

Computer Basics

Getting to Know Computers



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What is a computer?

A **computer** is an electronic device that manipulates information, or data. It has the ability to **store**, **retrieve**, and **process** data. You can use a computer to type documents, send email, and browse the Web. You can also use it to handle spreadsheets, accounting, database management, presentations, games, and more.

Watch the video to learn about different types of computers.

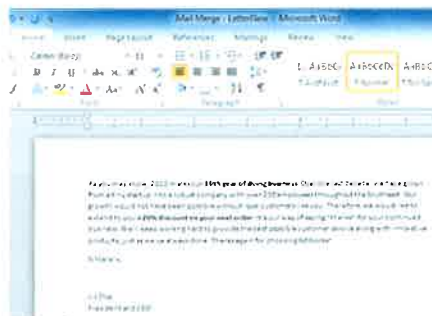


Computers simplified

For beginner computer users, the computer aisles at an electronics store can be quite a mystery, not to mention overwhelming. However, computers really aren't that mysterious. All types of computers consist of two basic parts:

Hardware is any part of your computer that has a **physical structure**, such as the computer monitor or keyboard.

Software is any **set of instructions** that tells the hardware what to do. It is what guides the hardware and tells it how to accomplish each task. Some examples of software include web browsers, games, and word processors such as Microsoft Word.



Anything you buy for your computer can be classified as either hardware or software. Once you learn more about these items, computers are actually very straightforward.

The first electronic computer, the Electronic Numerical Integrator and Computer (ENIAC), was developed in 1946. It took up 1,800 square feet and weighed 30 tons.

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What are the different types of computers?

When most people hear the word "computer," they think of a **personal computer** such as a **desktop** or **laptop** computer. However, computers come in many shapes and sizes, and they perform many different functions in our daily lives. When you withdraw cash from an ATM, scan groceries at the store, or use a calculator, you're using a type of computer.

Desktop computers

Many people use **desktop computers** at work, home, school, or the library. They can be small, medium, or large in style, and they usually sit on a desk. Once you

add a monitor, mouse, and keyboard, you have what is typically known as a **desktop computer**.

Most desktop computers are **easy to upgrade** and **expand** or add new parts. Another benefit of desktop computers is the **cost**. If you compare a **desktop** and a **laptop** with the same features, you will most likely find that the desktop computer is priced lower.



Some desktop computers have a built-in monitor to save space. These are often called all-in-one desktop computers.

Laptop computers

The second type of computer you may be familiar with is a **laptop computer**, or a laptop. Laptops are battery- or AC-powered personal computers that are **more portable** than desktop computers, allowing you to use them almost anywhere.

Because a laptop is smaller than a desktop, it's more difficult to access its internal components. This means you may not be able to upgrade them as easily as a desktop. However, it's usually possible to add more **RAM** or a larger **hard drive**.



A **laptop** computer is sometimes called a **notebook computer** because of its size.

Servers



A **server** is a computer that "serves up" information to other computers on a network. Many businesses have **file servers** that employees can use to store and share files. A server can look like a regular desktop computer, or it can be much larger.

Servers also play an important role in making the Internet work: They are where **webpages** are stored. When you use your browser to click a link, a **web server** delivers the page you requested.

Other types of computers

Today, there are many everyday devices that are basically **specialized computers**, even though we don't always think of them as computers. Here are a few common examples:

- **Tablet computers:** These use a **touch-sensitive screen** for typing and navigation. Because they don't require a keyboard or mouse, tablet computers are even more portable than laptops. The **iPad** is an example of a tablet computer.
- **Mobile phones:** Many mobile phones can do a lot of things computers can do, such as browsing the Internet and playing games. These phones are often called **smartphones**.

- **Game consoles:** A **game console** is a specialized kind of computer that is used for playing **video games**. Although they are not as fully featured as desktop computers, many newer consoles, such as the **Nintendo Wii**, allow you to perform nongaming tasks like browsing the Web.
- **TVs:** Many TVs now include **applications** (or **apps**) that let you access various types of online content. For example, you can view your **Facebook news feed** or watch streaming movies on **Netflix**.



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PCs and Macs

Personal computers come in two main styles: **PC** and **Mac**. Both styles are fully functional, but they do have a different look and feel, and many people prefer one or the other.



PC: This type of computer began with the original **IBM PC** that was introduced in 1981. Other companies began to create similar computers, which were called **IBM PC Compatible** (often shortened to **PC**). Today, this is the most common type of personal computer, and it typically includes the **Microsoft Windows** operating system.

Mac: The **Macintosh** computer was introduced in 1984, and it was the first widely sold personal computer with a Graphical User Interface, or **GUI** (pronounced goeey). All Macs are made by one company, **Apple Inc.**, and they almost always use the **Mac OS X** operating system.

Although **PC** can refer to an **IBM PC Compatible**, the term can also be used to refer to any **personal computer**, including Macs.

About this tutorial

In this tutorial, we'll mostly be focusing on **PCs** and the **Windows** operating system. If you're using a **Mac**, you may notice some differences with the way your computer works. However, much of the information in this tutorial will still apply, no matter which type of computer you're using.

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Challenge!

- Think about the **activities you perform** or want to perform using a computer (email, online shopping, etc.).
- Think about all of the computers that are necessary for you to complete your **day-to-day activities**:
 - Is it a computer that controls stoplights so you can drive to work?
 - How did the cashier scan and calculate your grocery items?
 - Does the coffee store you visit use a computer to order its inventory?
 - Is the weather map on television computer-generated?

Computer Basics

Understanding Operating Systems



Page 1

What is an operating system?

An **operating system** is the **most important software** that runs on a computer. It manages the computer's **memory, processes**, and all of its **software and hardware**. It also allows you to **communicate** with the computer without knowing how to speak the computer's "language." **Without an operating system, a computer is useless.**

Watch the video to learn about operating systems.



The operating system's job

You've probably heard the phrase **boot your computer**, but do you know what that means? **Booting** is the process that occurs when you press the power button to turn your computer on. During this process (which may take a minute or two), the computer does several things:

- It **runs tests** to make sure everything is working correctly.
- It **checks for new hardware**.
- It then **starts up the operating system**.

In the image below, you can see the start-up screen that appears when you turn on a Windows 7 computer.



Once the operating system has started up, it **manages all of the software and hardware on the computer**. Most of the time, there are many different programs running at the same time, and they all need to access your computer's **central processing unit (CPU), memory, and storage**. The operating system coordinates all of this to make sure each program gets what it needs. Without the operating system, the software wouldn't even be able to talk to the hardware, and the computer would be useless. In the image below, you can see how Windows 7 appears after starting up.



Types of operating systems

Operating systems usually come **preloaded** on any computer you buy. Most people use the operating system that comes with their computer, but it is possible to upgrade or even change operating systems.

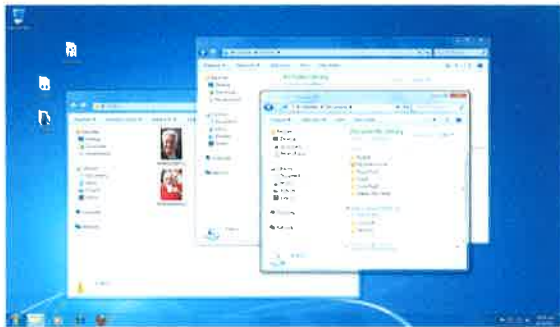
The three most common operating systems for personal computers are **Microsoft Windows**, **Mac OS X**, and **Linux**.



Modern operating systems use a **Graphical User Interface**, or **GUI** (pronounced "gooey"). A GUI lets you use your mouse to click on **icons**, **buttons**, and **menus**, and everything is clearly displayed on the screen using a combination of **graphics** and **text**.

Each operating system's GUI has a different look and feel, so if you switch to a different operating system it may seem unfamiliar at first. However, modern operating systems are designed to be **easy to use**, and most of the basic principles are the same.

In the images below, you can see the Windows and Mac OS X GUIs.

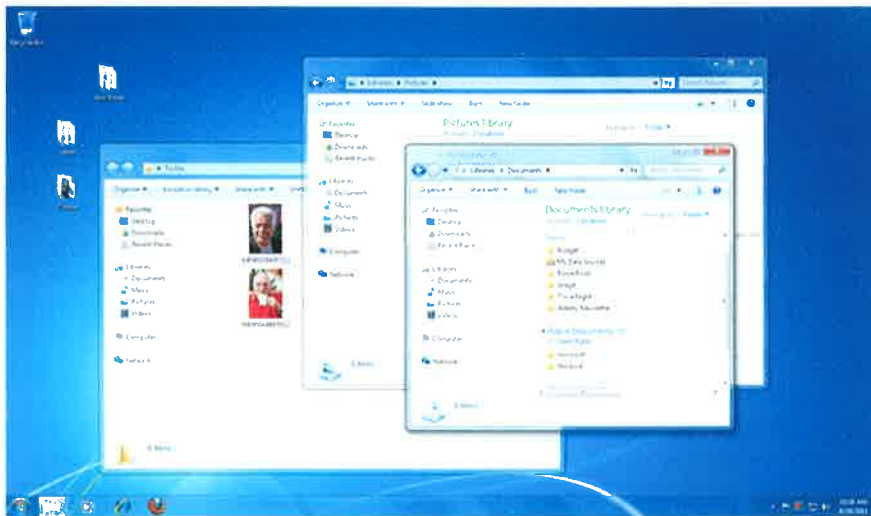


Before GUIs, computers had a **command-line interface**, which meant the user had to type every single command, and the computer would only display text.

Microsoft Windows

Microsoft created the **Windows** operating system in the mid-1980s. Over the years, there have been many different versions of Windows, but the most recent ones are **Windows 8** (released in 2012), **Windows 7** (2009), and **Windows Vista** (2007). Windows comes **preloaded** on most new PCs, which helps to make it the **most popular operating system** in the world.

If you're buying a new computer or upgrading to a newer version of Windows, you can choose from several different **editions** of Windows, such as **Home Premium**, **Professional**, and **Ultimate**. You may need to do some research to decide which edition is right for you.



Visit Microsoft's [Windows page](#) to learn more about this operating system.

Check out our tutorials on [Windows 8](#), [Windows 7](#), and [Windows XP](#) for more information.

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Apple Mac OS X

Mac OS is a line of operating systems created by Apple Inc. It comes preloaded on all new Macintosh computers, or **Macs**. All of the recent versions are known as **OS X** (pronounced O-S Ten), and the specific versions include **Yosemite** (released in 2014), **Mavericks** (2013), **Mountain Lion** (2012), **Lion** (2011), and **Snow Leopard** (2009). Apple also offers a version called **Mac OS X Server**, which is designed to be run on servers.

According to [StatCounter Global Stats](#), Mac OS X users account for **7.5%** of the operating systems market as of January 2013—much lower than the percentage of Windows users (more than **90%**). One reason for this is that Apple computers tend to be more expensive. However, many people prefer the look and feel of Mac OS X.



Check out our tutorials on [Mac OS X Mavericks](#), [Mountain Lion](#), and [Lion](#) for more information.

Linux

Linux (pronounced LINN-ux) is a family of **open-source** operating systems, which means they can be modified and distributed by anyone around the world. This is different from **proprietary software** like Windows, which can only be modified by the company that owns it (Microsoft). The advantages of Linux are that it is **free**, and there are many different **distributions** (or versions) you can choose from. Each distribution has a different look and feel, and the most popular ones include **Ubuntu**, **Mint**, and **Fedora**.

Linux is named after **Linus Torvalds**, who created the **Linux kernel** in 1991. The **kernel** is the computer code that is the central part of an operating system.

According to [StatCounter Global Stats](#), Linux users account for less than **1%** of the operating systems market as of January 2013. However, most **servers** run Linux because it's relatively easy to customize.



To learn more about different distributions of Linux, visit the [Ubuntu](#), [Mint](#), and [Fedora](#) websites.

Operating systems for mobile devices

The operating systems we've been talking about were designed to run on **desktop** or **laptop** computers. **Mobile devices** such as phones, tablet computers, and mp3 players are different from desktop and laptop computers, so they run operating systems that are designed specifically for mobile devices. Examples of mobile operating systems include **Apple iOS**, **Windows Phone**, and **Google Android**.

Operating systems for mobile devices generally aren't as **fully featured** as those made for desktop or laptop computers, and they aren't able to run all of the same software. However, you can still do a lot of things with them, like watch movies, browse the Web, manage your calendar, and play games.



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Challenge!

- What is an **operating system**? Is it software?
- Do you know which **operating system** your computer uses? If not, find out.
- Visit the [Microsoft](#) and [Apple](#) websites to learn more about each operating system.
- Search the Internet for articles that **compare** Windows and Mac OS X.
- Visit the [Ubuntu](#), [Mint](#), and [Fedora](#) websites to learn more about each Linux distribution.
- If you have a **PC** and currently use an older version of Windows, such as Windows 7, search for articles comparing **Windows 8.1** with **Windows 7**. You may want to read our lesson on [Upgrading to Windows 8.1](#) to help you decide if you should upgrade.

Computer Basics

Understanding Applications



Page 1

What is an application?

You may have heard people talking about using an **application**, or an **app**. But what exactly does that mean? An **app** is a type of software that allows you to **perform specific tasks**. Applications for desktop or laptop computers are sometimes called **desktop applications**, and those for mobile devices are called **mobile apps**. When you open an application, it runs inside the **operating system** until you close it. Much of the time, you will have more than one application open at the same time, and this is known as **multi-tasking**.



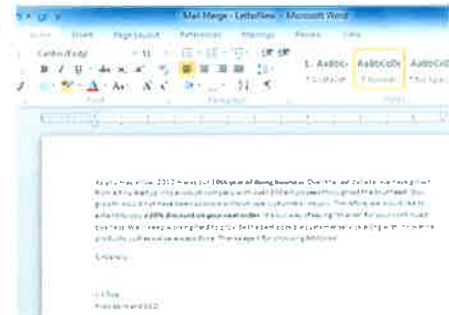
Watch the video to learn about how applications are used.

App is a common term for an **application**, especially for **simple applications** that can be downloaded **cheaply** or even **for free**. Many apps are also available for **mobile devices** and even some **TVs**.

Types of desktop applications

There are countless desktop applications out there, and they fall into many different categories. Some are more **full-featured** (like **Microsoft Word**), while others may only do **one or two things** (like **gadgets**). Below are just a few types of applications you might use:

Word processors: A word processor allows you to write a letter, design a flyer, and create many other kinds of documents. The most well-known word processor is **Microsoft Word**.



Personal finance: Personal finance software, such as **Quicken**, allows you to keep track of your income and expenses, create a budget, and more. Most personal finance programs can automatically download information from your bank so you don't have to manually add your transactions.

Web browsers: A **web browser** is the tool you use to access the Web. Most computers come with a web browser **pre-installed**, but you can also download a different one if you prefer. Examples of browsers include **Internet Explorer**, **Firefox**, **Google Chrome**, and **Safari**.

Games: There are many different games you can play on your computer. They range from card games such as **Solitaire** to action games like **Halo 2**. Many action games require a lot of **computing power**, so they may not work unless you have a newer computer.

Media players: If you want to listen to **MP3s** or watch **movies** you've downloaded, you'll need to use a **media player**. **Windows Media Player** and **iTunes** are popular media players.



Gadgets: Sometimes called **widgets**, these are simple applications you can place on your desktop (or on the **Dashboard** if you're using a Mac). There are many different types of gadgets, and they include **calendars**, **calculators**, **maps**, and **news headlines**.

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Installing desktop applications

In order to work, an application usually has to be **installed** on your computer. Typically, installation is as simple as inserting the **installation disc** and following the instructions on the screen. For software **downloaded from the Internet**, you can usually **double-click** it after it is finished downloading and then follow the instructions on the screen. Many applications include a **readme** file (for example, **readme.txt**), which includes installation instructions and other information.

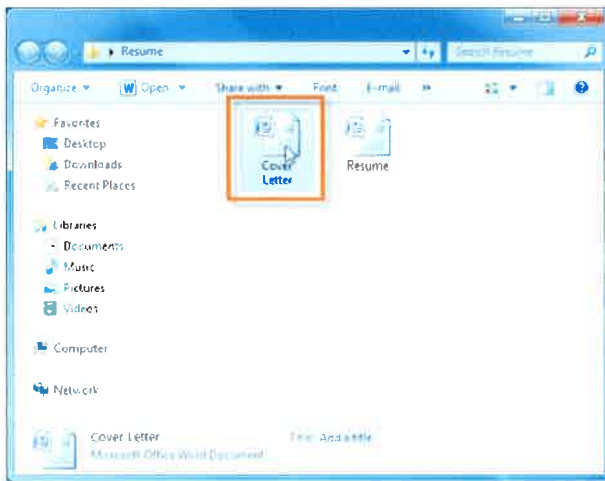
Use caution when downloading software, as it can contain **viruses** or other **malware**. If you have an **antivirus** program, you should scan the downloaded software before installing it. For more information, learn about [Protecting Your Computer from Internet Threats](#) in our Internet Safety tutorial.

Opening files with applications

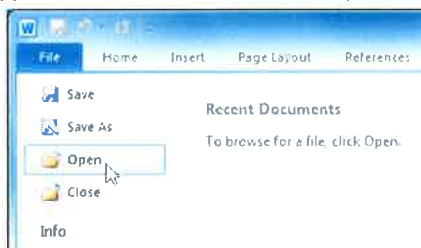
Many applications are designed to open one or more types of **files** (or **file formats**). For example, **Microsoft Word** can create and edit **Word documents**. If you don't have the right kind of application, you won't be able to open a file. For example, if you are taking our [Access 2010](#) tutorial, you will need to have Microsoft Access in order to open the **sample database**.

There are two main ways to open a file:

- **Find the file on your computer, and double-click it.** This will open the file using the **default program**.



- **Open the application, then use the application to open the file.** Once the application is open, you can go to the **File** menu at the top of the screen and select **Open**. This is useful because some files can be opened by several different applications, and this method allows you to **choose which application** to use.



If you're not sure what a file's **format** is, you can look at the **extension** at the end of the file name (for example **.docx**, **.txt**, or **.jpg**). On some computers, the extension may be **hidden**, and you may need to look at the **icon** to determine the file format.

Mobile apps

Desktop and laptop computers aren't the only devices that can run apps. You can also download apps for mobile devices like **smartphones** and **tablet computers**, which opens up a lot of new possibilities. Here are a few examples of mobile apps:

RedLaser: You can use RedLaser to **compare prices** while shopping. You simply scan an item's barcode using your phone's built-in camera, and the app searches the Web for the best price.

Word Lens: Word Lens is a **language translator** app. Like RedLaser, it uses your phone's camera to take a picture of a **sign, menu, or other text** you want to translate, and it displays the translation for you.

Foursquare: If you're going out to a restaurant, bar, or mall, you can "check in" with Foursquare to **find nearby friends** and also let your friends know where you are. Foursquare can also show you a list of nearby businesses (using your phone's built-in GPS), which can help you discover places you've never been to before.



Compared with traditional applications, mobile apps are **relatively cheap**. Many of them cost as little as **\$0.99**, and others are **free**. If your mobile device has an Internet connection, you can download apps directly onto the mobile device. Otherwise, you can download them to your computer and then transfer them over.

Some of the tutorials on GCFLearnFree.org are available as **mobile apps**. You can go to our [Mobile Apps page](#) to download them for free.

Challenge!

- What are some **examples of applications** you have on your computer? Did you have to **install** them, or did they come **pre-installed** on your computer?
- Try **double-clicking some files** on your computer. Which applications open up?
- What are some **examples of mobile apps**?
- If you have a mobile device, research some of the apps available for [Apple iOS](#) or [Android](#).

Computer Basics

Web Apps and the Cloud



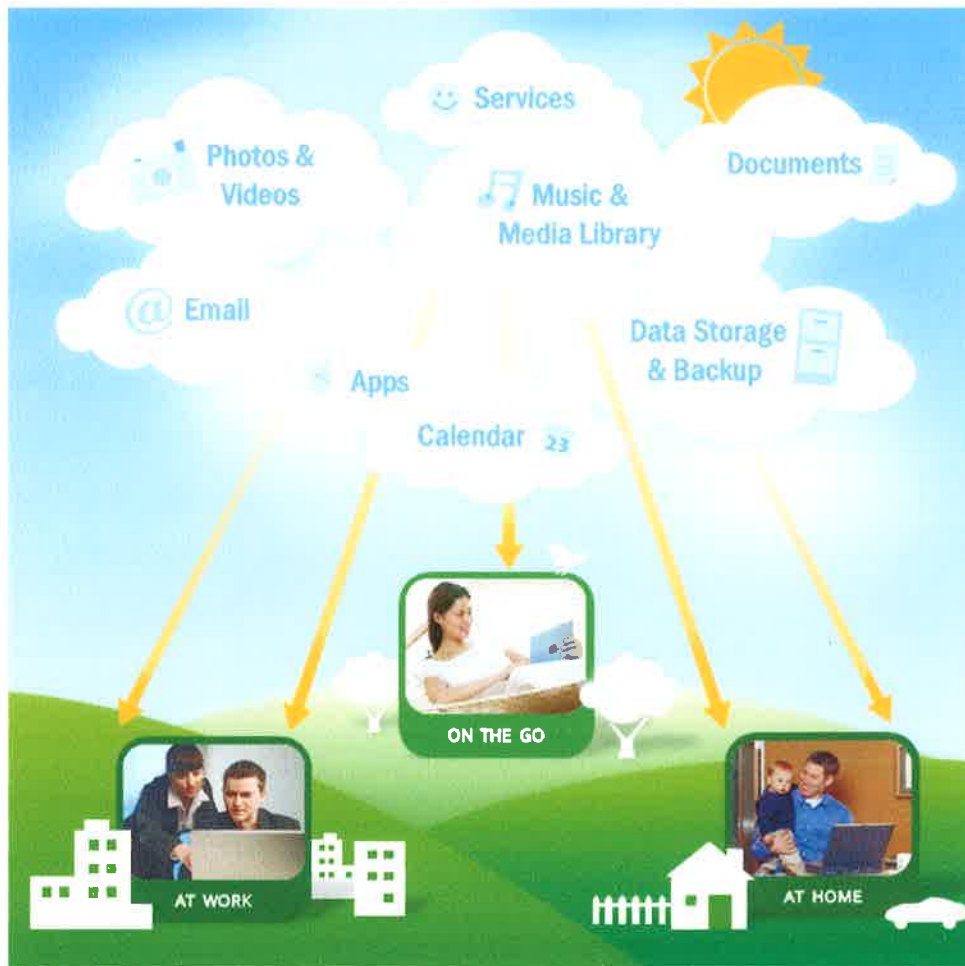
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What is the cloud?

You may have heard people using terms like **the cloud**, **cloud computing**, or **cloud storage**. But what exactly is the cloud? Basically, the cloud is **the Internet**—more specifically, it's all of the things you can **access remotely** over the Internet. When something is **in the cloud**, it means it's stored on **servers** on the Internet instead of on your computer. It lets you access your **calendar**, **email**, **files**, and **more** from any computer with an Internet connection.



Watch the video to learn about the cloud.



If you've ever used web-based email, then you've used the cloud—all of the emails in your inbox are stored on servers. However, there are many other services that use the cloud in different ways. Here are just a few examples:

- **Dropbox** is a cloud storage service that lets you easily store and share files with other people, and it lets you access your files from a mobile device as well.
- **Evernote** lets you type notes, clip webpages, take photos, and organize all of them from your computer or mobile device.
- **Mozy** and **Carbonite** can automatically back up your data in case your computer is lost, stolen, or damaged.

Why use the cloud?

There are many reasons to use the cloud, but the main reasons are **convenience** and **reliability**. In the past, if you wanted to **bring a file with you**, you would have to save it to a **USB flash drive**, **external hard drive**, or **CD-R disc**. Saving a file to the cloud ensures that you'll be able to access it with any computer that has an Internet connection, so you don't have any **physical media** to keep track of. The cloud also makes it much easier to **share** a file with coworkers or friends, making it possible to **collaborate** over the Web.

With the cloud, you're much less likely to **lose your data** because it is stored on servers. However, just like anything online, there is always a risk that someone may try to **gain access to your personal data**, so it's important to choose a **strong password** and pay attention to any **privacy settings** for the service you're using.



What is a web app?



Previously, we talked about how **desktop applications** allow you to perform tasks on your computer. However, there are also **web applications** (or **web apps**), which run **in the cloud** and do not need to be installed on your computer. These are sometimes called **cloud apps**.

Examples of web apps

Here are a few examples of web apps:

Online email services: Services like **Gmail** and **Yahoo! Mail** run within your browser and can do many of the same things email programs like **Microsoft Outlook** can do. After you sign up for an online email service, you can begin using it immediately—no installation is required. Instead of being stored on your computer, your emails are stored **in the cloud**.

Google Docs: Google Docs is an **office suite** that runs within your browser. Much like **Microsoft Office**, you can use it to create **documents**, **spreadsheets**, **presentations**, and more. Your documents are stored **in the cloud**, which makes it easy to **share** them with other people.

Facebook: Facebook lets you create an online **profile** and interact with your **friends**. Profiles and conversations are **constantly evolving**, so Facebook uses web app technologies throughout the site to **keep the information up-to-date**. There are also **games** and other **web apps** you can add to your Facebook profile.

Welcome Back Teachers Week

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Hello all,

I hope each of you have had a wonderful summer. As you know, students will return for the 2011-2012 school year on August 17th. This means that our official planning week will be **Monday, August 8th through Friday, August 12th**. As usual, attendance this week is required. We'll be going over safety procedures, new testing policies, staff changes, and more. Below is the tentative schedule. Please review this doc again before Monday. Right now we're ironing out some specifics, but I will update and add more details as soon as I have them.

Also, note that the RTI specialist and guidance counselor have arranged a meeting with each teacher to go over your class rosters and discuss any special accommodations. You should receive an email with your exact meeting time.

Feel free to email or call me about anything. As it has been the past month, the school building will be open to teachers and staff Monday-Friday from 8-6. I'll be in my office most days, so don't hesitate to come by.

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Challenge!

- Do you already use the **cloud** for things like web-based email?
- What are some **other ways** you could use the cloud?
- How is a **web app** different from a **desktop application**?