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A Comparative Study of Surfing Performance of Various Web Browsers

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Abstract: Today web browsers are more than a medium for surfing websites. In earlier days the purpose of web browsers are to surf websites and retrieval of information via www. But now the world is changed rather than browsing there are many tools are available in the webbrowsers to make the browsing more interesting. There is a big competitions among various webbrowsers companies. Some of the top browsers are Chrome, firefox, Internet Explorer, Opera etc. In order compete in market all browsers are providing platform independent (Computer, tablet, mobile) applications along with cloud storage. So that the user data can be more secured and can be accessed anywhere more easily.

Keywords: *Access user data, cookies, scripts, pageranks.*

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Introduction

Different browsers provides different functionality and facilities for accessing websites. Rather than accessing websites the browsers are providing contents for various age groups. Such as for children you can enjoy games by adding games to your webbrowsers. Using youtube scripts you can download videos in your computer system. You can use browser for websites testing purpose for different platform websites. The websites which can have different views on different devices are known as responsive websites. The most popular browsers are shown in the figure below:

Figure 1. Most popular browsers

According to use and functionality and competitions the number of browsers having its own speciality. Some of the most popular browsers with their facilities are given below:
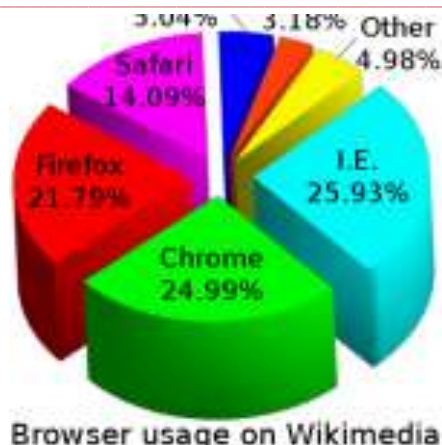
Internet Explorer

Internet Explorer is generally the first component of Windows used in 1995 that is generally known as Microsoft Internet Explorer (IE or MSIE) containing a series of graphical web browsers and works only on Windows Operating systems 1. Over the years, it has been updated to different versions to improve the operating system for Microsoft Windows.[1]

Figure 2. Internet Explorer

The Internet Explorer supports Java, RSS, CSS, JavaScript, ActiveX for downloading purposes such as videos, songs, or software. It also includes privacy protection such as malware and phishing that is built-in. It mainly use over roughly 90% percent of the world in the market.2

Most people started out using Internet Explorer majority of the time when it comes to browsing the internet, checking emails, listening to music online, shopping online, and etc. This was the first web browser consumers used in technology world before other web browsers came out. For more information check out Internet Explorer website.

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Browser usage on Wikimedia

Looking at the latest updates, 26% of the users on internet are using Internet Explorer but Google Chrome comes close to second place in the competition of usage share in April 2012 followed by Firefox and so on.12

Pros:

- Free to download at no cost
- Offers every help option we looked for, including direct support via email and telephone11
- Provides speed and functionality11
- Easy to use11
- Mostly used throughout the world

Cons:

- Bugs come in IE (Internet Explorer) users at different times and fixing them is time consuming3
- Microsoft is unaware of finding any bugs hidden within the browser to fix3
- Installation on software such as Adobe Flash Player can be slow and has to be done manually sometimes when it comes to updates that need to be install3
- Lack of security in ActiveX controls3
- Lack of built in features to synchronize bookmarks3
- Confusion between 32 and 64 bit versions for IE3
- Lack of cross-platform experience (ie. used in Windows but not Mac)3
- Huge target for hackers and cyber-thieves11

What is Safari?

Safari is web browser that was produced and developed by Apple Inc. which functions on a Mac OX, iOS, and Windows operating system. It was first put out in public on January 7, 2003 by Apple Inc. It was Apple's default browser known as "Panther" for Mac users and released on June 11, 2007 on Microsoft Windows operating system.4

Figure 4. Safari Browser

Safari is generally for Mac users who are operating Mac OS X 8.1 and onwards for later systems. Many people didn't have a MacBook when they first started using computers because it was either too expensive or were so used to using a Windows platform even though IE (Internet Explorer) was also good for Mac at the time. For more information check out Safari website.

Pros:

- Ease of Use13
- Page-load times impressive13
- Provides all of security features13
- Cleans up unnecessary junk
- Great for Mac users and free to download
- Speed compatibility
- Extremely Fast to download for Mac users
- Add extensions from Safari Extensions

Cons:

- Lack of customization options many competitors offer13
- Support system may be missing some options for users in FAQ section13
- Trouble with Google built-in search engine that can't be change13
- Difficulty deleting cookies on exit automatically13

What is Google Chrome?

Google Chrome is a freeware browser developed by Google using the WebKit layout engine. It was first release on Microsoft Windows operating system on September 2, 2008 in 43 different languages in beta version.

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Figure 5: Chrome Browser

It was written in C++, Assembly, Python, and JavaScript. Now a days it is available in 50 languages. For more information you can check out website www.google.com/chrome.5

Pros:

- Fast browsing performance6
- More control over your tabs6
- More dynamic home page for common used search engines and bookmarks6
- More speed and won't slow down on your browsing through internet7
- Built-in Flash and PDF Support6
- Has sync capabilities that allow you to access your customized browser from any computer7
- Makes searching so much simpler7
- Ease of use7
- Great security7
- Free to download at no cost

Cons:

- Lack of parental controls7
- Minor site incompatibilities6
- Graphics hardware acceleration doesn't work with all graphics cards6

What is Firefox?

Firefox is a free and open source web browser developed for Microsoft Windows, Mac OS X, and Linux coordinated by Mozilla Corporation and Mozilla Foundation. It was first version 1.0 released on November 9, 2004. It is now available in about 78 languages worldwide. The original title was Phoenix from the

Phoenix Technologies and had to be renamed because of trademark problems. It was renamed to Firebird which was a free database software project. There was conflict in using the name and the matter was resolved when they renamed the browser again to Firefox. Later on February 9, 2004, Mozilla Firebird became known as Mozilla Firefox then simply referred to as Firefox (Fx, fx, or FF).8

Figure 6: Firefox browser

Firefox was introduced to new comers who were used to browsing through Internet Explorer in the early 90s. Majority of people may stick to this brand since it most popular browsers amongst its competitors based on its features and may allow secure downloads on applications and programs. For more information check out Firefox website.

Pros:

- More secure privacy mode and downloading9
- More intuitive navigation9
- Contains minimalist interface9
- Offers lot of help and support on Firefox tutorial9
- Ease of use9
- More Customization
- Speed and more compatible9
- Easy to have add-ons
- Free to download at no cost

Cons:

- No thumbnail previews or mouse gestures however there are free plug-ins from Firefox Mozilla that address both these issues9
- Resource heavy "uses a heavy portion of memory to run"

Browser Name:	Mozilla FireFox 9	Google Chrome 16	Internet Explorer 9	Opera 11	Apple Safari 5
Desktop Browser Share	51.9%	19.1%	21.8%	5.0%	1.7%
Speed					
Startup Time (Rank)	5	2	1	3	4
Webpage loading time (Rank)	3	1	2	4	5
General Features					
Tabbed Browsing	Yes	Yes	Yes	Yes	Yes
Integrated Search Engine	Yes	Yes	Yes	Yes	Yes
Smart Toolbar	Yes	Yes	Yes	Yes	Yes
Save Tabs	Yes	Yes	Yes	Yes	Yes
Customize	Yes	Yes	Partial	Yes	Partial
Frequently Visited List	Yes	Yes	Yes	Yes	Yes
RSS Feeds	Yes	No	Yes	Yes	Yes
Automatic Updates	Yes	Yes	Yes	Yes	Yes
Password Manager	Yes	Yes	Weak	Yes	Yes
Find on page	Yes	Yes	Yes	Yes	Yes
Zoom	Yes	Yes	Yes	Yes	
Parental Controls	Yes	No	Yes	No	No
HTML 5 Support	Yes	Yes	Yes	Yes	Yes
Addons	Yes	Yes	Average	Yes	Average
Addons Manager	Yes	Weak	Strong	Yes	Good
Addons Performance Advisor	No	No	Yes	No	No
Spell-Check	Yes	Yes	No	Yes	Yes
Open Source Development	Yes	Yes	No	No	No
Seamless Download Manager	Yes	Yes	Yes	Yes	Weak
Tab Isolation Features	No	Yes	Yes	No	No
Thumbnail Preview	Average	Yes	Yes	Yes	
Synchronize	Yes	Yes	Partial	Average	No
Mouse Gestures	No	No	No	Yes	No
Website Pinning Capability	No	No	Yes	No	No
Security					
Popup Block	Strong	Strong	Strong	Average	Weak
Anti Phishing	Yes	Yes	Yes	Yes	No
Clear History	Yes	Yes	Yes	Yes	Yes
Private Mode	Yes	Yes	Yes	Yes	No
Technical Help/Support					
Email Support	Yes	No	Yes	Yes	No
Online Help	Yes	Yes	Yes	Yes	Yes
Tutorials	Yes	Yes	Yes	Yes	Yes
User Manual	Yes	Yes	Yes	Yes	Yes
FAQs	Yes	Yes	Yes	Yes	Yes
User Forums	Yes	Yes	Yes	Yes	Yes
Telephone Support	No	No	Yes	No	No
Supported OSs					
Windows	Yes	Yes	Yes	Yes	Yes
Linux	Yes	Yes	No	Yes	No
Mac	Yes	Yes	No	Yes	Yes

Figure: Comparison of browsers with features [14]

Conclusion:

Here the most pupolar browser are introduced and compared with performance wise. Evaluation.Basically all the browsers providing commonly surfing facility. But the difference is the applications provided by the online store. It is very hard to conclude that which browser is best. As different features are suitable for different age group users. Overall, everyone has their own preference on which browser they prefer to use.

Resources:

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