

Topic 1 - What is the Internet?



The Internet

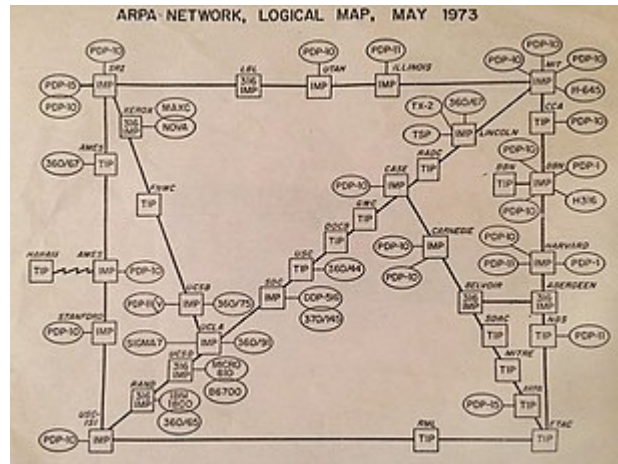
The internet is a globally connected network system that provides a variety of information and communication tools. It consists of interconnected networks using standardized communication protocols.

```
In [ ]: from IPython.display import HTML
```

```
HTML('<iframe width="560" height="315" src="https://www.youtube.com/embed/Dxcc  
6ycZ73M" frameborder="0" allow="accelerometer; autoplay; encrypted-media; gyro  
scope; picture-in-picture" allowfullscreen></iframe>')
```

Timeline of the Internet

1. 1969: ARPANET



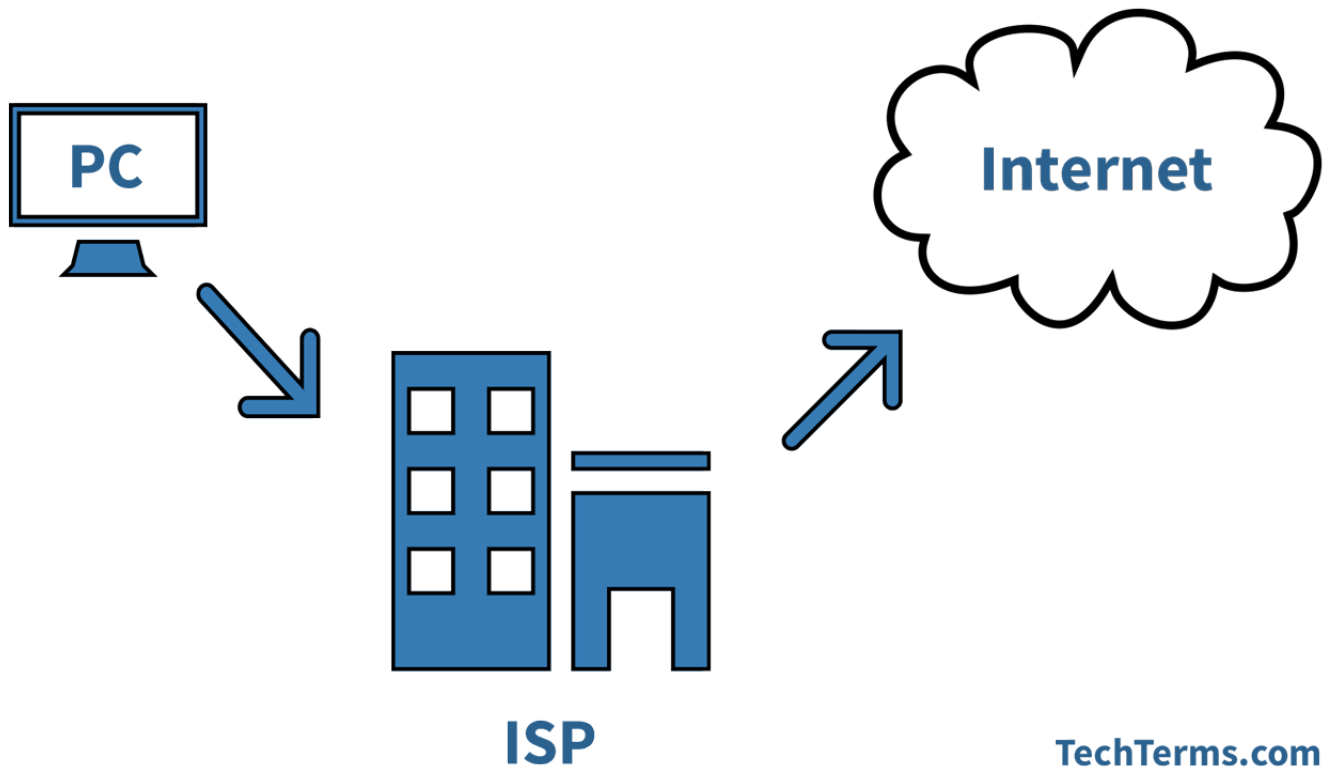
- ARPANET was a concept credited to Leonard Kleinrock in 1961.
- ARPANET was the interconnection of four university computers with the intention of sharing files for research, coming online in 1969.
- First network to implement the TCP/IP Protocol suite
- Technical foundation of the internet

1. 1972: Network Email



- BBN's Ray Tomlinson introduced network email
- The Internetworking Working Group (INWG) forms to address need for establishing standard protocols.

1. 1974: Internet Service Provider (ISP)



- The first ISP is born with the introduction of the a commercial version of ARPANET, known as Telenet

1. 1981: National Science Foundation (NSF)

- Provided a grant to establish the Computer Science Network (CSNET) to provide networking services to university computer scientists

1. 1982: Transmission Control Protocol (TCP) and Internet Protocol (IP)



- TCP/IP emerges as the protocol for ARPANET.
- Defines the Internet as connected TCP/IP internets
- Remains the standard protocol for the internet

1. 1983: The Domain Name System (DNS)

- Establishes the familiar .edu, .gov, .com, .mil, .org, .net, and .int as the naming for websites
- Easier to remember than the previous designations (123.456.789.10 - an ISP address)

1. 1987: Cisco ships its first router

1. 1989: World.std.com becomes the first commercial provider of dial-up access to the Internet

1. 1990: Tim Berners-Lee invents the World Wide Web



- CERN Scientist
- Developed HyperText Markup Language (HTML)
- This technology continues to have a large impact on how we navigate and view the Internet today

1. **1991: CERN introduces the World Wide Web to the public**
1. **1994: Netscape Communications is born. Microsoft creates Web Browser for Windows 95**
 - Yahoo! is also created by Jerry Yang and David Filo
1. **1995: AOL, Amazon, Craigslist, and eBay go live.**
1. **1998: Google Search Engine is born**

Importance of the Internet

The Internet has made access to information and communication far easier. It affects nearly every aspect of modern life.

Some argue that the Internet has accelerated globalization of economics, social interactions, and enabled people to be exposed to a wide variety of worldviews and perspectives they might not have been able to previously.

Most importantly, the Internet is a **philosophy** of making all information and knowledge open and accessible to ALL.

Topic 2 - Introduction to HTML and CSS

HTML



What is HTML?

HTML stands for **HyperText Markup Language**

HTML is a language for describing web pages:

- A markup language is a set of markup **tags**
- The tags **describe** document content
- HTML documents contain HTML tags and plain text
- HTML documents are also called **web pages**

HTML Tags

HTML Markup Tags are usually called HTML tags:

- HTML Tags are keywords surrounded by **angle brackets** like `< html >`
- Normally, tags come in pairs like `< strong >` and `< /strong >`
 - The first tag in the pair is called the **start tag** and the second is called the **end tag**
 - They are also called **opening and closing tags**
 - There is often text inside the tags:
 - `< tagname > content < / tagname >`
 - Certain HTML tags can also appear alone, like `< img >`

HTML Elements

"HTML Tags" and "HTML Elements" are often used to describe the same thing. But strictly speaking, an HTML element is everything between the start tag and the end tag (including the tags).

Web Browsers



The purpose of a **web browser**, like Google Chrome, Microsoft Edge, Firefox, Safari, is to read HTML documents and display them as web pages.

The browser does not display the HTML tags, but uses the tags to interpret the content of the page.

HTML Page Structure

```
< html>
```

```
< body>
```

```
< h1> This is a heading < /h1>
```

```
< p> This is a paragraph < /p>
```

```
< p> This is another paragraph < /p>
```

```
< /body>
```

```
< /html>
```

HTML Exercise 1 - Creating a Page that Outputs Your Name

Put the following into the IDE embedded below:

```
<html>
<body>
<!-- print name to the screen -->
John
</body>
</html>
```

```
In [ ]: %%html
<iframe src="https://html5-editor.net/" width="950" height="700"></iframe>
```

HTML Versions

Version	Year
HTML	1991
HTML+	1993
HTML 2.0	1995
HTML 3.2	1997
HTML 4.01	1999
XHTML 1.0	2000
HTML5 / XHTML5	2012



What is CSS?

- CSS stands for **Cascading Style Sheets**
- CSS styles your web page by overriding the default way browsers render certain HTML elements
- If you link a HTML page to a .css file, the browser will parse that .css file, and override the HTML rendering.

Why use CSS?

CSS solved a **BIG PROBLEM**

HTML was never intended to contain tags for formatting a web page!

HTML was created to **describe the content** of a web page, like:

```
<h1>This is a heading</h1>
```

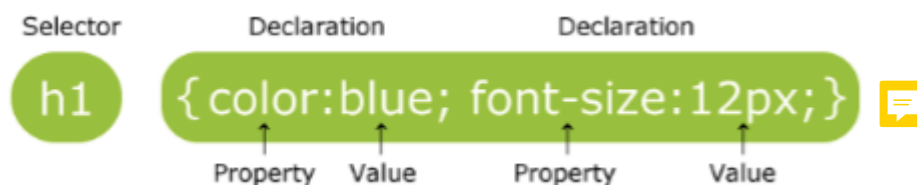
```
<p>This is a paragraph.</p>
```

When tags like `< font >`, and colour attributes were added to HTML 3.2 specification, it started a nightmare for web developers.

Development for large websites, where fonts and colour information were added to every single page, became a long and expensive process.

To solve this problem, the **World Wide Web Consortium (W3C)** created CSS.

CSS Syntax



CSS Selectors

The **selector** points to the HTML element you want to style.

The **declaration** block contains one or more declarations separated by semi-colons

Each declaration includes a CSS property name and a value, separated by a colon.

A CSS declaration **ALWAYS** ends with a semi-colon, and declaration blocks are surrounded by braces.

Most Common Selectors

<code>htmlElementType</code>	targets all HTML elements of type <code>htmlElementType</code> (e.g. <code>h1</code> , <code>span</code> , <code>div</code> , etc.)
<code>.className</code>	targets elements of class <code>className</code>
<code>#idName</code>	targets one element with id <code>idName</code> (assuming HTML is well-formed - ids should be unique per document!)
<code>*</code>	targets all elements
<code>selector1, selector2</code>	targets all elements specified by either <code>selector1</code> or <code>selector2</code>
<code>selector1 selector2</code>	targets all elements specified by <code>selector2</code> that are children (both direct and indirect) of elements specified by <code>selector1</code>
<code>selector1[attr=value]</code>	targets all elements specified by <code>selector1</code> with a specified attribute, e.g. <code>input[type=password]</code>

CSS Box Model

We've covered how CSS is used, and how the browser processes the code, now we'll go over an often-used case of applying CSS:

Positioning, Aligning Elements, or Giving Elements certain degrees of margin/padding



Margin Versus Padding

Margin and padding seem similar, they add "space" around an HTML element. There are some important differences though. A larger padding will push the border out, and the background will still appear in the "padding" of the box.

Think of **padding** as part of the element, whereas **margin** is the space around it.

Topic 3 - HTML - Structuring Websites

HyperText - text displayed on a computer that has links to other hypertext documents

Markup Language - lets you annotate text to define how it should be displayed

Basic HTML Page

```
<!DOCTYPE html>

<html>

    <head>

        <title></title>

    </head>

    <body>

    </body>

</html>
```

!DOCTYPE tells the browser which version of HTML we are using.

html - the html tag says everything in between these two tags is our html page

- Container for all html tags

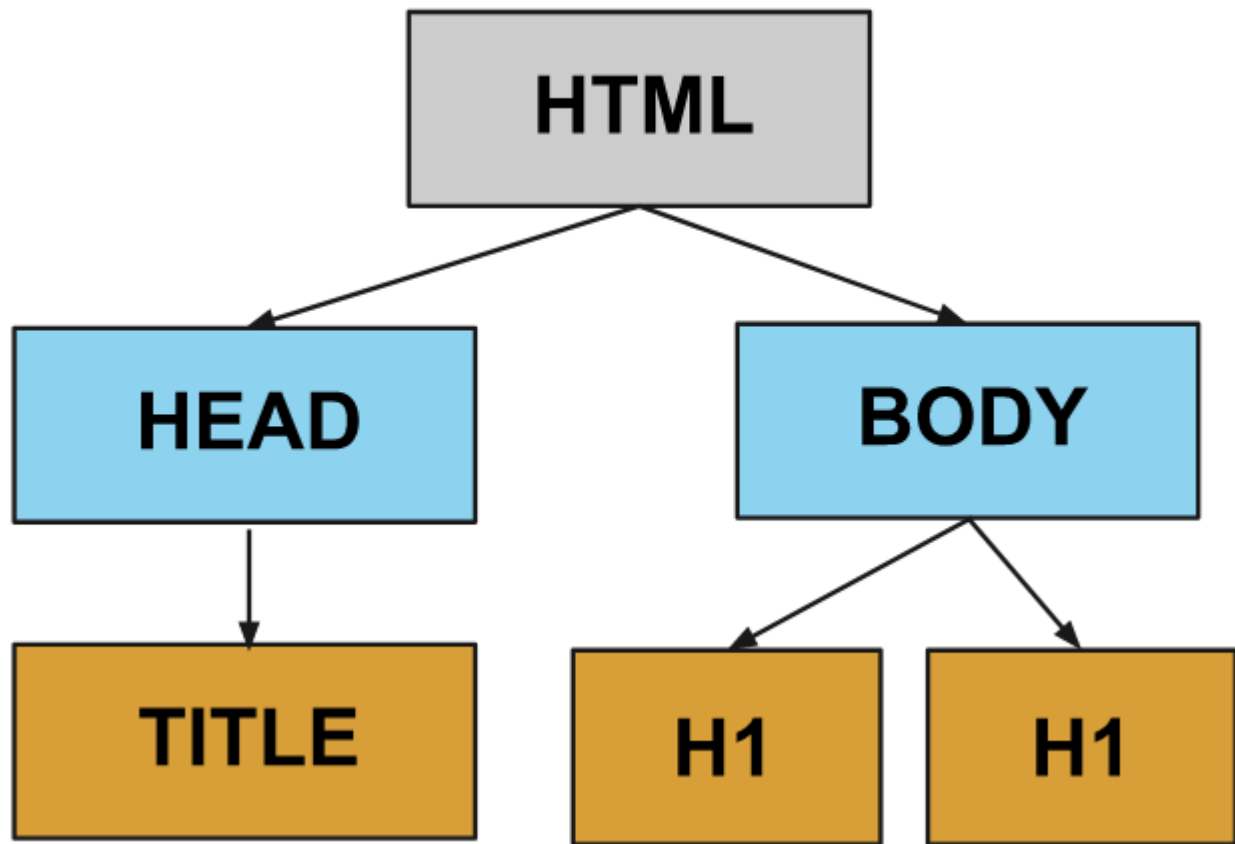
head - the head tag contains important information about the document: **metadata** - data about data

- We can include a few special tags here
 - The title tag defines the title of the webpage.
 - This is displayed in the top of the web browser
 - The body tag is where the actual content of the document goes (text, images, etc)
 - This is where most of your HTML tags will go

IMPORTANT POINTS

1. Tags can go inside other tags
2. We use **indenting** to show the structure of the tags

3. The structure of an html document is a **tree**



HTML Example 2 - My First Web Page

```
<html>
  <head>
    <title>
      My First Web Page
    </title>
  </head>
  <body>
    <h1>Hello!</h1>
  </body>
</html>
```

```
In [ ]: %%html
<iframe src="https://html5-editor.net/" width="950" height="700"></iframe>
```

```
In [ ]:
```