

Home Sweet Homepage :-)

Paul S. Wang, Kent State University

February 23, 2020

Introduction

“Hello Mary, it is nice to meet you. Please (producing a business card) visit our homepage and find out all about me or my company.” Or, in an email, “Can you believe this? See it [here](#).” Or, “Look at [their menu](#), I am very much looking forward to our dinner together.” These days we rely on the Web every single day and it seems a computer (or smartphone) is simply a ticket to the Web. Yet, what is the Web? Where is it? Who owns it? Is it another name for the Internet? Why is it called the Web? What makes it tick? How come it is so important? Why should I care?

In this 4th article of our *Computational Thinking* (CT) series (Vol. 13 to 15, [aroundkent.net](#)) we turn our attention to answering these questions and to ways we can make the Web work for us.

What is the Web?

It’s full name is *The World Wide Web* (WWW) and it is just one of the services available on the Internet, along with other Internet services such as email, video chat, file transfer, and so on. Each computer connected to the Internet is called a *host*. **The Web is part of the Internet** even though sometimes it is hard to tell them apart. Like most Internet services, the Web uses the *client and server* model to perform its duties.

Perhaps the easiest way to understand client and server is to look at an everyday example. We are all familiar with the retail banking service where a customer (the banking client) would visit a bank office (banking host) and seek service from a teller (the banking server). The customer transacts business with the teller using a well-defined language. This customer-teller interface language (*a banking protocol*) involves account number, balance, deposit, withdraw, and so on. Any customer using the banking protocol can work with any teller at any bank.

On the Web, the Web client is a program, known as a Web Browser (or browser for short), running on a person’s computer. And the Web server is another program running on a *host computer* that serves up Web contents.



A person uses a browser to access the Web. Well-known browsers include Google Chrome, Firefox, Microsoft Edge, Apple Safari, and Opera. Using a browser you can visit any website where Web server programs are ready and waiting to render services.

HTTP (Hypertext Transfer Protocol) is the precisely defined common language spoken between a Web browser and a Web server. Like our banking protocol, HTTP enables any browser to interact with any server in a standard way. HTTPS encrypts HTTP traffic for security.

Fortunately, human users don't have to speak HTTP, using a browser all we do is point and click plus a few occasional keystrokes and the browser does the rest.

Where is the Web?

The modern Web is indeed *of the people, by the people, for the people* of the world. The Web exists in the form of a wide collection of Web *server hosts* located all over the world. Each server host is a computer placed on the Internet that stores contents and programming ready to handle requests from any browser (Web client) that may come along. Usually, a Web host can serve up many websites each identified by a Web address known as a *URL* (Uniform Resource Locator). Examples are

```
http://amazon.com
http://weather.com
http://my.clevelandclinic.org
http://www.kent.edu
https://chase.com
```

and `http://aroundkent.net` the website of this magazine.

The speed of the Internet makes the actual physical location of a server host less important. Still a close-by server would deliver contents to you a bit faster than one that is on the other side of the globe.

Webpages are coded in HTML (Hypertext Markup Language) that uses *markup tags* to organize page contents such as headings, sections, paragraphs, pictures, videos, tables, and *hyperlinks*. Hyperlinks use URLs to connect parts of the webpage to other webpages, as well as other data/services, anywhere in the world. The hyperlinks form an extensive web structure of interconnected webpages and hence the name World Wide Web.

Links to different contents such as pictures, audio, video, PDF and other formats allow the Web to deliver any information to any visitor 24/7. What's more, URLs can also link to services such as file download, email, phone, skype, GPS coordinates etc. for one-click/one-tap access. How wonderful is that?

It's A Brand New World!

The Web brings the whole world to our fingertips and is changing our lives and the way we go about doing things in profound ways. Firing up a browser, we can shop, learn, socialize, listen to music, watch video, play games, invest, and work immediately, from anywhere at any time.

The Web bridges the gap between countries and civilizations, empowers people in cities and rural areas alike, enables individual entrepreneurship, as well as encourages free sharing of information. When is the last time you drive to different stores to find products or to compare prices, visit the library, rent a movie from a store, or buy a plane ticket from a local travel agency? Where can you find yellow pages or white pages phone books?

The Web is a medium for sharing. People share their pictures, funny videos, plumbing knowhow, recipes, gardening tips, DIY instructions, and so forth on the Web. Individuals sell their crafts, artistic creations, and used books, computers, cellphones on the Web.

Looking for information? Find it on the Web.

- You can find images and pictures fitting your description.
- You can find videos and movies to watch.
- You can find products and see reviews from actual consumers who had used them.
- You can find directions to any address, its GPS coordinates and navigate to that location.
- You can find translations between over 100 languages and listen to their pronunciation.
- You can find academic and scientific research articles/books in all fields.

Of course, you can purchase all kinds of products and services, many made available only on the Web. You can attend video conferences, do banking, get health insurance, and pay taxes (!) too.

What's more, you can even do mathematics, including algebra, trigonometry, and calculus, on the Web. See these live demos at the Institute for Computational Mathematics (Kent State University):

`icm.mcs.kent.edu/research/demo.html`

Indeed, it seems you can find anything and everything on the Web.

The Answer Is ...

Human beings are always curious and thirsty for information. Not so long ago people with means displayed their prize possession the Encyclopædia Britannica in their homes. But now Wikipedia, created and maintained by volunteers all over the world, is free for all on the Web.

No matter what questions you have or what information you are seeking, more than likely, the answers are on the Web. All you have to do is to look for it. Web search engines are built precisely for that purpose.

A search engine automatically and continuously visits all parts of the Web and stores its findings in huge indexing databases organized for fast retrieval. Just ask the right question and a search engine can find the answers for you instantly. In this new environment, good Web search skills can be very handy.

Search Engine Tips

The most popular and widely used search engine is Google. But all Web search engines are used in entirely similar ways: You enter one or more keywords for the search. The search engine looks for webpages containing the given keywords.



When doing a search it is important to provide the intended context. For example, if you enter *subway* as the keyword you may get info on the Subway restaurant instead of a transportation system. If you enter *Indians* you may get a baseball team instead of a people.

It also helps to add year, time, location, and other qualifiers to your search to make it more specific. With a precise and unambiguous search phrase, you often can get good leads immediately. If not, looking at the search results will give you ideas to refine your search.

For further information, why not look up *google search tips*?

Web Browser Tips

We all use Web browsers extensively whenever we get online. So it pays to know how to use browsers effectively. Here are a few pointers.

- Homepage—Every time a browser starts, it automatically loads a designated *homepage*. Why not make it the most useful site for yourself? Go to your browser *control menu* (usually three lines or three dots on the top right) and choose **preferences** to set your startup homepage.
- Sizing the browser window—Press and hold the left mouse button on the browser *title bar* (the topmost bar) and drag it to reposition your browser window. Drag a window border to expand or shrink the window. Right click on the title bar to *maximize*, *unmaximize*, or *minimize* the window.
- Zoom in and out—From the *View menu* you can zoom in/out for a better view of page contents. From the keyboard use CONTROL + (holding down the CONTROL key and press +) and CONTROL -. On a touch screen use the pinch/unpinch gesture.
- Bookmarks bar—By placing bookmarks on the *bookmarks bar* you make it easy to go to often-used sites. Just select the URL in the Location field and drag it to the bookmarks bar. Often the title of the bookmark is way too long. You can edit the title by right clicking the bookmark and edit the title property.
- Links—In a webpage, text and images can be links. Hover the mouse over a link usually shows the *tooltip text* telling you more about the link before you click it. Click a link to load it into the current tab. Middle click it to open it in a new tab, right click it to perform other operations on the link including saving the linked-to document on your computer.
- Sharing—See a webpage of interest and wanted to share it with someone? Simply use the *File menu* and select **email**. You can also print a hardcopy or into a file.
- Page scrolling—The arrow keys make it simple to scroll page contents up/down left/right. Your mouse middle wheel button can scroll up/down too. On a touchscreen, a finger swipe achieves scrolling. When enjoying a video in full-screen mode, you can exit fullscreen with the ESC (escape) key or tapping the touchscreen.
- Tabs—Click on a tab to switch to it. Middle click a tab to close it. Right click the tab to perform other operations.
- Browser plugins and extensions—Go to the browser control menu and select **Add-ons** or **Extensions**. Finding something you like, you can install the plugin or extension to your browser right away.

In this digital age, we all want maximum functionality for our tools and gadgets. But then many of us won't bother reading the owner's manual. So we end up paying a lot for a very smart device and then use it as a very dumb one. So who is cheating who? Here is a CT rule:

CT: Learn to use your device or app, configure it to your liking, and enjoy.

Your Own Website

The Web is a two-way street. You obtain info and services from it and you provide info and services to it. To do the latter, many choose to set up their own website.

In planning your website pay attention to

- What are the goals and functions you want your website to achieve?
- Who are the intended audiences?
- What contents (words, pictures, videos) will the site display?
- What operations will the site perform?
- Do you have/want a logo for your site?
- What visual feel/effect do you wish the site to convey? Warm, cool, funny, serious, friendly, official, all-business, or funky?

A website can easily do many things: advertising, information dissemination, selling, receiving donations, recruiting, and customer service. Website owners need to provide the site requirements and the contents. But then you need help from a Web developer who can do the visual design, layout, navigation scheme and, just as importantly, the programming, for you. Attempting to read "*HTML for Dummies in 24 Hours*" and do this yourself is usually a mistake.

Make sure that your site works for both regular and mobile browsers. A 2016 *The Guardian* article reported

"Mobile devices are used more than traditional computers for web browsing, as smartphone and tablet use overtook desktop for the first time, October figures show."

To place your website on the Web, you first need to register a *domain name*, *something_nice.com* or *another_thing.org* for example. Go to a *domain name registrar* to find what's available and register. There is a small yearly registration fee (usually \$15 to \$30).

Then you need *Web hosting* by a service provider such as *GoDaddy.com* or *Webtong.com* where you pay around \$10/month for hosting services which can include email accounts for your organization as well. Faculty and students in colleges often can place their homepages up on a school Web server for free.

Remember a website is the new front office for your organization or business. You need to make sure it gives a good impression and is always informative and up-to-date. Any inquiries from the site are received and processed quickly. Any changes in business practices such as business hours, pricing, contact information, procedures and so on are also reflected immediately on your website. Misinformation on your site can be a disaster and managing the website must be folded into regular routines of your business. This includes encouraging and responding to online feedback from your site.

Be Careful

Because the Web is open and world-wide, not everything you read on it is accurate or even true. Hackers can put up a fake website with little difficulty.

Therefore, we must be careful when accessing the Web, when entering login information, when purchasing, and performing financial transactions. A previous article in this CT series talks about cyber security can be a good read:

aroundkent.net/cyber-security--how-not-to-be-a-fish.html

Teachers should worry about students copy-and-pasting information in their homework or term papers. Guess what? You can find free tools, just search for “best tools to check for plagiarism”.

Pictures and videos can be altered digitally. News can even be based on rumors. When in doubt, do a Web search and you can soon find the truth.

Summary

In summary, the Web is part of the Internet where Web hosts store and provide information and programming. The Web has these important technological ingredients:

- Web browsers—The user agents for the Web functioning as a Web client.
- Web servers—Programs running on Web hosts that deliver Web contents and services.
- HTTP and HTTPS—The hypertext transfer protocol is the language between Web servers and clients.
- HTML—The hypertext markup language is used to code webpages.
- URL—The Uniform Resource Locator is used to link to all kinds of content and services.
- Domain names—Registered Web addresses belonging to individuals and organizations.

Yet, the most important part of the Web is human contributions: We all do our part to make the Web useful and beneficial for everyone. That is sweet indeed.

I hope you find this article useful and please feel free to give your feedback to me at (pwang@cs.kent.edu). I look forward to continuing this series of articles on CT.