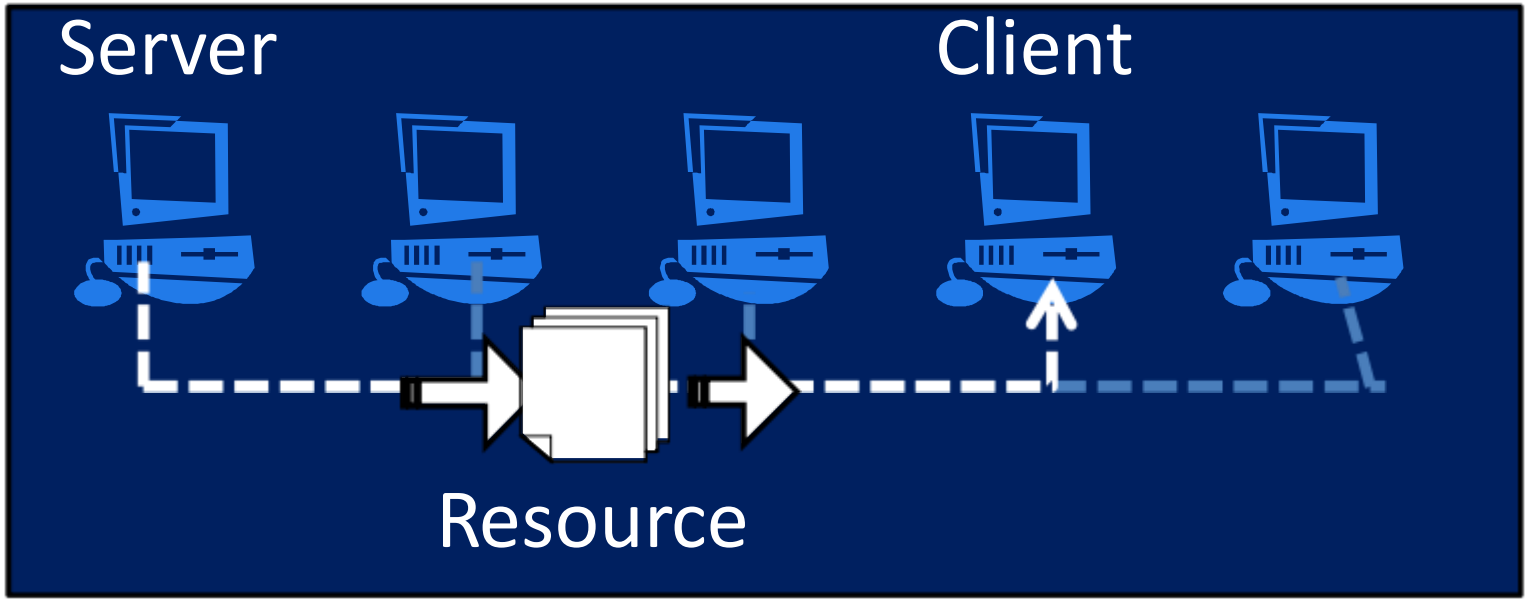
What is the internet?

- When different networks using the same protocol are connected across the world they make the Internet.

- Therefore the Internet is defined as **the collection of computer networks using the same protocol connected across the world**.

Clients and servers

- **A Server is the computer that provides resources** to another computer through a network.
- **A Client is the computer that requests and uses the resources** that are provided by the server.



Resources on the internet

To find resources **Uniform Resource Locators** URL's are used

For example :

https://www.exmouthcollege.devon.sch.uk/index.html

- A URL has three parts
  - the **transfer protocol**, (e.g. https),
  - followed by the **domain name** (e.g. www.exmouthcollege.devon.sch.uk)
  - And possibly the **file and path** (e.g. index.html)

The **World Wide Web** (WWW)

- Electronic documents (and other resources) all around the world that have a URL's make an enormous library of electronic information which we call the World Wide Web.
- Don't get them confused!The WWW are all the resources that are available and the Internet is the connection that allows them to be accessed, they are different concepts

The HTML protocol

- Most information is coded for use in the WWW using a protocol called **HTML**
- HTML stands for **H**ypertext **T**ext **M**ark up **L**anguage
- Mark up tags are coded into a document using text and codes between < > and </ > .
- A special application program called a **web browser** knows how to put together HTML content when it arrives from a another computer it is connected through a network.
- Browsers do not display the HTML codes such as paragraph and heading tags, but uses them to **render** or place and display the content of the page in a way that a user can understand.
- Using HTML to write documents means the same content can be displayed on different computers.

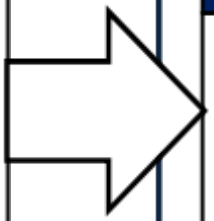
Coding in HTML

- HTML Code

```
<!DOCTYPE
<html>
<head>
<title>Page Title</title>
</head>
<body>

<h1>This is a Heading</h1>
<p>This is a paragraph.</p>

</body>
</html>
```



Rendered version
(as seen through a web browser program)

Page Title ☐

This is a Heading

This is a paragraph.

Tryit Editor v3.6 (www.w3schools.com)

HTML tags

There are lots of HTML tags these are just the ones we have studied

Tag	Used for	Notes
<a> ... 	Defines a hyperlink Anchor	Used to make a link from one page to another. (more detail about <a> on another page)
<body> ... </body>	The document body	All the contents of an HTML document, such as the text, headings, paragraphs, images, hyperlinks, etc. Should be be enclosed between body tags
<head> ... </head>	The document heading information.	Contains Metadata or data about the HTML document. Metadata is not displayed as it is used to tell the web browser things about the document

HTML tags we have studied

Tag	Used for	Notes
<h1> ... <h1>	For top level, headings	Headings have numbers between 1 and 6 where 1 is the top level or most important and <h6> is least. A heading starts a new block.
<html> ... </html>	R	Must be the container for all other HTML elements including
<img>	For including images	embed an image in an HTML page. Needs attributes to work properly (more detail about <img> on another page)
<p> ... <p>	For paragraphs	Starts a new block.

<img> html tag example

- Must use attributes within the <img> tag
  - **src** = the URL of the picture to display
  - **alt** the text to display when picture does not load.
  - **Width** and **Height** dimensions
- Example:

```
<!DOCTYPE html>
<html>
<body>

<h1>The img element</h1>

<img src="img_girl.jpg" alt="Girl in a jacket" width="100" height="120">

</body>
</html>
```

- You can click on this link to find out more HTML img tag (www.w3schools.com)
- Rendered version *(as seen through a web browser)*

The HTML Anchor tag <A>

Example

```
<html>
 <body>
 <a href=" https://www.exmouthcollege.devon.sch.uk " >Welcome to  ECC</a>
 </body>
 </html>
```

- <a> is the way to create a hyperlink from one document to load another. This anchoring from one page to another is made possible by the attribute "href“
- Href is the URL of the page to hyperlink to