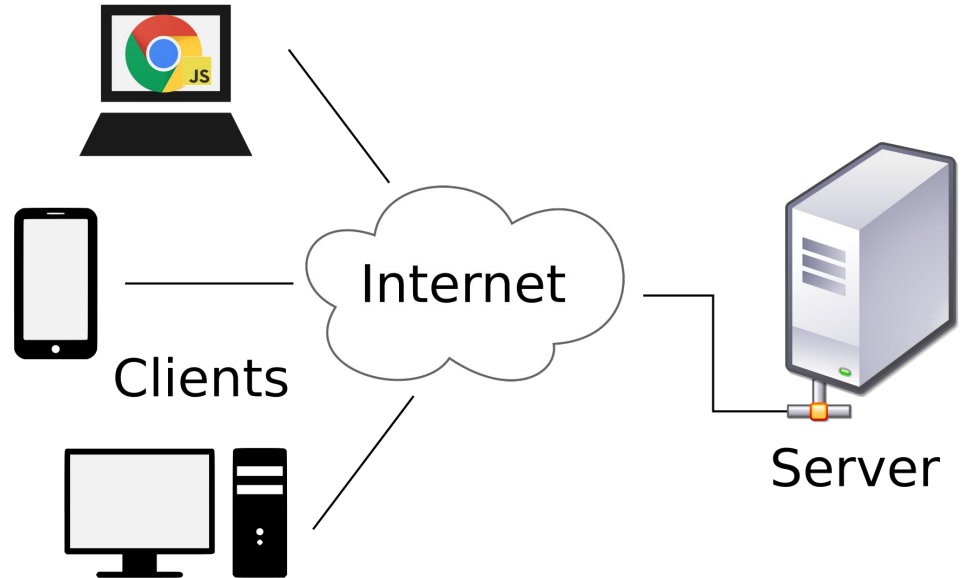# WWW
Browser
JavaScript

History

1

JS

Inventions

Basic understanding of workflow

- World Wide Web
- Web browser
- JavaScript

World Wide Web

CERN (**C**onseil **E**uropéen pour la **R**echerche **N**ucléaire) - European Organization for Nuclear Research

Inventor of the World Wide Web

World Wide Web

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Tim Berners-Lee

Director of the World Wide Web Consortium (W3C)

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World Wide Web

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Robert Cailliau

World Wide Web

Birth of WWW

- Constantly losing information at CERN
- At CERN, in March 12, 1989, proposal for an information management system for sharing and updating information among researchers
- In 1990, **URI**: Uniform Resource Identifier, **HTTP**: Hypertext Transfer Protocol and **HTML**: HyperText Markup Language
- In 1991, first release to the world with the browser called **'WorldWideWeb.app'** (Nexus) and server called **'httpd'**

World Wide Web

References

- Tim Berners-Lee wiki: https://en.wikipedia.org/wiki/Tim_Berners-Lee
- Tim's WWW proposal: https://www.w3.org/History/1989/proposal.html
- History of WWW: http://webfoundation.org/about/vision/history-of-the-web/
- URI RFC: https://www.ietf.org/rfc/rfc2396.txt
- HTTP/0.9: https://www.w3.org/Protocols/HTTP/AsImplemented.html
- HTML 2.0 RFC: https://tools.ietf.org/html/rfc1866#page-21
- Very first web page: http://info.cern.ch/hypertext/WWW/TheProject.html
- WWW wiki: https://en.wikipedia.org/wiki/World_Wide_Web_Consortium

Web browser

NCSA (**N**ational **C**enter for **S**upercomputing **A**pplications) - cyberinfrastructure that advances science and engineering, University of Illinois at Urbana-Champaign, U.S.A

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Marc Andreessen

- Entrepreneur
  - Netscape Communications Corp, Opsware, Ning

- Investor
  - Facebook, Foursquare, GitHub, Pinterest, Twitter and more

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- Investor
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- Software engineer
  - Mosaic browser at NCSA

Web browser

Mosaic (1992): The first browser to display images inline with text instead of displaying images in a separate window

Erwise (1992): At the suggestion of Robert Cailliau, four Finnish students tried to make a web browser at the Helsinki University of Technology, Finland. Project was dropped due to the lack of funding and could not be continued by others because of Erwise documents were in Finnish language

ViolaWWW (1992): **V**isually **I**nteractive **O**bject-oriented **L**anguage and **A**pplication at UC Berkeley, CA.
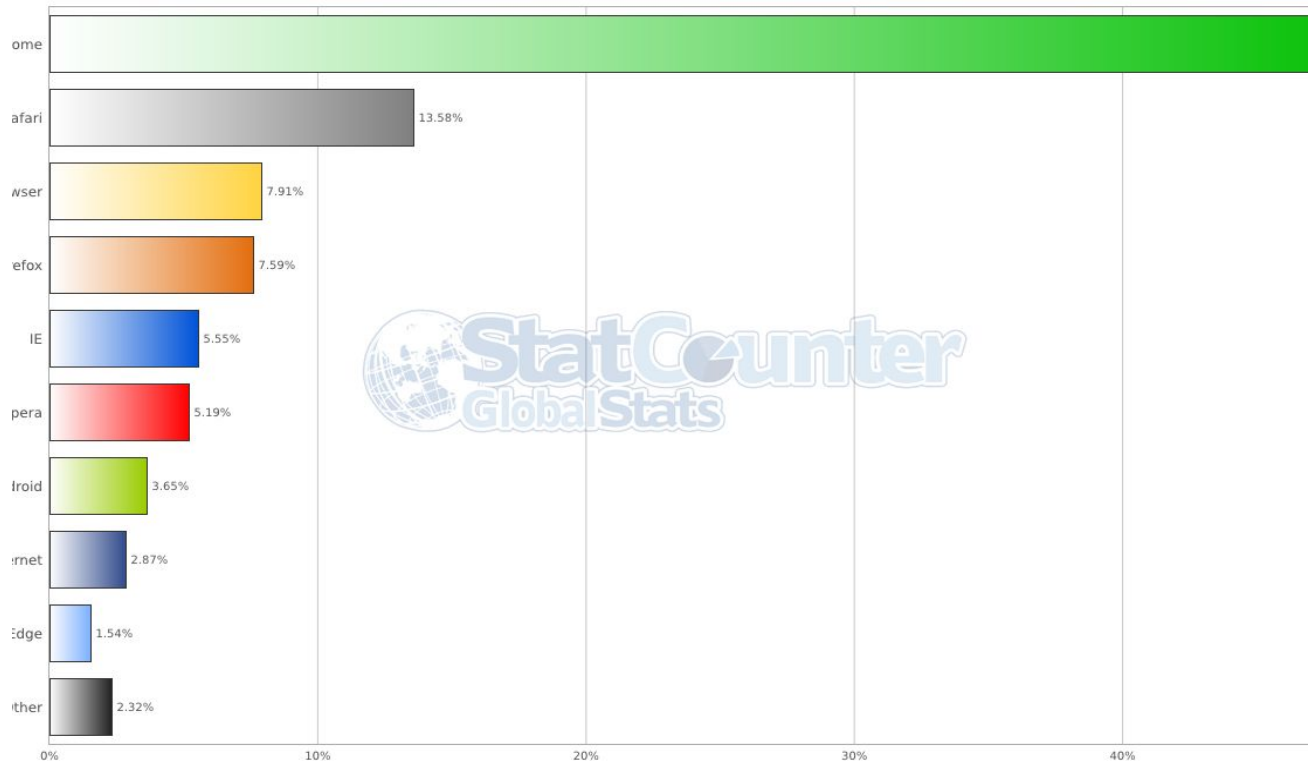
Lynx (1992): Text based browser

Web browser

- ~~Mosaic~~/Netscape Communications Corp (**1994**): Gecko
    - Internal codename was 'Mozilla' which means 'mosaic killer'
    - Netscape Navigator
    - 75% of the market share in 4 months
    - IPO in 1995
- Microsoft - Internet Explorer (**1995**): Spyglass/Trident (MSHTML)/EdgeHTML
    - spyglass - a commercial entity that owned the license of NCSA's "Mosaic" browser source code
    - Windows 95 with IE 1.0 in August, 1995
    - Browser war
- Opera (**1995**): Presto
    - Norway company built Opera browser and released it with Microsoft's Windows
    - In 1998, started releasing for mobile devices

Web browser

- Mozilla (**1998**): Gecko
  - AOL acquisition of Netscape in 1999
  - **Firefox** browser in 2002 (code named 'Phoenix')
  - Mozilla corp in 2005
- Apple (**2003**): Webkit
  - Mac machines with Netscape Navigator and IE till 2003
  - **Safari** browser in 2003
  - Fork of Konqueror browser and called it as 'webkit'
- Google (**2008**): Webkit/Blink
  - a fork of the webkit is used to build Chromium-based browsers
  - In **2013**, Google forked the core of webkit and made 'Blink'

Web browser

StatCounter Global Stats
Browser Market Share Worldwide from Mar 2016 to Feb 2017

Browser	Share
ome	
afari	13.58%
wser	7.91%
efox	7.59%
IE	5.55%
pera	5.19%
droid	3.65%
rnet	2.87%
Edge	1.54%
ther	2.32%

Chrome - **49.8%**

Safari - **13.58%**

Firefox - **7.59%**

IE - **5.55%**

Opera - **5.19%**

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Web browser

Most recent user agents

- NCSA_Mosaic 3.0 - NCSA Mosaic/3.0 (Windows 95)
- Netscape 9.1 - Mozilla/5.0 (Windows; U; Win 9x 4.90; SG; rv:1.9.2.4) Gecko/20101104 Netscape/9.1.0285
- Firefox 40.1 - Mozilla/5.0 (Windows NT 6.1; WOW64; rv:40.0) Gecko/20100101 Firefox/40.1
- Internet Explorer 11.0 - Mozilla/5.0 (Windows NT 6.1; WOW64; Trident/7.0; AS; rv:11.0) like Gecko
- Safari 7.0.3 - Mozilla/5.0 (Macintosh; Intel Mac OS X 10_9_3) AppleWebKit/537.75.14 (KHTML, like Gecko) Version/7.0.3 Safari/7046A194A
- Chrome 41.0 - Mozilla/5.0 (Windows NT 6.1) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/41.0.2228.0 Safari/537.36

Web browser

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- NCSA_Mosaic 3.0 - NCSA Mosaic/3.0 (Windows 95)
- Netscape 9.1 - **Mozilla/5.0** (Windows; U; Win 9x 4.90; SG; rv:1.9.2.4) Gecko/20101104 Netscape/9.1.0285
- Firefox 40.1 - **Mozilla/5.0** (Windows NT 6.1; WOW64; rv:40.0) Gecko/20100101 Firefox/40.1
- Internet Explorer 11.0 - **Mozilla/5.0** (Windows NT 6.1; WOW64; Trident/7.0; AS; rv:11.0) like Gecko
- Safari 7.0.3 - **Mozilla/5.0** (Macintosh; Intel Mac OS X 10_9_3) AppleWebKit/537.75.14 (KHTML, like Gecko) Version/7.0.3 Safari/7046A194A
- Chrome 41.0 - **Mozilla/5.0** (Windows NT 6.1) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/41.0.2228.0 Safari/537.36

Web browser

References

- Marc Andreesen wiki: https://en.wikipedia.org/wiki/Marc_Andreessen
- Mosaic browser: https://en.wikipedia.org/wiki/Mosaic_(web_browser)
- Erwise browser: https://en.wikipedia.org/wiki/Erwise
- ViolaWWW browser: https://en.wikipedia.org/wiki/ViolaWWW
- Browser stats:
  http://gs.statcounter.com/browser-market-share#monthly-201603-201702
- User agent: http://www.useragentstring.com/

JavaScript

Netscape Communications Corp (1995): Hired for putting 'scheme' into the browser

????

JavaScript

Netscape Communications Corp (1995): Hired for putting 'scheme' into the browser

Brendan Eich

JavaScript

Netscape Communications Corp (SpiderMonkey)

- May 1995, Brendan Eich created a language called 'LiveScript' in 10 days.
- Has the elements of Java, Scheme and Self
- In March 1996, Netscape Navigator 2.0 featuring support for JavaScript
- JavaScript is standardized by ECMA (European Computer Manufacturers Association) and called as ECMAScript
- Mozilla project in 1998 and Mozilla Corp in 2005

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Microsoft Corp (JScript)

- In August 1996, Internet Explorer 3.0 was released with JScript

JavaScript

ECMAScript

- Version 1.0 > ECMA-262 began in Nov 1996 and adopted in June 1997
- Version 2.0 > June 1998
- Version 3.0 > Dec 1999 (**ES3**)
- ~~Version 4 - Abandoned~~
- Version 5 > Dec 2009 (**ES5**)
- Version 5.1 > June 2011
- Version 6.0 > June 2015 (**ES6 or ECMAScript 2015**)
- Version 7.0 > June 2016 (**ES7 or ECMAScript 2016**)
- Version 8.0 > Work in progress

JavaScript

Browser engines

Browser	JavaScript engine	Layout/Rendering engine
Chrome	V8	Webkit/Blink
IE	JScript/Chakra	Spyglass/Trident/edgeHTML
Firefox	SpiderMonkey	Gecko
Safari	JavaScriptCore/Nitro (originally KJS)	Webkit

JavaScript

References

- Brendon Eich: https://en.wikipedia.org/wiki/Brendan_Eich
- ECMA-262-1.0:
  http://www.ecma-international.org/publications/files/ECMA-ST-ARCH/ECMA-262,%201st%20edition,%20June%201997.pdf
- ECMAScript: https://en.wikipedia.org/wiki/ECMAScript
- JavaScript engines: https://en.wikipedia.org/wiki/JavaScript_engine
- Layout engines: https://en.wikipedia.org/wiki/List_of_layout_engines
- TC39: https://github.com/tc39

Demo

1. Lynx browser
2. DOM (w3c)
3. JavaScriptCore
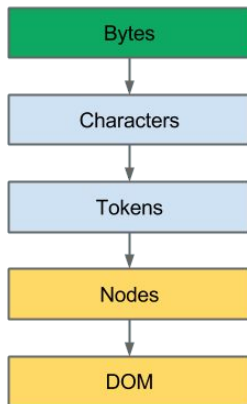
| Bytes | 3C 62 6F 64 79 3E 48 65 6C 6C 6F 2C 20 3C 73 70 61 6E 3E 77 6F 72 6C 64 21 3C 2F 73 70 61 6E 3E 3C 2F 62 6F 64 79 3E |

Characters: `<html><head>...</head><body><p>Hello <span>web performance</span>...`

Tokens: **StartTag:** html | **StartTag:** head | ... | **EndTag:** head | **StartTag:** body | **StartTag:** p | Hello | ...

Nodes: html | head | meta | body | p | Hello

DOM