

## Welcome to the Internet SIG





# Web Browsers



# Discussion Topics

- What is a Web Browser?
- History of Browsers
- How Does a Browser Work?
- Browser Error Messages
- Browser Add-Ons
- Specialty Browsers
- Which Browser Should You Use?

# What is a Web Browser?

A Web Browser is a software application used to retrieve, present and pass along information from the World Wide Web

Browsers can also be used to access information from web servers in private networks.

Browsers can also open a web page without a server from your computer.

# Browsers Through the Years



**History**

Tim Berniers-Lee, the inventor of the WWW, also wrote the first web browser in late 1990.

It was called WorldWideWeb. Some of the original code still exists on his neXT computer preserved at the CERN Museum in Switzerland.

It was later renamed the Nexus.

[You can still download it.](#)

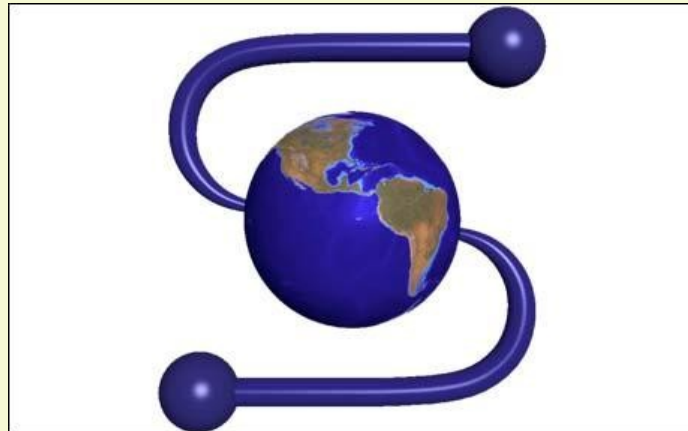


# Erwise Browser

- Written by four Finnish college students
- Released in 1992
- 1<sup>st</sup> browser that had a graphical user interface
- Could also search for words on a page
- Development halted when students graduated.

# NCSA Mosaic

- Developed by the National Center for Supercomputing Applications at the University of Illinois
- Released in 1993 by Marc Andreesson
- The world's first popular browser
- Made the WWW easy to use and accessible to the average person
- First browser to display images inline
- Led to the internet boom of the 1990s



# Netscape

- Netscape Navigator released in 1994
- Originally the Mosaic browser. Many employees came from the university project
- Became most popular browser with 90 percent usage share.



# Internet Explorer

- Released in 1995
- Led to start of the Browser War
- Bundling with Windows led to 95 percent usage share



# Opera Browser

- Released in 1996
- One of the first to introduce tabbed browsing
- Never became real popular



# Mozilla Foundation

- Launched by Netscape in 1998 as Mozilla Organization
- Used open source software
- Mozilla Foundation launched in 2003 when AOL purchased Netscape and reduced funding
- Firefox Browser released in 2004



# Safari

- Released in 2003
- Default browser on all Apple devices
- Windows version was available from 2007-2012
- Was buggy on Windows and never caught on
- Can still be installed on Windows 10



# Chrome

- Released in 2008
- Developed by Google
- Majority of code is open source





# Edge

- Released in 2015
- Replacement for Internet Explorer
- Rebuilt in 2019 (based on Chromium)



This was only a review of major browsers.

There are literally hundreds of browsers.

Here's a short list

# How a Web Browser Works

- The Browser requests a web page from site
- The sites web Server responds by sending the page to the browser
- The browser decodes the html tags and other information and displays on the users computer
- All browsers have the same basic structure

# Features Common To All Modern Browsers

- Navigation Toolbar
- Tabbed Browsing
- Incognito (private) Mode
- Bookmarks Editor
- Integrated Search
- And Many Others

# Browser Structure

1. **The user interface:** this includes the address bar, back/forward button, bookmarking menu, etc
2. **The browser engine:** assembles actions between the UI and the rendering engine.
3. **The rendering engine:** displays requested content.
4. **Networking:** for network calls such as HTTP requests
5. **JavaScript Interpreter:** Used to parse and execute JavaScript code.
6. **Data Storage:** The browser may need to save all sorts of data locally, such as cookies.

# Web Browser Engines

- Also known as the Rendering or Layout Engine
- Typical component of Web Browsers, E-Mail Clients, E-Book Readers, etc.
- Retrieves the document and displays a graphical representation on your monitor
- Also handles links, forms, cookies, scripting, plug-in loading, etc.
- Can be proprietary, open source or both

# Some Layout Engines

- Blink – Chrome, Opera and Maxthon
- EdgeHTML – Microsoft Edge
- Gecko - Firefox
- Servo – Mozilla and Samsung
- WebKit – Safari, Arora, Midori and OmniWeb
- Trident – Internet Explorer
- Browsers can use more than one engine
- [There are many Engines](#)





Oops!  
There was an error!

Good news though. Your browser doesn't really have an error. It is just displaying an **HTTP Status Code**

# HTTP Status Codes

- Sometimes called Browser Error or Internet Errors
- Sent to your browser when an error occurs
- Are 3 digits long (some websites may add a decimal and give more information)
- Divided into 5 classes (some websites may add their own information classes)

# The Five Classes of HTTP Status Codes

(the class is the first number of the error code)

A. Classes not displayed by the browser:

1. Informational – tells the browser the status of requests.
2. Success – tells the browser that requests were understood.
3. Redirection – tells the browser that it must take some action to complete the request.

B. Classes displayed by the browser:

4. Client Error – tells the browser it has made a bad request.
5. Server Error – tells the browser it cannot complete a valid request.

# Common Class 4 Error Codes

- 400-Bad File Request. The server didn't understand. Usually a syntax or spelling error.
- 401-Unauthorized. Usually need a user name/password.
- 403-Forbidden/Access Denied. User supplied an incorrect name/password.
- 404-File Not Found. One of the most common errors. Either a web page has been removed or renamed.
- [There are many other Error Codes](#)

# Common Class 5 Error Codes

- 500-Internal Server Error. The web page couldn't be delivered because of a web server error.
- 501-Not Implemented. The web server doesn't support a feature that the browser is requesting.
- 502-Bad Gateway. Too many web browsers are trying to access the same page.
- 503-Service Unavailable. The server is temporarily busy or down.
- There are many other [Error Codes](#)

# What To Do When You Get An Error Code

- Try refreshing the page.
- Try using a different browser.
- Try finding the information somewhere else.
- Jump up and down. Say some bad words. Throw your mouse at the monitor.

# Browser Add-Ons

Browser Add-Ons is the collective name for browser themes, extensions, plugins, etc. They are anything that can be added to a browser to customize it for an individual user.

# Plug-Ins

Third party software that “plugs in” to a browser to read libraries embedded in the web page. Some examples are:

- Macromedia Flash
- Java
- Microsoft Silverlight
- Media Players
- PDF Readers



# Add-Ons

Although similar to plug-ins, add-ons (sometimes called extensions) are “added on” to a browser to change the way it looks or operates. Some examples are:

- Toolbars
- Themes
- Bookmark Managers
- Ad Blockers
- Tab Managers
- Dictionaries
- And many more

Plug-In and Extensions are similar and often confused. A plug-in manages data embedded in a web page. An extension changes the browser.

An extension could have a plug-in embedded.

I'll be demonstrating extensions in a future SIG.

# Some Specialty Browsers

- [Lunascap Browser](#) - runs all three engines
- [Coowon Browser](#) – for playing web games
- [Torch Browser](#) – for media junkies
- [SeaMonkey Browser](#) – for those who want it all
- [Epic Privacy Browser](#) - Chrome without Google
- [Maxthon Cloud Browser](#) – cross platform
- [WebbiE Browser](#) – no graphics
- [KidSplorer Web Browser](#) – for the little ones

That list was just a few of the many specialized web browsers. There are many more. A web search will find links for browsers that

- download BitTorrents.
- aid users with visual, mental, hearing and other impairments.
- are optimized for speed.
- designed for reading blogs, newspapers, etc.



# Which Browser Should You Use?



# Future Topics

- May 20 Microsoft Edge Browser
- May 27 Google Chrome Browser
- June 3 Firefox Browser
- June 10 Web Browser Extensions

THANKS FOR LISTENING 😊

Presentation Video & PDF Available for Download

Toxitman Website

