

What is a browser?

The basic definition of a web-browser is a computer program with a graphical user interface for navigating between web pages/sites and displaying them. A web browser has the ability to explore and retrieve information from the World Wide Web. Before analysing how they work, let's first look at a brief history of web browsers.

In the 1950s (before the web era), computers took up entire rooms and did not possess even a fraction of the processing power we have in modern computers. It wasn't until the 1960s that computers were finally able to run complex programs. The **Advanced Research Projects Agency Network (ARPANET)** was the first wide-area packet-switched network with distributed control. Furthermore, it was one of the first networks to implement the TCP/IP protocol suite. TCP/IP stands for Transmission Control Protocol/Internet Protocol and is a suite of communication protocols used to interconnect network devices on the internet. The emergence of this technology became the technical foundation of the Internet. In 1969, the very first message was sent from the computer science lab at University of California, Los Angeles (UCLA) to Stanford Research Institute (SRI), also in California. ARPANET was the first successful networking project, and this drove the revolution in computer networking. Unfortunately the interconnectivity via computer networking was only accessible to university researchers, government analysts, and private corporations. The internet only became publicly accessible in 1990. It was around this time that the first web browser was created.

Tim Berners-Lee, a British computer scientist, created the first web server and a graphical web browser in 1990. It was created for research at CERN (European Council for Nuclear Research), in Switzerland. The name given to this creation was the **World Wide Web**. This was the first time that text documents were linked together over a public network. In 1991 Nicola Pellow, a math student, wrote the Line Mode Browser (LMB) which was a program for basic computer terminals. This became the second web browser ever created. In 1993, **Mosaic** was created at the National Centre for Supercomputing Applications (NCSA) by Marc Andreessen. Mozilla Firefox can trace its foundation to the creation of Mosaic. The following year in 1994 Andreessen founded Netscape. He then released **Netscape Navigator** to the public. This creation was extremely successful and was the first browser that was for the public. In response to Netscape Navigator, Microsoft created and released the Internet Explorer in 1995. Microsoft and Netscape were continuously competing with each other. Netscape created and released JavaScript. This creation gave websites powerful and amazing capabilities that they never had before. Microsoft responded by creating **Cascading Style Sheets (CSS)**. The importance of this creation cannot be overstated because this became the foundational standard of web page design. Other competitors such as Google Chrome and Safari emerged during the late 90s and early 2000s. Now that we have a brief history let's take a look at how web browsers actually work.

Browsers are software applications used to find, retrieve, and display content on the World Wide Web, including Web pages, images, video and other files. When a person searches for information, the browser uses the key words to locate relevant information. It then displays results to the user. The user then clicks on a page link and the browser contacts the Web server and requests the information. The Web server then sends the information back to the browser which displays the web page/site on the screen. This is done using hyperlinks. A hyperlink is a link from a hypertext

document to another location, activated by clicking on a highlighted word or image. HTML (HyperText Markup Language – released in 1993) is the code that is used to structure a web page and its content. The combination of HTML, JavaScript, CSS as well as other coding languages results in the web sites that we interact with in our modern society.

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