



Web Browsers



Discussion Topics

- What is a Web Browser?
- A Brief History of Web Browsers
- How Does a Web Browser Work?
- Web Browser Error Messages
- Web Browser Add-Ons
- Specialty Web Browsers
- Which Web 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.

What was the first Web Browser?

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.

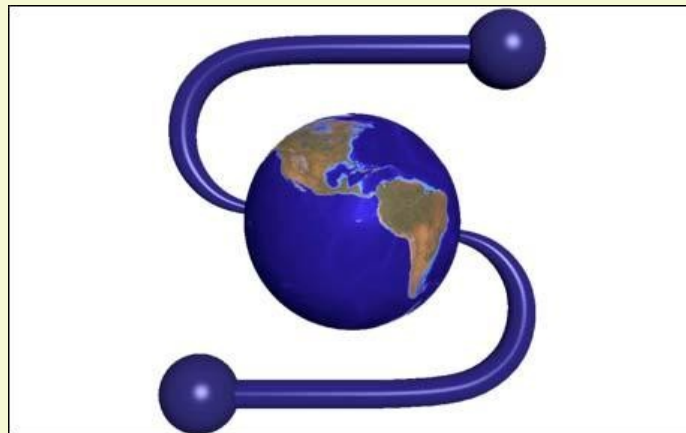
[You can still download it.](#)

Erwise Browser

- Written by four Finnish college students
- Released in 1992
- 1st 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 Wars
- 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 – built into Apples OS
- Default browser on all Apple devices
- Windows version was available from 2007-2012
- Was buggy on Windows and never caught on
- Not officially supported Windows 10/11



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)



New Browsers are often released to enable us:

- 1) To browse faster
- 2) Be Safer
- 3) Be More Private
- 4) Have Other Special Functions

There isn't time to review every browser.

Monthly List of Active Browsers

How a 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 Most 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.

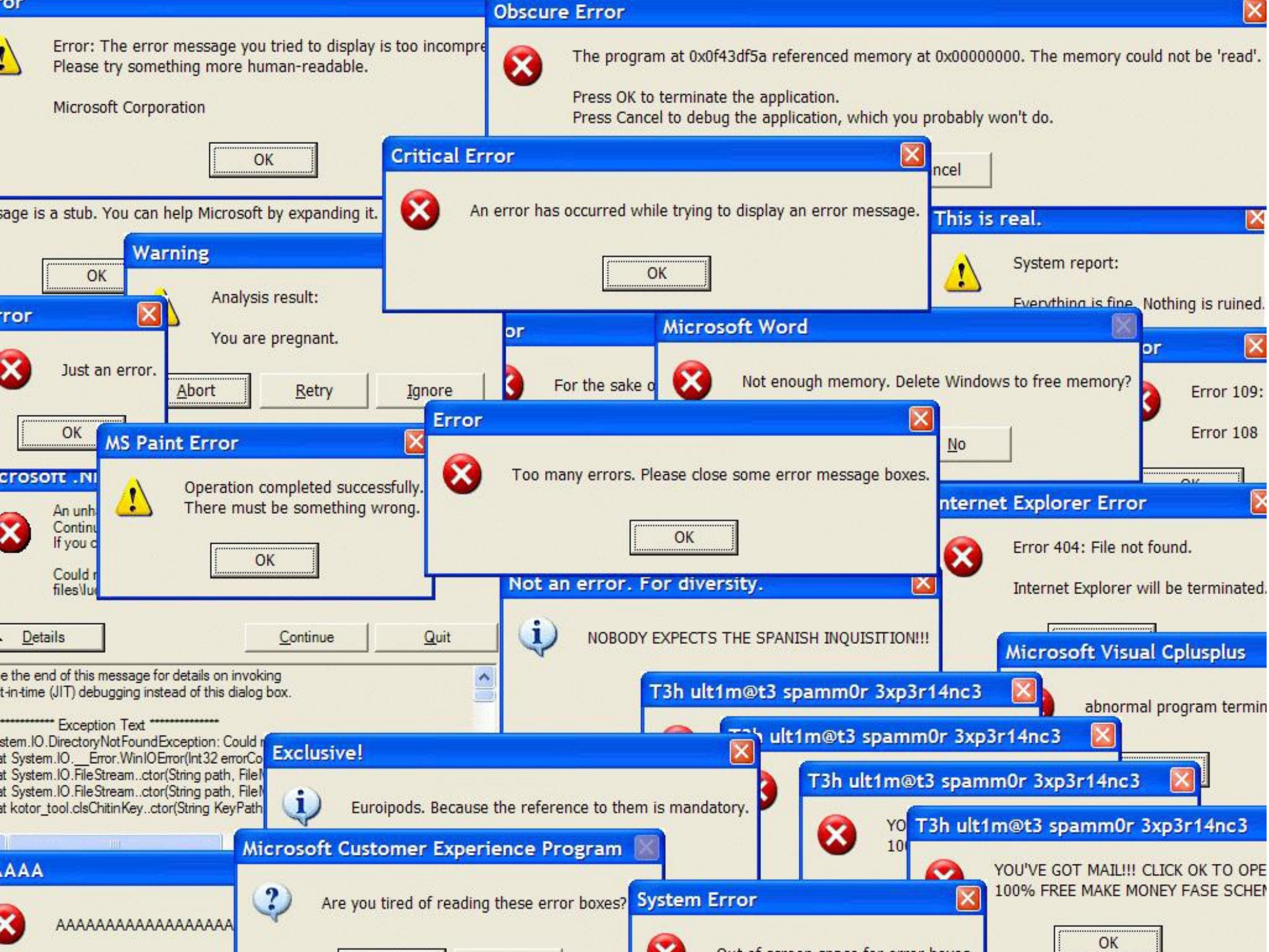
Web Browser Engines

- 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
- There are many engines

Some Layout Engines

- Blink – Chrome, Opera and Maxthon
- Gecko - Firefox
- Servo – Mozilla and Samsung
- WebKit – Safari, Arora, Midori and OmniWeb
- Trident – Internet Explorer
- Browsers can use more than one engine
- Sometimes called a Rendering Engine

There are many Layout Engines



Error: The error message you tried to display is too incompre
Please try something more human-readable.

Microsoft Corporation

OK

Obscure Error
The program at 0x0f43df5a referenced memory at 0x00000000. The memory could not be 'read'.
Press OK to terminate the application.
Press Cancel to debug the application, which you probably won't do.

Critical Error
An error has occurred while trying to display an error message.

This is real.
System report:
Everything is fine. Nothing is ruined.

Warning
Analysis result:
You are pregnant.

Error
Just an error.

Microsoft Word
For the sake of
Not enough memory. Delete Windows to free memory?

MS Paint Error
Operation completed successfully.
There must be something wrong.

Error
Too many errors. Please close some error message boxes.

Internet Explorer Error
Error 404: File not found.
Internet Explorer will be terminated.

Not an error. For diversity.
NOBODY EXPECTS THE SPANISH INQUISITION!!!

T3h ult1m@t3 spamm0r 3xp3r14nc3
abnormal program termin

Exclusive!
Euroipods. Because the reference to them is mandatory.

T3h ult1m@t3 spamm0r 3xp3r14nc3

Microsoft Customer Experience Program
Are you tired of reading these error boxes?

T3h ult1m@t3 spamm0r 3xp3r14nc3
YOU'VE GOT MAIL!!! CLICK OK TO OPE
100% FREE MAKE MONEY FASE SCHEM

AAA
AAAAAAAAAAAAAAAAAAAA

System Error
Out of space space for error boxes

Oops!
There was an error!

Good news though. Your
browser doesn't really have
an error. It is just displays a
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

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.

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

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)

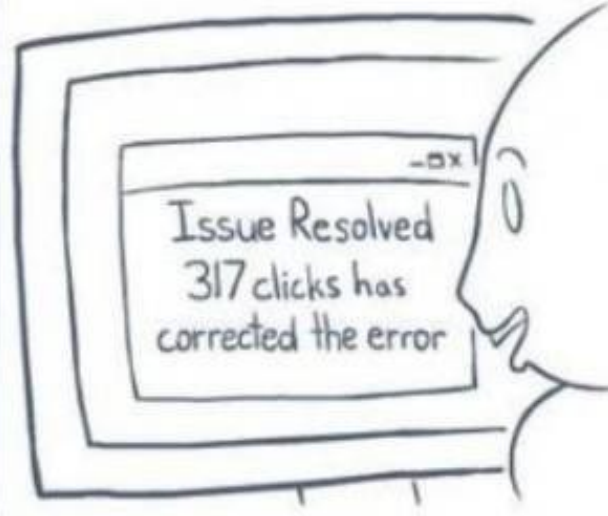
Common Class 5 Error Codes

- 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, plug-ins, 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.

Some Specialized 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
- [Kiddle 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?



Upcoming Schedule

August 17: Chrome Web Browser

August 24: Edge Web Browser

August 31: Firefox Web Browser

September: About Android



THANKS FOR LISTENING 😊

All Presentations and Recordings

Available for Download



toxitman.com