



Computers and Tablets and Phones, Oh My!

Overview: COMPUTERS and the INTERNET are EVERYWHERE! Not just “computers” any more, they are both traditional (like laptops) and nontraditional (like electrical outlets). Learn how to read technology advertising and understand what’s most important about buying a computer. What is a “smart” device? Why might you want one (or WHY NOT?)

Student Skill Level: Basic

Requirements: None

Objectives:

- The student will be able to:
- Decipher a computer advertisement by:
 - Naming the three major types of computer
 - Naming hardware elements of a personal computer
 - Understand memory space and processing speeds and how they affect computer speed (and price)
 - Define the term Operating System (software)
 - Why is it that important?
 - Define the Internet and a Home Network
 - Discuss various Smart Devices: Apple, Google, Windows
 - Search the Internet for Information



Hardware Type

There are now three major types of hardware: **PCs** (or desktops), **Laptops/Notebooks**, and **Tablets**. Keep in mind the following:

PCs are the sturdiest, and generally, the most inexpensive to purchase

Laptops are very popular now, and price depends on more than just hardware and software, it depends on size, too. Laptops are measured just like TVs: on the diagonal.

Tablets are fully-functional computers, minus USB ports (**some**), hard drives, and optical drives.

PCs

Typical Computer Ad (See www.amazon.com)



HP 2022 Newest All-in-One Desktop, 21.5" FHD Display, Intel Celeron J4025 Processor, 16GB RAM, 512GB PCIe SSD, Webcam, HDMI, RJ-45, Wired Keyboard&Mouse, WiFi, Windows 11 Home, White

-10% \$529⁰⁰
Typical price: \$589.00 ⓘ



Dell Inspiron 23 5415 All in One Desktop - 23.8-inch FHD Touchscreen Display, AMD Ryzen 5-5625U Processor, 12GB DDR4 RAM, 256GB SSD + 1TB HDD, AMD Radeon Graphics, 1 Year Hardware Warranty - White

\$849⁹⁹



HP Elite Desktop PC Computer Intel Core i5 3.1-GHz, 8 gb Ram, 1 TB Hard Drive, DVDRW, 19 Inch LCI Monitor, Keyboard, Mouse, Wireless WiFi, Windows 10 (Renewed)

★★★★☆ ~ 7,006

\$134⁰⁰ List Price: \$200.98

FREE delivery Thu, Jun 8

Only 19 left in stock - order soon.

Climate Pledge Friendly

More Buying Choices

Processor Type
Core i5

Disk Size
1 TB

RAM
8 GB

Processor Speed
3.20 GHz

NOTE: A PCIe SSD (PCIe solid-state drive) is a high-speed expansion card that attaches a computer to its peripherals. PCIe, which stands for Peripheral Component Interconnect Express, is a serial expansion bus standard. The key benefits of PCIe SSDs over the alternative server-based Serial ATA (SATA) drives include better compatibility, speed and storage capacity. PCIe SSDs are used for components like graphics cards and are ideal for users who need the fastest performance and lowest latency.

<https://www.techtarget.com/searchstorage/definition/PCIe-SSD-PCIe-solid-state-drive>

Laptops



Sponsored ⓘ

HP Newest Flagship 15.6 HD Pavilion Laptop for Business and Student, Intel Pentium Quad-Core Processor, 16GB RAM, 1TB SSD, Online Conferencing, Webcam, HDMI, WiFi, Bluetooth, Fast Charge,...

★★★★★ ~ 379

\$469⁰⁰ Typical: \$499.00

✓prime Two-Day
FREE delivery **Thu, Jun 8**

Options: 8 capacities

Display Size
15.6 inches

Disk Size
1 TB

RAM
16.0 GB

Operating System
Windows 11 S



Sponsored ⓘ

HP 17.3" Flagship HD+ Business Laptop, 16GB DDR4 RAM, 1TB PCIe SSD, Intel Quad Core i3-1125G4(Beat i5-1035G4), Bluetooth, HDMI, Webcam, Windows 11, Silver, w/GM Accessories

★★★★★ ~ 148

\$569⁰⁰

✓prime Two-Day
FREE delivery **Thu, Jun 8**

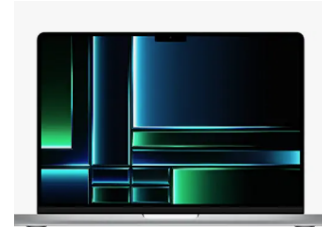
Options: 7 capacities

Display Size
17.3 inches

Disk Size
1 TB

RAM
16 GB

Operating System
Windows 11



Apple 2023 MacBook Pro Laptop M2 Pro chip with 10-core CPU and 16-core GPU: 14.2-inch Liquid Retina XDR Display, 16GB Unified Memory, 512GB SSD Storage. Works with iPhone/iPad; Silver

★★★★★ ~ 149

\$1,749⁹⁹ List: \$1,999.00

FREE delivery for Prime members

Options: 2 capacities

✓ Climate Pledge Friendly ▾

Display Size
14.2 inches

Disk Size
512 GB

RAM
16.0 GB

Operating System
Mac OS

Tablets



Apple iPad Pro 11-inch (4th Generation): with M2 chip, Liquid Retina Display, 128GB, Wi-Fi 6E + 5G Cellular, 12MP front/12MP and 10MP Back Cameras, Face ID, All-Day Battery Life – Silver

\$999.00

PC MAG.COM EDITORS' CHOICE

fire HD10

32/64 GB storage | 12-hour battery
3 GB RAM | octa-core processor

prime video

Office

Amazon Fire HD 10 tablet, 10.1", 1080p Full HD, 64 GB, latest model (2021 release), Black

Brand: Amazon
4.6 ★★★★★ ~ 111,989 ratings
| 1000+ answered questions
✓ Climate Pledge Friendly

Deal
-32% \$129⁹⁹

List Price: \$189.99 ⓘ

✓prime Two-Day

FREE Returns ▾

Save 20% with Trade-In





Microsoft Surface Pro 9 (2022), 13" 2-in-1 Tablet & Laptop, Thin & Lightweight, Intel 12th Gen i7 Fast Processor for Multi-Tasking, 16GB RAM, 256GB Storage with Windows 11, Sapphire

\$1,299.99

AMAZON LIMITERS ON LEFT:

Delivery

☐ All Prime

Delivery Day

☐ Get It by Tomorrow

More-sustainable Products

☐ Climate Pledge Friendly

Department

Laptop Computers

Traditional Laptop Computers

2 in 1 Laptop Computers

Customer Reviews

★★★★★ & Up

★★★★☆ & Up

★★★☆☆ & Up

★★☆☆☆ & Up

Brands

☐ HP

☐ Lenovo

☐ ASUS

☐ Dell

☐ SAMSUNG

☐ Acer

☐ SGIN

▼ See more

Laptop Price

Under \$500

\$500 to \$600

\$600 to \$700

\$700 to \$800

\$800 to \$1000

\$1000 & Above

\$ Min

\$ Max

Go

Deals & Discounts

All Discounts

Today's Deals

Laptop CPU Manufacturer

☐ AMD

☐ Apple

☐ ARM

☐ Intel

☐ NVIDIA

☐ Qualcomm

Computer Processor Count

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 8

▼ See more

Computer Operating System

☐ Windows 11 Home

☐ Windows 11 Pro

☐ Windows 11 in S mode

☐ Windows 10 Home

☐ Windows 10 Pro

☐ Windows 10 in S mode

☐ Windows Legacy System

☐ Mac OS

☐ Chrome OS

☐ DOS

Laptop Display Size

☐ 17 Inches & Above

☐ 16 to 16.9 Inches

☐ 15 to 15.9 Inches

☐ 14 to 14.9 Inches

☐ 13 to 13.9 Inches

☐ 12 to 12.9 Inches

☐ 11 to 11.9 Inches

☐ 11 Inches & Under

Personal Electronics Wireless Connecti Type

☐ Bluetooth

☐ NFC

☐ Wi-Fi

Display Type

☐ AMOLED

☐ LCD

☐ LED

☐ OLED

Computer Processor Type

☐ AMD A-Series

☐ AMD A10

☐ AMD A4

☐ AMD A6

☐ AMD A8

▼ See more

**CERTIFIED
REFURBISHED
PCs**

SAVE OVER 50%
VS BUYING NEW!

SHOP NOW

**12 MONTH
WARRANTY**

NOTE: If you understand everything on these pages, congratulations! You have successfully completed the class! If not, stick around. We can learn together!

Hardware: Monitor

Liquid Crystal Display (LCD or flat panel) – narrower and more expensive, they also provide a sharper picture and take up less space on a desk.

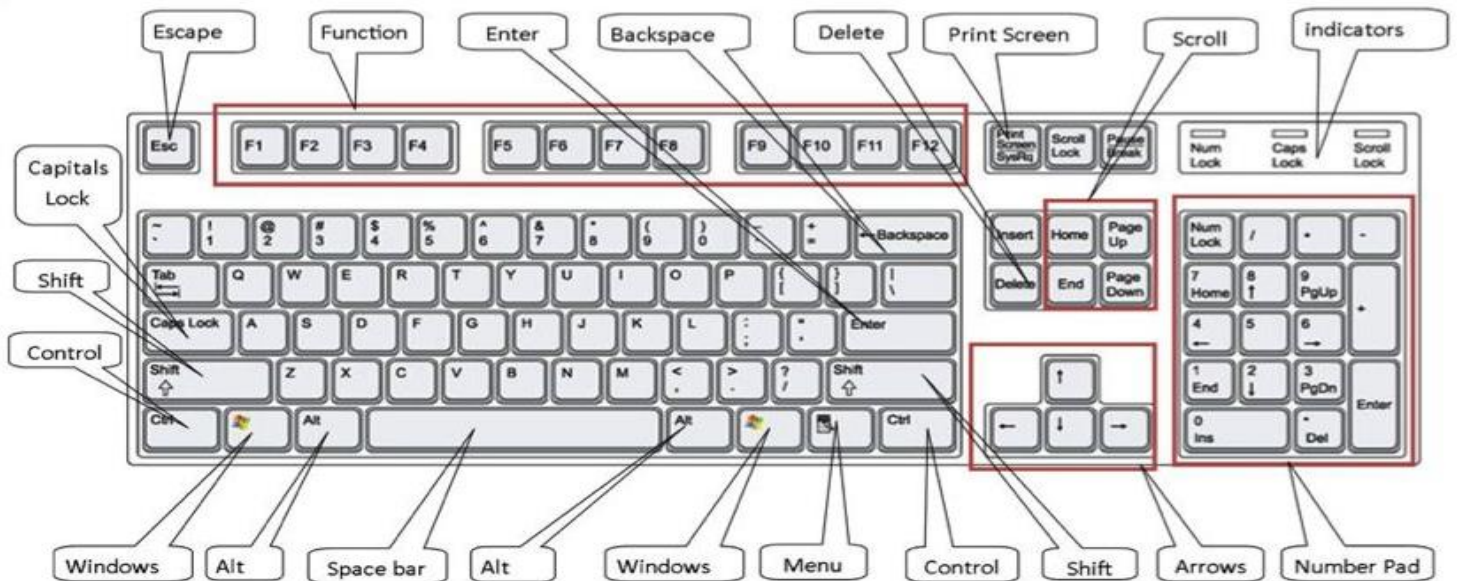
Flat panels are the only type of monitor you may purchase for a new computer, and more computers are now **touch screens**, which means you must purchase the monitor.

Touch screens use any combination of glass or other surfaces to track finger or stylus movement across the screen. These are the most intuitive to use, as there's no mouse. TFT is the newer technology of Thin Film Transfer. It improves contrast on the display.



Keyboard

Full-size keyboard:



Touch screen keyboard:



Mouse – It's unique!

A pointer device that is **both**: **Hardware** – the piece you touch

Software – the indicator on the screen

USB mouse:



A touch pad:



A button mouse:



As you move the mouse, remember to always **focus on the computer screen**. Using the mouse takes a bit of hand-eye coordination and a lot of practice! We will practice later in class. **Note: touch screens have no mouse. Your finger is the pointer.**

Computer Speed: Central Processing Unit (CPU) and RAM

Speed:

It is a computer chip that funnels electricity through silicon circuits, carrying out command sequences. To complete this, CPUs need to **fetch** the instructions, **decode** them (break them up between parts of the chip that are needed to complete the instructions), **execute** the instructions (electricity runs through complete circuits in the chip), and **writeback** the results of the execution (to make sure the computer engineer knows the sequence completed successfully).

The speed of the chip is measured by how fast the electricity can finish its path through the chip and thus fulfill a single sequence of stored instructions.

Computer engineers make the chip work to the **tick of an internal clock**, and the processor generally performs **one circuit** (fetch/decode/execute/writeback) on **every tick**. This “clock speed” helps determine the speed of the computer and it's measured in **hertz**.

Today all processors are measured in **gigahertz (GHz)**. “One gigahertz” means the processor’s “clock ticks” **one billion times in one second** – one billion calculations (circuits) per second. Currently, AMD has one of the fastest Central Processing Units at over 4GHz. That means it can perform 4,00,000,000 (that's **billion**) calculations per second.

Cores:

Processors may be **multicore** (two or more processing units integrated into one chip) so they run faster. For example, Intel produces a **quad core processor** (essentially 4 processors in one chip). Computer engineers are constantly working to improve a processor's speed; by using multiple processors it's possible to achieve **some level of parallel processing** (using parts of each processor to perform a single task, thereby making the computer faster).

The faster the processor (or the more cores it has), the less likely the computer will “freeze” from operational overload. The faster the processor, the more money you will spend on a computer – a single chip can cost as much as a low-end consumer computer (\$500 or more).

The CPU is advertised as the first specification in a computer advertisement. “Core i7” “i3”

Memory: Two types built into the Computer

Temporary Memory:

RAM – Random Access Memory is also located inside the computer. It is integrated circuitry that plugs into the motherboard and allows computer users to access stored data quickly and efficiently – as long as there's constant electricity. This data is permanently lost if a computer shuts down unexpectedly. **The more RAM a computer has, the more room the user has to “play.”** More RAM means the computer can store more information for quick access as the user operates the computer; the computer responds faster. **RAM is advertised as the second item in the specifications. “12GB.” “6GB.”**



****DDR4 SDRAM** (double data rate four synchronous dynamic RAM) is the newest form of RAM available with the fastest data transfer rate between it and the CPU (Wikimedia, DDR3 SDRAM, 2010). True still for 2020

Permanent Memory:

Hard Drive (C: drive, Hard Disk or Local Disk) – located in the computer itself. It is made of **platters** (a hard drive may have from 1 to 6 platters inside its sealed compartment). This is a picture of the hard drive that is located **inside** the tower. You should never open the sealed case of the hard drive (you will ruin the data on the platters)



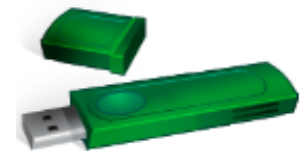
PCIe and SSD or Solid State Drives are so named because they have no moving parts, unlike a hard drive. It has permanent, flash-type memory that uses electronic chips for data storage. They are extremely fast, physically small, and lightweight. SSDs have taken over for HDDs (Hard Disk Drives).

Memory: Portable Memory

Flash drives (a.k.a. USB, thumb, jump drive, removable disk, or memory stick) plug into any available **USB** (Universal Serial Bus) **port** on the computer. They range in size from 64 to 512 Gb (64Gb costs \$15 or less. 512Gb costs about \$40).

Flash drives are a great way to back up **anything** you would normally save on the computer: **text documents, music, pictures, or videos/movies**. They will store as much data as they have space for and are easily used – just plug them into a USB port on any computer. When they are plugged in, there is electricity that runs through the port to power the circuitry inside the drive. They are fairly tough, as well, meaning you can store them virtually anywhere and your data is safe.

Most computers come equipped with 4 to 8 built-in USB ports. Two of those ports are usually in the front of the computer for easy access. Even tablets are coming with USB ports on them, and they already have flash memory inside (replacing the bulkier hard drive for onboard storage).



Flash Drive

Optical Drives

Computers MAY come with an optical drive to read and write CDs and DVDs

R/W – Read/Write – reading means “play back” and writing means “saving” (burning; this is usually only done for music, if there’s a CD player in a car)

One drive does everything: **CD/DVDRW**

You may also find **BluRay** drives for sale. If you’d like one in your computer, it’s recommended you purchase a computer with one built-in. BluRay disks are also writeable.



An Optical drive

Memory Space – What does it mean to you?

Memory Space Measurements:

Name	Abbreviation	Size
Bit	b	1 bit (on or off, 1 or 0, electricity or no electricity – it's the lowest unit of measure – everything else is based on this)
Byte	B or b	8 bits – one typed letter ("F")
Kilobyte	Kb	1000 bytes – about 1/2 page of text
Megabyte	Mb	1000 kilobytes – 1 Mb is about 500 pages (about 2 books), 4Mb is about one digital photo, or 1 song
Gigabyte	Gb	1000 megabytes – 1 Gb is about 250 photos, or 2,000 ebooks. 5Gb is about one DVD (Hollywood movie with extra features) A Blu-ray is about 27Gb.
Terabyte	Tb	1000 gigabytes – about 225,000 digital photos or about 450 DVD movies

Above table based on the HowStuffWorks Web site (2009). DVD and Blu-ray info: Watson, 2010.

Motherboard – the circuitry that ties everything together

The motherboard is the **main printed circuit board** in a computer; it carries the system buses (the circuitry that allows all the hardware devices in the computer to talk to each other).

Equipped with connections for:

- All processors (CPU)
- Memory modules (RAM)
- Plug-in Cards (Sound and Video)
- Any peripheral devices (USB ports)
- All power supply cables (electricity)

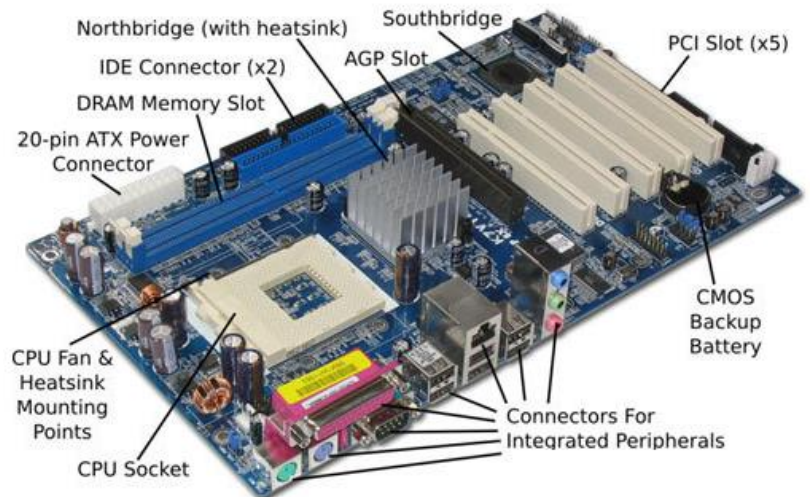


Image from Obsessible Web site

Memory Space and Processing Speed In a Nutshell

There are **3 major things** to keep in mind when looking at computers:

1. **Processing speed/number of cores**
2. **RAM size**
3. **Hard Disk/Onboard storage size, HDD vs. SSD**

IN GENERAL:

The **larger** the RAM and faster the processor, the more **money** the computer will cost.

The **larger the laptop or tablet**, the more money it will cost. ("Larger" here refers to physical size).

Solid State Drives cost more than **Hard Disk Drives**



The Operating System (Software)

Operating Systems:

Controls the overall activity of your computer – it dictates what you see on the screen
 Manages your hardware (“plug and play”)
 Runs your software and controls the proper sequence of activity that takes place in the processor
 Arranges your information on the hard drive and other storage areas; Runs multiple programs and shares information between programs
 Represents programs, commands, and options visually

Three Major OS's: Windows, Apple, Android

Apple controls all the hardware and software for its computers. This means that Apples are always more expensive than Windows or Androids.

Apple products are preferred by anyone in graphic design, fashion, music, or any other “art” major. However, because they are so expensive, consumers and businesses alike tend to favor Windows. This pattern holds steady from the 1980s through the 90s.

In 2001, Apple came out with the iPod for digital music. This really put Apple out in the mass market again.

Windows products are really “just” software. Bill Gates allowed other companies in the 1980s to make the hardware to fit his software. IBM is the most iconic. Now, you have multiple companies that “fit” Windows computers. This means competition. Competition means that the price drops, and more people adopt that computer. This is why Windows is still about 95% of the computer market.

Windows, along with all other software companies, updates its system.

For many, many years, all computers were “stand alone,” meaning that you used one computer and that was it.

Then: BOOM!!!!!!

THE INTERNET IS ONLINE!!
 MASS HYSTERIA ENSUES



Windows went through many “iterations.” Generations.

1990s: Windows 3.1 and 3.2

Windows 1995, 98, XP (2000, “Experience”)

2007 Vista – bad system. Resource hog.

2009 Windows 7 – good system. Sleek, runs in background. Windows 7 is the last of the “stand alone” operating systems.

2012 Windows 8 came out. BAD!!!

2015 – Windows 10 First system that Microsoft offers FOR FREE.

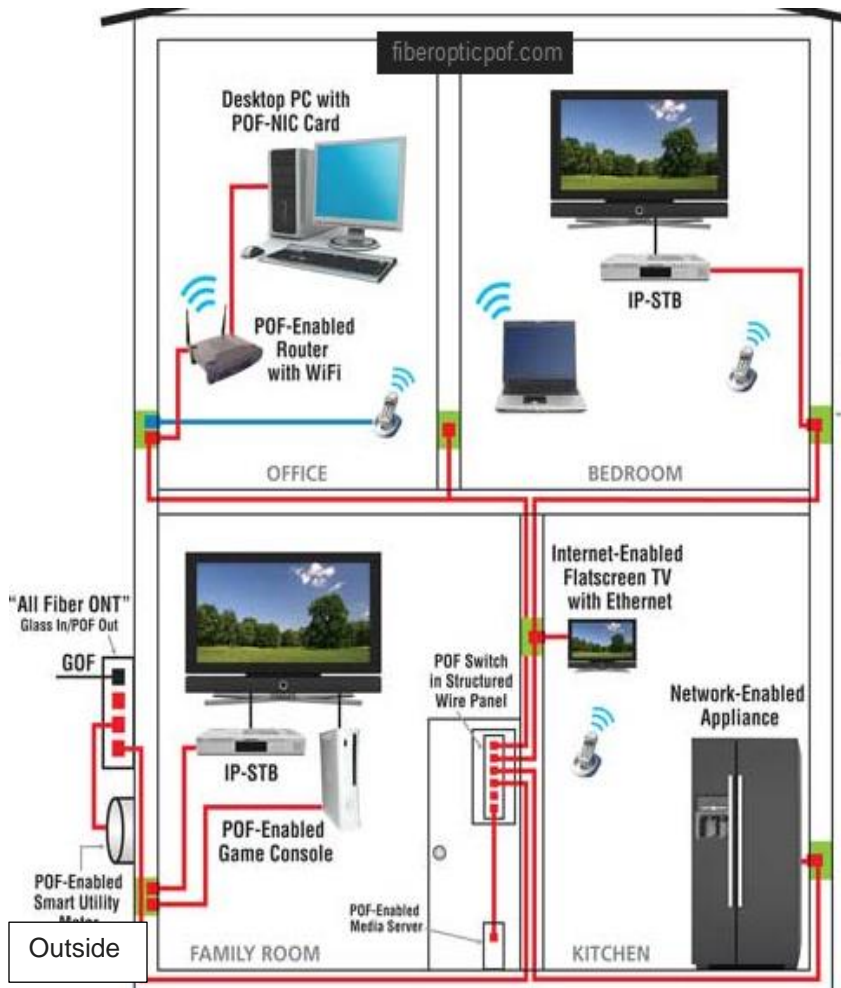
Android is the latest player in the computer game, and its focus is the **mobile** market. It first appeared on the market in 2008, fully 23 years after the Mac. It's still number 1 in the mobile market, followed closely by Apple (they trade spots a lot). Windows was late to the game, and so are still a distant third. **LOGOS:**



****You may use a different Operating System for your phone or tablet. Apple OS and Andriod are the two systems most popular in the mobile market. They each have their own learning curves!****

Internet Concepts – What is a Computer Network?

A computer network is a collection of devices that communicate with one another using wired and wireless technology. Here is an illustration of how your network at home or in the local library might work (see **definitions**)



Hybrid Modem with WAN and LAN ports (necessary for Internet access) and wireless access

Any device that connects to the Internet requires these things:

1. An Internet Service Provider
2. An Access Point
3. NIC card
4. Browsing software

Home network connected to the Internet through an ISP (Internet Service Provider). Also known as a LAN

Definitions:

LAN: Local Area Network. Computers and peripheral devices connected together “for the purpose of facilitating the exchange and sharing of information and resources normally within a floor or building” (Infigro, 2007).

WAN: Wide Area Network. One or more LANs connected together. The Internet is a world-wide WAN.

Router/Modem (in the home, these are most often converged in a single device – Hybrid Modem): A device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs (QuinStreet, Inc, 2010). A modem (modulator/demodulator) is a device that enables a computer to transmit data” over any network along telephone or cable lines or wirelessly (QuinStreet, 2010).

Client: a computer that connects to a server and relies on it for some functionality (for example, displaying Web pages). Client devices are usually used by end-users of the Internet – us!

Internet Service Provider: A company that charges a monthly fee for WAN access. They connect client computers to servers around the world. This is how the Internet works.

Peripheral Devices: anything external to the computer itself (a mouse, speakers, keyboard, flash drive, etc). Cameras, printers, PDAs (personal digital assistants), microphones and smart phones are peripheral devices, too. VoIP: Voice over Internet Protocol: use an Internet connection to make phone calls.

Smart Devices – What are they?

Most companies are putting out Smart devices. Basically, anything labeled “smart” is something that can connect to the Internet and be controlled by another device with an account and software. Before we get into that, here are some examples of smart devices (taken from Amazon.com web site)



Fire Stick: Fire TV Stick, the #1 best-selling streaming media player, with Alexa Voice Remote (2nd Gen). Use the dedicated power, volume, and mute buttons to control your TV, soundbar, and receiver. Launch and control content with the Alexa Voice Remote. Watch favorites from Netflix, YouTube, Prime Video, STARZ, SHOWTIME, or CBS All Access, plus stream for free with Pluto TV, IMDb TV, and others. Fire TV Stick devices have more storage for apps and games than any other streaming media stick. Experience tens of thousands of channels, apps, and Alexa skills, plus browse millions of websites like Facebook and Reddit using Firefox or Amazon Silk.



Ring Doorbell: 1080p HD video doorbell with enhanced features that let you see, hear, and speak to anyone from your phone, tablet, or PC.



Felix & Fido Petbot Interactive App Controlled Treat Dispensing Smart Mobile Robot, with HD WiFi Pet Camera, Bluetooth, 2-Way Audio,...

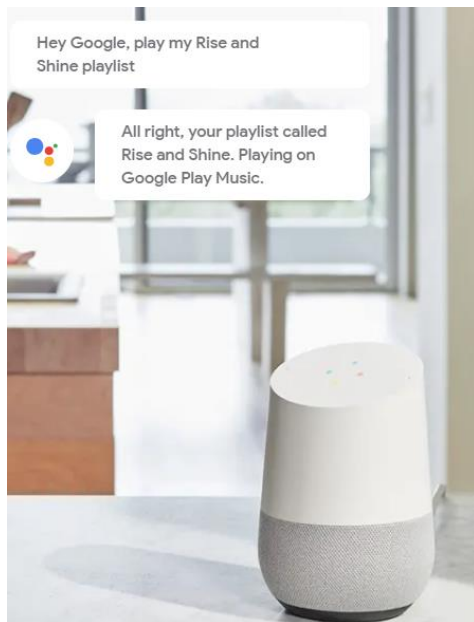
★★★★☆ ~ 15

\$199⁹⁹

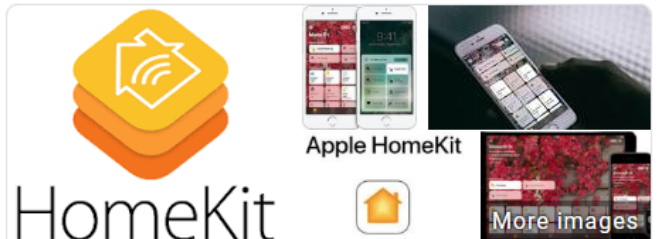


LifeShield, an ADT Company - 14-Piece Easy, DIY Smart Home...

When you arm your LifeShield System, you'll be notified when motion is detected, a door or window is opened, or your fire alarm has gone off. *24/7 professional monitoring for emergency services is optional. Easy to Set Up Sensors & Smart Camera: 2 pet-friendly Motion Sensors, 4 Door/Window Sensors, and a Fire Safety Sensor that works with your existing fire/CO alarms. The Indoor Smart Camera has motion detection, live video, & video recording. Our patented Base uses high-speed internet, cellular signal, cellular text, or a landline phone to ensure that its signal makes it out to you. And, with 24-hour battery backup, you don't have to worry if the power is out



Google Home: Base and voice-activated assistant. Connects with other Google-sold switches and wall sockets. Android-based



HomeKit Software

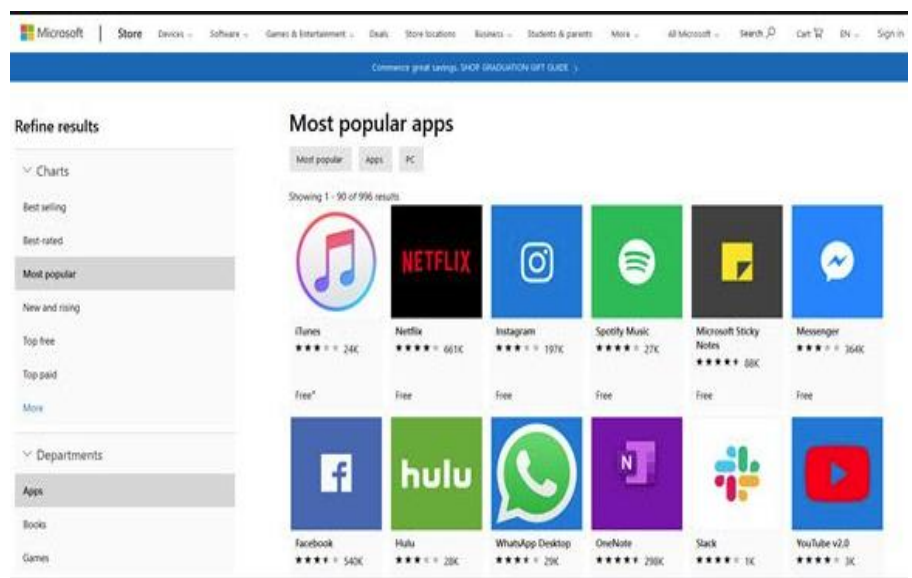
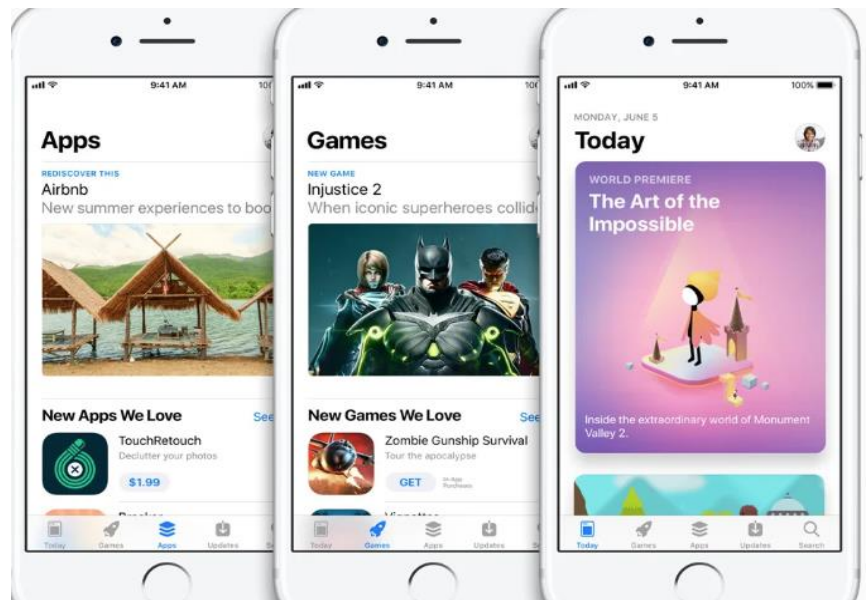
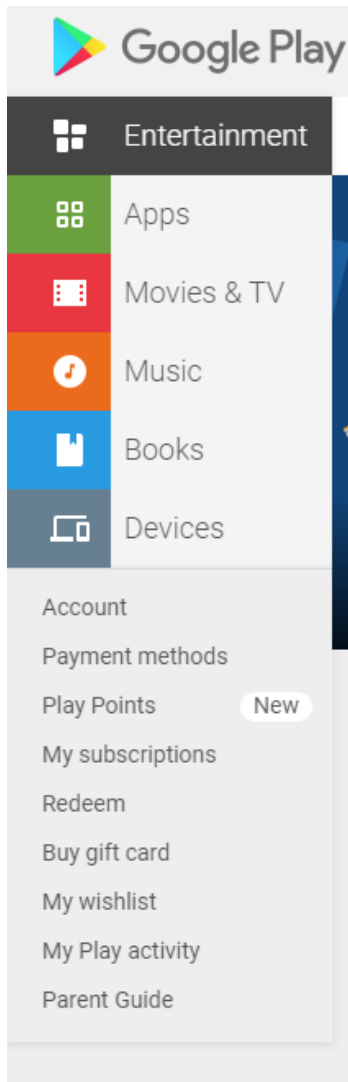
HomeKit is a software framework by Apple that lets users set up their iOS Device to configure, communicate with, and control smart-home appliances. By designing rooms, items, and actions in the HomeKit service, users can enable automatic actions in the house through a simple voice dictation to Siri or through apps. [Wikipedia](#)

Apple Home: voice-activated whole-house system works with Wi-Fi and iOS

Apps – Software Applications

Each of the three major companies – Windows, Apple, and Android/Google – offer their own unique “App Stores” that allow customers to download software. Some software is free, others cost money, but almost all apps (games, book readers, news apps, etc) allow for “in-app purchases.” That is, you can buy “power ups” in games, or buy books in ereading software.

This is where you also find the apps that work the objects listed previously.



Web Browsers and Web Sites

“**Browsers** are software programs that allow you to search for and view various kinds of information on the Web, such as Web sites, video, audio, etc.” (Boswell, 2008).

Edge is one type of Web browser. There are many different kinds of browsers, but they function similarly. Examples include **Firefox**, **Chrome**, **Opera**, and **Safari** (Mac).



Using a **browser** allows you to access Web pages which are stored on a server. **Web page(s)** make up **Web sites**. A single Web site may consist of one page to thousands of pages, just like books.

Open the Browser

There are two ways to open the Internet:

Double click on the **icon** on the **desktop** or

Single click on the **taskbar**



Web Sites – Home Page

The anchor page of ANY Web site is called the **Home page**. It is the starting point of the site, much like the cover of a book. A good Home page will have an easy-to-remember web address, introduce you to the company or person who owns the site, and will clearly point the way to additional pages in the site – like the table of contents in a book.

If you know the Home Page address of a Web site, it's very easy to find the site!

Have any questions? MobileTech@Nioga.org

Mobile Tech Home Schedule & Requests Courses & Resources Course Evaluations Libraries & Partners About Us

Nioga Mobile Tech



Get answers for your technology questions.

NIOGA MOBILE TECH

SPONSORED BY THE NIOGA LIBRARY SYSTEM

Nioga Library System

Request

We immediately see an email link to the owner of the site, and a revolving banner. There are multiple **hyperlinks**. Those are elements in a Web page that allow users to see new items or Web pages. Your mouse indicator  will change its shape to a hand  when you move it over the link.

Links may be **words, images, or animation**.

A **link bar** is an element on a page that is usually **across the top** (like the words we see here) or along the **left** side. **Link bars** are a common way to navigate in a web site, so be sure to look along the top or left side of a page to find important information.

Clicking on links and following them from page to page and site to site is called **Web surfing**. This is how anyone may access available information from the Internet (and spend hours in front of a computer screen)!

The Toolbar – Buttons Make Life Easier!

Any **toolbar** presents some of the most common functions of the program as **buttons** (visual aids that allow you to move from one place to another quickly)

We will discuss the **most frequently used** buttons

Use your **mouse** to click the buttons

Back

Goes backward to the **first** page viewed

May be used after viewing at least two Web pages



Forward

Goes forward to the **last** page viewed

Can only be used **after** using the **Back** button

These buttons work in conjunction with one another – like flipping pages in a book

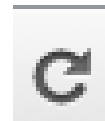


Refresh

Re-requests the same web page from the server

Automatically **updates** any information on the page (stock quotes, weather, sports scores, school closings)

Functions like “redial” on your telephone



Button Placement Overview:



URLs and the Web Address Bar

A **URL** (Uniform Resource Locator) is a string of characters (letters, punctuation, or numbers) typed into the **Web address bar** WITHOUT spaces. (The address bar is the only place you type without using your space bar – you should use proper word spacing everywhere else on the Internet.)

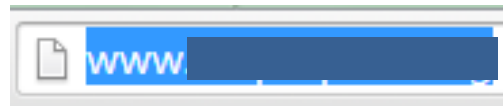
URLs can be **hundreds** of characters long. In any Web browser, the **address bar** will display the URL of the web page you are currently viewing.

Every single Web page has a **unique** web address that the **browser** uses to “call” a web page. “[T]he number of individual web pages out there is **growing by several billion pages per day**” (Alpert, 2008). The search engine Google has an index of over 1 trillion **unique** URLs (see Alpert, 2008).

“Eric Schmidt, the CEO of Google, the world’s largest index of the Internet, estimated the size at roughly 5 million terabytes of data. Schmidt further noted that in its years of operations, Google has indexed roughly 200 terabytes of that, or .004% of the total size” (McGuigan, 2011).

If you know the **exact address** of a web site, type it directly into the address bar. For example, let’s look at Yahoo.

Click once in the bar, right on top of the “www.” This will turn the lettering white and blue.



Type right over the blue:
www.yahoo.com and press **Enter** on your keyboard.

[/www.yahoo.com](http://www.yahoo.com)



See how the Yahoo home page loads?

YAHOO! [Search Bar] [Search]

My Yahoo [Sign In] [Mail]

Mail Autos News Sports Finance Weather Games Homes Food Tech

Sophia Loren dazzles on Cannes red carpet
Nearly 60 years after her debut at the Cannes Film Festival, the legendary actress makes a triumphant return. [▶ Her special plus-one »](#)

Trending Now [▶ Watch the show »](#)

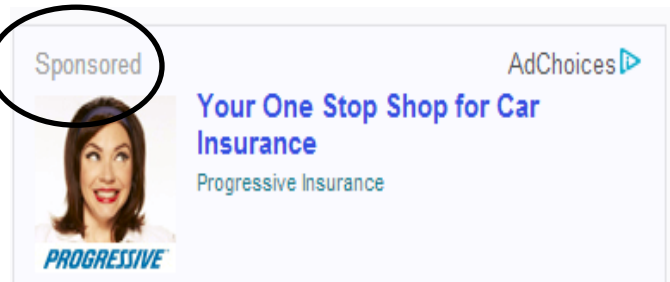
1 Nikki Reed	6 Burt Reynolds Ranch
2 Don Rickles	7 Ann Coulter
3 Danica Patrick	8 Hummus recall
4 Crazy Horse monument	9 Satellite TV
5 Elizabeth Smart	10 Gina Tognoni

Sponsored **Your One Stop Shop for Car Insurance** Progressive Insurance

Advertisements appear frequently on web pages. Without ads, the Internet would not be freely available to us.

Regardless of where on a page the ad appears, it will be marked as such, with the word **sponsored** or **ad** above it.

This ad is for Progressive Car Insurance.

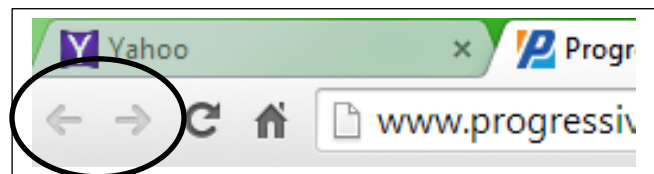


When you click on an ad, it usually opens up in a **new tab**.

Tabs are at the top of your screen.



Tabs are important, because once you are in a new one, the **back** and **forward** buttons will no longer move you anywhere. A **new tab is like a brand-new window**.

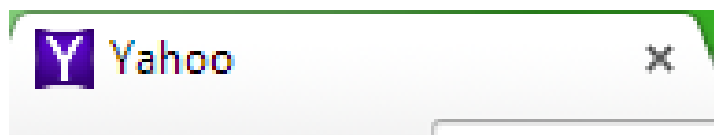


This is important to note, because new Internet users can sometimes click on an advertisement accidentally, and get "lost." They can't "get back" to the page they were viewing.

To get back to where you were, just **close the new tab** by clicking the small grey "X" on that tab.



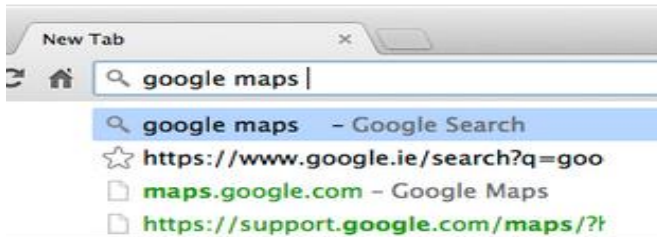
Now we're back to one tab!



Address bar (Omnibox) (Google Support, 2014)

Located at the top of the Window, above the menu bar, it's used to navigate to a particular **Web page**:

1. Type in the **exact** Web Address (Each page has a unique address!)
2. **Search** the Web: Simply type your search term in the address bar and press Enter to see results from **your default search engine**. (Could be Google, Yahoo, or Bing as a default).



3. Search and browse the web faster by trying the **Instant** feature for the address bar. With Instant enabled, search results and webpages appear as you type in the address bar, even before you press Enter. If you don't see the results you want, just keep typing and the results dynamically update.
4. Search for bookmarks, browsing history, and related items: When you type in the address bar, it automatically shows you matches from your bookmarks and browsing history:
 - ☆ appears next to bookmarked sites.
 - 🔍 appears next to searches, including related searches if you have the [prediction service](#) turned on.
 - 📁 appears next to matches from your browsing history, or related sites when you have the prediction service turned on.

★ Create bookmarks

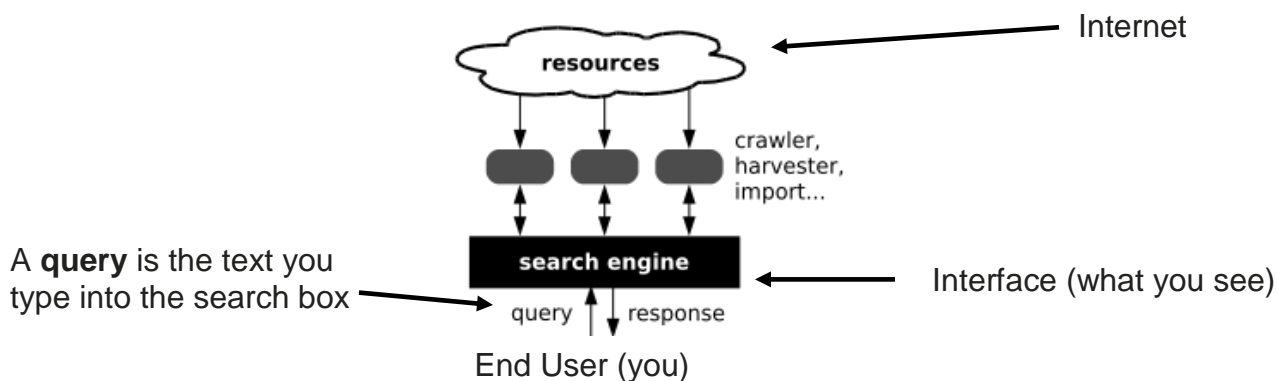
Click ☆ at the right end of the addresss bar to [create a bookmark](#).

Search Engines – Your key to finding URLs

So knowing a Home Page address is all well and good, but what do you do if you know what you're looking for but don't know the exact Web address? Use a search engine!

A **search engine** is an information retrieval system that is designed to assist people in finding data (Web sites, images, audio, etc.) stored on a computer system.

Search engines function similarly to the **yellow pages** – they allow you to look up information without knowing the **exact** business name ("carpenters," "plumbers," "auto repair," etc).



Examples of **commonly used** search engines (there are thousands of different ones in existence):

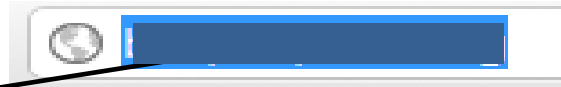
www.google.com
www.yahoo.com
www.bing.com

www.ask.com
www.about.com
www.eHow.com

www.dogpile.com
www.mamma.com
www.duckduckgo.com

.....Practice.....

Click once in the **Address** bar
 (lettering turns blue)



TYPE YOUR SEARCH HERE.

Omnibox Search

Let's look for information on the US presidents. **Begin typing** (without the quotes) "US presidents" in the omnibox.

You will also be given a suggestion list (**Google Suggest**) below the search box.

If you are conducting a search and see your choice, you may click on it with your mouse) If you don't see your particular search, type in what you want and press the Enter key on the keyboard

Click on any blue link on the **results page** to view the information on that **web page**



Notice:

The Link (Blue): The first line of any search result is the title of the webpage.

The URL (Green): The webpage's address.

The snippet (Black): A description of or an excerpt from the webpage.

Similar links (Light Blue): A link to a page within the site that is similar to your search. Click here if the page you wanted isn't available.

The screenshot shows a Google search interface. The search bar contains 'us presidents'. Below the search bar, there are filters: 'Everything' (selected), 'Images', 'Maps', 'Videos', 'News', 'Shopping', and 'More'. To the right of the filters, there are search suggestions: 'us presidents', 'us preventive services task force', 'us president salary', and 'us presidential elections'. Below the filters, there are search results. The first result is 'The Presidents | The White House' with the URL 'www.whitehouse.gov/about/presidents'. The snippet for this result is 'Short history of the U.S. Presidency, along with biographical sketches and portraits of all the presidents to date. From the official White House site.' Below this result, there are similar links: 'Barack Obama - The White House - George Washington - Abraham Lincoln'. The second result is 'The White House' with the URL 'www.whitehouse.gov/'. The snippet for this result is 'WhiteHouse.gov is the official web site for the White House and President Barack Obama, the 44th President of the United States. This site is a source for ...'. Below this result, there are similar links: 'Presidents of the United States (POTUS)' with the URL 'www.ipl.org/div/potus/'. The snippet for this result is 'Background information, election results, cabinet members, notable events, and some points of interest on each of the presidents. Links to biographies, historical ...'. At the bottom of the search results, there is a link 'Images for us presidents - Report images'.

The URL is important because it gives you important **domain** information:

Domains:

- ✓ **.com** – for standard sites and commercial sites, usually designed to sell things
- ✓ **.biz** – also for selling items, stands for business
- ✓ **.edu** – education, for schools, colleges, and universities (big difference from www.buffalo.com and www.buffalo.edu)
- ✓ **.org** – for nonprofit organizations (like public libraries)
- ✓ **.net** – for a specific network (like Verizon)
- ✓ **.gov** – usually stands for United States government bodies
- ✓ **.mil** – for the United States military departments
- ✓ **State Codes** – for US State departments (Motor Vehicles, Department of Labor, etc.)
- ✓ **Country Codes** – specific to the country, for example .ca (Canada), .uk (United Kingdom), .au (Australia)
- ✓ **.xxx** (yes, really, I won't explain here).

Domains give quick and easy information as to what kind of site you will visit and, sometimes, how trustworthy the data will be. I wouldn't necessarily trust medical information from a **.com** site, I'd probably be more inclined to trust a **.gov** site.

The **link** is the **most important feature** on the results page because it allows you to actually view a chosen web page. **Use your mouse to click the link to the official White House web site.**

I know this is the White House web site because it says so here (URL).

[The Presidents | The White House](http://www.whitehouse.gov/about/presidents)

www.whitehouse.gov/about/presidents

Short history of the U.S. Presidency, along with biographical sketches and portraits of all the presidents to date. From the official White House site.

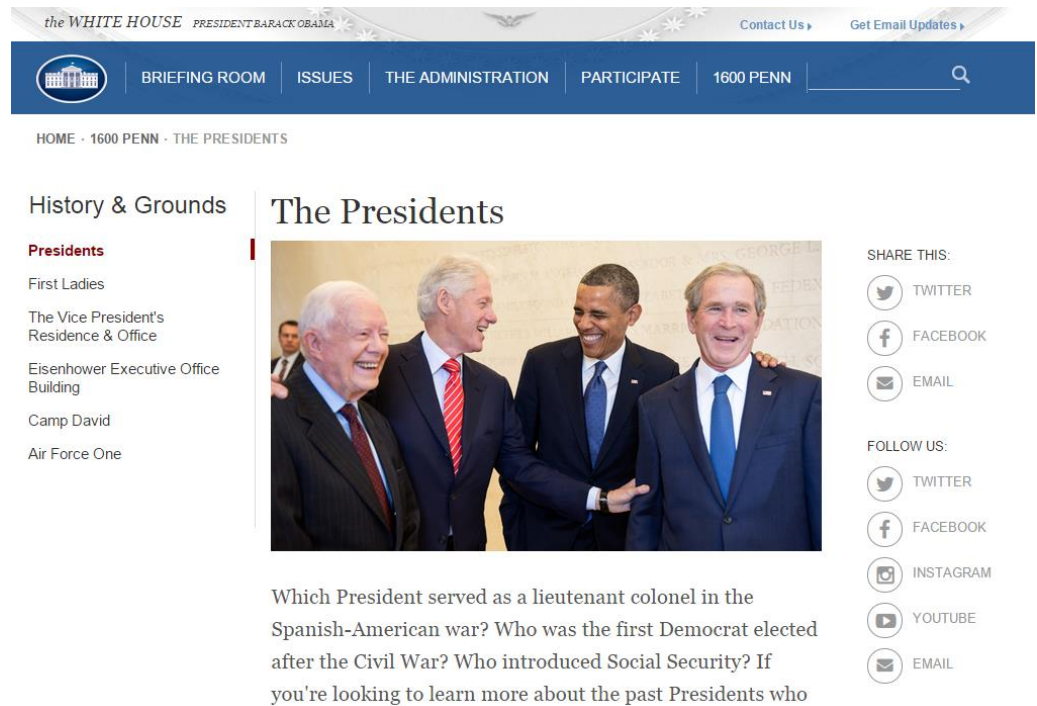
[Barack Obama - The White House - George Washington - Abraham Lincoln](#)

Several important things to note:

There is a fancy **link bar** across the top. Mouse over it to find more navigation options.

There is a **scroll bar** on the right side of the page. This means that the Web page is longer than your screen. Use your mouse to scroll down the page to see the whole thing.

Every word on the left side of the screen is a **link to another page** with more information. Clicking on links is how you **navigate** the Internet.



You can follow links anywhere on the Net; you will know something is a link because it is generally BLUE, might be underlined, or your mouse indicator will turn into a hand. A **button or picture** can be a link too.

PRACTICE: Windows Desktop

When you begin working on any library computer, this **desktop** is your base. It really is just like an actual desktop that you organize.

Icons on the desktop are pictorial representations of items you can use. For example:

Computer allows you to browse and search your entire computer system.



File Explorer allows you to find files stored on your computer, flash drive, or cloud storage.

Recycle bin stores all the files you choose to delete and allows you to recover them later.



Empty

Full

Program Icons (or **software applications**) help you get your work done. Some popular examples include:

Web browsers:



Edge



Mozilla Firefox



Google Chrome



Safari (Apple)



Microsoft
Word



Microsoft
Excel



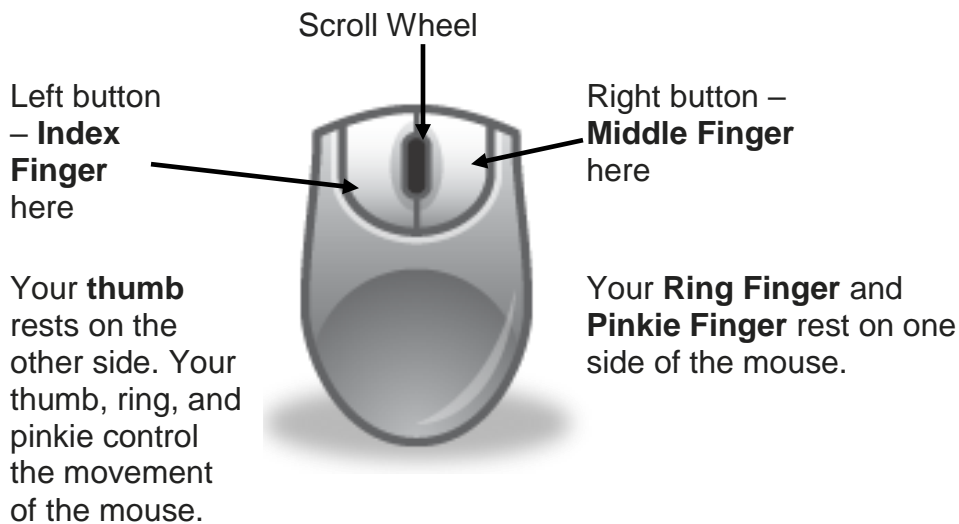
Microsoft
Power Point



Microsoft
Publisher

Mouse Skills Require Practice!

- **Left Click** (Used most often)
 - Used to select something in a program
- **Double-click** (on left button)
 - Used to start programs.
- **Right Click**
 - Context sensitive as it generally brings up submenus
- **Scroll Wheel**
 - Used to move a file up and down in a window (when it is too big for the window) so you may see everything
- Different options become available depending on where the mouse is when you click.
Remember: **Mouse skills require practice!**



A touch pad:



A button mouse:



Left Click

Right Click

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Resources

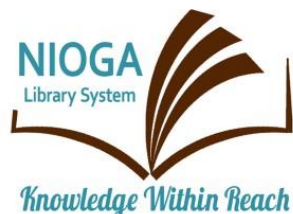
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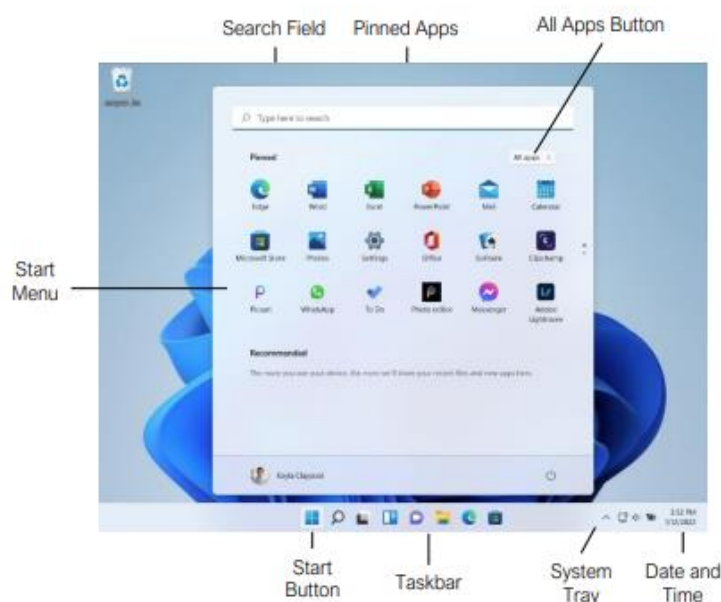
Windows 11

Quick Reference Guide



Free Quick References
Visit ref.customguide.com

Windows Desktop and Start Menu



Keyboard Shortcuts

General

Open the Start Menu	Win
Copy a file or folder	Ctrl + C
Cut a file or folder	Ctrl + X
Paste a file or folder	Ctrl + V
Quick Settings Menu	Win + A
Task view	Win + Tab
Close an app	Alt + F4
Lock computer	Win + L
Print	Ctrl + P
Open File Explorer	Win + E
Open the Run dialog box	Win + R
Open the Task Manager	Ctrl + Shift + Esc
Capture screenshot	Win + PrtScn
Open Search	Win + S
Open Narrator	Win + Ctrl + Enter

Settings Shortcuts

System settings	Win + I
Accessibility Settings	Win + U
Voice Typing	Win + H
Cast pane	Win + K
Display options for second screen	Win + P
Quick Link menu	Win + X

Desktop Shortcuts

Show/hide desktop	Win + D
Maximize window	Win + ↑
Minimize/Restore window	Win + ↓
Minimize all windows	Win + M
Snap window to left	Win + ←
Snap window to right	Win + →
Snap Layouts Menu	Win + Z
View open apps	Ctrl + Alt + Tab
Switch between apps	Alt + Tab
New desktop	Win + Ctrl + D
Switch desktops	Win + Ctrl + ← / →
Close active desktop	Win + Ctrl + F4
Peek at the desktop	Win + ,
Minimize all but the active window	Win + Home
Refresh active window	F5

Start Menu

Open the Start Menu: Click the **Start** button on the taskbar; or, press the **Win** key.

View All Apps: Click the **All Apps** button in the Start menu.

Pin an App to the Start Menu: Right-click an app in the All Apps list and select **Pin to Start**.

Pin an App to the Taskbar: Right-click an app in the All Apps list and select **Pin to Taskbar**.

Unpin an App from the Start Menu: Right-click an app in the Pinned group and select **Unpin from Start**.

Lock Your Computer: Click your **User Icon** button and select **Lock**.

Sign Out of Windows: Click your **User Icon** button and select **Sign Out**.

Switch Users: Click your **User Icon** button and select another user.

Put Your PC to Sleep: Click the **Power** button and select **Sleep**.

Shut Down or Restart Your PC: Click the **Power** button and select either **Shut down** or **Restart**.

Apps

Launch an App: Click the app's icon in the Pinned group in the Start menu; or, click the All Apps button in the Start menu, scroll through the list of apps, and select the app you want to open.

Search for an App: Click the **Search** button on the taskbar and type the name of the app you want to open.

Jump to an Open App: Click the **Task View** button on the taskbar and select an open app; or, press **Win + Tab**.

Note: You can also right-click an app in Task view to see additional options for viewing and closing the app.

Install an App: Click the **Microsoft Store** icon on the taskbar. Browse or search for the app you want and click it. Click **Get** to install a free app or **Buy** to install a paid app.

Update an App: Click the **Microsoft Store** icon on the taskbar and click the **Library** tab in the bottom-left corner of the window. Click the **Get updates** button at the top of the window.

Uninstall an App: Right-click an app's icon in the Pinned group in the Start menu or in the All Apps list, then select **Uninstall**.

The Fundamentals	Folders and Files	Maintain Your Computer
<p>View the Notification Center: Click the Date and Time on the right end of the taskbar. Notifications are grouped by the app that triggered them.</p> <ul style="list-style-type: none"> Click a notification to open it in the associated app. Click a notification's X Clear button to clear the notification. Click an app's X Clear button to clear all that app's notifications. Click the Clear All button to clear all notifications at once. <p>View the Quick Settings Menu: Click the Network, Volume, and Battery icons in the system tray.</p> <ul style="list-style-type: none"> Click a feature's button to toggle that feature on or off. Click and drag the Brightness slider to adjust screen brightness. Click and drag the Volume slider to adjust system audio volume. <p>Connect to a Wireless Network: Click the Network, Volume, and Battery icons in the system tray to open the Quick Settings menu, click the > Manage Wi-Fi Connections button (next to the Wi-Fi toggle button), select a network from the list, click Connect, enter the network's password, then click Next.</p> <p>Add a Virtual Desktop: Click the Task View button on the taskbar, then click the New Desktop button.</p> <p>Switch Between Virtual Desktops: Click the Task View button on the taskbar, then select another virtual desktop from the row of desktops along the bottom of the screen; or, press Win + Ctrl + ← or → to cycle through virtual desktops.</p> <p>Rename a Virtual Desktop: Click the Task View button on the taskbar, right-click a desktop thumbnail, select Rename, enter a new name, then press Enter.</p>	<p>Delete Files or Folders: Select the file or folder you want to rename in File Explorer and click the Delete button on the toolbar.</p> <p>Search in a Folder: Click in the Search field in the upper-right corner of the File Explorer window. Type a search term, then press Enter.</p> <p>Sort Icons: Click the Sort button on the toolbar, then select a sorting method (name, type, date modified, etc.). Click the Sort button again and select a sort order (ascending or descending).</p> <p>File Explorer Views: Click the View button on the toolbar. Use the options here to change how your files are viewed—as a grid of icons, simple or detailed lists, or tiles that display a file's contents.</p> <p>Compress Files or Folders: Select the files or folders you want to compress, then click the See More button on the toolbar. Select Compress to ZIP file, type a name for the compressed folder, then press Enter.</p> <p>Create a Shortcut: Right-click the file or folder you want to create a shortcut to, select Show More Options, then select Create Shortcut. Move the shortcut to the desktop, or another folder.</p> <p>Restore a Deleted File or Folder: Double-click the Recycle Bin icon on the desktop. Select the file(s) or folder(s) you want to restore, then click the Restore the Selected Items button on the toolbar.</p> <p>Restore All Deleted Files and Folders: Double-click the Recycle Bin icon on the desktop, then click the Restore All Items button on the toolbar.</p> <p>Empty the Recycle Bin: Double-click the Recycle Bin icon on the desktop and click the Empty Recycle Bin button on the toolbar; or, right-click the Recycle Bin icon and select Empty Recycle Bin.</p> <p>Connect to a Network Computer: Click the Network category in the File Explorer Navigation Pane to expand it, then double-click the computer you want to connect to. Enter a user name and password for a user on that computer, then click OK.</p>	<p>Pair a Bluetooth Device: Click the Start button and open the Settings app. Click Bluetooth & Devices, click the Add Device button, click Bluetooth, select a device, then click Done.</p> <p>Connect a Paired Bluetooth Device: Click the Start button and open the Settings app. Click Bluetooth & Devices, click the More Options button for a paired device, then select Connect.</p> <p>Disconnect a Paired Bluetooth Device: Click the Start button and open the Settings app. Click Bluetooth & Devices, click the More Options button for a connected device, then select Disconnect. You can also select Remove Device, then click Yes to unpair the device.</p> <p>Check for Windows Updates: Click the Start button and open the Settings app. Click Windows Update and then click the Check for updates button.</p> <p>Open the Task Manager: Right-click the Start button and select Task Manager; or, press Ctrl + Shift + Esc. If a task is no longer responding, select it and click End task.</p> <p>View Power and Battery Settings: Click the Network, Volume, and Battery icons in the system tray to open the Quick Settings menu, then click the Battery icon. Adjust the time needed for your display and computer to sleep, adjust power modes, and configure Battery Saver mode here.</p> <p>Adjust App Privacy Permissions: Click the Start button, open the Settings app, and click Privacy & Security. Click a specific permission category (location, camera, microphone, etc.) to choose which apps can and cannot access that data.</p> <p>Keep Windows Secure: Click Show Hidden Icons in the system tray (if necessary), then click the Windows Security icon; or, in the Settings app, click Privacy & Security, click Windows Security, then click the Open Windows Security button.</p>
<p>Open File Explorer: Click the File Explorer icon on the taskbar. Double-click a file or folder to open it.</p> <p>Move or Copy Files and Folders: Select the file or folder you want to move, then click the Cut button (to move) or the Copy button (to copy) on the toolbar. Navigate to the folder you want to move or copy the file or folder to, then click the Paste button.</p> <p>Rename Files and Folders: Select the file or folder you want to rename in File Explorer and click the Rename button on the toolbar. Type a new name for the file or folder, then press Enter.</p>	<p>Personalize Windows</p> <p>Change the Desktop Background: Click the Start button and open the Settings app. Click Personalization, then click Background. Use the options here to select a new background color or image.</p> <p>Customize the Lock Screen: Click the Start button and open the Settings app. Click Personalization and then click Lock Screen. Use the options here to select a new background image and status information.</p>	<p>Some of the categories available that will help ensure Windows is secure include:</p> <ul style="list-style-type: none"> Virus & threat protection checks your computer for viruses and other malicious files. Firewall & network protection configures network firewalls for both private and public networks to keep your computer safe from network attacks. App & browser control configures warnings for suspicious files, applications, and websites that you download and visit. Device performance & health keeps track of system, software, and driver updates, while monitoring storage space and battery life.