TEC 923
Introduction to Computers for Teachers

Fresno Pacific University

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Welcome

Thank you for taking this course which covers the basics of computers and computer use, both Macintosh and Windows. If you are reading this online, you may wish to use the physical copy of the workbook which was sent to you when I received notification of your enrollment.

Over the years (decades really) I have found having a physical workbook alongside your computer is the most efficient way of gathering and processing information. Having to bounce back and forth between screen and windows on a computer can be disconcerting at best.

Using Moodle to access the projects can be kept at a minimum if you prefer. About half of the required projects are turned in using Google Forms, accessed through either Moodle or the course website. The hands-on projects are saved to your computer (or the cloud) then uploaded to Moodle at the end of the course.

Please take time and review the entire workbook before 'jumping ahead' to the projects. Countless questions and periods of frustration can be avoided if you familiarize yourself with the introduction and lead-in instructions to each project.

As with my other courses, this one is built on a 'step-by-step' approach to learning. The process may seem long winded when you are doing it, but you will be able to transfer your new skills and experience to a wide array of situations, whether you are creating for yourself or passing on your knowledge to your students,

My hope is that you succeed and enjoy while learning. I appreciate, respect and rely on your candor in amy feedback you provide when completing the course evaluation. Your honesty would never effect your grade. On an ongoing basis I review and revise all my courses! Historically the changes made have been effected based on your recommendations. I really do listen!

TEC 923 Companion Website

An integral and essential component of your course materials is the TEC 923 companion website (URL below). Among other things, included on the website you will find links to Google Forms - the mechanism whereby you will be submitting several assignments. There are links to course readings / videos / help files and some of the relevant topics the course covers. There is also a .pdf copy of this workbook in the event you wish to work on the course while away on vacation and forget to pack the workbook!

www.intro.steveyoungfpu.net

Please refer to the course workbook for directions before starting an assignment.

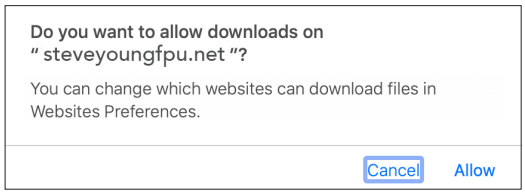
All links will open in a new browser tab.

The Basics	Videos	Forms	Software	Other Links
Download Course Files	Instructor Welcome	Pre-Course Survey	Word Processing*	Moodle
Reading Option 1	What is a Computer*	Parts of a Computer	Spreadsheet*	Course Workbook
Alternate Option 2	Parts of a Computer*	Inside Your Computer	Graphics	Course Syllabus
Alternate Option 3	Windows Basics*	Treasure Hunt	Internet*	ISTE Standards
	Macintosh Basics*	Internet	Email*	Fresno Pacific University
	Uploading to Moodle	Internet Site		Steve Young's Website
		Standards Survey		
		Post-Course Survey		
		Course Evaluation		

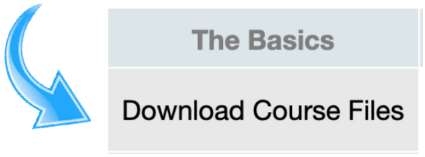
Downloading Companion Files

One link on the course website is titled '**Download Course Files**' which contains files and folders necessary to complete many of the course assignments. Clicking on the link will download a .zip file to your computer. The assumption is your computer is set up to accept downloads (some school districts may block this function). **Download this file before you begin the course.** If there is an issue with this, please let me know.

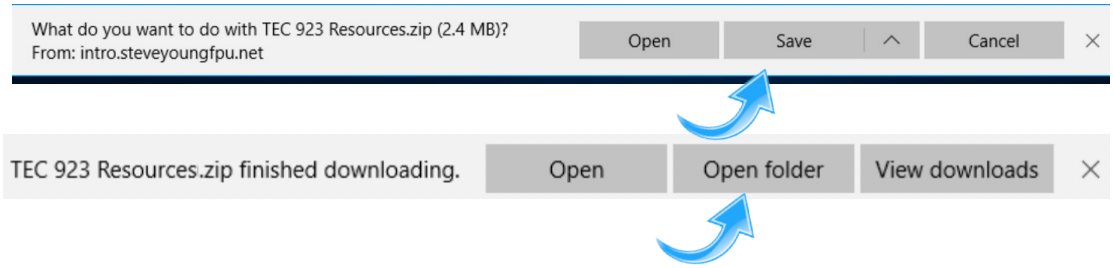
On a Macintosh, the download will appear in the default location, usually the Downloads folder. Double-clicking the .zip icon will create the course resources folder.



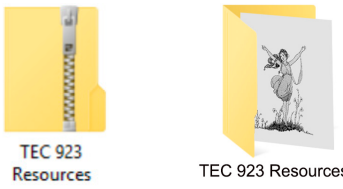
TEC 923 Resources.zip



On a Windows computer, a small window will appear when the link is clicked. Choose the 'Save' button and click.



A new set of buttons will appear. Click the 'Open Folder' button.



ZIP file icon

Folder icon

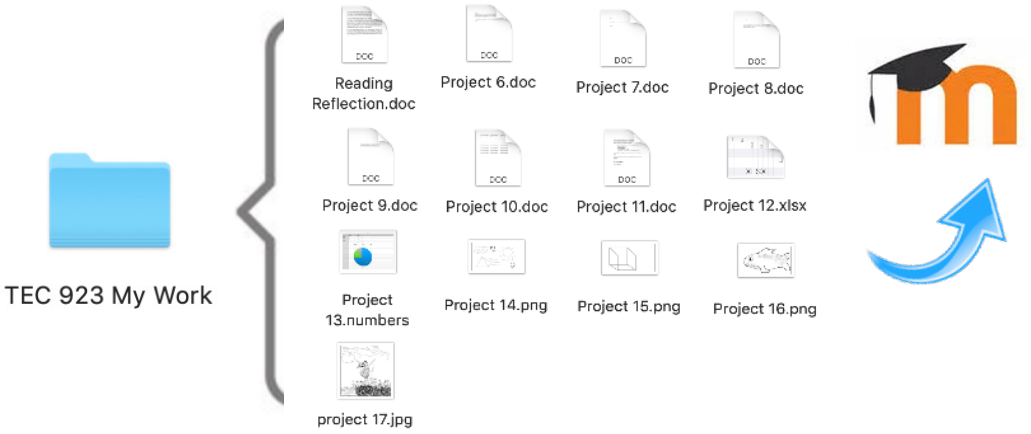
In the folder, a .zip file icon will appear. Double-clicking the icon will create the course resource folder. I would strongly suggest **dragging the new folder onto the desktop for easy access - otherwise you will need to locate and unzip the file every time you want to access it.**

Inside the TEC 923 folder are several folders. Double-clicking a folder will reveal its contents.

Submitting Coursework

There are two methods of submitting coursework for TEC 923: **Google Forms** and Moodle. The question / answer forms are done through Google Forms. The 'hands on' projects, where you create original documents using a word processor, spreadsheet and a computer graphics program, are saved to your computer's hard drive (or the cloud) then uploaded to Moodle at the end of the course. It is strongly suggested you keep all your self-created, hands-on projects in one master folder/ portfolio.

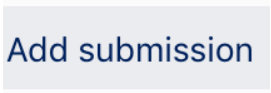
- Pre-Course Survey
- Parts of a Computer
- Inside Your Computer
- Treasure Hunt
- Internet
- Internet Site
- Standards Survey
- Post-Course Survey
- Course Evaluation



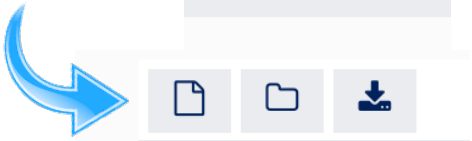
Below are the steps to upload your portfolio to Moodle:

Login to your Moodle account and access the TEC 923 *Introduction to Computers* course. Scroll to the bottom of Module 4 and click the "Portfolio Submission" link. This brings up an instruction page.

At the bottom of the resulting page, click the **Add submission** button.



Click the **file** icon



Click the **Upload a file** button

Click the **Choose File** button

A standard 'Open' window will appear, where you can navigate to your 'portfolio' folder and select all the files. Once you have selected the relevant files or folder, click the **Upload this file** button

Course Completion Checklist

- ☐ Project 1: Pre-course Teacher Survey #1
- ☐ Project 2: Reading Reflection
- ☐ Project 3: Parts of a Computer
- ☐ Project 4: Inside Your Computer
- ☐ Project 5: Treasure Hunt
- ☐ Project 6: Word Processing - Typing Skills
- ☐ Project 7: Word Processing - Working With Text
- ☐ Project 8: Word Processing - Fonts
- ☐ Project 9: Word Processing - Margins
- ☐ Project 10: Word Processing - Tabs
- ☐ Project 11: Word Processing - Letter To Parents
- ☐ Project 12: Simple Spreadsheet - The Basics
- ☐ Project 13: Simple Spreadsheet - Spreadsheet With Pie Chart
- ☐ Project 14: Graphics - Doodling in Paint
- ☐ Project 15: Graphics - Geometric Shapes
- ☐ Project 16: Graphics - Using Tools in Paint
- ☐ Project 17: Graphics - Import & Edit An Image
- ☐ Project 18: Internet Survey
- ☐ Project 19: Internet Site
- ☐ Project 20: E-mail
- ☐ Project 21: Standards Correlation Chart & Discussion
- ☐ Project 22: Post-course Teacher Survey #2
- ☐ Project 23: Course Evaluation
- ☐ Submit Request for Online Grading

Why Learn About Computers?

Evidence from various studies conducted over the past decade confirm that educational technologies can improve student achievement, so long as such tools are integrated thoughtfully into teaching and learning. When digital capabilities (such as engaging online environments, access to a wide array of resources, and interactivity) are incorporated meaningfully into instruction, students have new opportunities to learn and achieve. Below are some highlights of the meta-study.

• Reading: A recent meta-analysis of 84 rigorous studies compares the impact of various technologies (computer-managed learning, innovative technology applications, supplemental technology, and comprehensive models) on K12 reading achievement. Comprehensive models that integrate computer assisted instruction with other activities as a core reading program appear to produce the largest improvements in reading scores.

• Mathematics: A meta-analysis of 74 rigorous studies on K12 mathematics computer applications indicates that such programs produce small but positive effects on mathematics achievement. Specifically, programs that supplement traditional math instruction with additional computer assisted instruction at students' individualized assessed levels of need have the greatest effects on math achievement.

• Writing: A systematic review of studies in peer-reviewed journals between 2005 and 2010 finds that participation in one-to-one computer projects (wherein each student is provided a digital device) to improved student motivation and engagement in learning, slightly improved students' writing skills, proficiency with the use of digital tools, and scores on high-stakes tests. Another study indicates that students using laptops regularly outperform their peers in four areas of writing: content, organization, language/voice/style, and mechanics.

Keys to the Successful Implementation of Technology for Student Learning

1. Provide effective professional development for teachers on the instructional integration of technology
2. Embed the use of technology within the daily school schedule
3. Directly support the curriculum objectives being assessed through technology
4. Adjust for students' abilities and prior experiences, and provide feedback to the student and teacher about student performance or progress with the application
5. Provide opportunities for student collaboration
6. Provide opportunities for students to design and implement projects that extend the curricular content being assessed by a particular standardized test
7. Foster school environments where teachers, the school community, and school and district administrators support the use of technology

Source: International Society for Technology in Education (ISTE), 2013
Found at: https://www.arccta.org/sites/default/files/general_uploads/Research%20Brief%20Does%20Ed%20Tech%20Improve%20Student%20Learning.pdf

Project 1: Pre-Course Teacher Survey #1

To fill out and submit this form, **please go to the Pre-Course Survey link on the course website.** *I have copied the survey here merely for reference; you will* **submit your responses via the Course Website.** *A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice.*

What grade level and/or subject(s) do you currently teach?

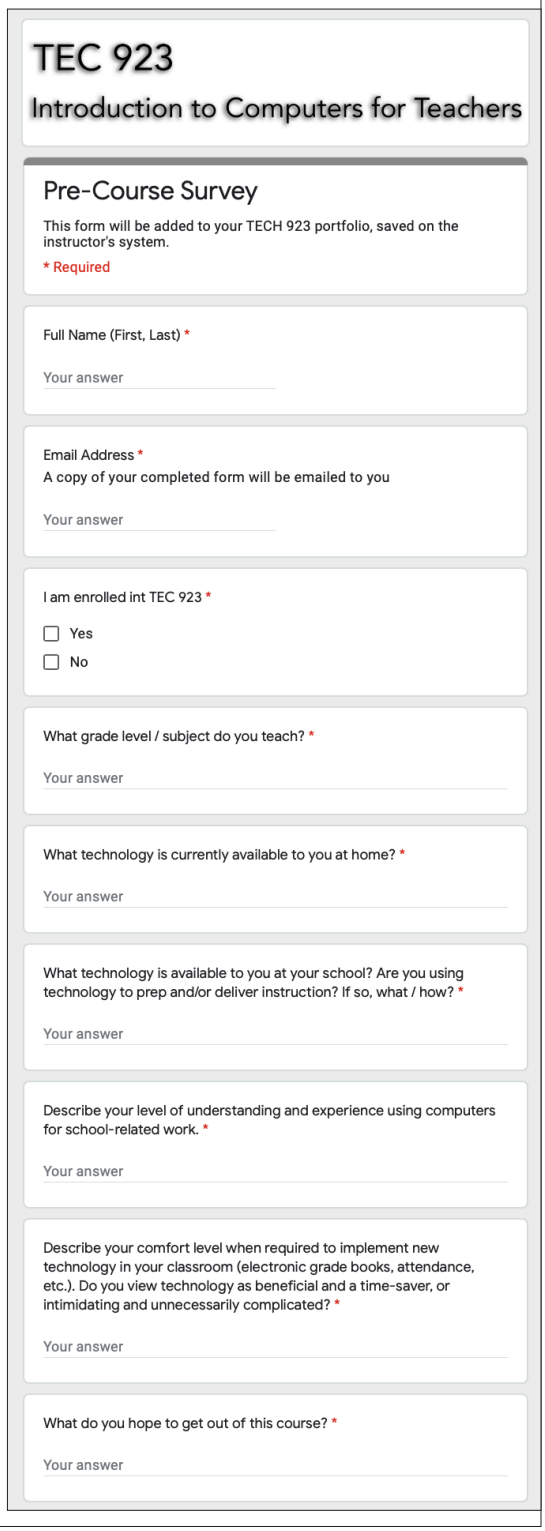
What technology is currently available to you at home?

What technology is available to you at your school? Are you using technology to prep and/or deliver instruction? If so, what/how?

Describe your level of understanding and experience using computers for school-related work.

Describe your comfort level when required to implement new technology in your classroom (electronic grade books, attendance, etc.). Do you view technology as beneficial and a time-saver, or intimidating and unnecessarily complicated?

What do you hope to get out of this course?



TEC 923

Introduction to Computers for Teachers

Pre-Course Survey

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

Yes

No

What grade level / subject do you teach? *

Your answer

What technology is currently available to you at home? *

Your answer

What technology is available to you at your school? Are you using technology to prep and/or deliver instruction? If so, what / how? *

Your answer

Describe your level of understanding and experience using computers for school-related work. *

Your answer

Describe your comfort level when required to implement new technology in your classroom (electronic grade books, attendance, etc.). Do you view technology as beneficial and a time-saver, or intimidating and unnecessarily complicated? *

Your answer

What do you hope to get out of this course? *

Your answer

Project 2: Reading Reflection

Go to the course website, ***www.intro.steveyoungfpu.net*** - left hand column, titled The Basics.

There you will find three readings; one in PDF format and two online articles. The PDF article is one I have been offering to students for years, as it is very well written. The downside is it is rather old, but I believe the basic thrust of the content still holds true today in many respects.

I have provided two alternative (online) readings; take a look at all three, chose one, then respond to the following questions below. Your responses should be word-processed then saved to your computer (or in the cloud). If you prefer, the course resources folder which you downloaded contains a PDF form on which you can type your answers.

Later in the course you will upload it, along with other assignments, to your Moodle course page.

1. Which article did you chose?

2. What are your general feelings concerning the article?

3. Cite a specific example or concept within the article you found particularly useful then explain your rationale.

4. Did any concept or real-world example from the article change your opinion or attitude toward using computers in the classroom?

Let's Get Started Learning About Your Computer!

In this section you will gain an understanding of:

- General computer terminology
- Basic components of a personal computer system

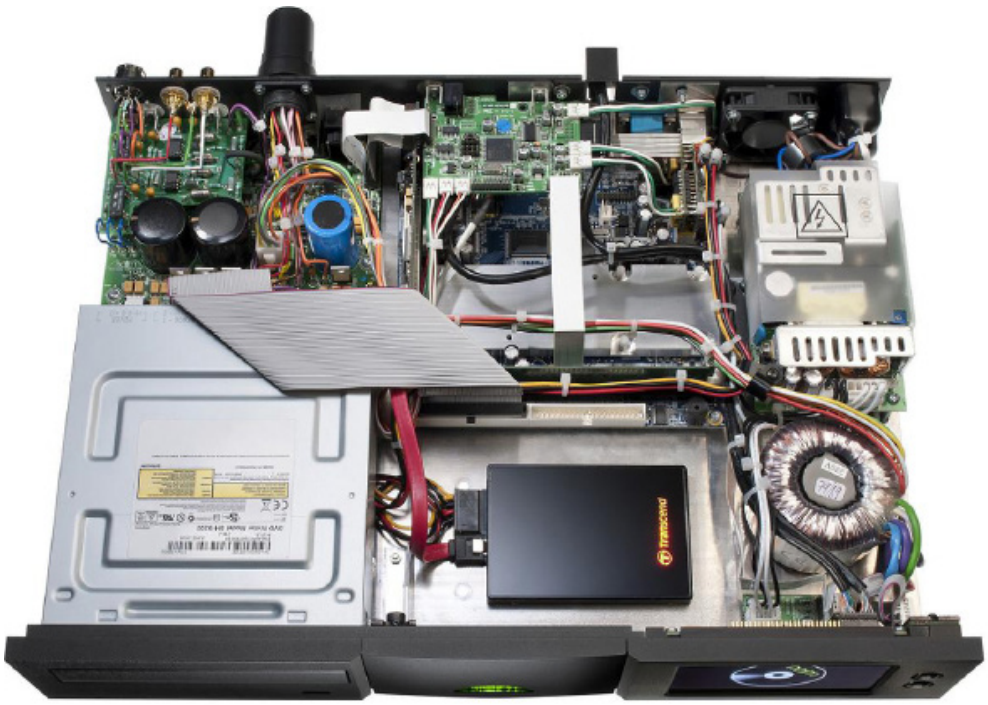
This section, like the others to follow, will illustrate and demonstrate on both the Macintosh and Windows **platforms**.

Macintosh

Windows

***IMPORTANT* - PLEASE NOTE:** Throughout the workbook you will see the icons to the left. The parallel text for each platform is indicated by the Apple for Macintosh and the Microsoft flag for Windows. If you are using one type of computer exclusively you may concentrate on just that system or learn about both. The choice is yours.

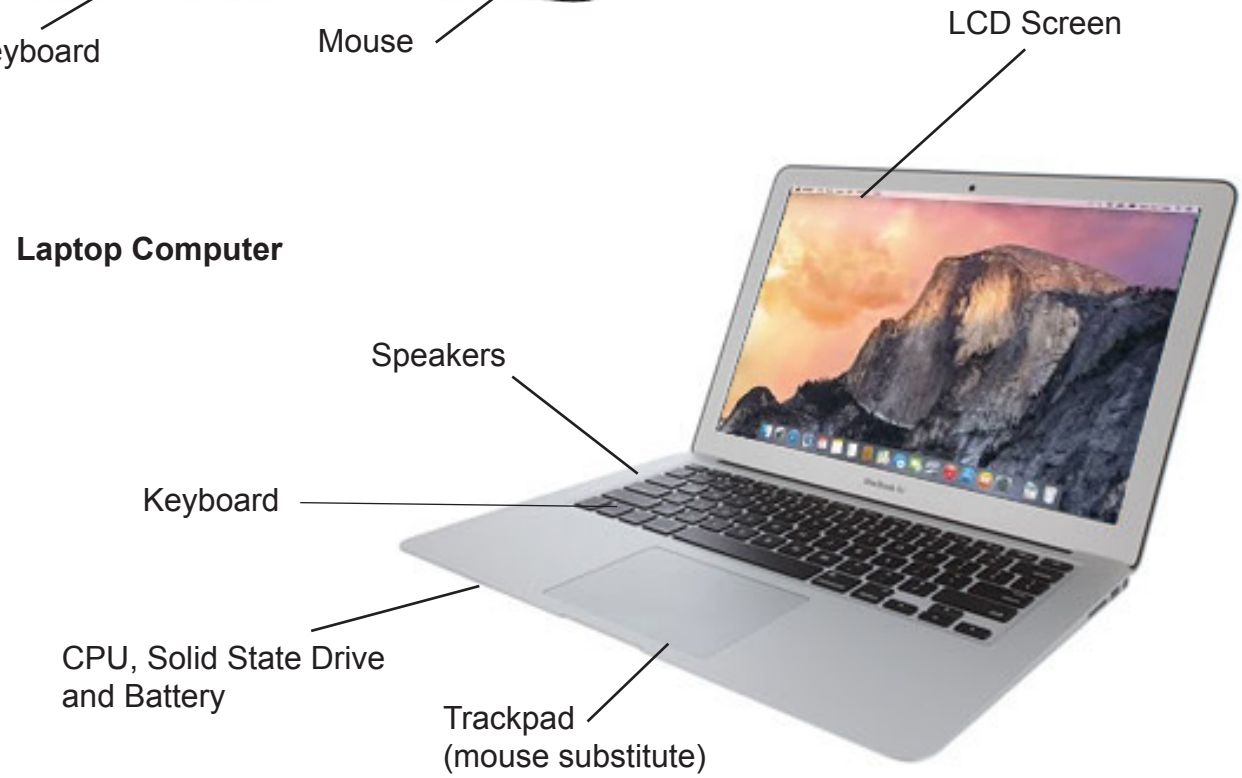
Illustrations in this section of the workbook are from a mixture of computers: Windows XP, Windows 7, Windows 8.1, Windows 10 and Macintosh OSX 10.6 through 10.11.



The Outside Parts

In order to understand how computers work, you must first acquaint yourself with the different parts, or devices. A computer consists of both **hardware** and **software** working together to help you accomplish tasks. Input devices, output devices, the processor or central processing unit (CPU), and memory make up what is known as the computer's hardware (the physical components of the computer system).

Desktop Computer



Laptop Computer

Central Processing Unit

All desktop computers have a CPU (Central Processing Unit) enclosure. This box houses the main circuitry and components of a computer. Memory, storage, a cooling fan and places to plug in the power cord, keyboard, mouse, printer, monitor and other accessories are contained inside the CPU box. There are several styles of enclosures, based on function and style. Some CPUs also have a DVD / CD-ROM drive built in but they are becoming obsolete.

The tower style computer typically sits under, on top, or next to a desk. The monitor and keyboard are separate.

All-in-One desktop computers contain the CPU, monitor and speakers all in one unit.

Laptop computers are also all-in-one computers with the addition of a built-in keyboard.

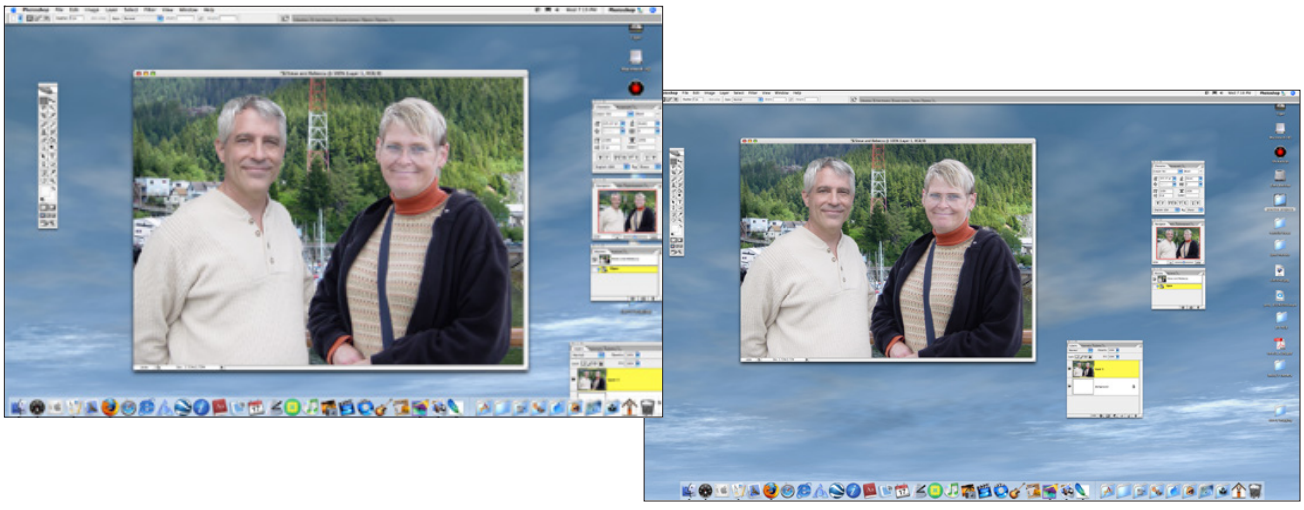
Monitors

The main output of a computer is visual and is displayed on the monitor. Early computers used a standard television set as the monitor, but the resolution of the screen limited it to large printing and simple graphics. Modern computer screens are crystal clear and have very stable pictures.

Liquid crystal displays (**LCD**) have always been used in laptop computers and have now replaced the older CRT monitors. LCDs are light, thin and take up virtually no desk space. There are several different technologies used in manufacturing flat screen displays, and offer varying degrees of picture quality. Typically they may range in size (measured diagonally) from 14” to over 30”.

Newer computers are capable of running two or more monitors at once.

Computers can display images on a monitor at different **resolutions**. This means that on any given size monitor, it is possible to display an image in different sizes. Below, the same screen is displayed at 920 X 1200 pixels (left) and 2560 x 1600 pixels (right). Note that more information is displayed on the right, but the images are smaller.



Storage Devices

Every computer must have a way of storing information, such as programs and documents. Hard drives, the most common storage device, use spinning magnetic platters which store data. Hard drives must be **formatted** at the factory. Formatting is like putting a road map on the hard drive; a way for the computer to know where to put the information on the hard drive, since it will be placed (**written**) and retrieved (**read**) from the hard drive randomly.

Hard drive sizes are measured in **gigabytes** (GB). The larger the number, the greater the storage capacity of the drive. Most computer hard drives already have some data stored on them: the computer's **operating system**. Other programs may be present, or will need to be loaded (written) on the hard drive from a disk or downloaded from the internet.

USB drives (AKA thumb/ flash drives) are small external storage devices that store up to 1 TB of data (512 GBs is more common though).

Think of a hard disk drive (**HDD**) like a cross between a home VCR (recording magnetically) and an old-fashioned record player (with a stylus reading information across a spinning disk).

A Solid State Drive (**SSD**) performs the same function as a Hard Drive, but with no moving parts, and much faster data transfers.

An optical drive can record and play data, music and movies. These are quickly becoming obsolete.

Cloud Storage has become a robust storage medium, whereby data is saved to and retrieved from an internet-based service.

Input Devices

There are many input devices you can use to get information into your computer. The two most common are the keyboard and the mouse, but remember - the most important input device on any computer is you!

You use the **keyboard** to type information into your computer or access commands. There are many different styles of computer keyboards, but they all provide the same basic functionality.

By clicking the buttons on a **mouse**, you tell the computer to take a specific action. In most computer programs which utilize a mouse, the way you click the buttons sends different signals to the computer.

For laptop computers, the **trackpad** performs the same function as a mouse.

Flatbed **Scanners**, video **cameras** and digital **document cameras** input pictures and video into the computer for storage, editing, or placement on the web. Microphones (either built-in or external) input music and speech for multimedia projects, speech-to-text programs, or to control the computer.

Output Devices

The main output device on your computer is the **monitor**. Monitors are also called screens or displays. There are many different types of monitors and the main differences between them are screen size and image quality.

Sounds require computer **speakers**, either built-in or external.

Most computers are able to output images (both still and moving) onto a television set or video projector for group viewing.

A printed copy of your information can be sent to a **printer**. Printers are either inkjet or laser, color or black-and-white. Some printers are designed for individual use, and some for high-volume network (multi-user) use.

Input

The basic layout of the keys on the computer keyboard evolved from an earlier office workhorse, the typewriter, first patented in 1867 by Christopher Latham Sholes, a Wisconsin newspaper editor and printer. The typewriter was successfully mass-marketed six years later by the fire-arms company Remington & Sons. That company went on to become Remington Rand which, in 1951, launched Univac - the first commercial mainframe computer in the United States.

Despite this distant kinship, however, the differences between computer keyboards and typewriters far outweigh their apparent similarities. The first distinction is that the keys on a computer keyboard, unlike those of a typewriter, have no intrinsic meaning.

The keys are marked with letters of the alphabet and numbers, but they can be assigned an infinite variety of other meanings depending on what is wanted by program designers, systems engineers, and even the individual user, who is also able to customize the keyboard. Thus, while depressing the letter "**q**" means "**q**" in a word processing context, it can just as easily mean "move the queen" in a chess program or "quit" in a math program.

In some other application it can be assigned a meaning that has no connection at all to the letter "q" in the alphabet. In addition to conventional typewriter keys, the keyboard also has **function keys** which can be assigned a variety of tasks to meet the demands of different software packages. There are also several single purpose keys on the keyboard. These include the **cursor** or **arrow keys**, which are used to move an on-screen marker called the cursor. The cursor's feedback helps the user interact with the computer by indicating the location of the next character to be entered.

While the keyboard is a fast, efficient tool for entering text, the mouse is often far quicker and more convenient when it comes to moving the cursor around the screen. The mouse works as an analog for the cursor. Moving the mouse along a flat surface moves the cursor in the same relative direction on the screen. As the user propels the mouse along, this action changes the cursor's horizontal and vertical screen coordinates. By checking these map references, the computer knows the position of the cursor.

The software being used generates on-screen icons and menus tailored to each program. With the cursor positioned on the desired command or object, the user clicks a button mounted on the mouse to send input into the computer. The mouse displays its advantage when it is used to point and click on **icons** and **pull down menus**. It really comes into its own in graphic applications, when it is used as a paintbrush or a stylus or to move graphics around the screen.

Mice come in two varieties, mechanical and optical. The more common mechanical mouse has several moving parts. The most conspicuous is a roller ball that is clearly visible underneath the device. The trackball is simply an upside down variant of the mouse. While a mouse must roam about a desktop or a pad to do its work, in a trackball, only the roller ball moves; the unit, itself, remains stationary.

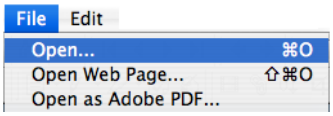
The Mouse

Input is the gateway from the outside world (you and all your knowledge) and the computer. Through input devices, you tell the computer what to do. There are two indispensable devices for this; the mouse and the keyboard. You use a mouse to translate your hand movements into movements of an on-screen pointer. By controlling the pointer with the mouse, you are able to input information and instructions by selecting, rather than typing. The following tasks can be done using a mouse:

• Move a cursor

• Select and change information

• Choose items from a menu



Glossary

Mouse: A small, hand-controlled input device that relays signals to the computer which moves a corresponding pointer on the monitor screen.

Icon: A small graphic or pictorial representation of an idea or action. Icons are used to save screen space and give the user labels of commands and options within a program (i.e. an icon such as  tells the user to “click here and I will print out your document").

Point: The act of moving the mouse cursor to an area (usually a word or Icon). The tip of the arrow is the ‘hot spot”, and must be touching (on top of) the word or icon to properly 'point' to that object (ie the cursor is on the number 3.)

Click: Pressing down, then releasing the mouse button (the left side button on a Windows mouse). On a Macintosh, there is only one button (with a right and left side); however the same functionality of a two or three button mouse is achieved by holding down the control key.

Double - Click: Pressing down, then quickly releasing the mouse button (the left side button on a Windows mouse) twice in rapid succession.

Right - Click: On a Windows computer, clicking (pressing down, then releasing) the right side mouse button. On a Macintosh, control-click performs similar actions.

Drag: Pressing down and holding down the mouse button (the left-side button on a Windows mouse) and moving the mouse (and the cursor) to a new physical location. The action is click - move - unclick.

Optical Mouse: Some mice use an optical sensor instead of a rolling mouse ball to sense movement. These mice are more accurate (and forgiving) than older mice.

You should spend some time getting comfortable with the mouse you will be using. Pick the mouse up and look at the bottom. The optical mouse has a tiny LED (light emitting diode) or laser which emits red light. That light is bounced off a surface (like a mouse pad or the surface of your desk) which is in turn sensed by the mouse to determine the position of the cursor. Think of it like an Etch-a-Sketch. Older mice use a mechanical roller ball and spinning disks to perform the same task.

Apple Magic Mouse

Windows Mouse

Turn the mouse back over and place on a flat, non-reflective surface (an optical mouse will not work on glass or shiny surfaces). The cable connecting the mouse to the computer should be pointed away from you. With your hand cupped over the top of the mouse, move the mouse over a flat surface. As you begin to move the mouse, look at the monitor. You will notice a small arrow (see picture below) moving around the screen as you move the mouse.

The Mouse Pointer or Cursor

NOTE: When selecting (clicking, holding and dragging), if you run out of flat surface before running out of computer screen, with the mouse still depressed, pick it up and place it back on the flat surface closer to the center, then continue moving the mouse. The pointer will remain stationary on the screen until the mouse ball comes in contact with the flat surface and begins moving again.

The Keyboard

The most common, and still the best way to get your thoughts into a computer, is through the keyboard. The keyboard is the same QWERTY keyboard typewriters use, invented in 1873.

Most schools introduce keyboarding as the first step in their technology-based learning program, as it is essential that typing skills be mastered before one can move on to applications such as word processing. In addition to letter keys, keyboards have several modifier keys, functions keys and hardware/software specific keys. Here is a glossary of some of the most common:

Glossary

Command Key: (Macintosh): Also called the Apple key, it is used to send menu commands to the computer.  The equivalent of the control key in Windows.

Control Key: (Windows): it is used to send menu commands to the computer  . The equivalent of the command key in Macintosh.

Option / ALT Key: (Windows and Mac): Allows access to special characters on the keyboard (i.e. pressing option and the letter v will produce a √). 

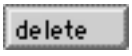
F (Function) Keys: 1 through 12 (Windows and some Macintosh): On Windows computers F-Keys provide shortcuts to system and program menu items (see next page).

Escape Key: (Windows and Mac): Typically tells the computer to “stop” or “go back” when running a program, especially one where several choices are presented. 

Shift Key: (Windows and Macintosh): Like a typewriter, allows for the typing of upper case letters and characters (such as those on the number keys). 

Return Key: (Windows and Macintosh): When typing text, enters a “hard return” forcing the cursor to the next line down. It can also be used to accept the default button in a dialog box On some computers, it is labeled CR (Carriage Return). 

Enter Key: With some programs, the Enter key performs the same function as the Return key; in other programs (such as spreadsheets), the enter key validates the input. 

Delete/Backspace Key: (Windows and Macintosh): This key un-types text, just like a typewriter. With most programs, it can be made to un-type letters to the left or to the right of the text cursor. 

System / Application Shortcuts

Shortcut	Macintosh	Windows
Open	⌘ +O	control +O
Close	⌘ +W	control +W
New	⌘ +N	control +N
Print	⌘ +P	control +P
Save	⌘ +S	control +S
Quit / Exit	⌘ +Q	ALT +F4

There are many keyboard shortcuts which are virtually the same on both Macintosh and Windows computers. These are the most common, and you should learn them. They allow your hands to stay on the keyboard rather than always reaching for the mouse. Note that, for the most part, they are mnemonic, with the first letter of what they do (i.e. print) as their designation (i.e. control-p).

Editing Shortcuts

Whether it is writing a letter or designing a web page, you should always take advantage of the power a computer has to offer. One way of doing this is to use editing commands to copy, paste and delete text or graphics. Almost all programs use these keyboard shortcuts.

Shortcut	Macintosh	Windows
Copy	⌘ +C	control +C
Paste	⌘ +V	control +V
Cut	⌘ +X	control +X
Undo	⌘ +Z	control +Z
Select All	⌘ +A	control +A

Macintosh Keyboard

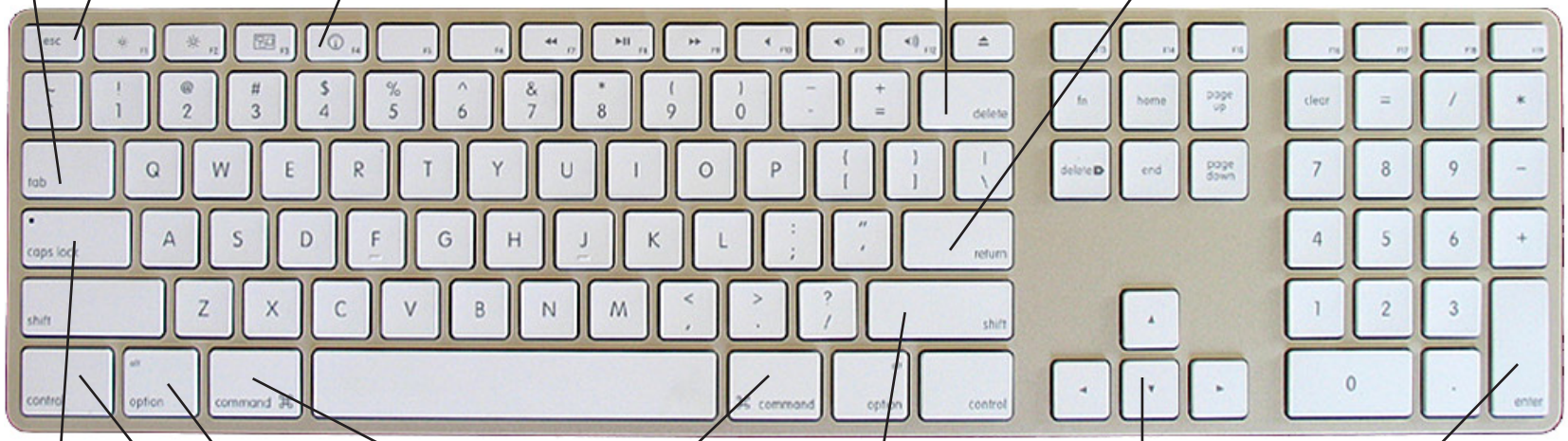
TAB
In a word processor, pressing the tab key moves the insertion point to the next tab position. The tab key also moves the cursor from one text field to the next in most programs.

ESCAPE
Lets you cancel an entry

FKeys
Are normally inactive unless programmed by the user. Newer Macs use some of these keys to adjust speaker volume and screen brightness.

BACKSPACE/DELETE
Pressing this key deletes the last letter you typed - or whatever text, picture or element is selected.

RETURN
This key inserts a hard return or paragraph character into text. In a dialog box, it is equivalent to the Enter key,



CONTROL
This key is used in some keyboard shortcuts.

COMMAND or APPLE
Using this key in addition to defined letter keys invokes a menu command (called a keyboard shortcut).

ARROW KEYS
These keys let you move the insertion point in text, move from cell to cell in a spreadsheet or reposition images.

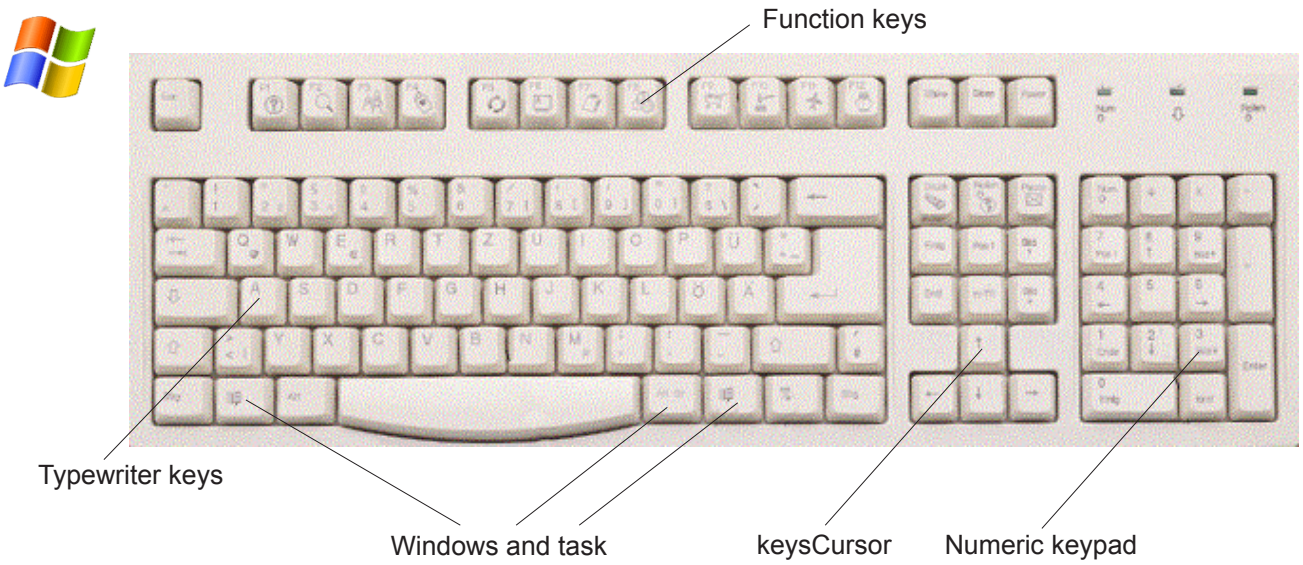
ENTER
This key lets you validate an entry in some programs. In other programs, it is a second Return key.

CAPS LOCK
Locks upper case letters (but not special characters on number keys).

OPTION
This key let you type special characters (é, ñ, ¿, etc.). It is also used in some keyboard shortcuts.

SHIFT
Changes lower case letters to upper case.

Windows Keyboard



There a four main parts to the Windows keyboard; the standard typewriter section, cursor keys, numeric keypad and the function keys. Some keyboards include other keys for turning on and off the computer, keys for web use, multimedia keys, and some with volume controls and short cut keys for all sorts of functions.

The function keys can be programmed by each piece of software you run. The only key in this group that is used only for ONE task is the Help key which is used for displaying the help files. This is programmed by Windows as a default - anytime you have a question on what you are doing, the Help key is a good place to start.

The numeric keypad has two defined operations which is toggled with the number lock key. There is usually a green light which indicates that the number lock is on or off. When the light is on, the keypad uses the upper symbols displayed on the keys.

Project 3: Parts of a Computer

To fill out and submit this form, please go to the Parts of a Computer Survey link on the course website (below is only a partial image of the assignment). A copy of your completed form should be e-mailed to you after you have submitted it.

TEC 923

Introduction to Computers for Teachers

Project 3: Parts of a Computer

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

- [ ] Yes
- [ ] No

Name of device: What is its purpose? *

Your answer

Name of device: What is its purpose? *

Your answer

Glossary of Computer Terms

Here are some common terms you should familiarize yourself with. They will help you better understand the workings of your computer and software and make communicating with others easier, given a common vocabulary.

Bit: Stands for "binary digit", which can have a value of 0 or 1; the smallest unit of information in digital computer systems.

Boot Up: To load an operating system into the computer's random access memory.

Byte: A group of 8 adjacent bits. Usually the amount of space required to store the binary value for one printed character. Abbreviation: b.

CD-ROM stands for "Compact Disc - 'Read Only' Memory". Read only means you can not write information back to them (change, alter or ad to).

Cloud Storage: the generic name for placing files onto remote internet - accessable servers. Popular cloud storage services include Dropbox, iCloud, Google Cloud and OneDrive.

CPU: "Central Processing Unit"; the main component in a computer where most calculations take place; the microprocessor.

Display: Another name for a computer monitor.

Dot pitch: the distance between the pixels on the monitor. The smaller the distance, the clearer the picture resolution.

DVD: stands for "Digital Versatile Disk" and is the successor of the CD-ROM and Video Tape. It is capable of holding video and/or computer data at a capacity of nearly 5 GB.

Format: To prepare a floppy disk or hard drive to hold data. An analogy would be to draw lines on a sheet of paper in preparation for writing.

Function Key: One of several special buttons on a computer keyboard which can be programmed to perform certain tasks, such as sending a document to a printer. Also called the **F-Key**

Gigabyte: A billion bytes. Abbreviation: GB.

GUI: Graphical User Interface. Means of communicating between computer and user by pointing via a mouse to move a pointer on the computer screen, select icons or menu items.

Hard Drive: Digital storage device containing one or more inflexible magnetic platters on which data can be recorded. Sealed in a case, it is not removable.

Hardware: The physical components of a computer system or network.

Inkjet Printer: A machine that prints text and/or images on to paper using microscopic blasts of ink from a liquid reservoir.

Input Device: Any device that generates input for the computer, such as a keyboard, mouse or scanner.

Kilobyte: A thousand bytes. Abbreviation: KB.

Laser Printer: A device for printing text and/or graphics, using a laser beam to fuse microscopic black powder onto paper

LCD: (Liquid Crystal Display) is a technology used in everything from digital wristwatches to flat screen computer monitors. It eliminates the picture tube, and there most of the size and weight of a CRT screen.

Megabyte: A measure of electronic memory. One MB equals 1,048,576 bytes.

Megahertz (MHz): Speed at which a computer runs. While a general indicator (the higher the number, the faster the computer) many other factors which factor into a computer's speed.

Memory: Electronic circuitry where a computer operating system can temporarily store programs and data that it is processing.

Microprocessor: The main 'brain' of the computer. This is the chip that reads the software and translates it into useful instructions.

Modem: A device that allows a computer to transmit information over telephone lines by converting between digital and analog forms of data.

Monitor: A video or computer display device. Also called a CRT (cathode-ray tube).

Mouse: Handheld device which allows user to move the screen cursor or pointer. Moving a mouse causes relative change in cursor location. Clicking selects an item or command.

Operating System: (OS) The software which teaches the computer how to be a computer. The OS tells the computer how to display text, menus and icons, when to beep, etc.

Output Device: Any device that displays information from the computer, such as a monitor, printer or speaker.

Peripheral: Any machine that is attached to a computer, such as a scanner or printer.

Platform: Type of computer, delineated by OS. Macintosh, Windows and Unix are 3 types.

RAM : "Random Access Memory"; computer memory which allows any item in it to be accessed directly without reading through other items. RAM is commonly used to mean "main memory", the memory available to programs.

Read: The process by which a computer gathers information from a disk or hard drive and stores it into memory.

Removable Media: Any type of computer storage device where the storage media can be taken out of the machine that uses that media. A Thumb Drive can be removed from a computer; it is therefore removable.

Resolution: Quality of image on a computer monitor or printed page, usually expressed in dots per inch (DPI); the higher the resolution, the sharper the image appears.

ROM: "Read Only Memory"; an area of a computer's memory which can be read from, but not altered, or written to.

Scanner: A device which digitizes printed text or images so that they can be processed. This is one way pictures may be input into a computer.

Software: A set of instructions to be executed by a computer. Two main classifications are system software (e.g. operating systems such as Mac OSX or Windows) and application software (e.g. word processing or e-mail programs) which people use directly to perform tasks.

SSD (Solid State Drive): A new alternative to a traditional hard drive. A SSD has no moving parts and is much faster than a hard drive.

Terabyte: A thousand gigabytes, or one million megabyesv. Abbreviation: TB.

Thumb Drive: Small storage device which plugs into computer's USB port. Acts like a mini-hard drive, but with no moving parts. Also referred to as a jump drive or flash drive.

Trackball: A device which allows a user to move the screen cursor or pointer. The user spins a sphere mounted in a stationary base. It looks like an upside-down mouse.

Trackpad / Touchpad: A flat tactile sensor that can translate the motion and position of a user's fingers to a relative position on the operating system which is outputted to the screen. Touchpads are a common feature of laptop computers.

USB: Short for Universal Serial Bus, it is a type of connector used to plug in keyboards, mice, printers, thumb drives, and scanners into a computer.

USB-C: The newest standard in connectivity. It can carry power, video and data at high speed.

Video Card: part of the internal circuitry of a computer which governs the output to a monitor. Different cards vary in speed and resolution.

Virtual Memory: Allocation of hard drive space as additional memory; slower than real RAM, since access to a disk is much slower than access to memory chips.

VRAM: "Video RAM"; special memory chips which store the screen display. Generally, higher VRAM means better screen resolution and more colors available on a computer's monitor.

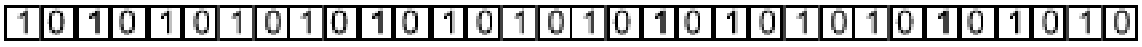
WiFi: Wireless communication between a computer and a network, which is then in turn connected to the internet.

Write: The process by which a computer places the contents of its memory onto a disk or hard drive. When a file is saved, it is written to a disk.

How the Computer Computes

At its simplest, a computer is a device that manipulates information, sometimes also called data. Information can and does take many forms. There are two ways to represent information. Information that is continuous is said to be analog. Think of a sweep second hand on a clock, which smoothly glides its way around the numbers. The second hand moves past a number, and moves through all the fractional elements of time in-between any 2 seconds.

Digital information is restricted to a finite set of values. Think of a digital watch; the hours display is either one number (say 10) or the next (say 11); nothing in between. An analog clock hour hand moves continually from 10 to 11. Digital information in its simplest form is called binary. Think of binary information as a light switch; it is either off (represented by a 0), or on (as represented by a 1).



Computers use binary information for several reasons:

- Simplicity: It is the simplest, most compact and least ambiguous way to express information about something: for example, binary data could be used to express the condition of a light bulb; 0 means "the light is off", 1 means "the light is on".

- Expandability: It is easy to build on and expand. You can use two binary values together to represent the status of two light bulbs.

- Clarity: Errors are reduced when a value can only be 1 or 0; the computer knows there are no values in-between.

- Speed: Computers make millions of decisions a second, and these decisions are easier to make when the number of values is small.

Hardware and Software

A computer is made up of hardware and software. Neither one would work without the other. In some ways the analogy can be made to humans that the hardware is your body and the software is your mind. If the processor is the computer's "brain" then the software is what that brain "thinks".

Each and every thing that happens inside the computer is controlled by some form of software: from spreadsheets, games and other applications, to the device drivers that tell your hardware exactly what it has to do to make them work properly.

Continuing the analogy to the human body, it is important to realize that much the way humanity is comprised of both the physical and mental, a computer is nothing without both hardware and software.

Try this: sort the following letters into alphabetical order: G B Y R V O. Most people can perform this task in 5 to 10 seconds. A modern computer can do it in about one billionth of a second! Is the computer smarter? No, not even close! In fact, the computer doesn't know how to sort anything at all. A processor only understands a few limited instructions, which are usually quite primitive. For example, a processor can multiply two numbers, or make a decision based on the result of comparing a number against another one. All programs you use on your computer are built from these mathematical "building blocks", even though their complex appearance makes this difficult to believe.

To get the computer to be able to sort the letters, someone has to write a program that is constructed from the processor's simple building blocks and performs the task that is needed. Once this is done, the computer can do the work so quickly because it has such raw speed: processors can execute many millions of instructions per second. The computer is not something to be compared to a genius, but more to a hard worker that has to be shown specifically how to make something but then can make it with lightning speed.

Computer Language

The only languages that computers understand is their own binary machine language. So for example, simply to tell the computer to add the numbers 181 and 207 together, the command might be "01101001 00110100 10110101 11001101". Who could write a 3D action game like that? Nobody, which is why a different method was invented to tell the program what to do.

Higher-level languages act as a "compromise" between what the computer understands and what the human programmer understands. They are not like natural spoken languages, but they use symbols that are relatively easy to learn.

For example, in a high-level language, the command to add those numbers might be "X = 181 + 207". C, C++, BASIC, FORTRAN and Java are examples of these types of languages.

But how does the computer know what to do with "X = 181 + 207"? It doesn't. A special program called a compiler is used to translate (or compile) the high-level language instructions into a form the computer. Here is an example of a high level program which multiplies two numbers together.

```
on mouseUp
  ask "input a number"
  put it into x
  ask "input a second number"
  put it into y
  put x * y into Z
  put x & " times " & y & " = " & z  into cd fld 1
end mouseUp
```

What Happens When You Press A Key

To illustrate how the computer works, let's take a very simple example. Let's suppose you are working in your word processor and you type the letter "M". Here's what happens, in general terms, when you press the "M" button:

- The keyboard sends an electrical signal, called a scan code, to the computer saying that a button was pressed.

- The keyboard controller interprets the scan code and determines that the letter pressed was an "M". It stores this "M" in a special memory location until the processor is ready to deal with it.

- The controller sends a signal to the processor, called an interrupt. An interrupt tells the processor that some part of the computer has information for it to process and wants its attention. In this case, the keyboard controller wants the processor to look at the key you just pressed.

- The processor is almost always doing many things, sharing its time among many tasks. As a result, most every event must wait its turn. The processor services interrupts based on their priority. When it is time to deal with the keypress, the processor routes it to the program for the operating system that you are using.

- Assuming you are using a multi-tasking operating system like Windows, the operating system software decides which window you pressed the key in and sends a message to that window telling it a key was pressed.

- The window decides what to do with the keypress. Since in this case it's your word processor window, and the key you pressed was an ordinary letter, the word processor will add that letter to its working area for the file you have open. The letter will take one byte of your computer's memory (RAM). Other keys could be handled differently (for example, if you pressed the key to tell the word processor to exit).

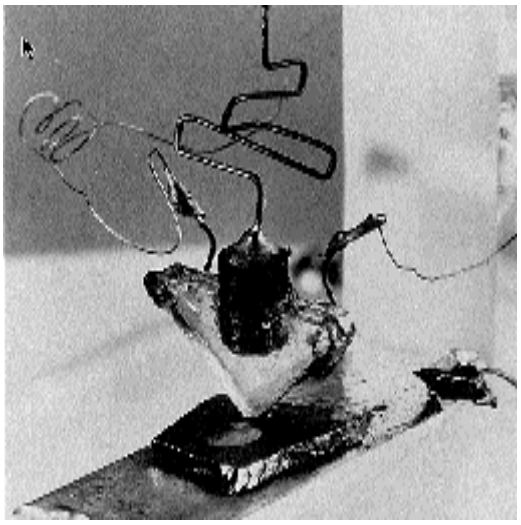
- The window will then call the operating system to display the letter on the screen.

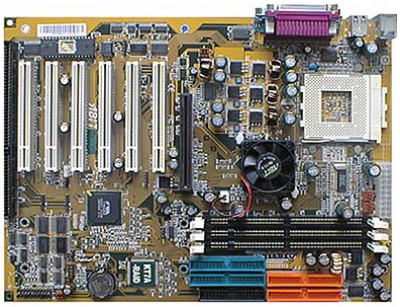
- The operating system will display the letter on the screen by adding it to your video card's video memory.

- The next time the video card refreshes your monitor (re-displays what is in its video memory) the letter will appear on the screen.

Inside the Computer

Today's computers are made up of hundreds of thousands of parts. The majority of these parts, electronic components called transistors, are built into the few dozen solid state chips that make up the brains of the computer. Invented in 1947 (pictured right), the transistor replaces the vacuum tube and makes the computer possible. Vacuum tube computers were built in the 1940's, but they were house - sized and enormously expensive. Using vacuum tube technology, a personal computer would be the size of a city block.



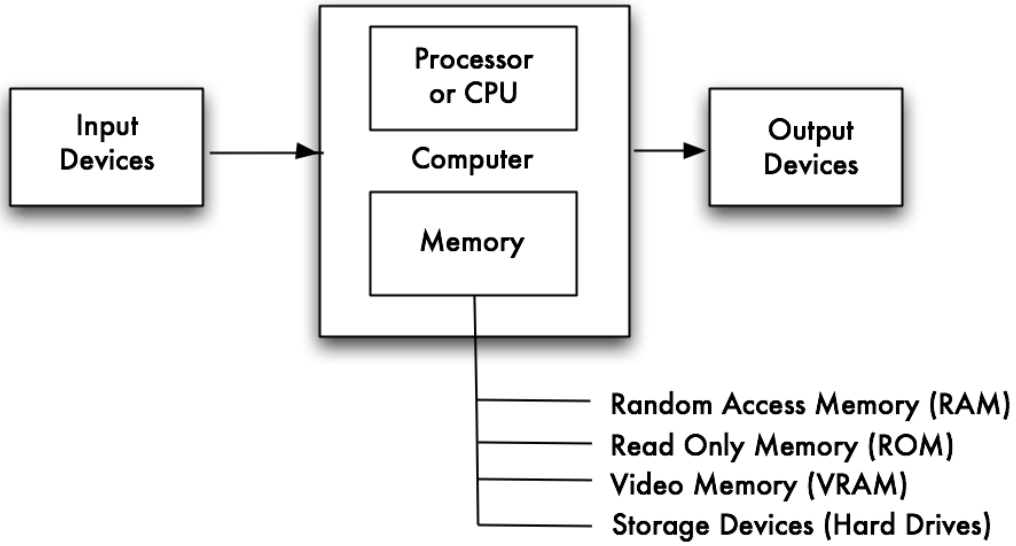


Inside a computer is the **motherboard**. Soldered onto the motherboard are the chips, cards, battery, fan and other components which make up the brains, memory, and most of the other electronic circuitry of the computer. We will not spend time on how or why they are put together as they are, only on the effect they have on you, the user. Recent advances have lead to 'computers on a chip', where all needed components are embedded into a single chip.

Some processor chips, have, in effect, chips within a chip. About a square inch in size, these CPU chips contain microscopic transistors. The Apple M1 chip, for example, contains 8 cores (processors) and 16 billion transistors. It can compute up to 2.6 teraflops.

A 1 teraFLOPS (TFLOPS) computer system is capable of performing one trillion floating-point operations per second. To match what a 1 TFLOPS computer system can do in just one second, you'd have to perform one calculation

Memory



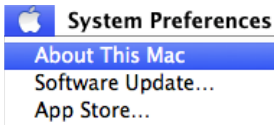
The computer receives information from input devices, the processor processes it, and it is fed back to the user through output devices. This cycle (input - process - output) would not be possible without a holding place for the information. This holding place is known as memory. There are three types of memory used by your computer; **RAM**, **ROM** and **VRAM**.

Memory is the electronic holding place for instructions and data.

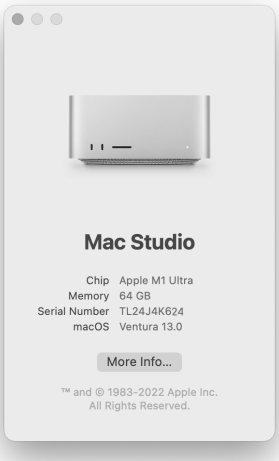
Random Access Memory (**RAM**) is the primary working memory that holds data and instructions while the computer is turned on. RAM can be thought of as the memory that the computer uses to remember and perform instructions given to it. RAM can be written to and read from. But the most important thing to remember about RAM is that if you do not save the information in RAM to a storage device (such as a floppy disk or hard drive) before you turn the computer off, the information in RAM will be lost.

Today's computers have from 4GB to 32GB of RAM memory. The operating system, loaded when the computer is first turned on, uses up to 2 GB of memory. There is a finite amount of RAM available to the computer for remembering things. If I want to load a dictionary, an encyclopedia and a music program along with a word processor, a computer may not have enough RAM to remember all those millions of lines of instructions that make up each program. A "not enough memory" message may appear on screen. To avoid this problem, only load the programs you wish to work on at any given time. When a program is quit, the computer forgets those instructions, freeing up that block of memory for other programs.

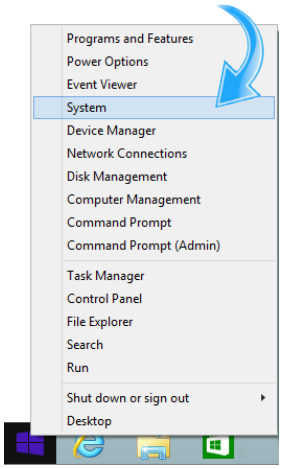
Read Only Memory (**ROM**) is more straight forward. ROM is built in memory that permanently stores instructions and data. The instructions and data in ROM are created when it is manufactured and it cannot be changed. This information is used by the computer to help during the boot up process.

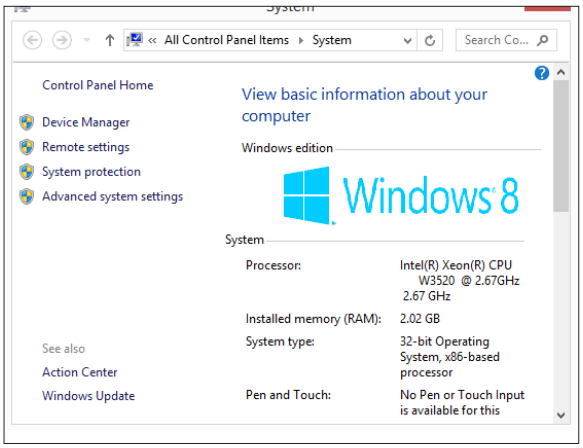


On a Macintosh, clicking 'About This Mac' in the Apple menu displays the amount of memory, processor speed, and what version of the OS is being used.



You can use System Properties to view and change settings that control how your computer uses memory, as well as information about hardware and the speed of the CPU.

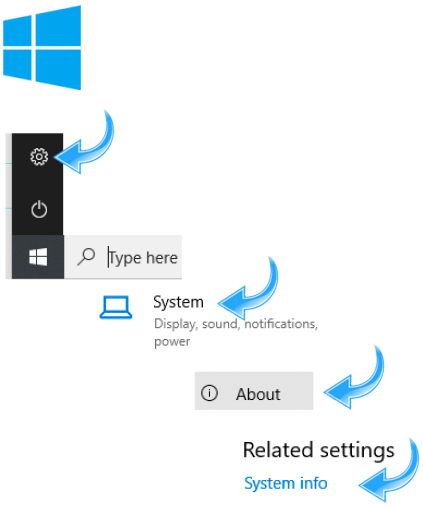


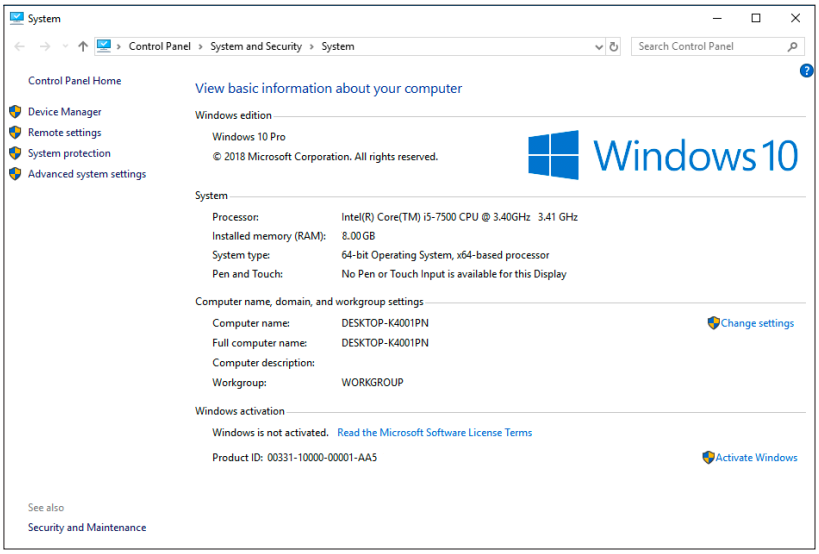


In Windows 8, right-click the Windows icon, then click 'System'. The vital statistics about your computer will be displayed

In Windows 10 you can easily view basic system information like Windows edition, processor and memory configuration and computer name.

View basic system information, right click on "Start Menu" and click on "System" in pop-up menu to open the "System" window.

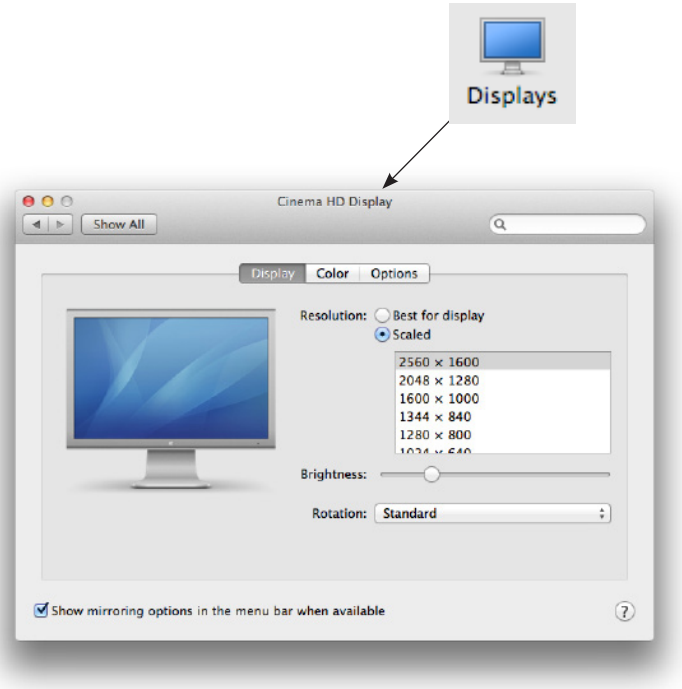




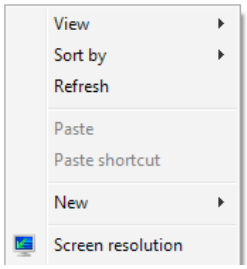
In Windows 10, click the Gear icon, then click 'System', then 'About', then 'Related Settings'. Other information about the computer can be found on the 'System' screen.

The third type of memory, **VRAM**, stands for Video Random Access Memory. This dictates the resolution and color capability of your computer's video monitor. Some computer systems let you change the number of colors displayed on-screen. Most computers allow for the adjustment of resolution - the scale of the images displayed on-screen.

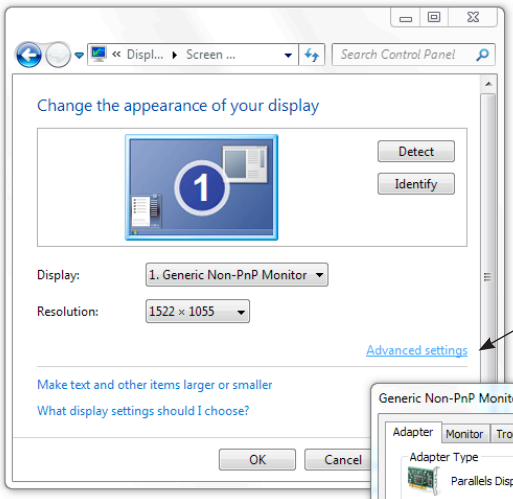
On a Macintosh, display (monitor) settings are in the System Preferences program (choose System Preferences from the Apple Menu). Colors are always set to the maximum possible; color adjustments include brightness and calibration, for color accuracy with different monitors.



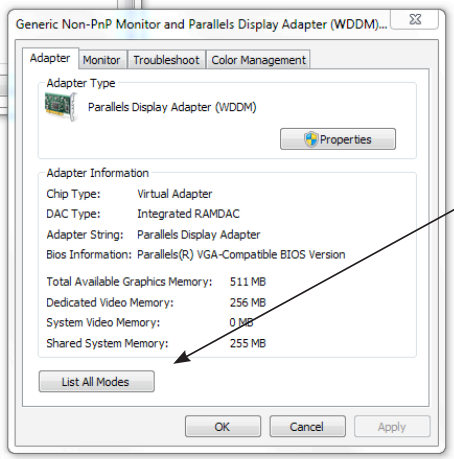
On Windows 7, 8, and 10 computers, the color is set by right-clicking on a empty space on the desktop and clicking on Screen Resolution. The same setting can be accessed through the Windows control panel.



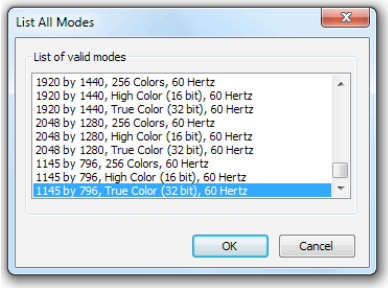
1. Right click on an empty space on the desktop and click on Screen Resolution.



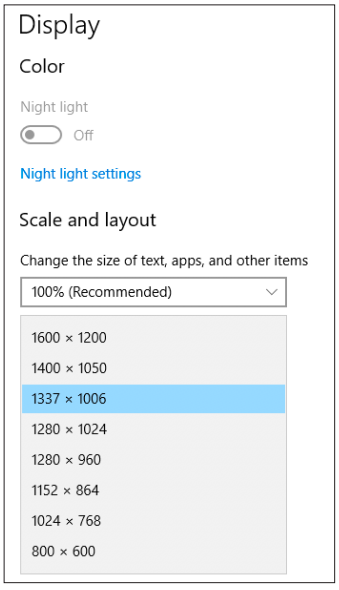
2. Click on the Advanced settings link.



3. Click on the Adapter tab, and on the List All Modes button.



A list of available screen resolutions and color (bit depth) will appear. The currently active screen size and color depth is highlighted.



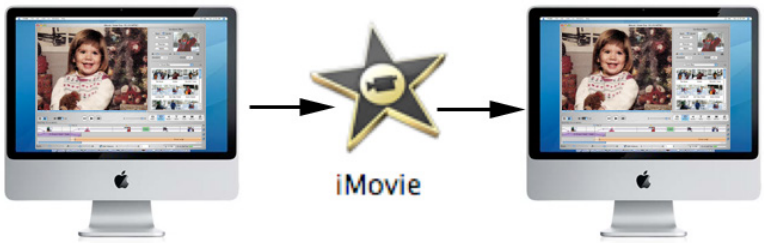
Windows 10 Display options

Storage Memory

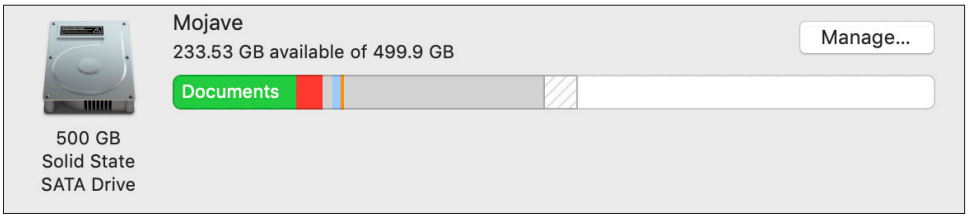
Another type of “memory” is **storage memory** - which refers to the amount of space available on the computer's **hard drive** to store programs and documents. This may be a spinning disk hard drive or a solid state hard drive. **SSD**s are faster, more dependable and more expensive.

Think storage memory it as a big filing cabinet. Hard drives come in a variety of sizes, from 256MB in older computers to 4TB (4000 Gigabytes) on new machines. The operating system may take up to 10GB of storage space. Microsoft Word by itself takes over 1GB of hard drive space. Other programs, once loaded onto the hard drive, also take up storage space as do files saved to the hard drive. When you save a word processing document, a photo from the web or save anything else, hard drive space is used. When a hard drive is full, you either have to throw something away to make space, or store new files somewhere else, like another hard drive or cloud storage. Because of the way hard drives store data, they work best when they are less than 3/4 full.

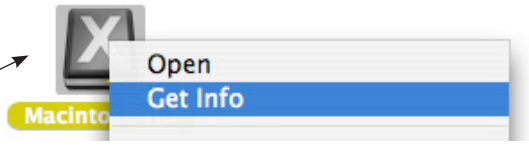
512GB hard drive space - 12GB saved movie = 500GB hard drive space remaining



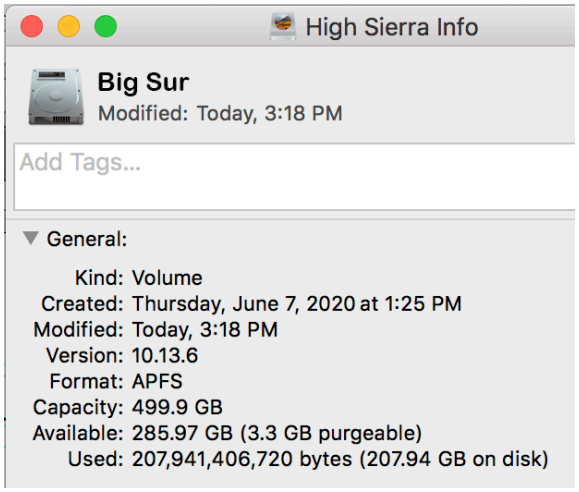
If a graph were made of a 512 GB hard drive, the different types of files might look like this: most of the 'filled' space is taken up with the OS files and programs, leaving most of the remaining storage for user-created documents, such as word processing files, photos, music and movies.

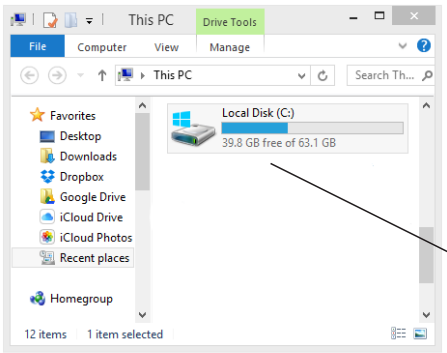


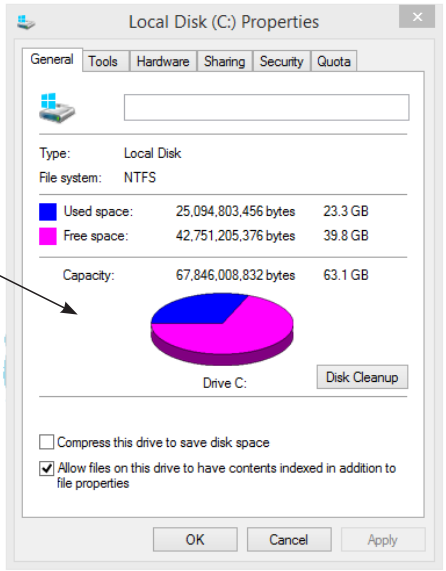
NAME	ABBREVIATION	EQUAL TO	SIZE (IN BYTES)
Bit	b	1 Bit	1/8
Byte	B	8 Bits	1
Kilobyte	KB	1024 Bytes	1024
Megabyte	MB	1, 024 Kilobytes	1, 048, 576
Gigabyte	GB	1, 024 Megabytes	1, 073, 741, 824
Terrabyte	TB	1, 024 Gigabytes	1, 099, 511, 627, 776



To check the capacity and available **free space** of the hard drive on a Macintosh, right-click the Hard Drive icon and then choose 'Get Info' from the File menu.

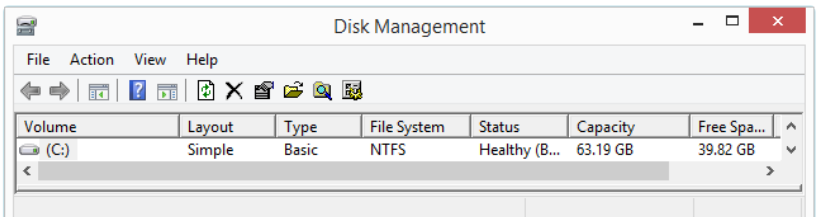






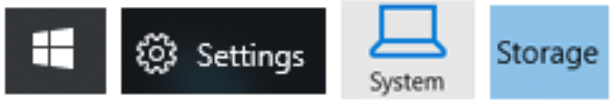
To check the capacity and free space of the hard drive on any Windows computer, double - click the My Computer icon to display a list of drives. Drive C is typically the main (or only) hard drive.

Right - Click its icon and choose 'Properties' to show its capacity and (remaining) **free space**.



For Windows 8 and 10, right click the Windows icon on the bottom left of the screen and choose "Disk Management" from the pop up menu.

In Windows 10, click the Windows icon then Settings, then System, then Storage.



The Processor

The Central Processing Unit (CPU) is the main component of a computer where most calculations take place; it is also called the microprocessor. Most computers have a CPU made by Intel, IBM or AMD. The speed, or **clock rate**, of a CPU is normally determined by the frequency of an oscillator crystal. In very general terms (there are many other factors which determine a computer's overall speed), the faster the processor, measured in megahertz (MHz), the better. A faster microprocessor means a computer can perform all its tasks more quickly, from displaying text and images on screen to re-calculating spreadsheets and surfing the web.

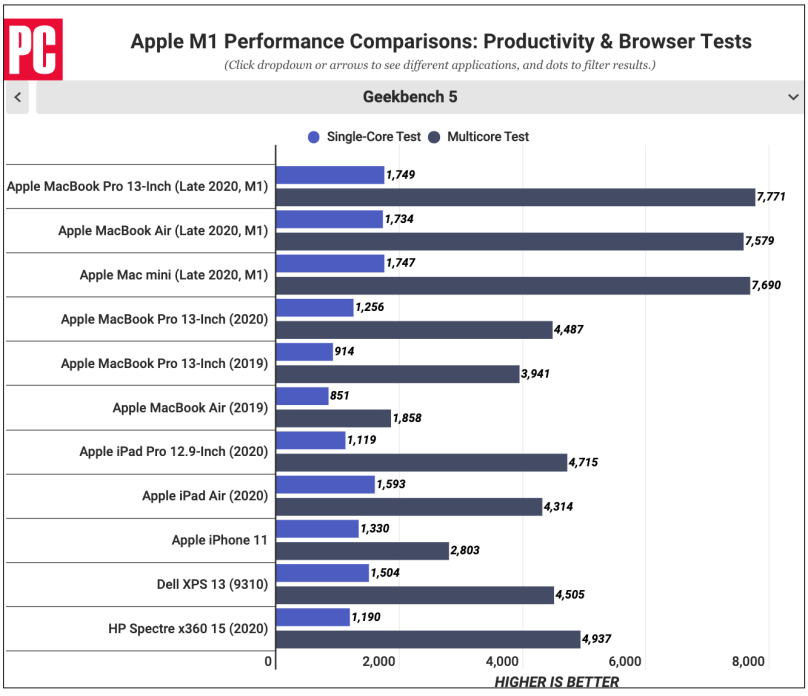
The clock rate of a computer is only useful for providing comparisons between computer chips in the same processor family. A computer with an Intel Core CPU running at 3.2 GHz will be about twice as fast (running programs) as one with the same CPU, memory and display running at 1.6 GHz. Apple has just introduced the M1 CPU chip, prompting a revolution in speed and power consumption for their Macintosh computers.

In practical terms, newer computers (less than 3 years old) will deliver all the speed needed for everyday tasks. As new models from various manufacturers appear, each tries to outdo the rest, and microprocessor clock speed is an easy benchmark on which to base advertising machine performance.

In truth, there are several different ways to measure speed, and several factors (not just the MHz or GHz of the chip) must be taken into account.

As you can see by the chart, the trend is to yield faster and faster processing power with each new generation of processor chip.

Apple is transitioning all their devices from Intel brand CPU chips to their own designed and manufactured chips.



Project 4: Inside Your Computer

To fill out and submit this form, please go to the Inside Your Computer Survey link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website. A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice

What kind of computer(s) are you using to complete this course? What Operating System?

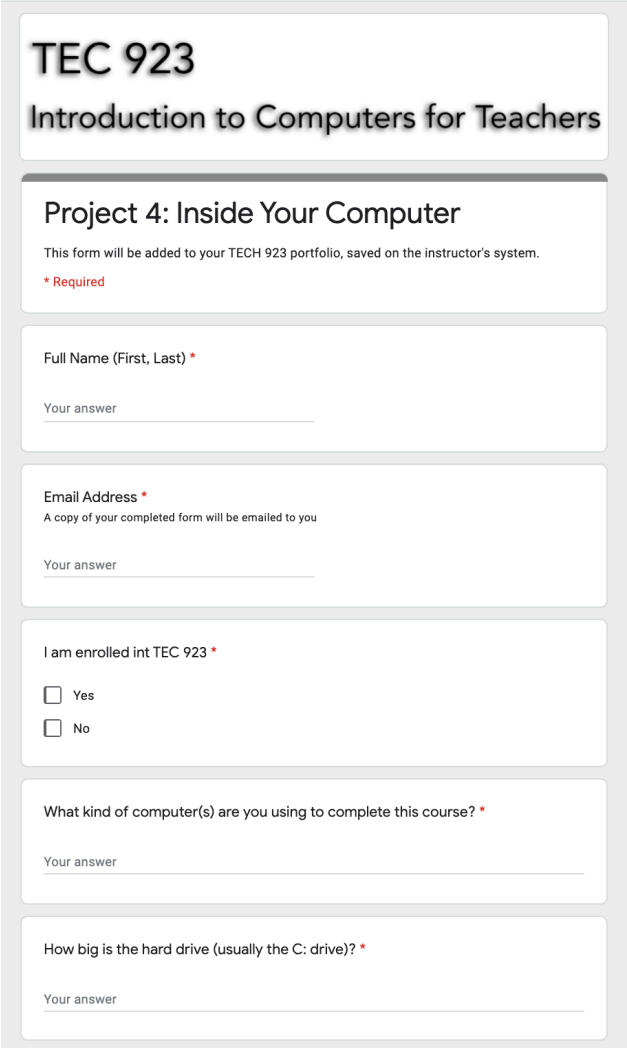
How big is the hard drive (the C: drive on a Windows computer)?

How much memory (RAM) does the computer have?

How much free space (in GB, or measured and expressed as a percentage) is available on your hard (usually the C:) drive?

Is the computer you are working on connected to a printer? How? (hardwired, WiFi, or none)

What type of mouse are you using (i.e. track-pad, mechanical, optical, wireless)?


TEC 923

Introduction to Computers for Teachers

Project 4: Inside Your Computer

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

Yes

No

What kind of computer(s) are you using to complete this course? *

Your answer

How big is the hard drive (usually the C: drive)? *

Your answer

The Computer's Operating System

The operating system, also called the **OS**, is the most basic software a computer uses. Your computer relies on its operating system to manage all of the programs installed on it and all the hardware devices connected to it. Without a functioning operating system, no other program or device will run.

The operating system is essentially a traffic cop, responsible for the flow of information through your computer system. It dictates how data is saved to your storage devices, keeps track of your file names and locations, and controls all of the devices connected to it.

When you turn on your computer, the operating system is read from the hard drive and automatically loads. When other programs are started, the operating system continues to run in the background. All modern operating systems provide the following functions:

- initializes (prepares for use) the hardware of the computer system (boot or startup)
- provides basic routines for device control (device management)
- provides for the management, scheduling and interaction of tasks
- maintains file systems (file management)
- provides software toolboxes which programs can use to perform tasks
- provides a graphical user interface (GUI) by which the user interacts with the OS

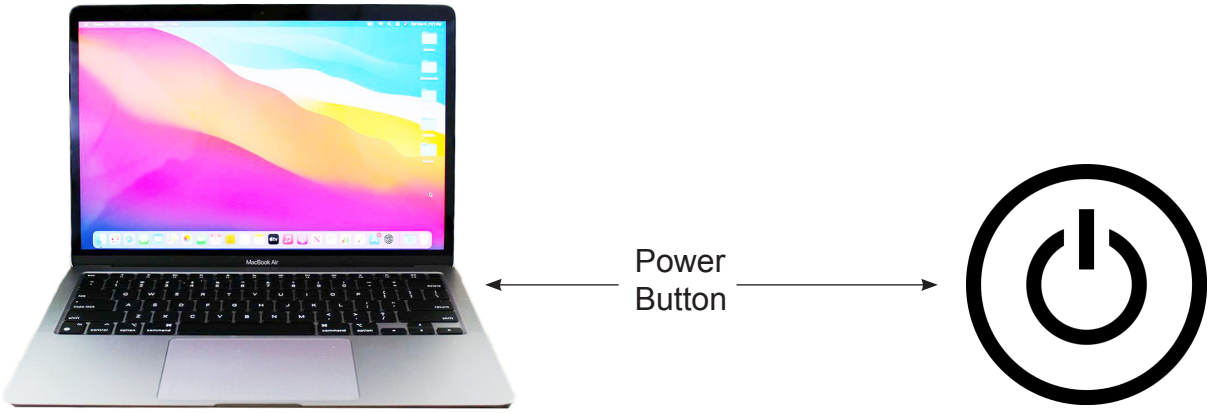
There are three major operating systems in today's computer-using schools - Microsoft Windows, Apple Macintosh and Google Chrome*, each with several different variations, or versions. A computer running Windows might have XP, Vista, 7,8 or 10 (Microsoft skipped number '9'). A Macintosh computer could be running OSX (10.6 through 12.3). Apple has dropped the OSX numerical designation, now calling their operating system 'MacOS' with catchy names (ie macOS Monterey).

All these variations do essentially the same things; it is just a matter of learning what you want

* Google Chrome (Chromebook) is covered in another of my courses, TEC 944

How to Boot Up a Macintosh (Start the computer)

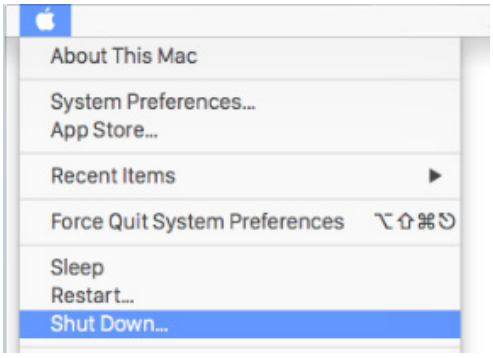
To boot up a Macintosh computer, press the power button, located on the upper right hand corner of a laptop or the rear bottom-left corner of iMacs. The power button is round with a short vertical line at the 12 o'clock position - this is the standard icon for power on/off. Sometimes peripherals, such as monitors or printers, have a separate on/off switch.

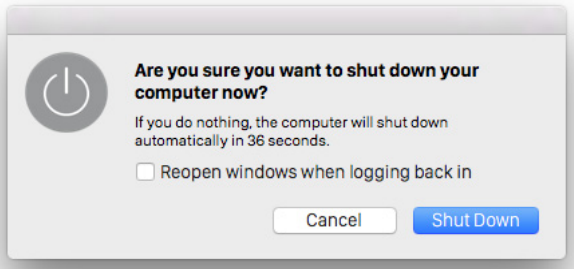


The operating system starts loading from the hard drive into the RAM when the power button is pushed. After the operating system is loaded, the computer performs a check to make sure all peripheral hardware (input, output and storage devices) are properly attached to the computer. As soon as all devices are verified and the computer has booted, it is ready to accept input from the user.

How to Shut Down a Macintosh (Turn off the computer)

Shutting down the computer turns the system off completely. To safely shut down the Macintosh computer, click on the Apple Menu and select Shut Down. The computer will completely shut down all open windows and turn itself off. You may also press the Power Key and select SHUT DOWN from the dialog box.



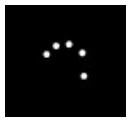


How to Boot Up a Windows Computer (Start up)

Now you are ready to learn how to **boot up** (to load an operating system into the computer's random access memory) a Windows computer. Different computer makers put the "on" button in different places, and they are often different shapes (round, square, rectangular). However, for the most part, you can identify the "on" button by looking for one of the symbols to the right. The symbol will be located on or below the button.

Pushing the power button initiates the loading of the operating system into RAM. After the operating system is loaded, the computer performs a check to make sure that all peripheral devices (input, output and storage devices) are properly attached to the computer. This boot process is displayed on the screen as a notice or animation.

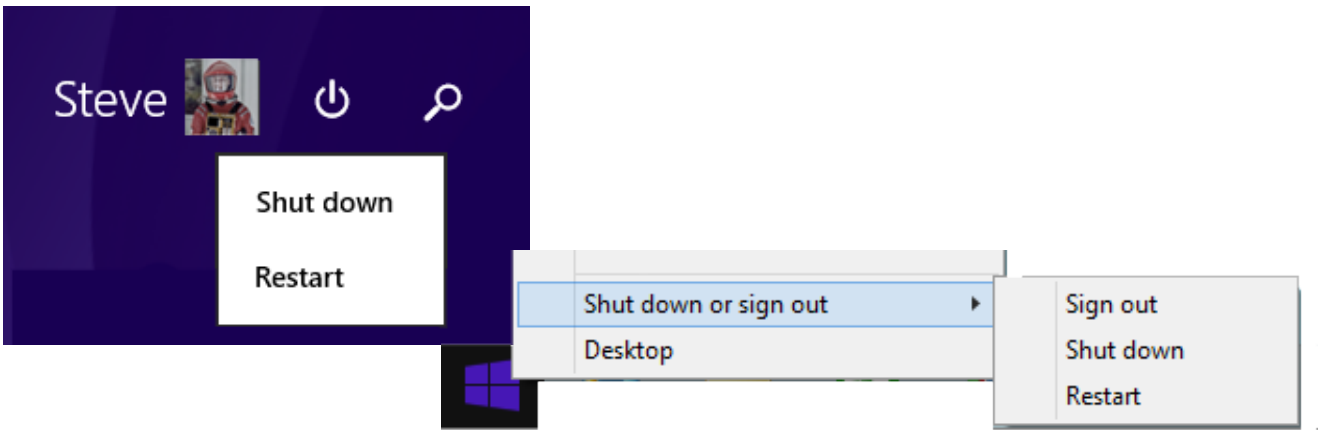
As soon as all devices are verified, the computer is ready to accept input from the user. Peripherals, such as monitors or printers, may have a separate on/off switch.



How to Shut Down a Windows Computer (Turn it off)

Shutting down the computer turns the system off. Click on the Start Menu, move the mouse pointer up to select "Shut Down" and click once.

On Windows 8 and 10, right click the Windows icon at the lower right of the screen. In Tiles mode, click 'Power', in desktop mode, right-click and choose 'Shut Down or Sign Out'.



Graphical User Interface: What is GUI (Gooey)?

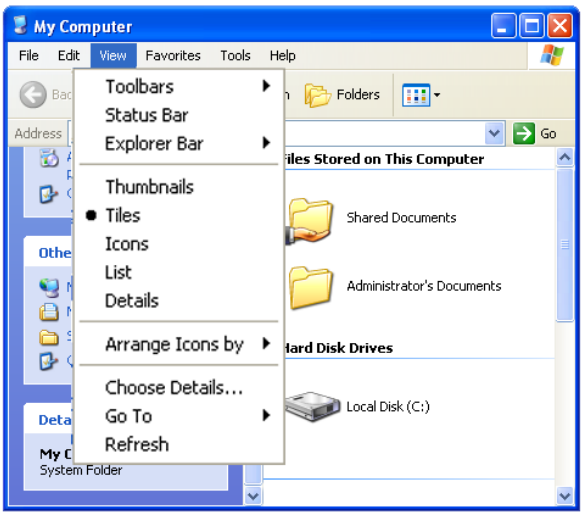
In ancient computer times (or about 30 years ago) computers were controlled by command line instructions. There were no mice. There were no menus. If you wanted to copy a file or change a setting, you had to use a programming language called DOS. In 1984 Apple Computer introduced the Macintosh and with it, the mouse-driven Graphical User Interface (GUI). The concept is borrowed from educational theory; it is easier to manipulate real-world objects (such as colored wooden building blocks) than it is to work with abstract symbols (such as numbers and equations). Just as it is easier to teach a child addition with blocks, it is easier to control a computer with visually representational icons. If you want to throw away a piece of paper, pick it up and drop it in the trash can. In DOS you would have to type something like **C:\del filename.txt** to throw away the document. When a child is counting with blocks, he or she knows those blocks are real; they can be moved, repositioned and arranged at will. When working on the computer the same is true. Icons, folders and files can be moved, arranged and organized just like their read-world counterparts. *This is a vital concept to grasp.*

The main parts of a graphical user interface are **icons**, **windows** and **menus**. There's a different icon for each kind of item on the desktop. For example, a program icon is an item you can open and use to create documents. Most programs and documents have their own unique icons, so you can identify which program created each file or document. For example, the document below was created in Microsoft Word - the 'W' is a unique icon used only by Word.

Hard Disk Programs Document Folder

To open an icon: Double-click it. (Click the icon twice quickly, being careful not to move the mouse between clicks.) When you open an icon, its contents appear in a window (more about windows in a bit).

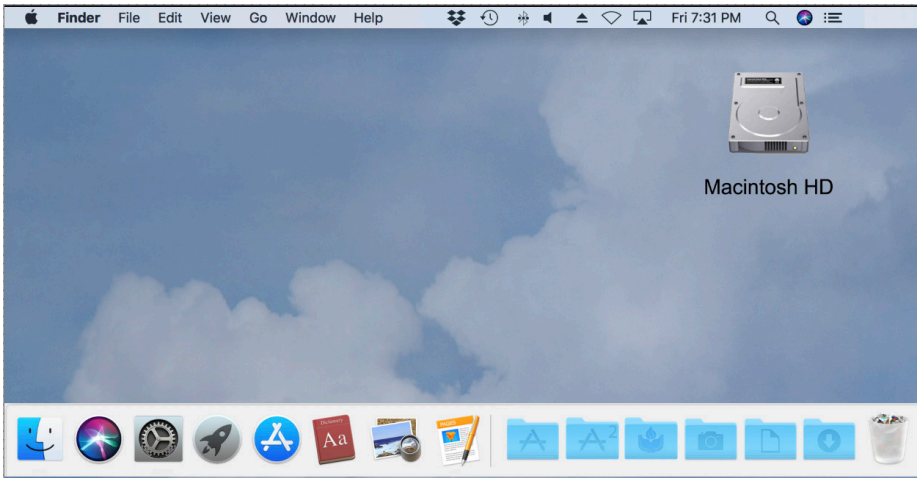
Rather than filling up the screen with labeled buttons, the GUI uses menus, or more accurately, **drop down menus**. To the right is the menu for VIEW when looking at files in a Windows program. They are visible only when the word VIEW is clicked. The VIEW menu, along with several others, appear on the MENU BAR at the top of each window.



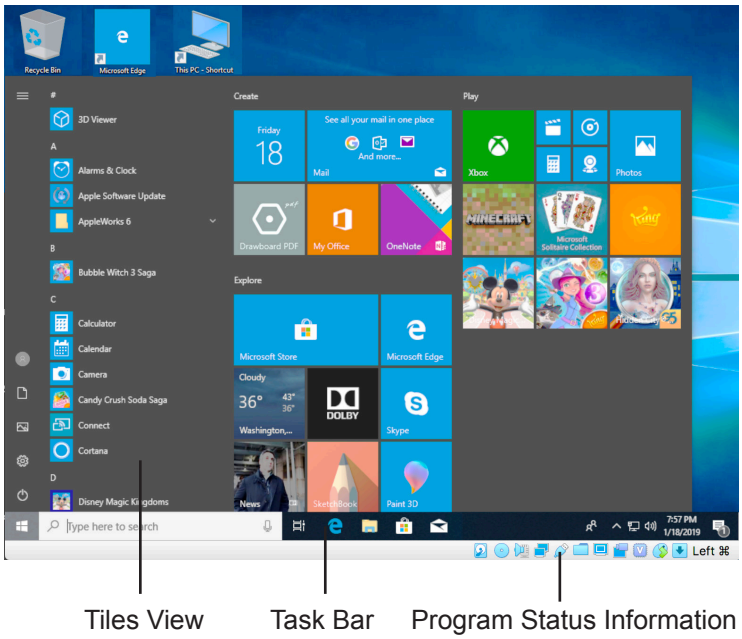
Most programs feature '**tooltips**'. Hovering the mouse over a button or icon will reveal its name.

The First Thing You See: The Desktop

When you boot up a Macintosh, the desktop will display the Menu Bar and, at minimum, the Hard Drive and the Dock icons. At the very top of the screen you will see a bar with words and icons on it. This bar is called the Menu Bar. The Menu Bar serves as the home base for all menus that are available to the user. The dock allows easy access to programs and files.

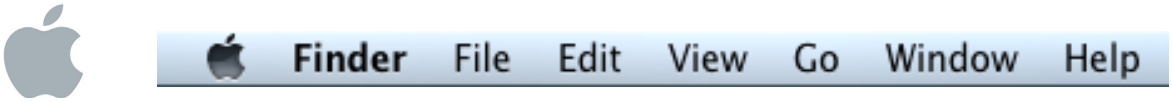


When you boot up a Windows OS computer, the desktop will display the **Task Bar** (generally located at the bottom of the screen) and, at a minimum, the My Computer and the Recycle Bin **icons**. In the image below, you will notice that at the bottom there is a bar with words and icons. This bar is the Task Bar. At start up, the Task Bar will contain the Start button and the program status information.

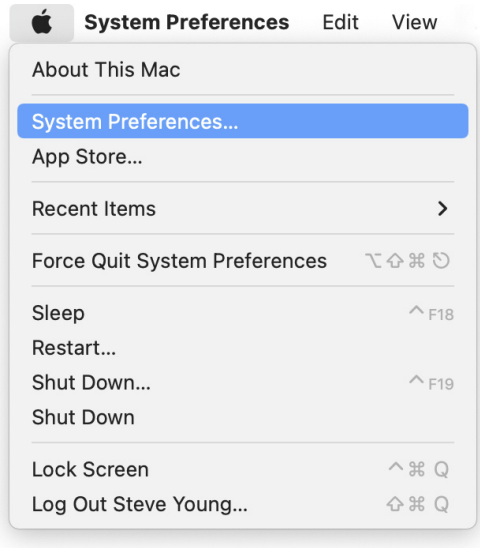


Windows Taskbar: adding items to the taskbar is referred to as pinning. Removing them, unpinning.

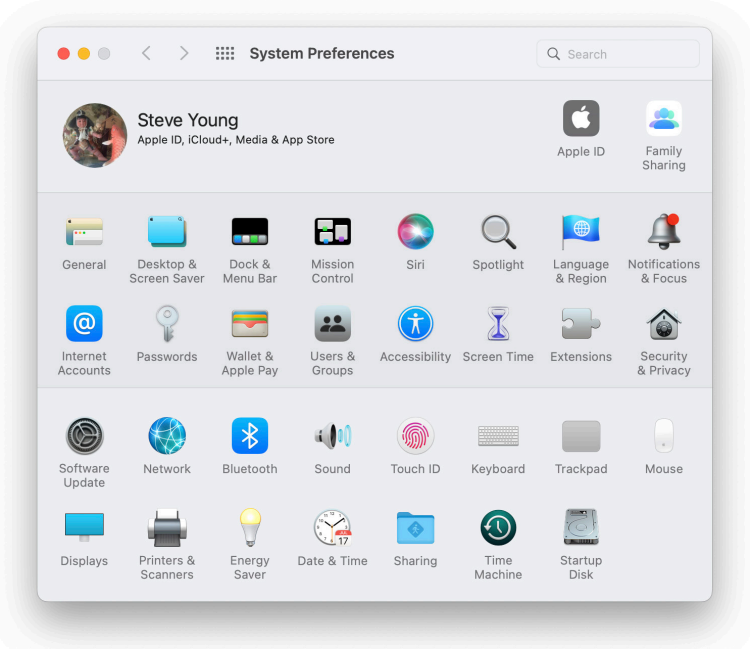
The Macintosh Desktop: A Detailed Look



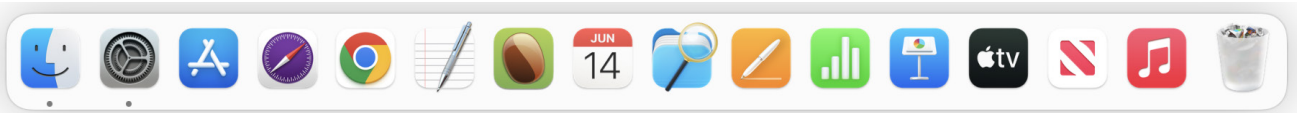
In the left-hand corner of the Menu Bar you will see the Macintosh Apple icon. This icon represents the Apple Menu. The **Apple menu** allows quick access to system settings and other computer-wide functions, such as Shut Down.



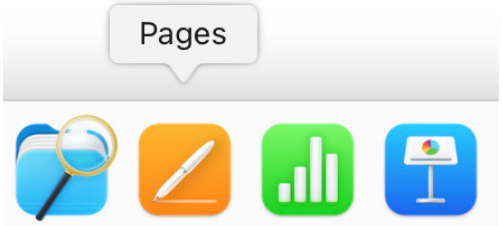
System Preferences contains settings for most of the computer's operations, from changing the desktop picture to adjusting the display and sound settings.

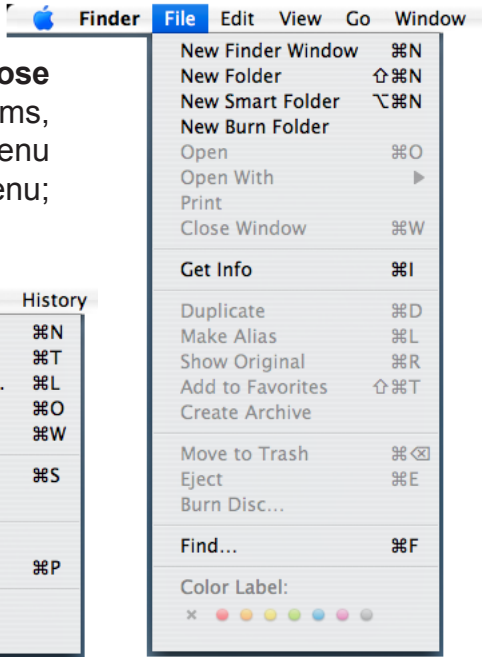


The **dock** in OSX allows the user to place shortcuts to frequently used programs and documents within easy reach from any program.

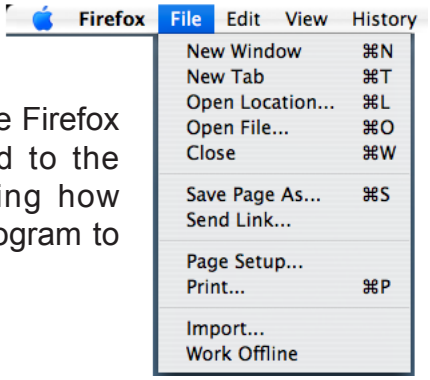


Move the cursor over the an icon on the dock, and its name will be displayed. Icons representing progams can be added or subtraced from the dock simply by dragging them on or off.





Next in line is the **File** menu. Some items, such as **Open**, **Close** and **Print** appear in every program you will use. Other items, such as **Get Info** and **New Folder**, appear in the **File** menu only in the Finder. This is an example of a contextual menu; one that changes in accordance with the program.

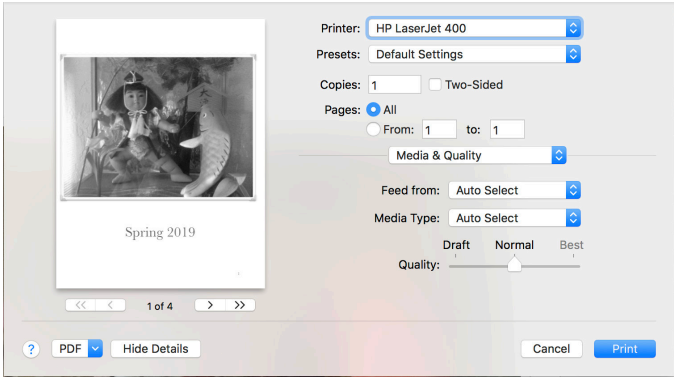


Here the File menu from the Firefox web browser is compared to the OSX Finder, demonstrating how the menus change from program to program.

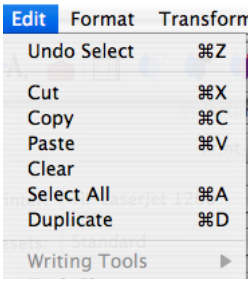
Note that some menu items are gray (grayed out), and some are black. The gray items are inactive, and you can't use them. For example, in the Finder File menu, the **Duplicate** item can not be used at this time because there is no file or folder selected to duplicate. Think of it as someone asking you to do 'something' - without knowing what 'something' is, it is better to do nothing; the program functions in the same way.

The darker menu items are active, and will perform the function normally when commanded.

The menu items that have an ellipses behind them (...) will open a dialog box when selected, giving you options and choices. The **Print...** menu will open a dialog box allowing you to select what printer to use, the number of copies, scale, orientation, etc.

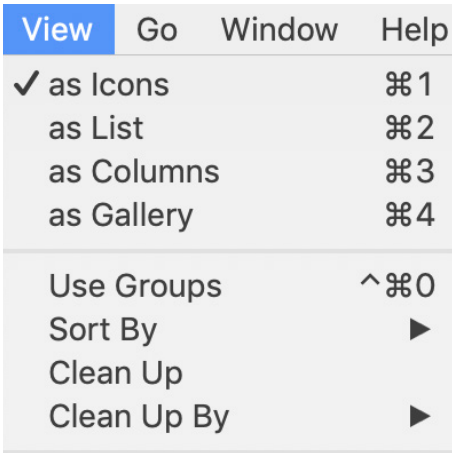


The **Edit** menu also exists in nearly every program. Here you can **Cut**, **Copy** and **Paste** information from a document, such as a paragraph from a word processor document or a photograph from a web page. Note the keyboard shortcuts are part of the menu.

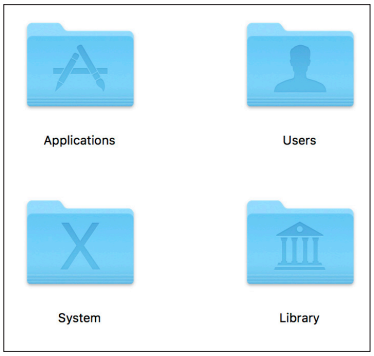


The ⌘ symbol represents the 'Apple' key, or **Command** key.

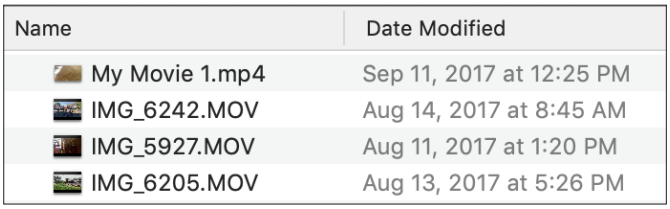
The **View** menu allows you to look at the file information presented on screen in a variety of ways. You can arrange and view a list of word processing documents, for example, as an alphabetical list or chronologically or by predefined order of importance. These are basically housekeeping functions; they don't directly relate to how work is done, but rather how you wish to file and view documents and files on the hard drive.



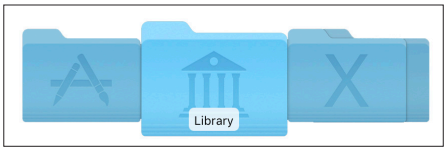
Double-clicking the Macintosh HD icon will show one of four views.



Icon view

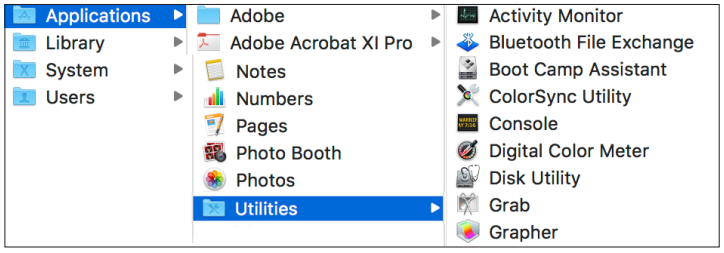


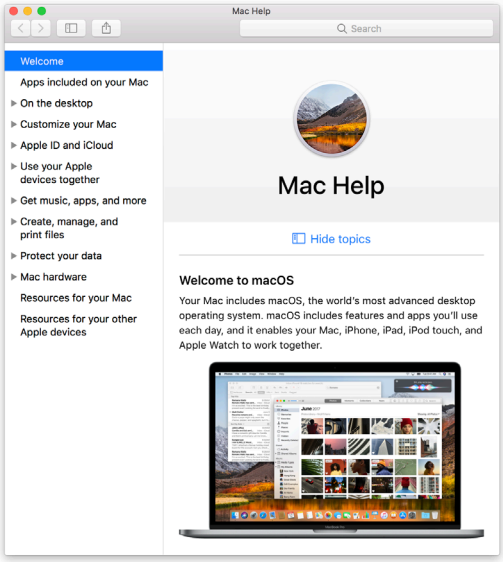
List view



Cover Flow

Column view

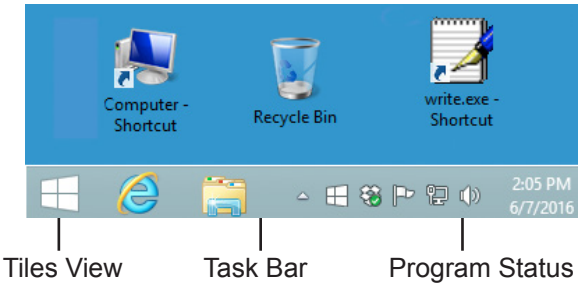




The **Help** menu offers contextual help with the finder and most other programs. Choosing the Help Center opens a good, basic primer on using the Macintosh.

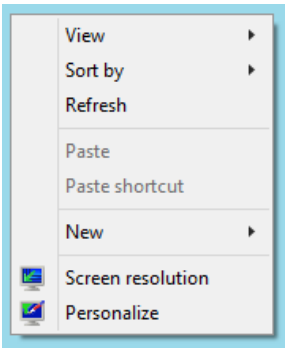
The Windows Desktop: A Detailed Look

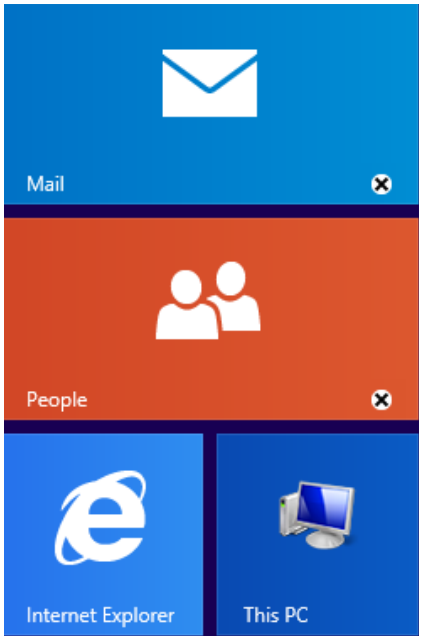
The DESKTOP, your Windows workspace, appears as a colored background or picture (**wallpaper**), and contains **icons** which open programs, files and directories of files.



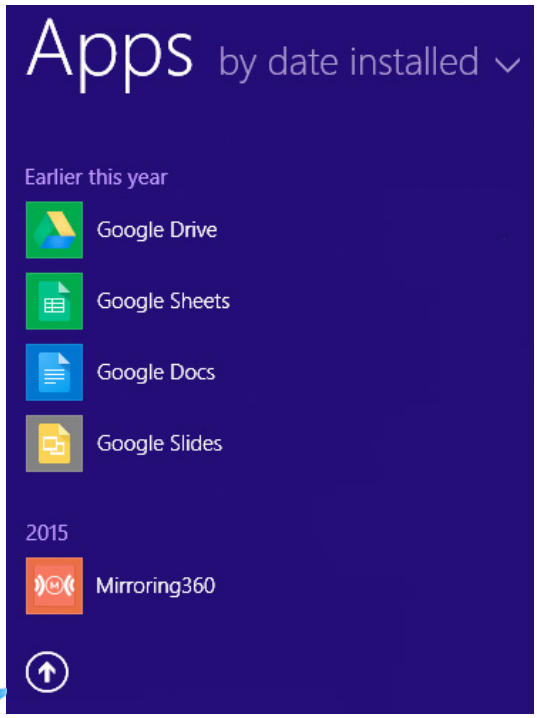
The icons displayed depend on choices you made at installation, but should always include COMPUTER (gateway to your computer's drives) and RECYCLE BIN (a temporary 'trash can' for storing files you intend to delete).

Double - clicking these icons will open the programs or files they represent. Right - clicking them will open a pop-up menu with a variety of options. Right - clicking the desktop will also open a pop-up menu with icon-related options such as arrange and line up icons. By dragging these icons, you can move them elsewhere and arrange them as you wish.



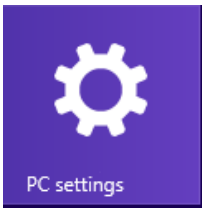


Windows 8 introduced **Tiles**, a way to view your computer's files and programs as large, movable icons. This scheme hides the desktop, simplifying the selection of programs.

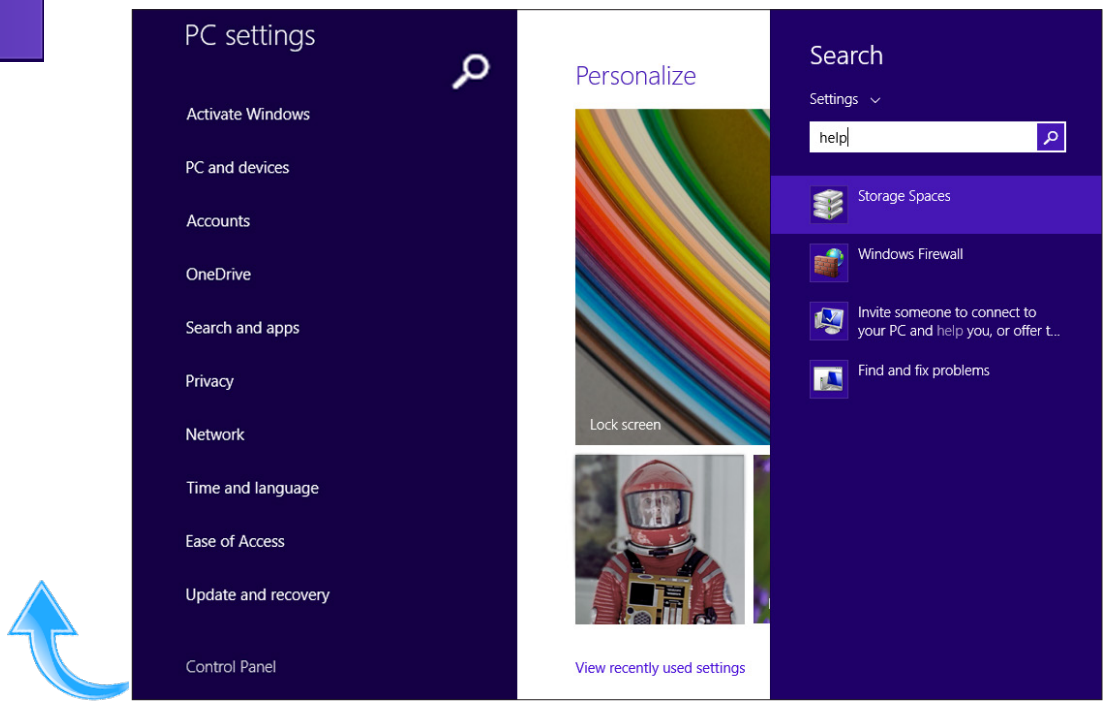


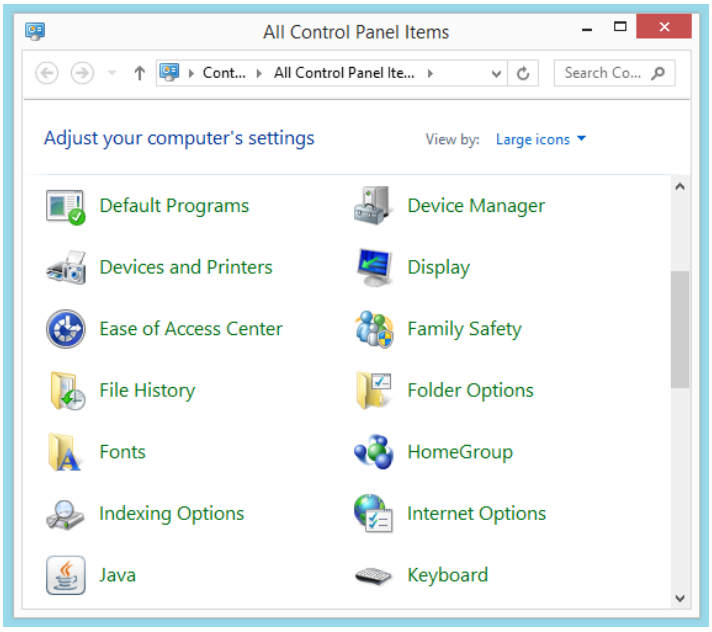
You can switch back and forth between the traditional desktop view and the tiles view. Windows 10 shows both views (tiles and icons) at the same time.

If you have more than one program open at once, you can switch between programs by using the Task Bar icons which appear at the bottom of the screen (in desktop mode).



Clicking on the 'PC Settings' icon (in tiles view) allows access to all the computer's technical and account information. At the bottom of the settings list is a link to the Control Panel.





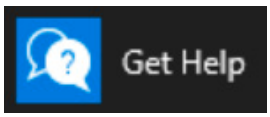
The Control Panel is where you can configure your computer and its hardware.

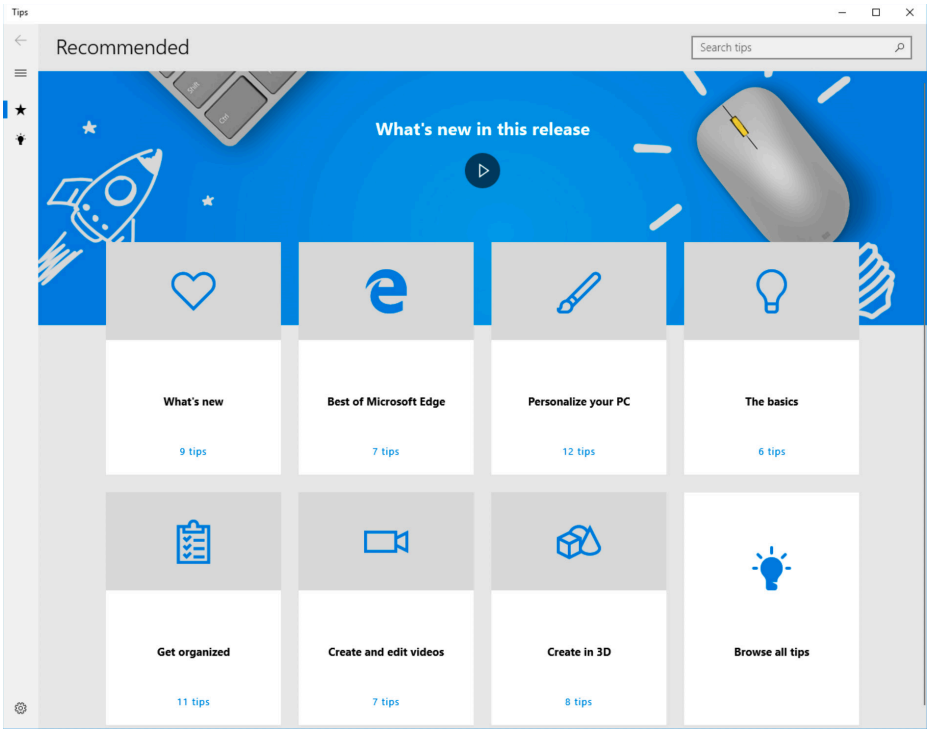
With **Devices and Printers**, you can set up your computer to talk to various printers.

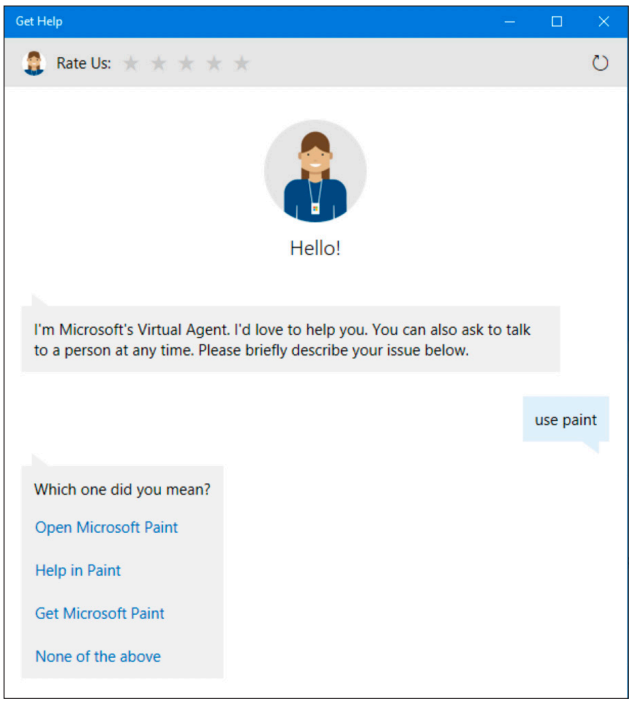
With **Search**, you can search for programs, files, and folders.

Help and Support provide you with a variety of means for getting help with Windows and its accessories.

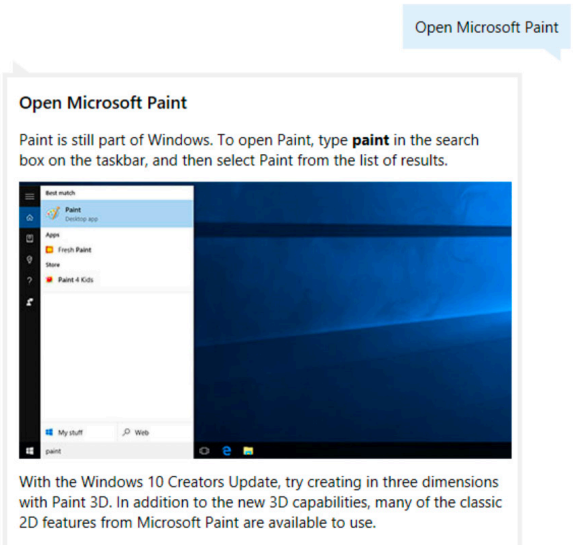
The **Help** menu offers contextual help with the finder and most other programs. Choosing **Get Help** from the Start menu will display a new window showing the equivalent of the user's manual. In it you can find step-by-step directions and explanations of common Windows commands and procedures.



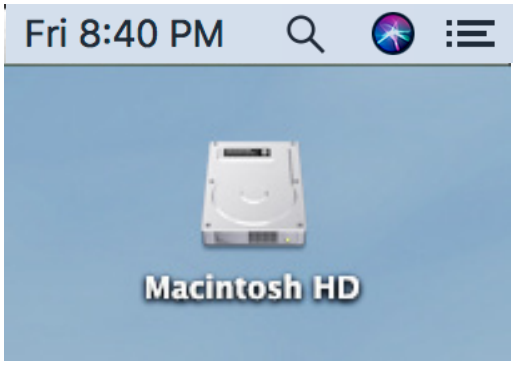




In Windows 10, click the Windows icon, then the **Get Started** icon to show the Help system, including how to use the new Windows 10 features.



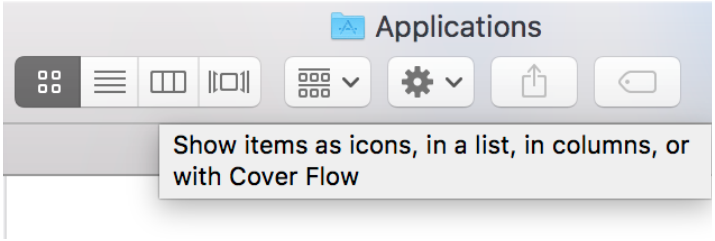
Working with Windows On A Macintosh Computer



Information on your computer appears in boxes called "**windows**." This is true whether it is a computer running the Macintosh OS or the Windows OS. When you hear "Windows on a Macintosh" or "Macintosh windows" it could be a point of confusion (it is possible, using a software program, to run the Windows OS on a Macintosh). This discussion concerns itself with the rectangular areas which contain the visual representation of folders and files. Think of a window as a detailed label on the front of a filing cabinet; it tells you what is stored inside. To open a window, double click a folder icon, such as **HARD DRIVE**. A window will appear revealing the contents of the hard drive. This action also works for folders (double clicking a program or document will **launch** a program). You can also think of a window as a piece of paper on your desk. You can put the paper whereever you want, file it away in a drawer, or fold it in half so it takes up less room on your desk.

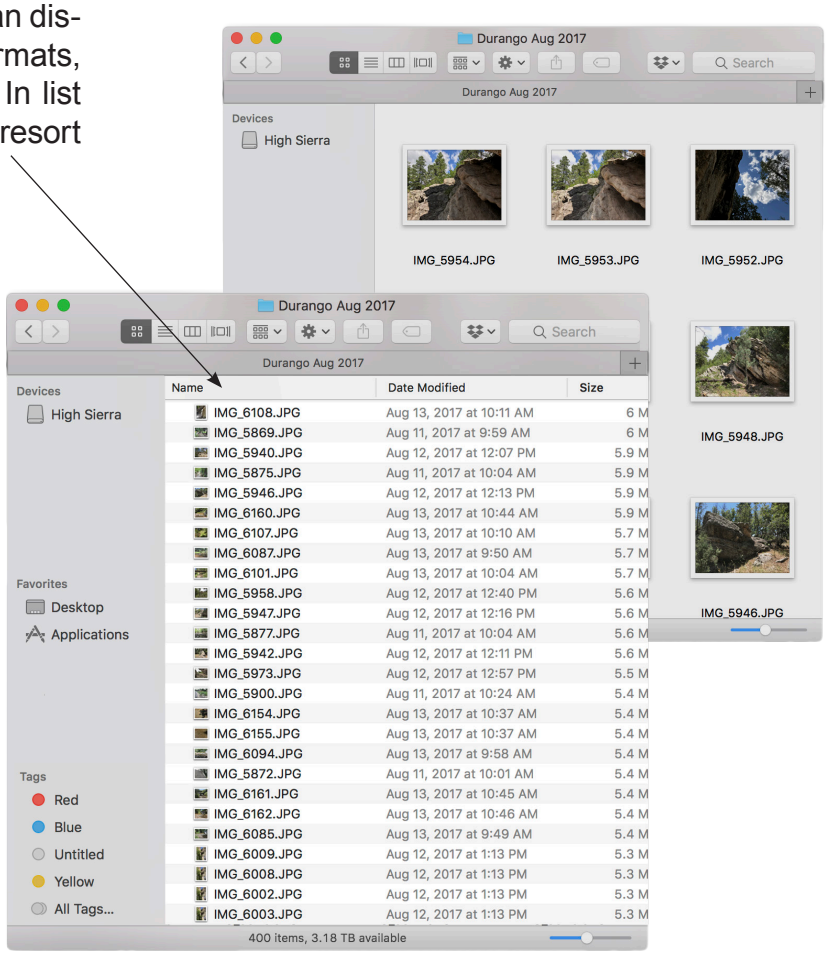
Here are the parts of a Macintosh Finder window:

By turning the **Toolbar** control on or off, you can view the window content as simple icons (above) or view the content by icon, list, column, or cover flow (right). Mousing over a button will display a short description of what that button does.

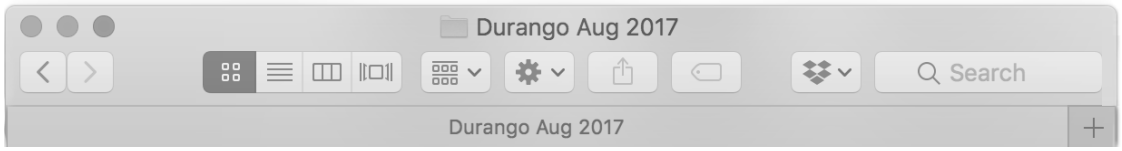


MacOS (Operating System 10), can display windows in many different formats, including list view and icon view. In list view, clicking a column heading will resort the list.

A customizable "Sidebar," down the left-hand side, gives one-click access to most files.

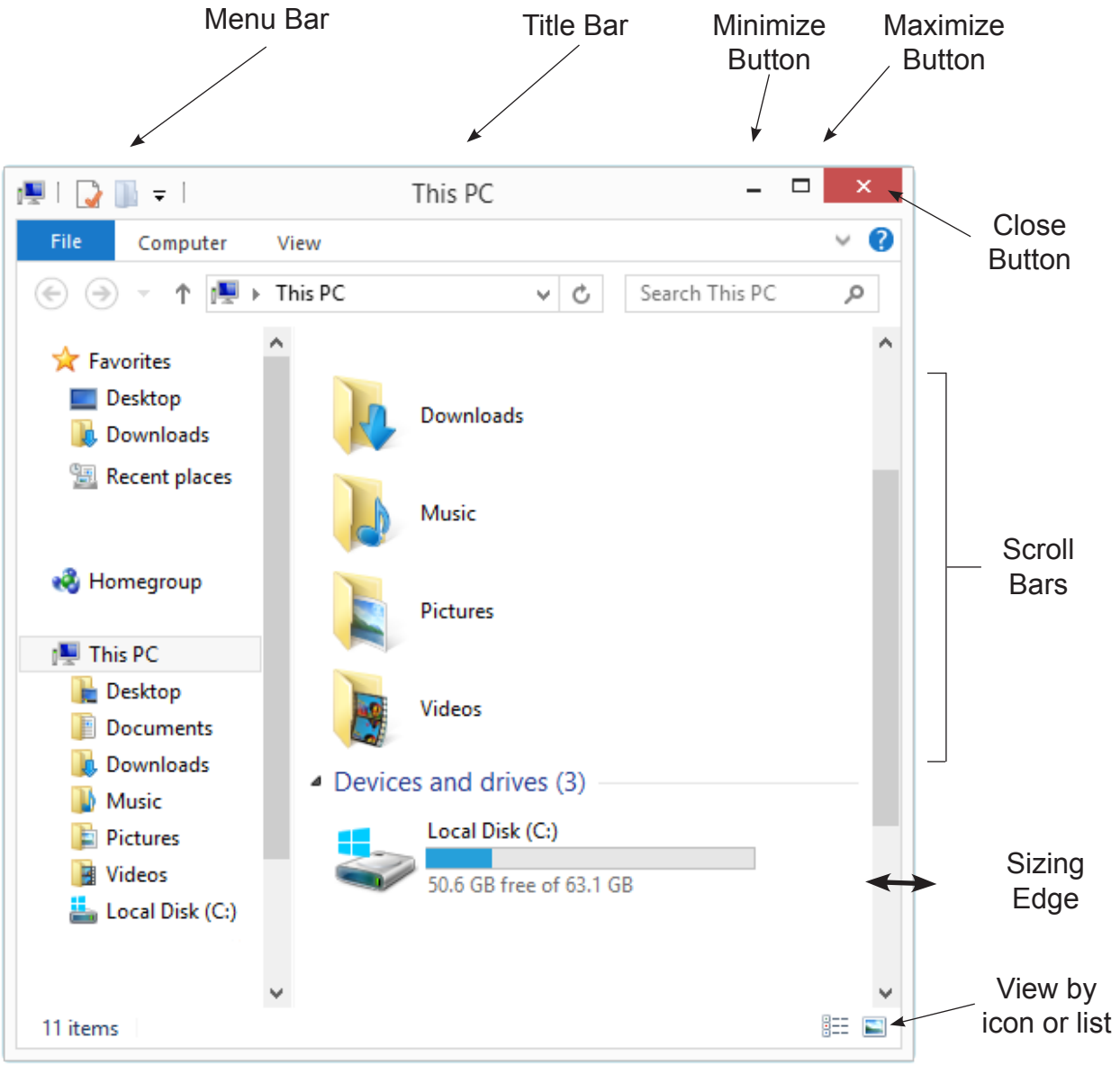


Active and **inactive** windows: you can distinguish the active window from the inactive window by looking at the title bar, which is grayed out. Here is the same window in active mode (above) and inactive mode (below). Simply click any part of an inactive window to activate it.



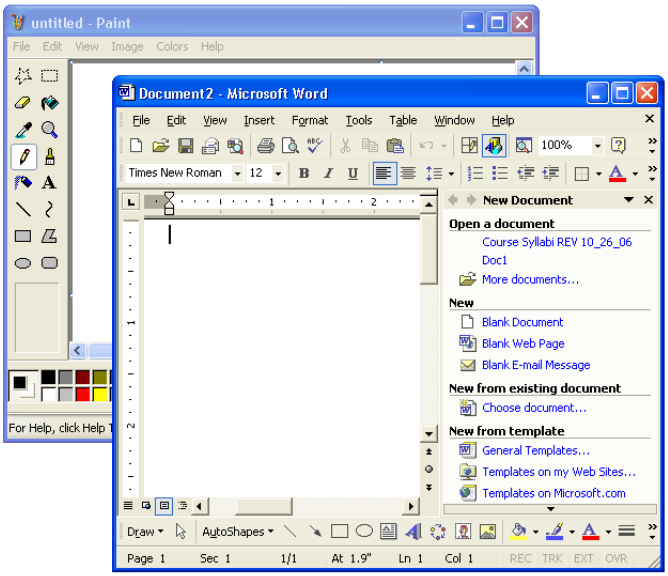
Working With Windows in Windows

The Windows OS window includes the title bar, the minimize button, the maximize button, the close button, the menu bar, and scroll bars (vertical and horizontal) if needed. Windows can be resized by mousing over an edge or corner, then dragging in or out. In the next section, you will learn how to perform the basic Windows OS window operations. Think of a window as a detailed label on the front of a filing cabinet; it tells you what is stored inside. To open a window, double click a folder icon, such as HARD DRIVE (Local Disk). A window will appear revealing the contents of the hard drive. This action also works for folders (double-clicking a program or document will launch a program). You can also think of a window as a piece of paper on your desk. You can put the paper wherever you want, file it away in a drawer, or fold it in half so it takes up less room on your desk.



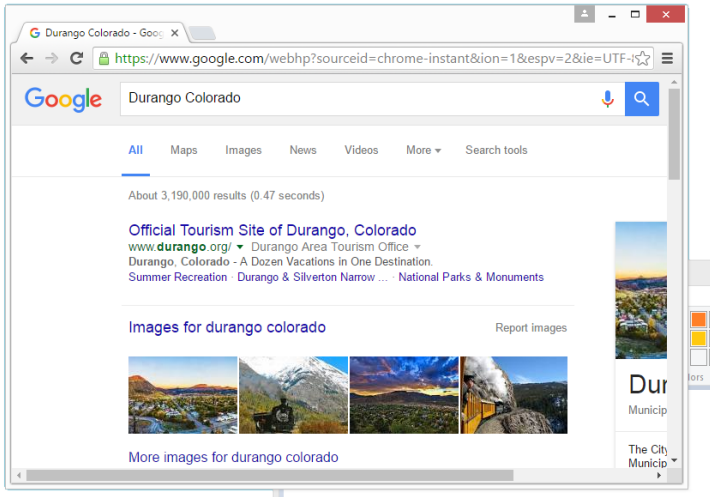
The image below displays two windows. You can distinguish the active window from the inactive window by looking for the window with the darker color - that will be the active window. The window in the upper left hand corner of the image is inactive (the "untitled - Paint" window) and the window at the bottom of the image is active (the "Microsoft Word" window). To make a window active, click anywhere inside the window or on the title bar. As a window becomes active, the Task Bar button for that window will appear darker as well. Notice the task bar at the bottom of the images.

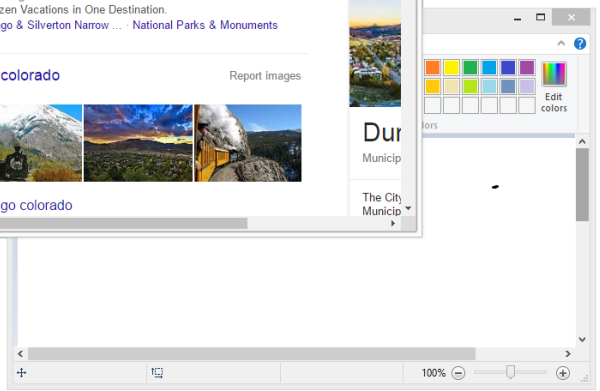
Inactive Window



Active Window

Active Window





Inactive Window

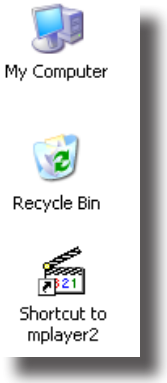
In Windows 8, the close button is red in active windows, grey in inactive.

In Windows 10, the close box is slightly darker in an active window. The Colored 'X' has been replaced by a simple 'X'.

How to Start (launch) a Program

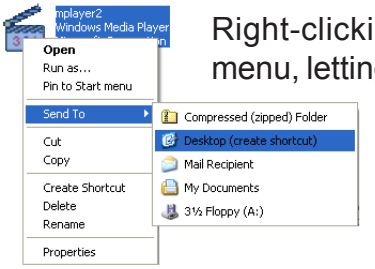
There are several ways to launch a Windows program, such as the built-in word processor, NotePad. The method you choose to use at any particular time will depend on where you are starting from.

From a desktop shortcut:



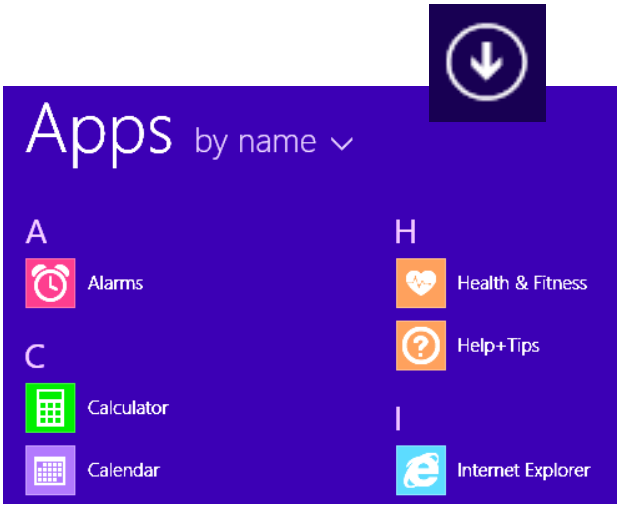
1. Find the shortcut icon on the desktop*
2. Double click the icon to launch the program

* - Windows comes with some shortcuts already on the desktop, but it is possible to add your own.



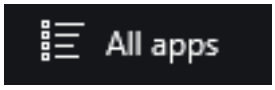
Right-clicking on a program will open a menu, letting you create a desktop shortcut.

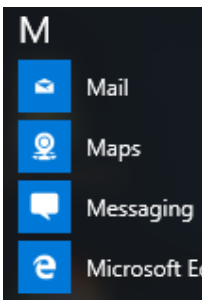
From the Windows Menu:

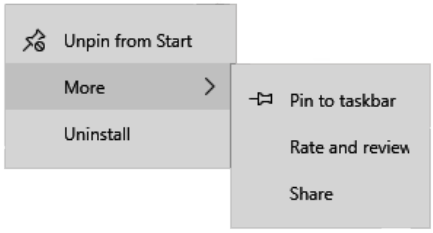


In Windows 8, click the down-arrow button at the bottom left of the Tile screen. An alphabetized list of all programs will be displayed. The program can be opened by double-clicking, or if you right-click a desktop shortcut can be created.

In Windows 10, click the Windows icon in the lower left corner, then click the 'All apps' link. A list of programs will appear in the sidebar. Right-clicking an icon reveals a range of options.







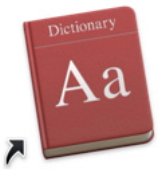
How to Start (launch) a Program

There are several ways to launch a Macintosh program, for example, the Dictionary. The method you choose to use at any particular time will depend on where you are starting from.

From a desktop shortcut (Alias):

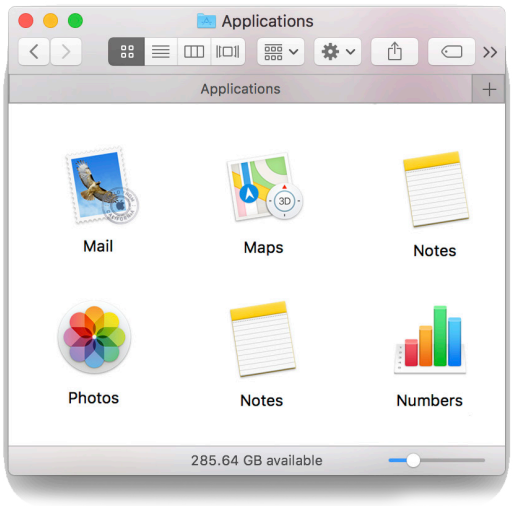
1. Find the shortcut icon on the desktop. Macs come with some shortcuts already on the dock. It is possible to add your own shortcuts. You can also add a program shortcut (or alias) to the desktop, or to the dock. The small arrow at the bottom right of an icon indicates it is an alias.

2. Double click the icon to launch the program (in this case, the Dictionary).



Dictionary

Applications

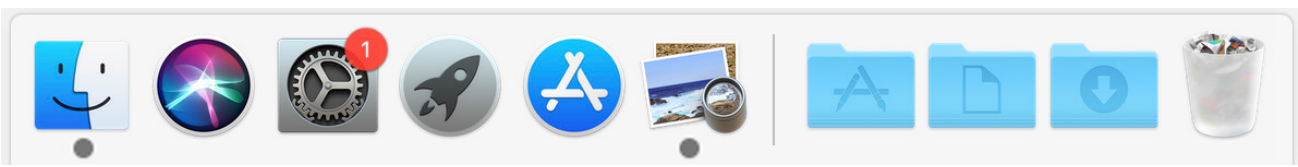


From the Hard Drive:

1. From the finder desktop, double click the Hard Drive icon.

2. You will see the contents of the Hard Drive. Find the Applications folder and double-click to open it. Locate the Dictionary program, then double-click to open.

If your program is present on the **dock**, click once to open. A small indicator will appear beneath the icon, indicating the program is active (opened). To add a program to the dock, simply drag its icon onto the dock from the Applications folder. In this illustration, the Finder and the Preview program are both open.

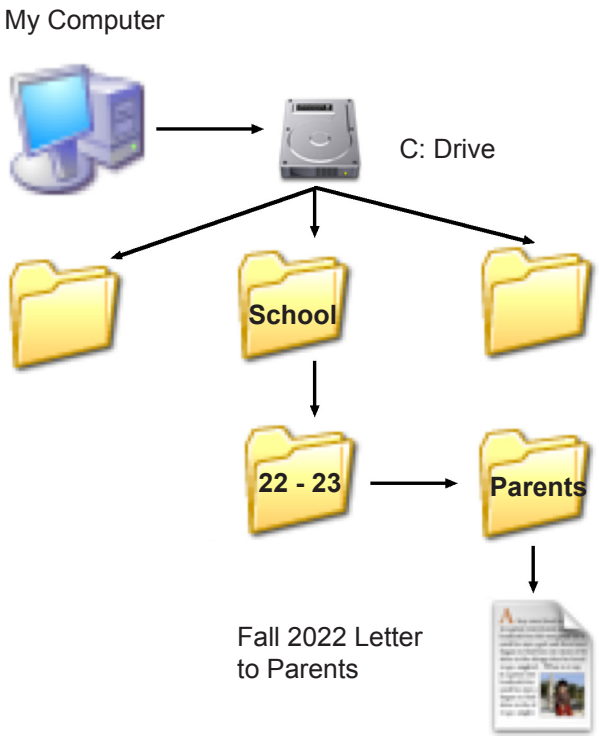


Keeping Track of Documents

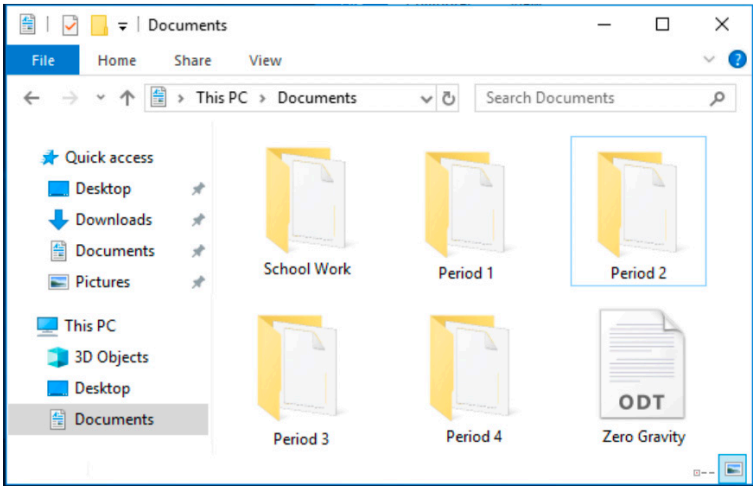
As described earlier, a hard drive is like a huge filing cabinet. Within it are many "drawers" called **folders** or **directories**. When creating a document, perhaps a note you want to send to parents, you have the ability to 'file' that note anywhere you wish on the hard drive.

This ability to navigate through the folders of your hard drive (or others, if your computer is on a network) is a very important concept. If you are a very organized person, you might like to create and label a special folder called "letters to parents" and place that folder in a drawer called "school correspondence".

You would save the note with a title something like "Spring 2019 letter to parents." To the right is a hierarchical diagram of how you might organize and save your school documents.



If you are in a hurry or don't mind where you store your document, it will probably be placed in the default location (i.e. the Documents folder) or the same folder where the original document was located. The bottom line: be organized! You will learn in a bit how to create folders, name and rename files, and move them where you want.



This Windows 10 screen shows the location of a document (Zero Gravity) and several user created folders, each holding at least one document as indicated by the icon.

Project 5: Treasure Hunt

In this assignment you will practice navigating to and exploring the contents of folders and files.

To fill out and submit this form, please go to the Treasure Hunt Survey link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website. A copy of your completed form should be e-mailed to you after submitted.

Go to the course website, ***www.intro.steveyoungfpu.net***

If you have not done so, locate the **'Course Forms & Resources'** link on the course website. Clicking on the link will download a .zip file to your computer. Double-clicking the file will create a folder on your computer containing all the course resources, including those for this assignment.

Windows Icon

TEC 923

Macintosh Icon

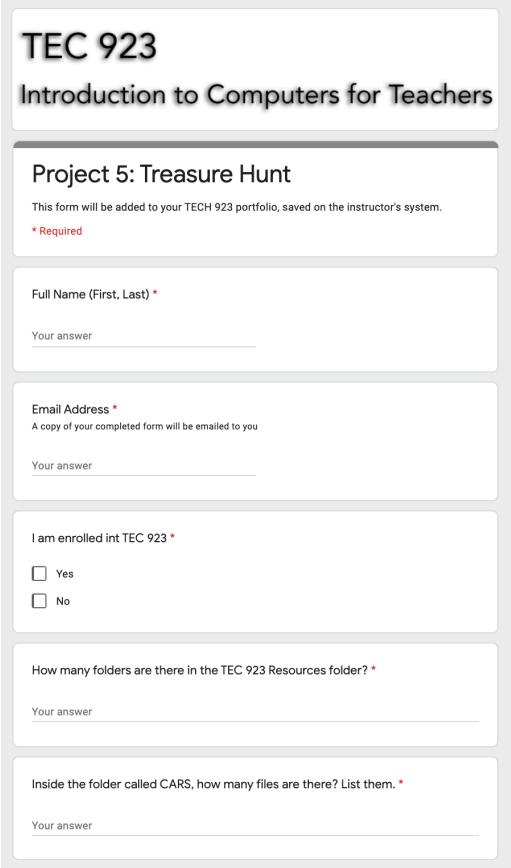
How many folders are there in the TEC 923 Resources folder?

Inside the folder called CARS, how many files are there? List them.

What is the name of the file in the DOGS folder?

How many files are there in the COOKING folder?

In what folder would you find the sound of a flute?



TEC 923

Introduction to Computers for Teachers

Project 5: Treasure Hunt

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

Yes

No

How many folders are there in the TEC 923 Resources folder? *

Your answer

Inside the folder called CARS, how many files are there? List them. *

Your answer

Word Processing

Word Processing is the ability to create written documents using a word processor. Word processing developed as a specialized program on mainframe computers during the 70s, as online computing with the use of personal terminal devices having keyboards and display screens became more common. These programs evolved from text-based editors used by programmers and computer professionals.

Microprocessors and, in the late 1970's, the ability to place intelligent devices on the desks of workers at a reasonable cost, including cheaper and smaller printers, led to the introduction of machines dedicated to "word processing". These were primarily aimed at typists, particularly those in centralized typing pools where other workers sent handwritten notes or Dictaphone tapes to be transcribed into documents that could be printed and returned for reviewing. Considerable time saving economies were achieved by word processing operators. This resulted from:

* the faster typing speeds achieved by as a result of electronic keyboards
* the assistance of word processing software for functions like layout and spell check

Word Processing is revolutionary because it bypasses steps that for centuries have been handled almost exclusively by trained professionals. Design, typesetting, paste up and printing - these skills are now in the hands of anyone who has learned to use a computer. Before word processing, a writer would compose copy, a typesetter would produce printed text and a designer would cut up the columns of type strip in graphics and lay out the pages on art boards. Then those boards would be sent to professional printers. With a word processing program, the final laser printed pages are sent directly to a printing house or simply photocopied by the user.

The essence of the process known as word processing goes by the acronym **wysiwyg** for "what you see is what you get". Whatever appears on the screen is very similar to what the printed page will look like. At any time during the process the printer can provide a good quality printout that serves as either a draft or a final page, a huge time saver over traditional methods.

Word processing has made it much easier to revise and rewrite a document. Instead of retyping a paper with inserts and changes, the author can open the document on the computer screen and just type the changes. Since the revision process is now much easier, teachers are finding that their students are excited by the way their work looks and are willing to make necessary changes.

Teachers find that the ability to quickly create informative and even entertaining documents to be of great benefit. Teacher-parent communications, class hand outs and even bulletin boards take on added value when the message from the teacher is cleanly and professionally produced. This can be achieved even by a novice at word processing, with just a little time, practice, patience and effort. So let's get started!

Word Processing Glossary

Active Window: The window where the next command or action takes place. The active window lies on top of other open windows.

Application: Instructions that manipulate information. Also referred to as a program.

Auto Numbering: Feature that automatically numbers the pages of a document for the user; also renumbers pages as material is moved, added, or deleted

Choose: Dragging with the mouse to pick a command from the menu.

Click: To position the mouse pointer and then press and quickly release the mouse button.

Clipboard: A portion of memory that holds the last Cut or Copied selection.

Comment: Feature that allows a user to annotate and create notes in a document without changing the text of the document.

Document: A file you create with a program

Double-click: To position the mouse pointer, then press and quickly release it twice.

Drag and Drop: The ability to Drag text and pictures from another document and Drop them onto an existing page.

Export: Transferring text out of one program to another program.

Filters: A translation feature that allows saving and opening one kind of document to a different program.

Find and Replace: A feature which allows a word to be replaced automatically throughout a document. May be global or selective.

Font: The shape of characters belonging to a particular family of type. Some examples of different fonts are ROSEWOOD, Giddyup STD, HERCULANUM, Comic Sans MS and Terratello

Footer: Text that appears at the bottom of each page of a document.

Footnote: Material that is printed at the bottom of a page; marked in text by a numbered referent.

Hard Copy: A printed copy of a word processor document, usually on paper.

Header: A title or heading that appears at the top of each page of a document.

Highlight: Click on or drag an object or area of a document to make the background or object darker or visually distinct. Highlighted objects or areas are referred to as "selected".

I-beam: The shape of the mouse pointer in a word-processing environment. It blinks and marks the point where text (or graphics) will be inserted.

Import: Bringing text or graphics into a program from another program or document.

Justify: To adjust the spacing within lines in a document, for example, so that the lines end evenly at a straight margin.

Keyboard Shortcut: A combination of keys that can be used instead of having to select an item from a menu.

Landscape Orientation: Refers to a page that is printed wider than it is long.

Menu Bar: The horizontal bar below the title bar that contains the names of the program's menus.

PDF: Portable Document File - A file format developed by Adobe Systems, Inc., for sharing files independently of the application that created the file or the computer's operating system.

Point: The size of letters are measured in points, equal to 1/72 of an inch. (i.e. 36 point text is 1/2 inch high, 18 point is 1/4 inch).

Scroll Bar: Rectangular shaded area on the right and bottom of a screen representing width or length of document. Scroll arrows and a scroll box used to scroll the document.

Select: To mark where the next action will take place. Before a command is chosen, items are selected by clicking or dragging the cursor (or I-beam) across them.

Spell Check: A feature which compares the words in a document with the words in its dictionary and offers alternatives. In some word processors, this feature can be set to automatically correct spelling as you type.

Style: The visual look of a letter or word, such as **bold**, *italic*, underline, etc.

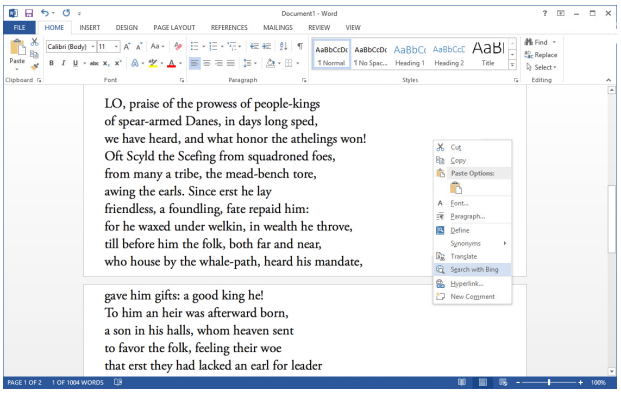
Template: A predefined document with specific style and layout. Use of a template saves time and assures a professional looking document.

Word wrap: A feature that moves text from the end of one line to beginning of the next line.

WYSIWYG: Arcane term for ' What You See Is What You Get'. When what you see on the screen is exactly the same as the way it will be printed. This term is outdated, as all word processors are now 'wysiwyg'

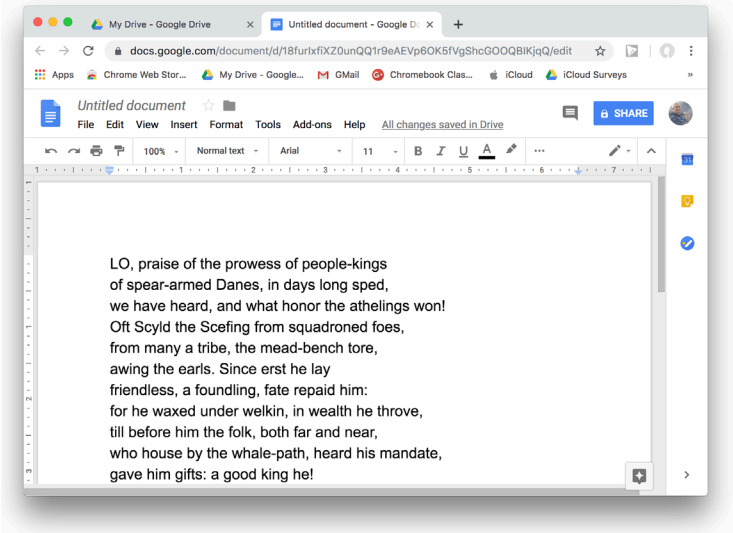
Word Processing Programs

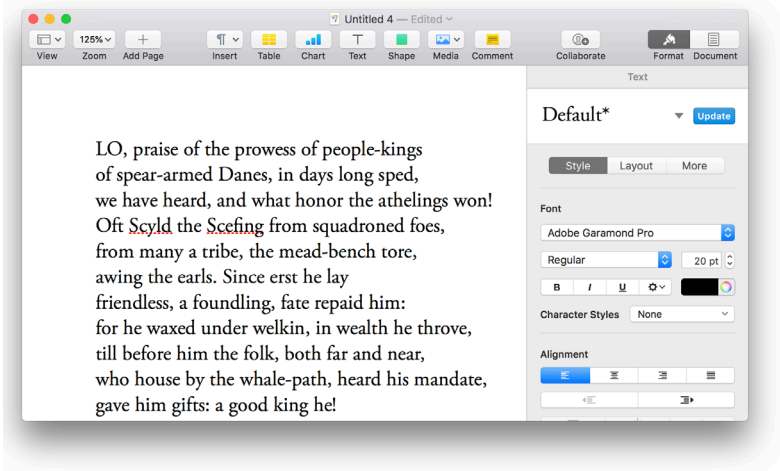
There are many word processing program available today, but three dominate the education community; Microsoft Word, Google Docs, and Apple Pages. You may use any of these (or another if you choose) to complete the word processing assignments.



Microsoft Word

Google Docs

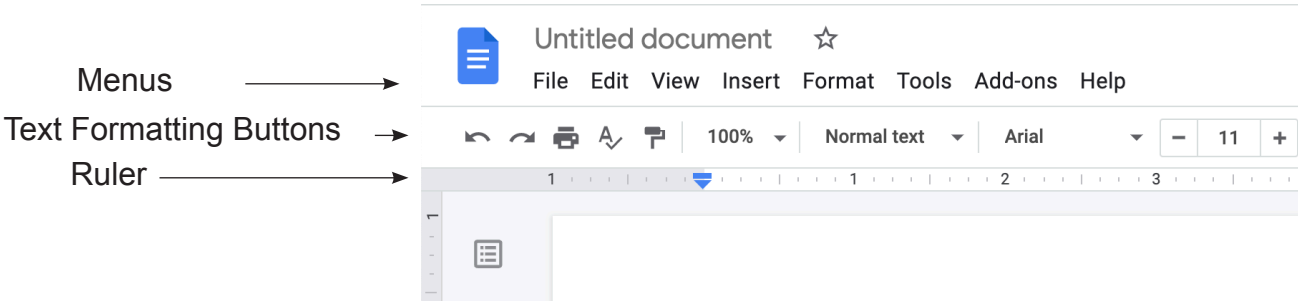




Apple Pages

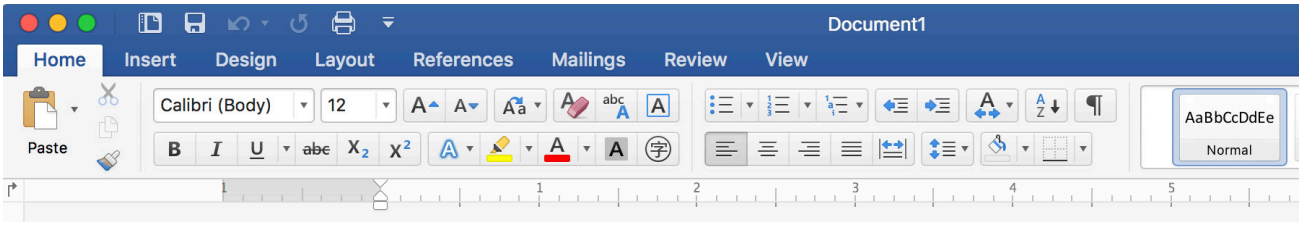
Word Processor Controls

This is a generic word processor window.

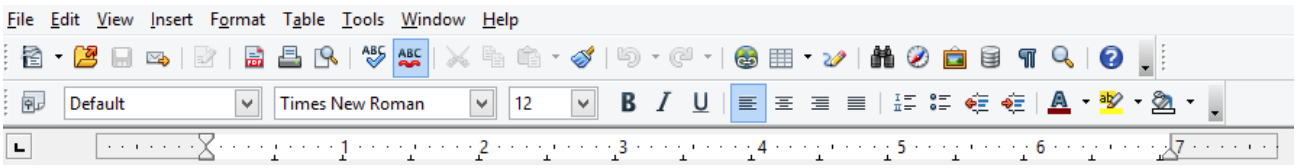


All word processors share common traits; controls for adjusting the position and formatting of text, setting tabs and spacing, inserting graphic elements into a document. Compare the three word processing programs below, Microsoft Word, OpenOffice Writer, and CKEditor. Notice they have many similarities. Learning one word processor will allow you to use other word processors; the underlying concepts and controls are all the same. Some programs may have more features than others, but the most often-used capabilities are shared by all.

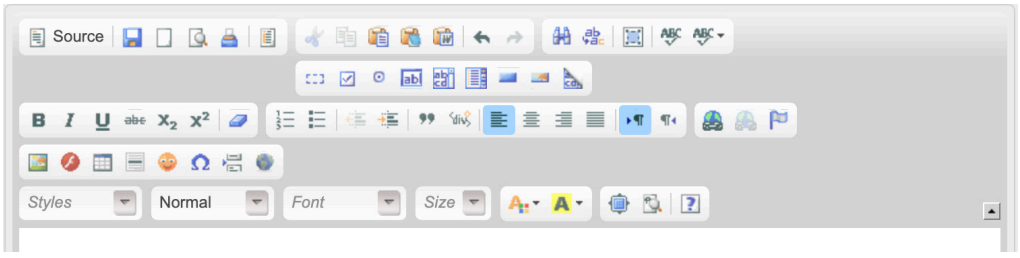
Microsoft Word



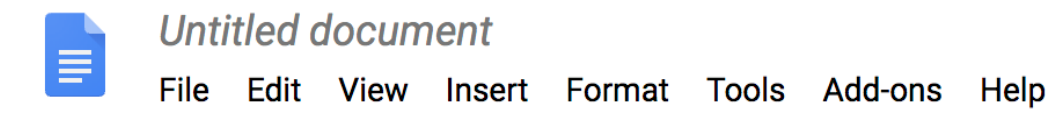
OpenOffice.org Writer

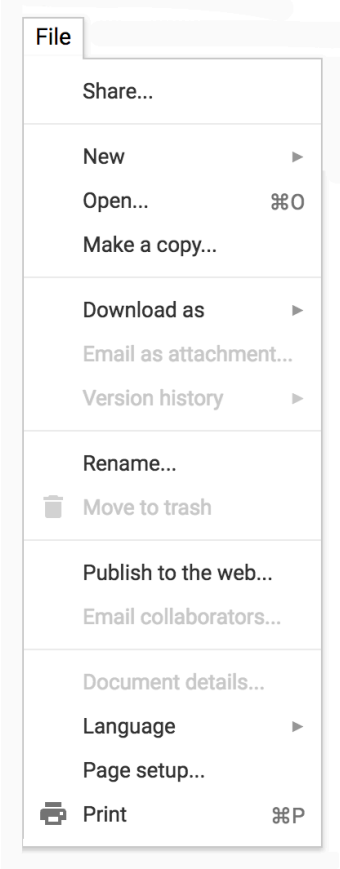


CKEditor Document (a free online word processor linked to on the course website)



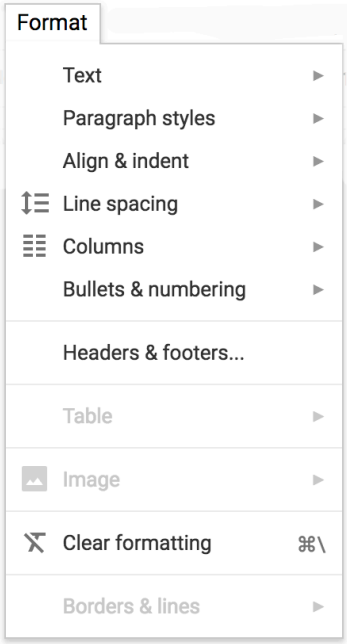
Get To Know Your Menus

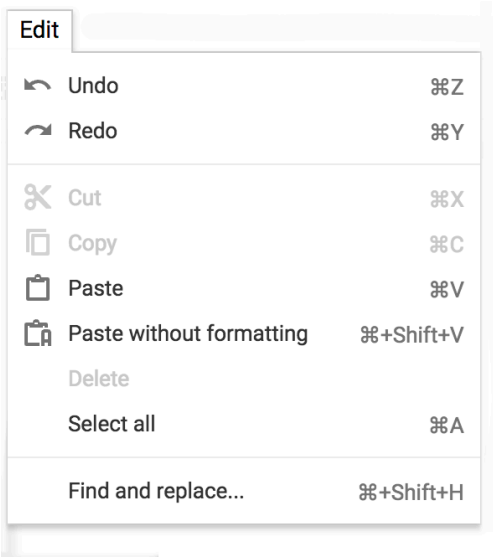




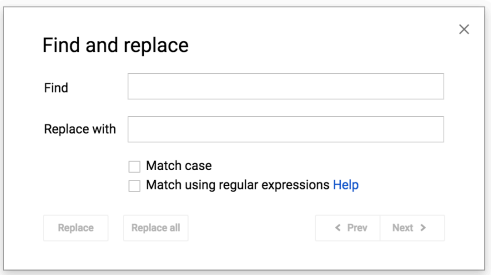
The items in the menu bar reveal the features and possibilities within the program. When you open a new program, take several minutes and look through the menus. In doing so, you will quickly see the range of options available to you. Some menu items have a small triangle next to them, indicating that a submenu will reveal even more options and features.

On this page are the menus for a Google word processor document. You will also see many items which will not be covered in this introductory course, but which may spark an interest to explore more about what the program has to offer.



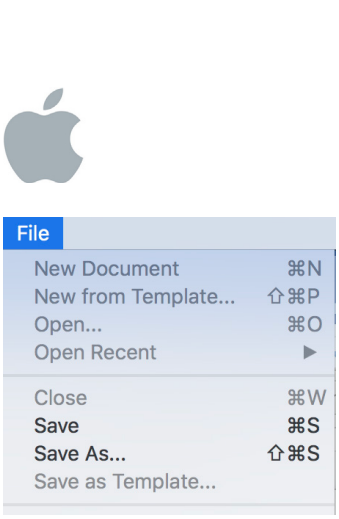


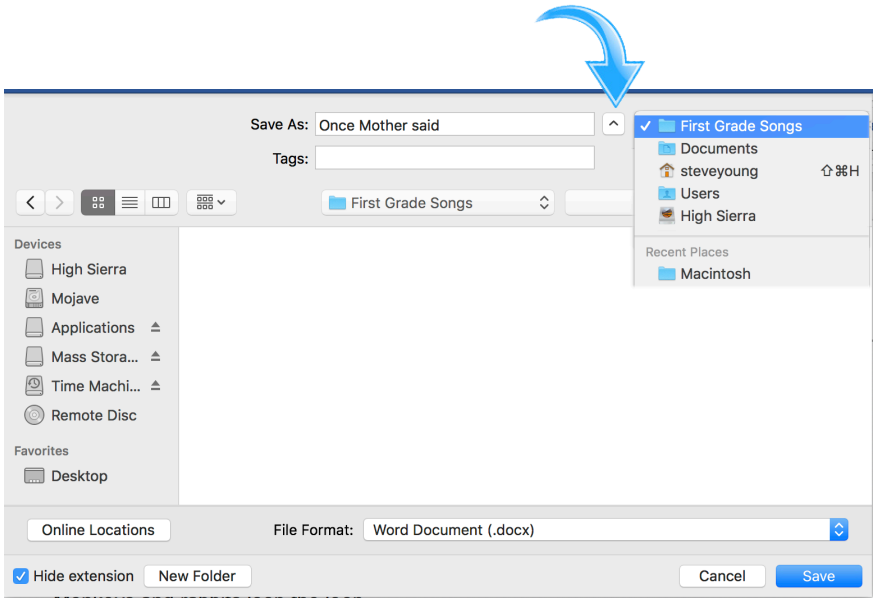
For example, in the Edit menu, there is an item called Find and Replace. This feature can locate and 'swap out' one bit of text for another. If you are writing a paper on insects and don't want to type in 'Psudocalamobius' over and over, you can just type 'psm' and then go back and have Find and Replace your three letter shortcut with the full word.



Saving a Document

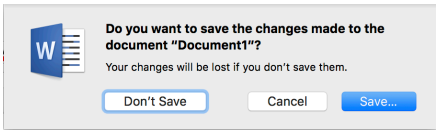
There are now a range of possibilities when it comes to saving your work. If you are using a cloud-based word processor such as Google Docs or Apple Pages, the document will be automatically saved to your cloud-based account.



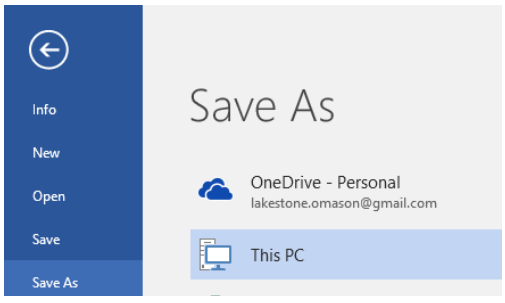


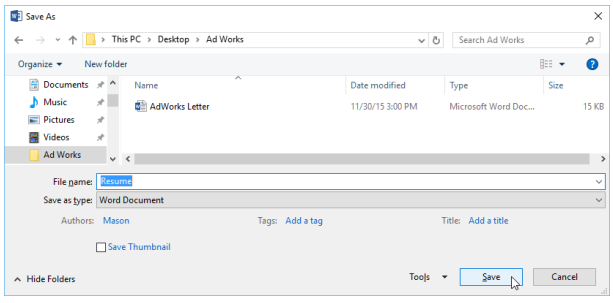
With traditional programs like Word, documents must be **Saved** or **Saved As**. Choosing Save for the first time will allow you to choose a name for the document and a location on your computer's drive to act as a storage location point. Subsequent saves will replace the existing named document with the updated version. Choosing Save As will let you save a copy of a document under a different name and/or location. In the above illustration, the 'Once Mother Said' document will be placed in the 'First Grade Songs' folder which is inside the 'Documents' folder.

Typically if you try to close a word processor without saving, the program will prompt you to save your work.

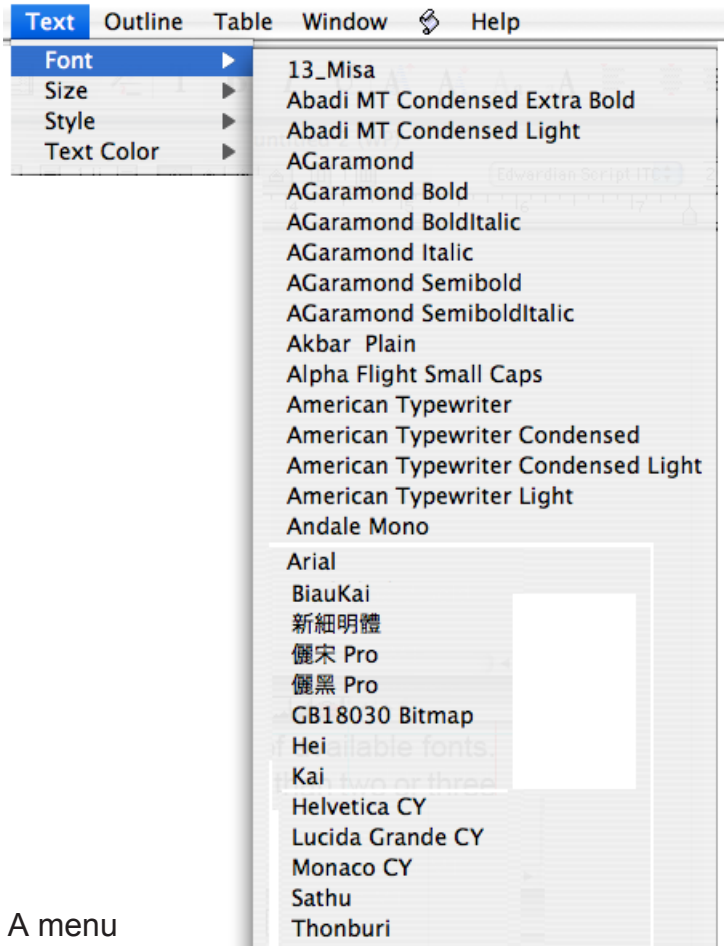


In Windows, locate and select the Save command. You can then name and place your document where desired. Note that in Word you have the option of saving to your computer or in Microsoft's cloud service.

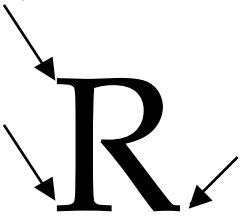




Fonts



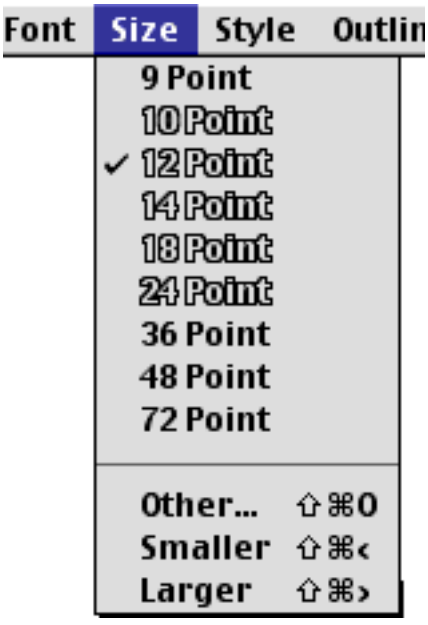
A font refers to a type of shape of a particular set of letters. Fonts afford us the ability to type in a wide variety of lettering. Two major classes of fonts are Serif and sans-serif. A serif is the flourish at the end points of a letter, as seen here.



A sans-serif (*sans* meaning without) font lacks the flourish and appears more 'blocky'.

R

To change fonts, go to the FONT menu. A menu will appear with a list of available fonts. Generally speaking, no more than two or three different fonts should be used in a given document. If too many fonts are used, your letter may end up looking like a **ransome note**.



You can also change the size of the lettering. In printing, size is measured in points. One point is 1/72 of an inch. 72 point text will produce lettering 1 inch high, 36 point text is 1/2 inch high, etc..

Most type you read in books and newspapers is 10 point text. To change font size, go to the SIZE menu and select a point size. You are currently reading 12 point type, just to give you an example.

Someday software may have the 'brains' to "do what I want, not what I say". Until that time we must rely on other ways to 'tell' a computer exactly what we want it to do at any given moment. There are literally hundreds of features built in to a word processing program - and commands to access each of them.

For example, let's say we are typing a letter and want a certain word **bolded**, just as I've done here. There are six ways to do this one task. Six ways! This may seem like overkill, but the idea is to make the software adaptable to the way you work. Many features can be turned on and off in several different ways. Experiment with each of them, and decide which way is easiest for your working style. Here are six ways to bold a word in a word processor document:

1) Type in your text, and just before you type in the word you wish bolded, mouse up to the STYLE menu and select **B**OLD. Type in the next word. You will notice that it is bold. After you type in that word, mouse to the STYLE menu and select PLAIN TEXT to return to normal character style. Many features in Google Docs, Word and other programs act on a toggle or light switch principle. In this case, once BOLD is turned on, it will stay on until you turn it off. The same menu command, BOLD, will either turn bold on or off, depending on its state. There are two ways to check whether or not bold is turned on; type something and see if it is bold, or look in the STYLE menu and see if there is a check-mark before the BOLD command. A check-mark means that bold (or any other feature) is on.

2) Type in your text, and just before you type in the word you wish bolded, press the keys, Command + B (control + B in Windows). Type in the next word. You will notice it is bolded. After you type in that word, press command - B or command - T. These commands are called COMMAND KEY EQUIVALENTS. If you look at the STYLE menu, you will see next to the bold command. This is to inform you that pressing command - B on the keyboard is the equivalent of using the mouse and selecting Bold from the Style menu. This technique has the advantage of not having to remove your hands from the keyboard.

3) Type in your text, and just before you type in the word you wish bolded, use the mouse to press the **B** (for Bold) button on the shortcuts palette. You will notice that it is bold. After you type in that word, use the mouse to press either the **B** button or the T (plain Text) button on the shortcuts palette.

4~6) The last three ways are to follow step 1 or 2 or 3 above after the document has been finished. Using the mouse, double click on the word (text, or characters) you want bolded. This highlights that word. You can then choose BOLD from the STYLE menu or click on the **B** button in the shortcut palette, or press command + B (control + B in Windows).

Justification - Alignment

When typing in a word processor it is not necessary to press return near the end of each line, as it is with a typewriter. Word processors have **word wrap**, which automatically starts a new line of text. You will note that each line starts on the left hand margin (this paragraph is an example). If you look at the right hand margin, you will note that each line ends at a different spot. This is called **left justify** or **ragged justification**. This paragraph is set to **full justification**. You will note that both the left and right sides of each line touch their margin. To do this, the word processor measures the width of each letter on a line and adjusts the spacing to spread out or squeeze together the text to make it fit exactly the width of a line. Some word processors have a **force justify** command, which will make a line reach from margin to margin, regardless of the number of words on a line - (t h i s i s a n e x a m p l e) .

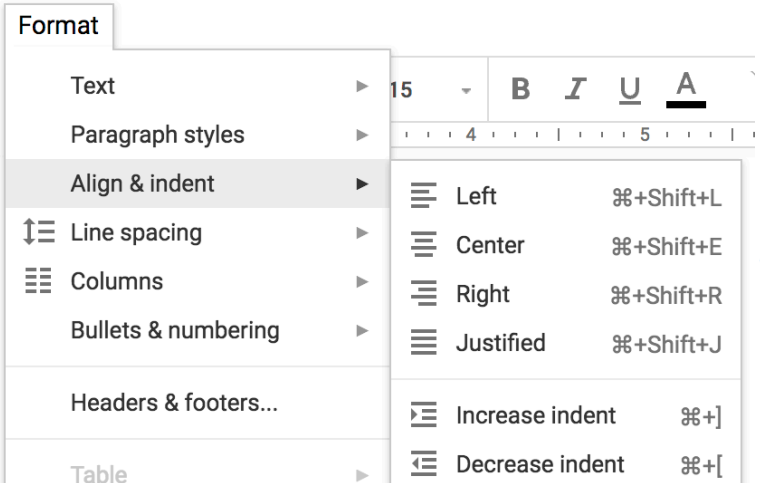
Left justify keeps the first character in each line at the left margin.

Center justify lets you center text (usually a title) on the page.

Right justify is used for numbers of two-column lists to create a visually interesting form.

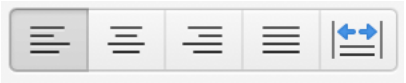
To align text:

There are typically three ways to change the alignment of text - using a menu command or an alignment icon.



The Justification (Align) menu controls in **Google Docs**

Alignment icons are nearly identical in, below, **Microsoft Word** (left) and **Apple Pages** (right).



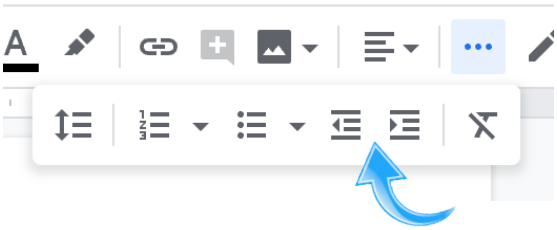
Indents

In a word processing document, paragraph indentation is the amount of space between the edge of the text and the document's margins. Each paragraph can have its own indentation settings. For example, to highlight a quotation, indent the paragraph.

To change paragraph indentation:

Click the relevant paragraph (a section of text separated from the text above and / or below it by a space) then click the Increase indent icon or decrease indent icon

> Once when a Lion was asleep, a little Mouse began running up and down upon him; this soon wakened the Lion, who placed his huge paw upon him, and opened his big jaws to swallow him.
>
> "Pardon, O King," cried the little Mouse, "forgive me this time, I shall never forget it. Who knows but I may be able to do you a turn some of these days?"
>
> The Lion was so tickled at the idea of the Mouse being able to help him, that he lifted up his paw and let him go.



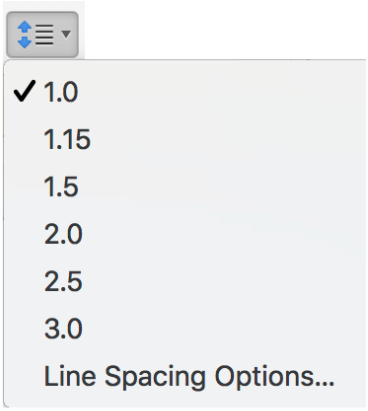
Indent icons in **Google Docs**

Indent icons in **MS Word**

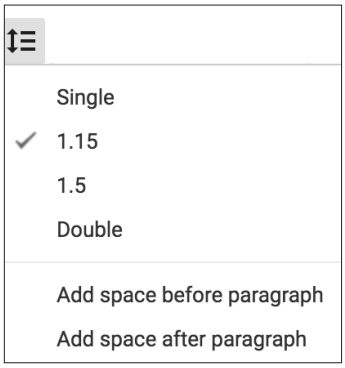
Indent icons in **Apple Pages**

Line Spacing

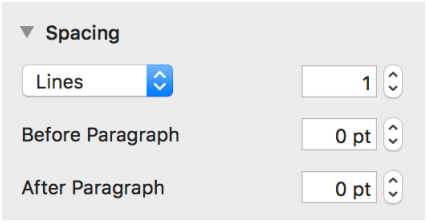
Text documents are preset to use single-space lines. You can increase or decrease the line spacing using the menu command and / or icon; you can set spacing in half-line increments. To set line spacing by a more exact amount, use the option dialog box. In most programs, you can also fine tune the spacing using **points**, or 1/72 of an inch increments.



Line spacing in **Microsoft Word**



Line Spacing in **Google Docs**

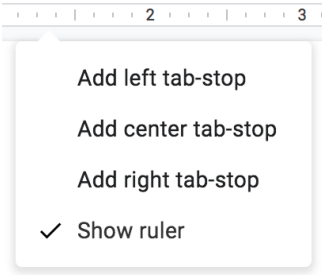


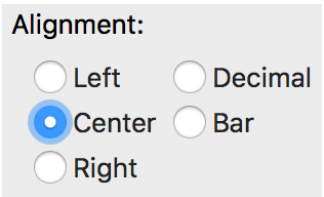
Line spacing in **Apple Pages**

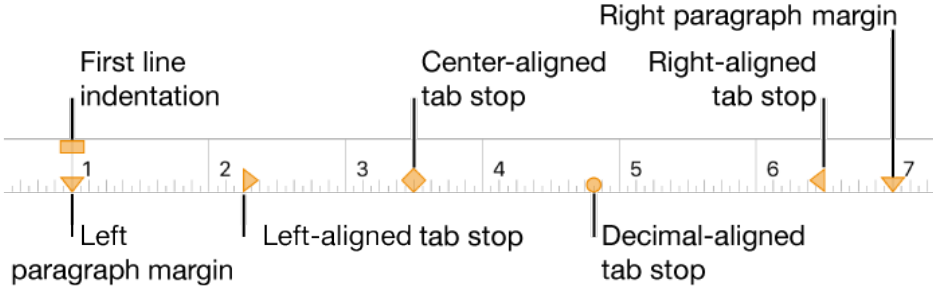
Tabs

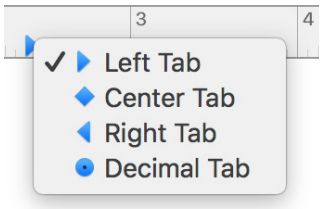
In a text document, you can line text up at specific points across the page by setting tab markers at those points. When you press the Tab key, the insertion point moves from one tab marker to the next (rather than the default, that being every 1/2 inch), and the text you type aligns at that point.

To set a tab, click the ruler at the location you wish to place a tab. In **Google Docs** (top right), a menu shows the available types of tabs. Double-click an existing tab icon in **Microsoft Word** (middle right) or right-click a tab icon in **Apple Pages** (bottom right) to reveal tab options. Note: as of this writing, there are no tab settings in iCloud Pages.





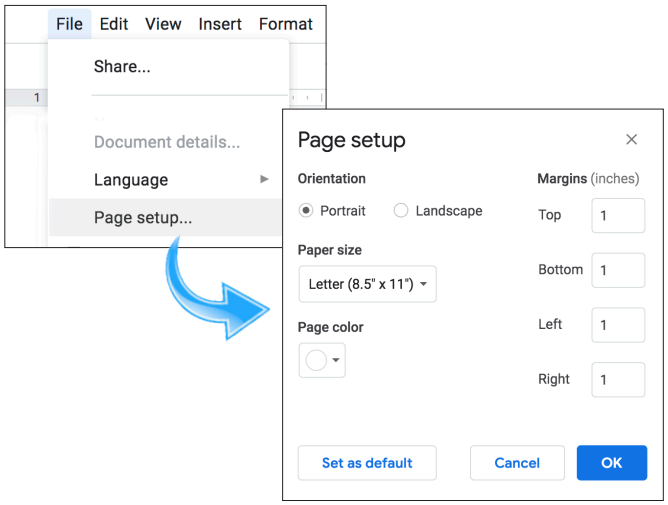




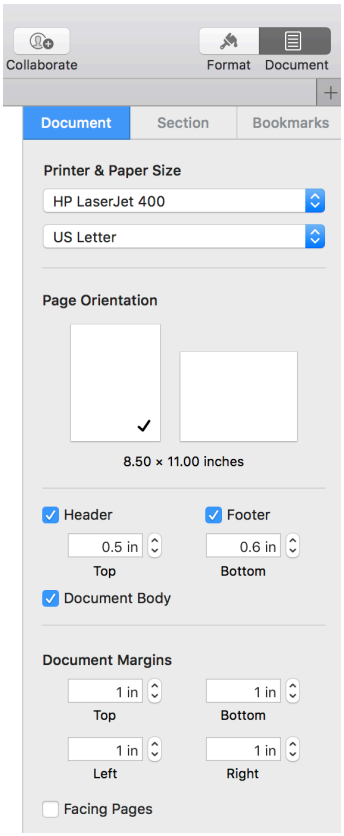
Margins

Margins are the empty spaces between the edges of the paper and the working area. They are marked by a light gray border called page guides. You can change the preset margins for your document. For example, you may want a wider left side margin if you are going to hole-punch the document and put it in a binder.

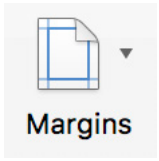
In **Google Docs**, choose Page Setup from the File menu.

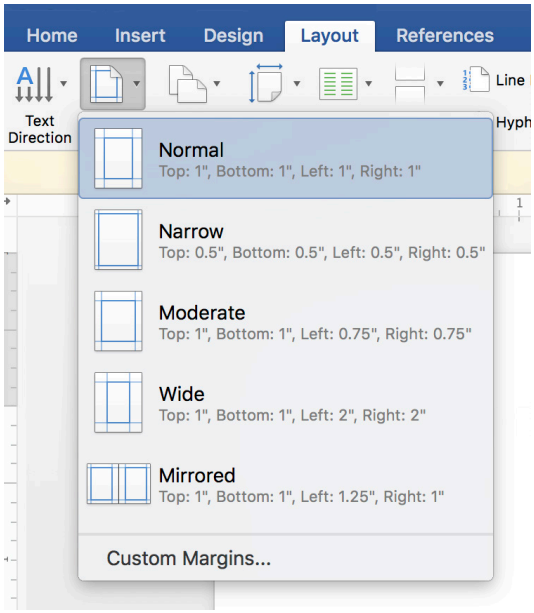


In **Apple Pages**, click the Document button. In iCloud Pages, click the icon.



In **Microsoft Word**, click the Layout tab on the icon ribbon, then click the Margins icon.





Headers and Footers

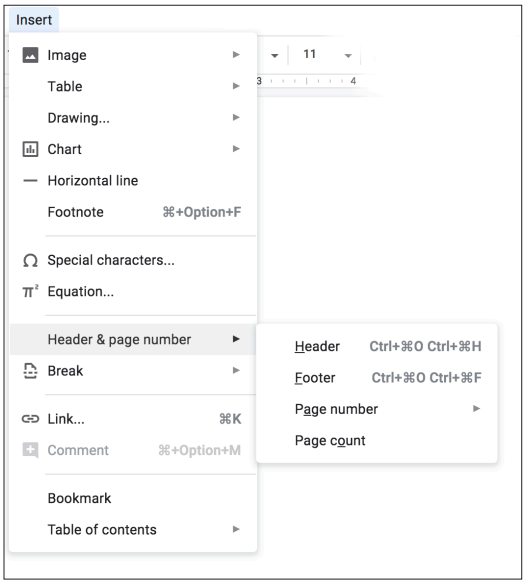
You can set up your document so **headers** or **footers** are automatically set on every page. Use headers and footers to repeat information such as the page number, title, and date on every page.

This will save you time (not having to re-type the information in every time) and give your document a finished, professional appearance.

To create a header or footer in Google Docs

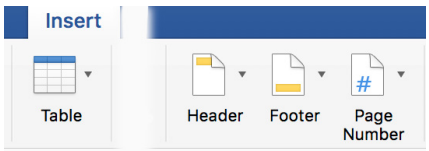
1. Choose Insert Header or Insert Footer from the Insert menu.

2. In the header or footer area, type or paste the information you want to use as a header or footer. You can use dates, times, and page numbers in headers and footers, as well as graphics and text. Note there is also a menu item for page numbering.



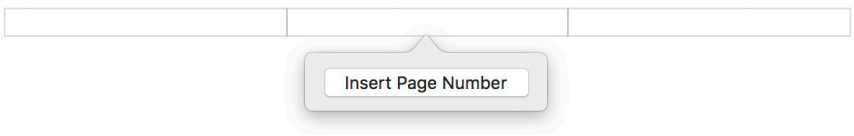
To create a header or footer in MS Word

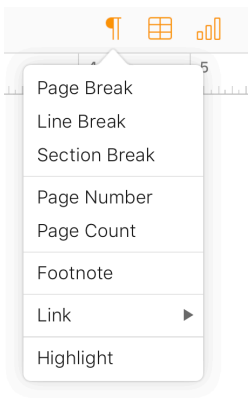
1. Click the Insert tab on the icon ribbon, then click the Header or Footer icon. The small arrow next to each icon will show several formatting options.



To create a header or footer in Apple Pages

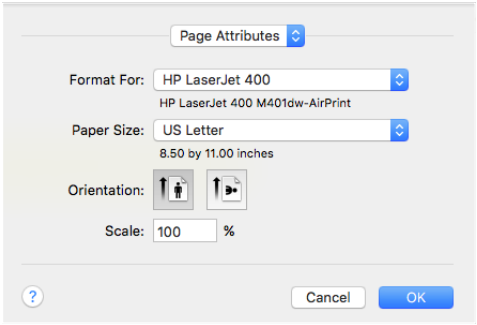
1. Click in the pre-defined header or footer section and add text. On a Mac, you can choose to add page numbers. In iCloud, use the Paragraph icon and choose and Page Number.



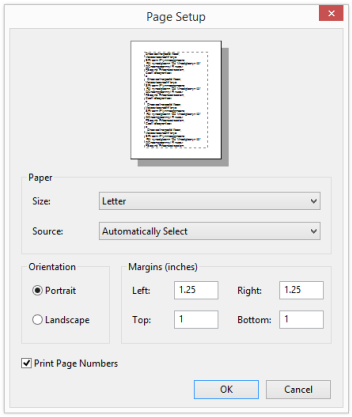


Page Setup & Printing

The printed page is still an important part of our lives. Work done on a computer is often printed, and you have control of how (and even where) it is printed. Two screens control these features, **page setup** and **print**.

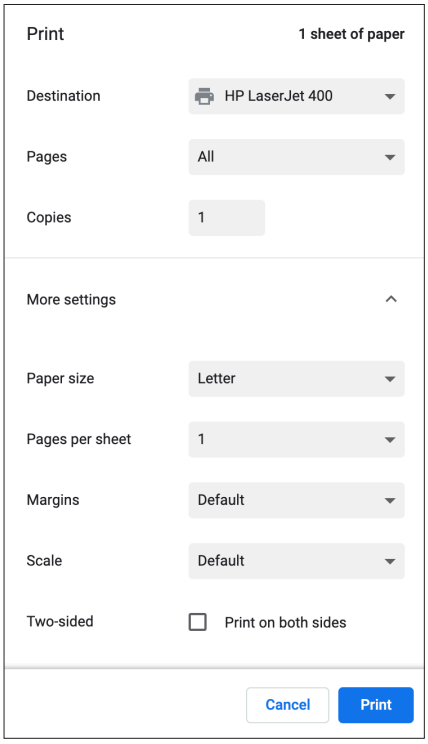


Page setup allows you to adjust the scale, orientation, paper size for your print job. The page setup screen is printer dependent, meaning each printer type and model may offer different features. The page setup command is in the FILE menu.



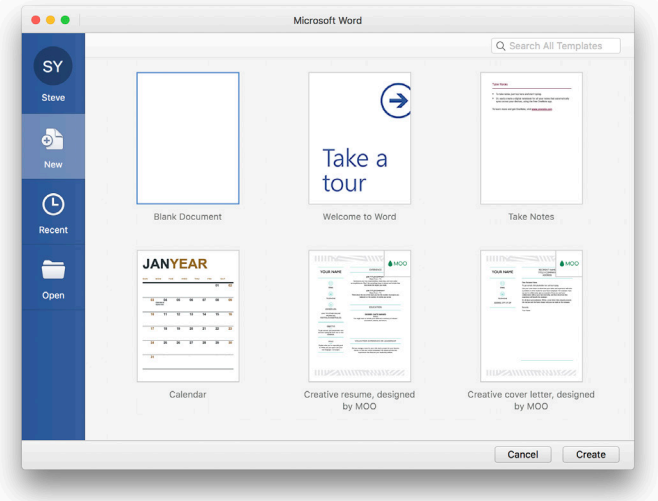
The print screen allows you to specify the quantity and range of your print job. You can print one copy or many copies of the same document (If you have to make many copies, I recommend printing one, then using a copy machine for the rest - it is much less expensive, in the long run!).

You can also print all the pages in a document or a range of pages, such as 'print page 5 to page 5' will print just the fifth page of a document. The print command is in the FILE menu, or sometimes there is a print button or keyboard shortcut.



Word Processing Projects

The following projects will progressively introduce you to the powerful word processing tools at your disposal. You will need to print each finished project to turn in with your packet. Feel free to experiment; you can often learn more from 10 minutes of playing than an hour reading an instruction manual.



Keep in mind that it may take *several* tries to 'get' a particular concept or technique. Stay below your frustration level, but keep trying!

Feel free to use which ever word processing program you normally use or have access to.

These might include:

Microsoft Word

Google Docs

Apple Pages

OpenOffice

If you do not have access to any of these programs, please contact the instructor for help.

The following projects will progressively introduce you to the powerful word processing tools at your disposal. You will need to print each finished project to turn in with your packet. Feel free to experiment; you can often learn more with a few minutes of playing that you can in hours of directed instruction.

NOTE: If you need assistance on any project, please do not hesitate to contact me. If you would like me to review a particular assignment, I would be glad to do so.

Project 6: Word Processing

Learning Objectives: Open a new word processor document; typing skills.

Step 1: Using your preferred word processor of your choice, open a new, blank document.

Step 2: Type! Get used to typing on your computer. Practice using the delete/backspace key, the return key, etc. Spend a few minutes and type several lines of text, noting how you don't need to press the return key at the right margin.

Step 3: **Save a copy to upload to Moodle at the end of the course.**

Benefits of Touch Typing:

Speed - This is going to be the first and most obvious benefit of learning to touch type. A touch typist can easily reach typing speeds above 75-80 words per minute, while a non-trained individual is around 10. This is increased by the fact that an accomplished touch typist doesn't have to look at the keyboard.

Accuracy - One of the most important things to learn no matter how hard you type is to type accurately.

Time - If you increase your typing speed for example, from say 30 words per minute to 60, you have effectively halved the time it would take you to do the same amount of work.

Decrease Fatigue - Typing is both psychologically and physically exhausting when done for long periods of time. Learning to touch type properly reduces mental and physical fatigue.

Health - Overall, touch typing is better for your health. You're not hunched over looking at the keys, and using all of your fingers actually reduces the risk for repetitive stress injuries (RSI).

Productivity - By learning touch typing, you shall become more productive.

Adapted from https://www.pitman-training.com/advice-hub/pitman-blog/why-is-it-important-to-touch-type

Project 7: Word Processing

Learning Objectives: Selecting text; moving text; using cut, copy and paste

Setup: *As you did in Project 6 and will do for the remaining word processing projects:*

Open a new blank word processing document. Type in several lines of text.

Step a: Move the mouse cursor so the point touches a word, as illustrated in the graphic at the bottom of this page. Double click to select the word.

Step b: From the EDIT menu, choose CUT. You will note that the selected word is gone, having been transferred to the computer's clipboard. The blinking text cursor remains in-between the two words which bracketed the selected word.

Step c: Without moving your cursor, from the EDIT menu, choose PASTE. Note the cut word reappears right where it was.

Now that you have seen how cut and paste works, lets edit a sentence.

Step 1: Repeat Step 'a' above to select a word.

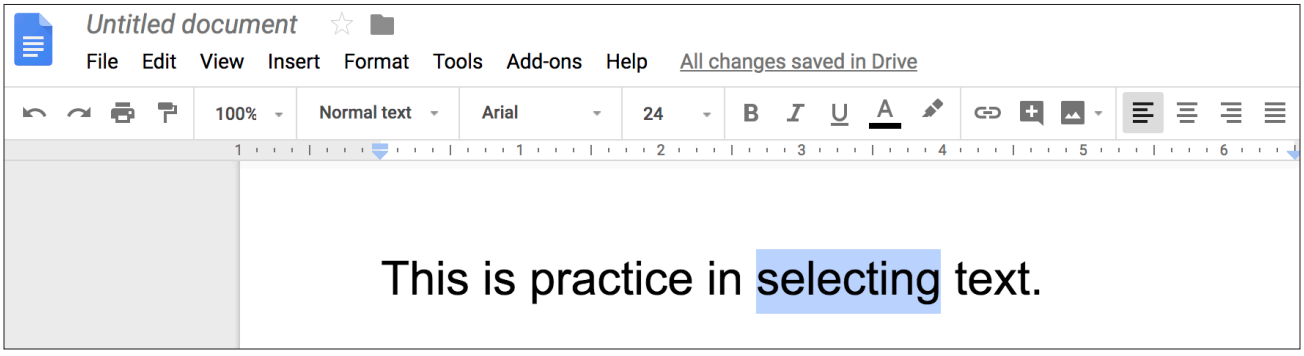
Step 2: From the EDIT menu, choose CUT.

Step 3: Using the mouse, click in-between two other words in your text. You will see the blinking text cursor jump to its new position.

Step 4: From the EDIT menu, choose PASTE. You will see the cut word appear in its new position. You may need to press the spacebar to separate it from the word which follows it.

Step 5: Practice CUTing and PASTEing. Type a series of words and, using cut and paste, reorder the words. Once you get comfortable with the process, editing is so much easier!

Step 6: **Save a copy of both the original and the CUT and PASTE text to upload to Moodle at the end of the course.**



Project 8: Word Processing

Learning Objectives: Using the font, size and style menus

Setup: Open a new word processor document, type in any paragraph of text.

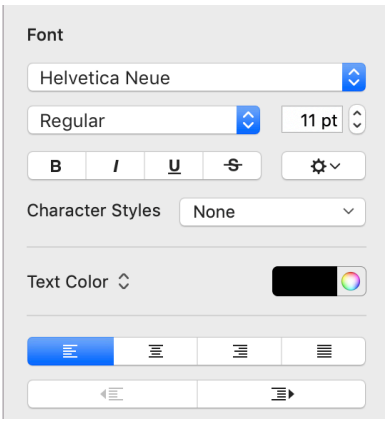
Step 1: Move the mouse so the point touches the beginning of one of the sentences. Holding down the (left) mouse button, drag the mouse until the cursor is at the end of the sentence. As you drag the mouse, the selection will spread over the text. Let go of the mouse button. If you are not happy with the selection, move the mouse to a blank area of the document and click. This will deselect the text, allowing you to try again.

Step 2: From the FONT menu, choose a new, significantly different font. As you look at the menu, note that the currently used font will have a check mark by it. (Choose another and you will see the selected text change to the new font.)

Step 3: From the SIZE menu, select a size significantly different than the original for a portion of your paragraph. As you look at the menu, note that the currently used size will have a check mark by it. (Choose another and you will see the selected text change to the new size.)

Step 4: From the STYLE menu / buttons, choose the style **BOLD**. As you look at the menu, note that the currently used style will have a check mark by it. (Choose another and you will see the selected text change to the new style.)

Step 5: **Save a copy to upload to Moodle at the end of the course.**



When I was a **child** I spoke as a **child** I understood as a **child** I thought as a child; *but when I became a man I put away childish things.*

Project 9: Word Processing

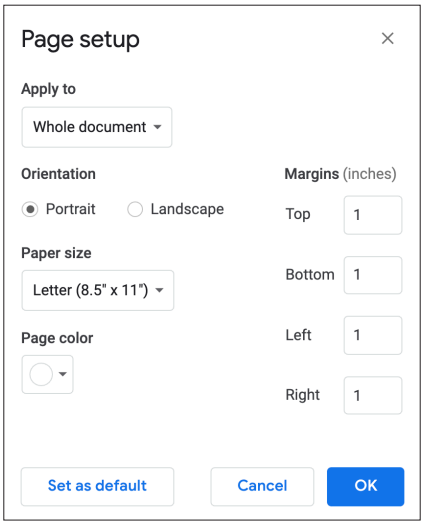
Learning Objectives: Setting the margins

Setup: Open a new word processor document, type in a brief paragraph of text.

Step 1: Note that the default paper size is 8 1/2 x 11 inches, the size of a standard sheet of paper. The default for most word processor documents is a 1 inch margin on all four sides, reducing the working area to 6 1/2 x 9 inches.

Step 2:
Microsoft Word - From the FORMAT menu, choose DOCUMENT...
Google Docs - From the FILE menu, choose Page Setup. . .
Apple Pages - Click the DOCUMENT icon at the top right

Step 3: You will see the four margins and their settings: top, bottom, left and right. All four indicate 1 in. Clicking in the 'TOP' text box selects that setting. Using the TAB key will move the cursor from setting to setting. Change the LEFT margin to 2.



Step 4: Click the OK button or press ENTER on the keyboard. You will now see your document again, with a 2 inch left margin, perfect for binders!

Step 5 Practice! Try changing the margins in different combinations and see what happens.

You only have to type in the number, not "inches". For a half-inch margin, type .5 and for a quarter-inch margin you would type .25. You can set the margins to 0, but most printers can not print to the edge of the paper.

1 = 1 inch margin
.75 = 3/4 inch margin
.5 = 1/2 inch margin
.25 = 1/4 inch margin

Step 6: **Save a copy of your paragraph with at least 2 of the margins changed (from the default) to upload to Moodle at the end of the course.**

Project 10: Word Processing

Using tabs is a huge time saver if you are typing columns or forms. To the right you see four triangles which represent the four kinds of tabs. There are built-in tabs every 1/2 inch of a new word processor document

Setup: Open a new word processor document.

Step 1: You are going to copy the text as shown at the right, using the preset tabs. Tap TAB until the cursor is at the 2" mark and type the word, 'one'. Press TAB 2 times to move the text cursor to 3 inches and type 'two'. Press TAB 2 times to move the text cursor to 4 inches and type 'three'. Press return to move to the next line. Repeat the process until you have typed nine numbers.

Step 2: You are now going to set the tabs and make it easier to repeat step 1. From the EDIT menu, choose SELECT ALL. From the EDIT menu, choose CLEAR. This will erase the text from your screen.

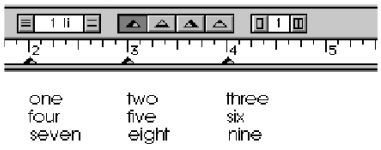
Step 3: Double (or control) click the 2" mark on the ruler and place a LEFT TAB. This will replace the pre-set tabs with your own. Place two more left tabs on the 3" and 4" ruler marks.

Step 4: Repeat Step 1. You will note that it only takes a single press of the TAB key to move from 2" to 3" to 4". Your work is cut in half!

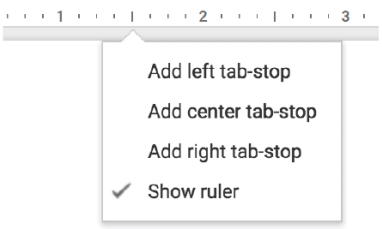
Step 5: Practice! Try choosing SELECT ALL from the EDIT menu and sliding the tabs along the ruler. The columns of text will move as well.

Step 6: **Save a copy to upload to Moodle at the end of the course.**

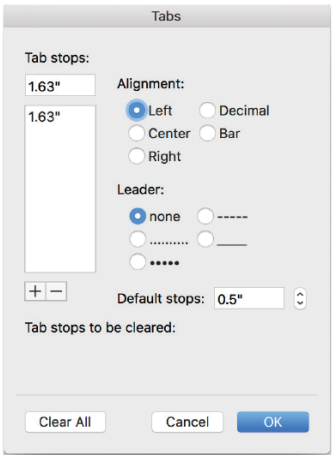
Double-clicking along the ruler will allow you to add and choose a tab type (control-click in Apple Pages).



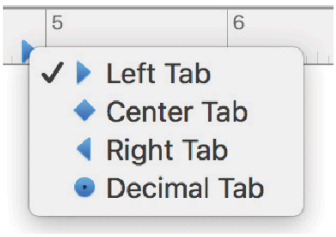
one two three
four five six
seven eight nine



Google Docs



Microsoft Word



Apple Pages

Project 11: Word Processing

Learning Objectives: Using what you have learned.

Step 1: Here you will combine many of the word processing skills you have learned. Using the letter below as a template (Brownie Points awarded for creating your own content), create a document which uses: different fonts, sizes and styles of text; different justifications; tabs; indents. Impress me!

Step 2: **Save a copy to upload to Moodle at the end of the course.**

August 17, 2022

Dear Parent:

We are rapidly approaching the end of our second semester! Expect to receive report cards for your child during parent conferences, which are scheduled to begin next month. This letter outlines the 'Reading Time' goals for which we have been striving since school began in late August.

We have focused on the following topics:

Reading for main idea
Reading for details
Writing for specific audiences
Writing to provide necessary details
Study skills - creating a positive environment for learning

I trust that by your receiving this information in advance we can spend our time together during our conference session discussing goals for the next marking period.

Please bring with you to the conference any questions you might have. I appreciate you setting aside this time to discuss and share ways we can support one another!

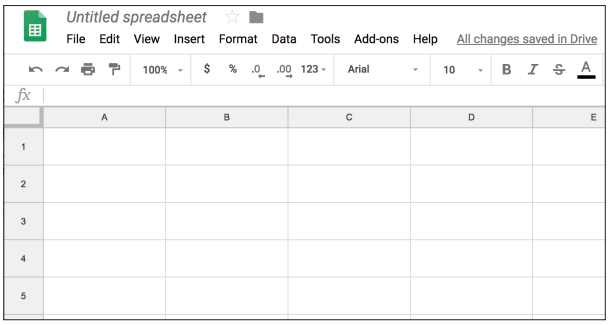
Sincerely,

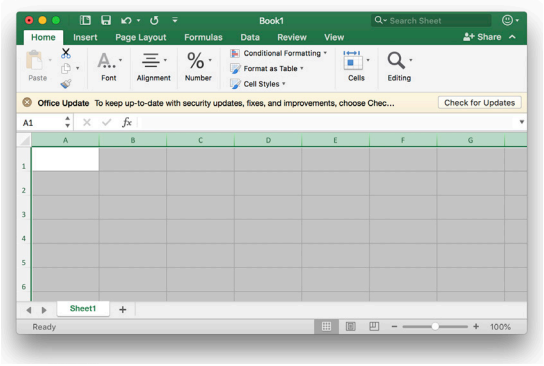
Mrs. Rebecca Young

5th Grade Teacher
Youngstown Elementary

Spreadsheets

A spreadsheet is a very powerful computer tool. Making use of the mathematical capabilities of a computer, spreadsheets can greatly automate and speed an otherwise dreary endeavor. With a spreadsheet, working with numbers can be exciting and (with charts) visually interesting. Think of a spreadsheet as a computerized checkbook; you keep a running balance by subtracting every check written from the previous total. To do this, you write the numbers in little squares, called **Cells** based on the information already written in other little squares.





Glossary

Cell: The intersection of a row and a column on a spreadsheet in which data can be entered. Cells are designated by their column letter and row number, i.e. B4.

Column: The vertical divisions of a spreadsheet that intersect the horizontal divisions (rows) to form cells in which data can be entered. Columns are labeled alphabetically (A, B, C ...).

Formula: A type of information that can be entered into a spreadsheet cell. It is a mathematical equation consisting of numbers, other cell designators, and symbols for mathematical operations. The result of the formula is displayed in the cell that holds the formula.

Label: A type of data that can be entered into a spreadsheet cell. It consists of words that usually label a column or row of numbers.

Row: The horizontal divisions of a spreadsheet that intersect the vertical divisions (columns) to form cells in which data can be entered. Rows are labeled numerically (1, 2, 3, 4 ...).

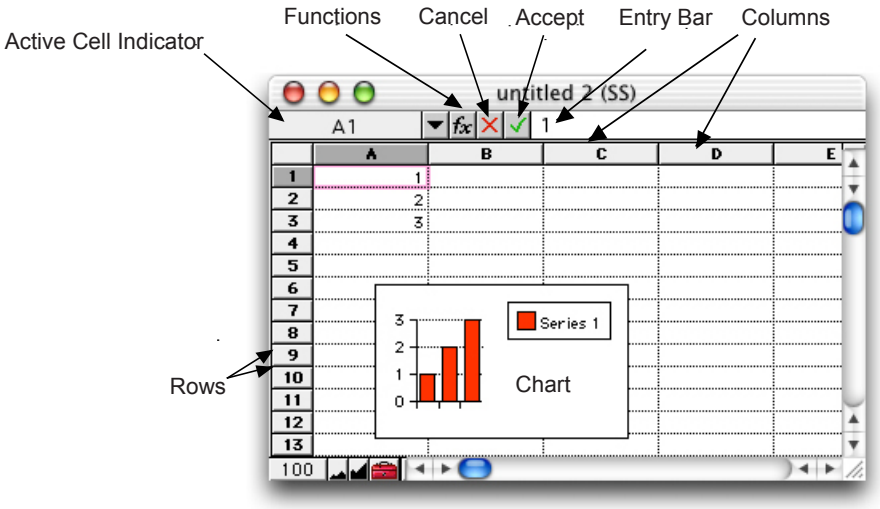
Select: To mark where the next action will take place. Before a command is chosen, items are selected by clicking or dragging the cursor (or I-beam) across them.

Spreadsheet: An applications program, used in financial forecasting, that can quickly handle calculations and perform evaluation.

Value: One type of data that can be entered into a spreadsheet cell. It consists of numbers (as opposed to words) that can be added, subtracted, etc.

Spreadsheet Basics

Spreadsheets appear as a series or grid of columns and rows. Each column in a spreadsheet is labeled with a letter at the top. Each row is labeled with a number at the left. The intersection of a row and column is called a cell. Each cell has a unique address, which consists of the column letter and row number (for example, B2)

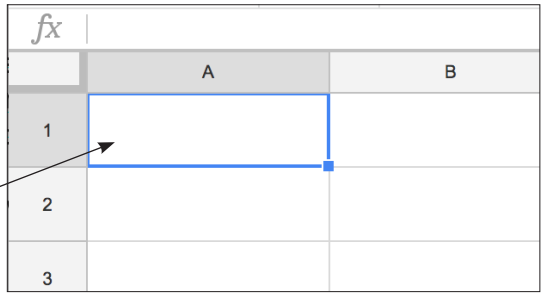


•You enter a cell's contents using the entry bar at the top of the spreadsheet. You can enter text, numbers, or formulas into cells.

•Formulas are not actual values like text or numbers. Instead, formulas are a set of instructions that spreadsheets follow to produce a value for a cell. You see a cell's formula in the entry bar.

•The formula's result appears as the actual value in the spreadsheet cell. The spreadsheet always has one current (active) cell, and that cell has a heavy, thicker border. The contents of the current cell, if any, appear in the entry bar.

Entering Data Into Cells

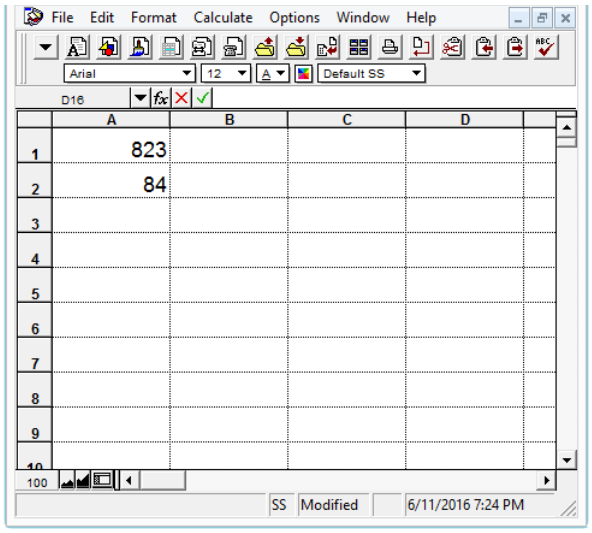


You can enter data into a cell at any time.
To enter data into a cell:

1. Select (click in) a cell in the spreadsheet. This cell becomes the current, active cell.
2. Type the data in the entry bar. To enter negative numbers: Type a minus sign (hyphen) and then type the number (for example, -56).
3. Confirm the entry by pressing either the Enter key, the Return Key, clicking in another cell or clicking the checkmark icon.

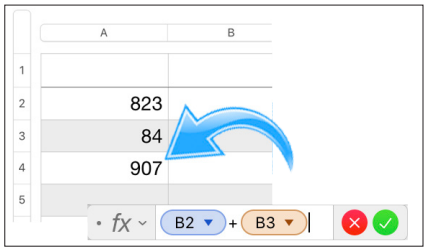
Making Calculations

The key point to remember is you do mathematical operations on cell addresses and not on the numbers themselves. That's a concept a bit alien to beginning computer users, however. To understand this better, look at the figure below. Notice that we have two values entered here, 823 in cell A1 and 84 in cell A2.



The two numbers are now ready to be added. The goal is to add the numbers together and put the sum in cell A3. We could go to cell A3 and type, "=823+84" to get the answer, but that would simply be using the spreadsheet as an adding machine. To get accustomed to using formulas, we instead utilize the cell addresses (in cell A3, we would type in "=A1+A2"). As a result, in the future, the sum in cell A3 would be updated any time we changed the values in either or both cell(s) A1 or A2.

In **Apple Numbers**, the + sign is automatically added to the formula.



1. Move the cursor to cell A3 with the arrow keys. Or, move the mouse cursor over cell A3 and click with the left mouse button. Now, lets create a formula!

2. **Start by typing an 'equal' sign "=".** You will note *it appears in the entry bar, not the cell.*

3. Move the cursor to cell A1 with the arrow keys or the mouse. Click the mouse button. Notice that the text "A1" appears after the "=" in the entry bar.

4. Next, type a plus sign '+' after "A1"

4. Move the cursor to cell A2. Click the mouse button. Note that the text "+ A2" appears after the "= A1+" in the entry bar.

5. Press ENTER. The sum now appears in cell A3, the formula (=A1+A2) in the editing line, and the cursor on cell A3, as well.

You could also have typed in any arithmetical operator if you'd rather have subtracted, multiplied or divided.

+	add	-	subtract
*	multiply	/	divide

Numbers versus Text Labels

Spreadsheets treat numbers and text labels differently. In a spreadsheet, you can use numbers in calculations. Text labels (i.e. "Reading Scores") always have a numerical value of "zero," even when they look like a number.

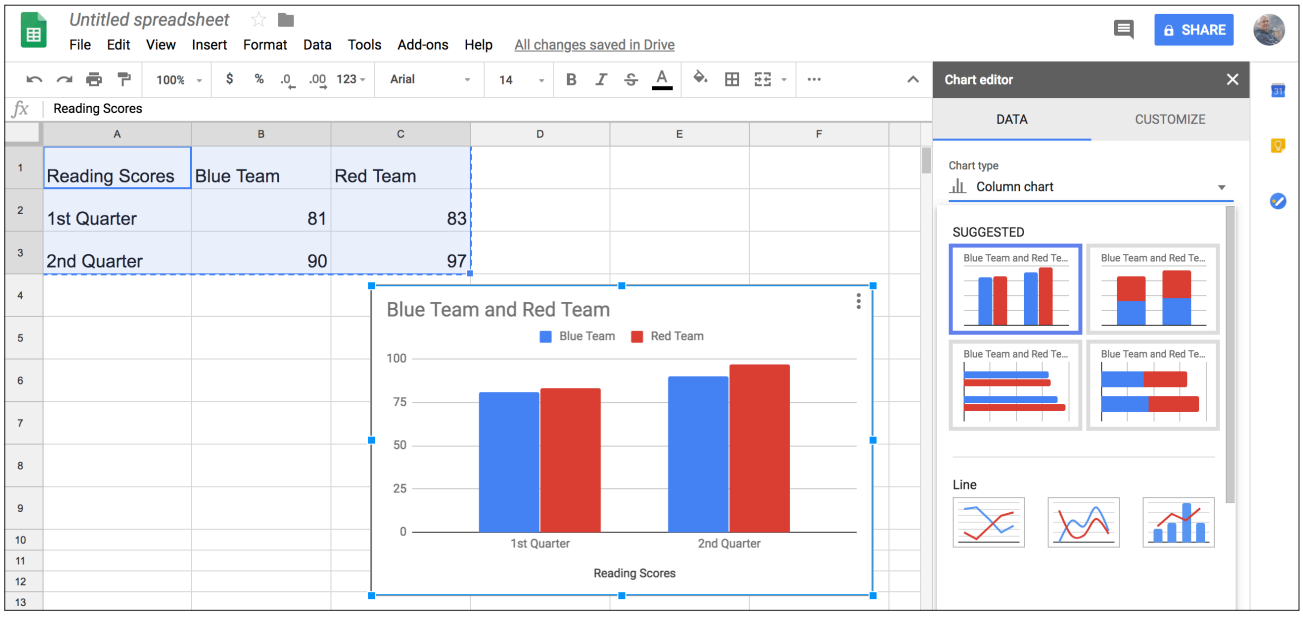
Creating Charts From Your Spreadsheet

You can transform the data in a spreadsheet into a chart (charts are also sometimes called graphs). A chart can visually reveal trends or relationships that aren't readily apparent by looking at rows and columns of numbers. You can create a chart from part or all of the data in a spreadsheet.

To make a chart, Select (highlight) the cells that you want to chart, including the Title and Names (seen below, down row 1 and across column C) and the numbers that make up the data.

Microsoft Excel From the INSERT menu or Tab, choose CHART
Google Sheets From the INSERT menu or icon, choose INSERT CHART
Apple Numbers Click the icon

You can create a variety of charts from the same data. Each chart type offers a wide range of options for presenting data.



Project 12: Simple Spreadsheet

Learning Objectives: Open a spreadsheet document and create a simple spreadsheet

Setup: Open a new spreadsheet document

Step 1: Click on cell A1, type in the number 23
Click on cell A2, type in the number 47

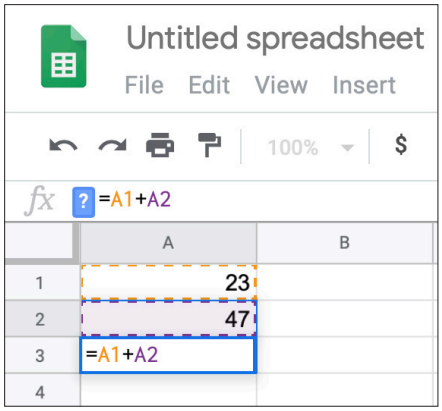
Step 2: Click cell A3, type an equal sign (=) to begin creating a formula.

Step 3: Click on cell A1. Note that the number contained in cell A1 is placed after the equal sign in the enty bar (i.e. = 23)

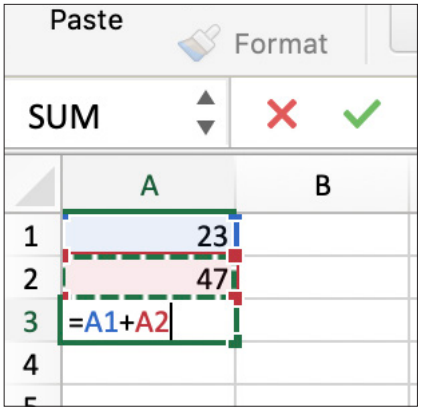
Step 4: Type in a plus sign (+) and then click on cell A2. Your fomula is now complete: = A1 + A2

Step 4: Press the Return key and you will see the solution to the formula (70) in cell A3

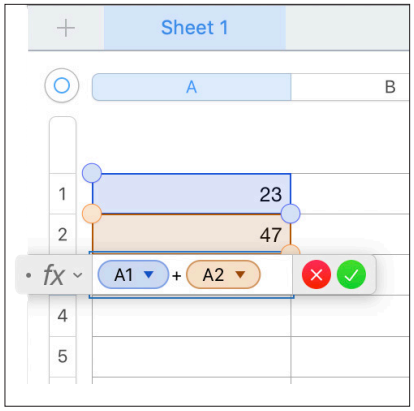
Step 5: Practice! Try other numbers, longer lists of numbers and different types of calculations. When you get a spreadsheet you like (with at least 5 numbers), **save a copy to upload to Moodle at the end of the course.**



Google Sheets

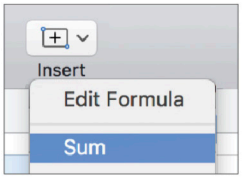


Microsoft Excel

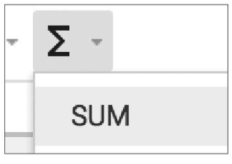


Apple Numbers

For very long lists of numbers, there is a **Sum** function which will automatically add a selected range of cells. Highlight a column of numbers plus one empty cell below and then select the Sum function.



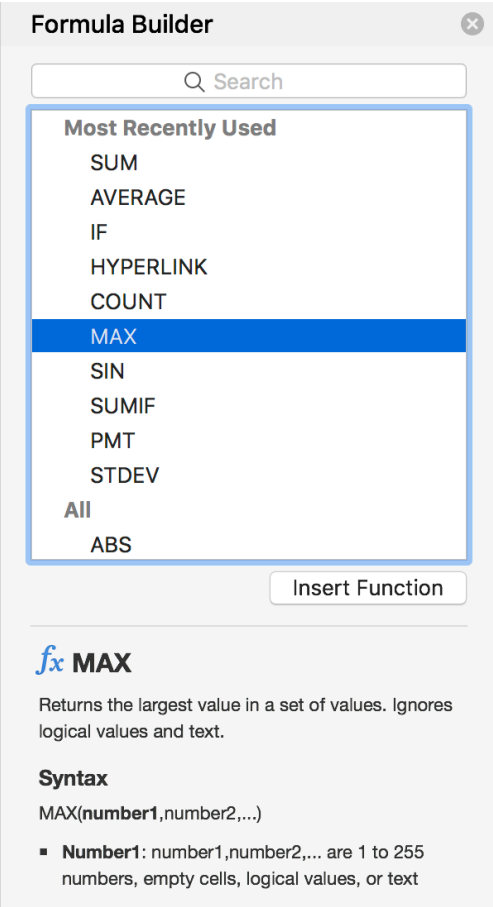
Numbers



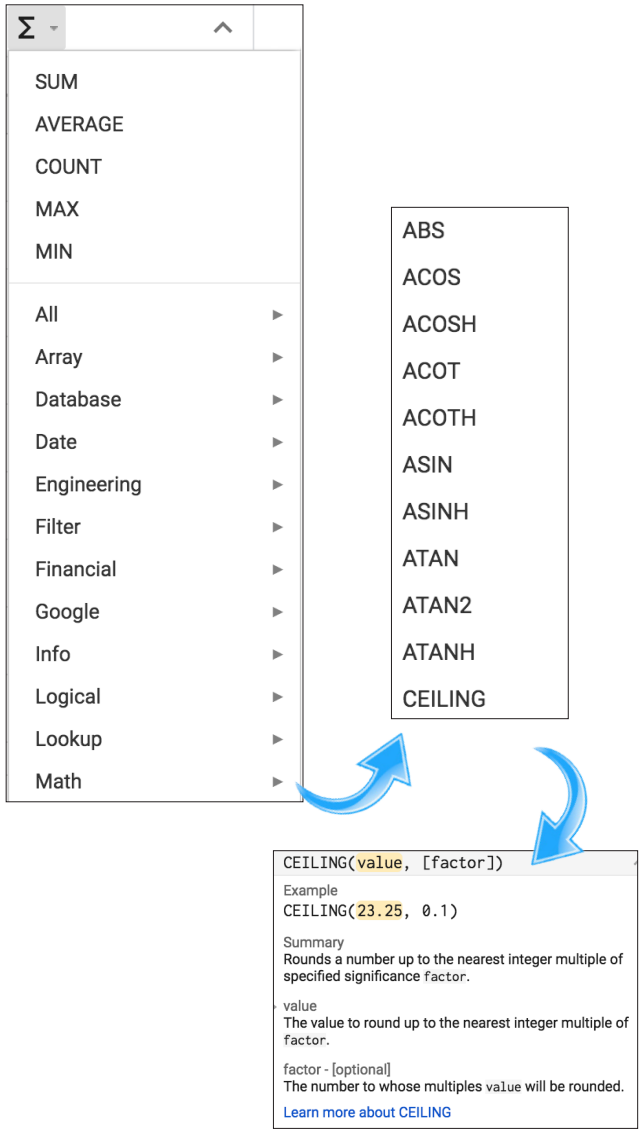
Sheets

Formulas and Functions

The formula in cell A3 (from the previous page) can be changed to any number of mathematical formulas. Spreadsheets can use simple functions or far more complex calculations, including algebraic, trigonometric and statistical computations.



In the **Microsoft Excel** spreadsheet, clicking the Function button allows you to choose a formula from an annotated menu of types.



Google Sheets divides functions into categories. Selecting a function will display its properties.

Functions consist of the function name followed by one or more arguments enclosed in parentheses. Arguments are the values you supply to a function so that it can perform a calculation.

Microsoft Excel	467 Functions
Google Sheets	431 Functions
Apple Numbers	250+ functions

Project 13: Class Survey Hair Color

Learning Objectives: Create a spreadsheet with a pie chart.

Sometimes no formulas are needed in a spreadsheet. Here, a group of students was surveyed and their hair color recorded in a simple spreadsheet. The information was then translated into pie charts to present the information visually.

Setup: Open a new spreadsheet document

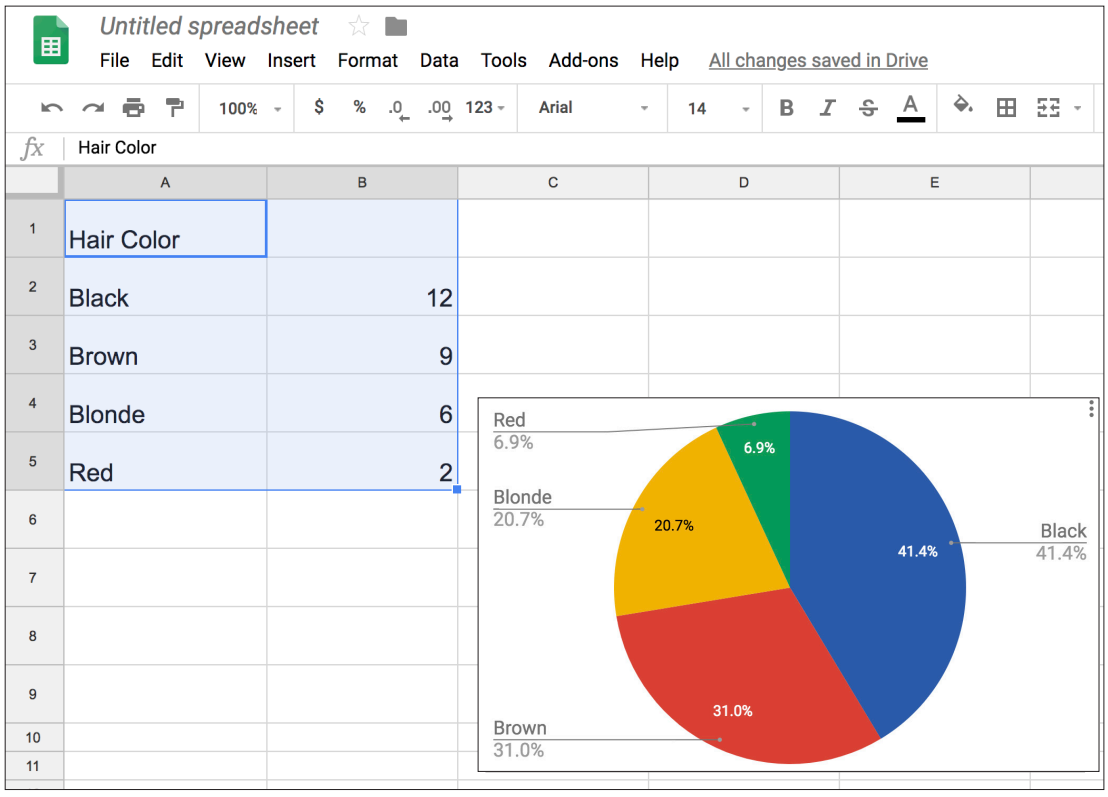
Step 1: In cell A1, type Hair Color.

This will be your title. Press Enter (on the numeric keypad) Cell A2 should become the active cell. If it is not, click in cell A2 to select it.

Step 2: Type in several different hair colors, one in each cell, as shown below. Pressing **Return** will select the next cell down. Feel free to use the examples presented in the sample below, if you wish, or create your own.

Step 3: Click in cell B2 to select it. Type in numbers of students with the hair color indicated in the same row.

Step 4: Using the mouse, drag to select cells A1 to B5 of your spreadsheet.



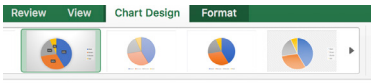
Making the Pie Chart

Step 5: Click the **Make Chart** button on the Button Bar or choose Make Chart from the Options menu. When the **Chart Option** screen appears, click the **Pie** icon, then OK.

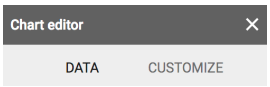
	A	B
1	Hair Color	
2	Black	12
3	Brown	9
4	Blonde	6
5	Red	2

A simple pie chart will appear in the spreadsheet. You can adjust the look and information within the graph by choosing several options:

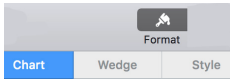
Microsoft Excel Select an item from the **CHART DESIGN TAB**



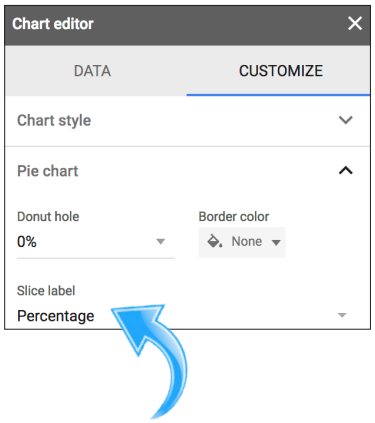
Google Sheets Double-click the chart to open the **CHART EDITOR**



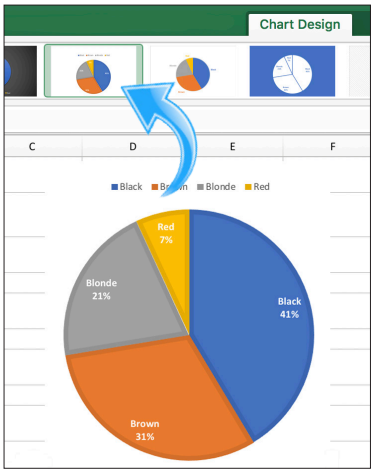
Apple Numbers Click the chart then select an item from the **Format** menu



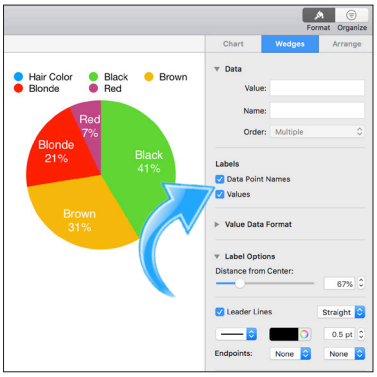
Step 6: Adjust the settings on the pie chart so that the percentage of each type of hair color is displayed in the relevant pie slice.



Numbers



Excel



Sheets

Step 7: **Save a copy to upload to Moodle at the end of the course.**

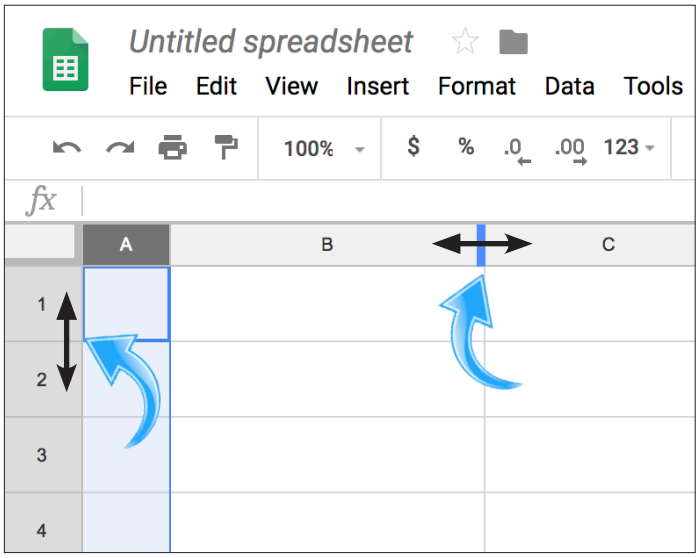
Formatting

Most of the time using the pre-defined width and height of spreadsheet cells is fine. There are times when you may want to change these settings. If you are doing a spreadsheet in a 72 point font size, the letters will be too tall to fit into a cell.

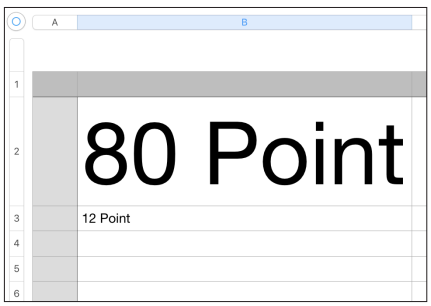
To adjust the width of a column of cells, click (or click-drag) to select one or more columns. Place the cursor on one of the lines dividing two columns and drag left or right to increase or decrease the width of the relevant columns.

You can adjust the height of cells in a similar fashion - select the row(s) of cells you want to change, then drag the dividing line between two cells up or down to increase or decrease their height.

Generally, you can use the same formatting options in a spreadsheet as you can a word processor - font, size, style and color can be changed for a single cell or any sized group of cells.

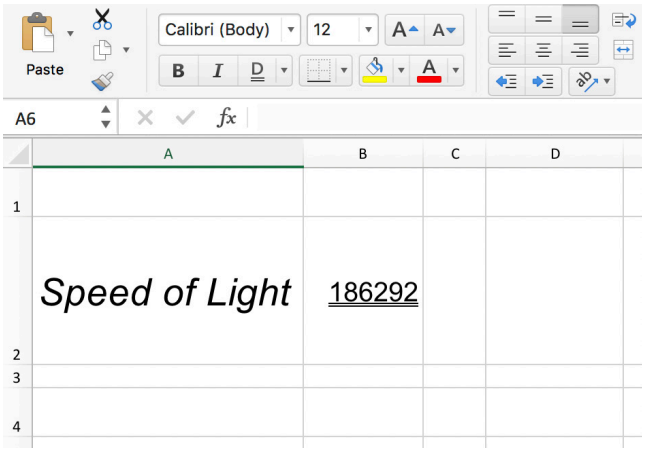


Sheets



Numbers

Excel



Computer Graphics

Computer graphics are fun! Few other uses of the computer allow you to expand your ability and expression like computer graphics. The best part is... you don't have to be an artist to create them - learn to let the computer do the work for you!

There are two basic ways that a computer displays graphic information on a screen: **bitmap** and **object**. These two types are represented by two general kinds of computer graphics programs: **PAINT** (bitmap) programs and **DRAW** (object) programs.

Basically, a bitmap is an array of pixels. A bitmap can be of various bit depth and resolution. Each pixel takes up one space on the monitor; there can not be two pixels in the same location. All the pixels are on the same layer - that is, no pixel can be in front of or behind another pixel.

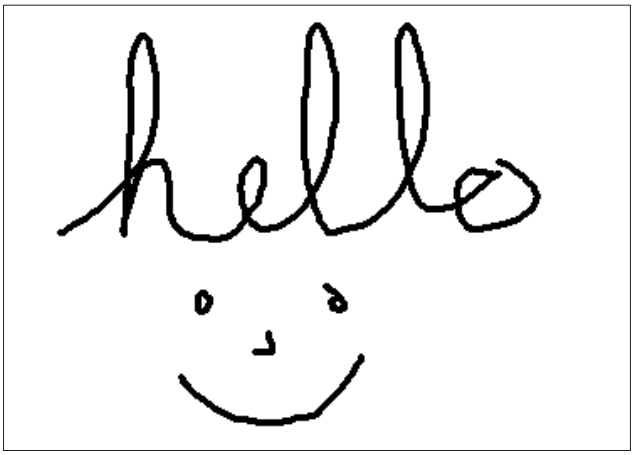
There are hybrid programs, such as Adobe's Photoshop and Corel's Painter, which have elements of both paint and draw within the same application. For the purpose of this introductory course I will introduce you to a few of the tools common to all programs which create only **PAINT** (bitmap) graphics.

There are literally hundreds of graphics programs on the market. All **Paint** programs, whether on a Macintosh, Windows computer or cloud-based, share a common set of tools; pencil, paintbrush, eraser, spray can, simple geometric shapes. Paint programs may be quite simple or very sophisticated. For now, let's keep it simple!

The following pages illustrate some of the commonly found tools used in **PAINT** programs.

With all the tools, a three step process is used:

1) Click once on a tool to select it.
2) Move the cursor to the part of the document where you want to use the tool.
3) Click or drag the mouse to use the tool.



Graphics Glossary

Anti-aliased: Anti aliasing an edge of an element or a mask is to give it a slightly soft edge that makes it appear smoother. It is similar to feathering by one or two pixels.

Bitmap: Another term for a line-art scan file or scanner setting. Refers to the pattern (map) of bits that are either black or white.

Bitmapped Image: A bitmapped image is a computer file representing a line-art image that was scanned with a scanner.

Clip Art: Electronic illustrations that can be inserted into a document.

Clipboard: An imaginary place where images that are 'cut' or 'copied' go. The clipboard can be 'loaded' with an image, then that image can be pasted (multiple times) back onto a document.

Cropping: The act of discarding unwanted detail around the edge of a picture. Cropping in this way permanently discards the detail from the file and reduces file size.

Draw: A category of graphics program defined by its use of elements (entire images or shapes) to create images on the computer screen.

Export: Term used in some illustration programs that allows the drawing to be saved to the hard disk in a commonly readable format allowing the drawings to be placed into a page layout.

Fill: A menu command that allows a path to be filled with a color or tint.

Graduated Fill: A command within illustration software that allows elements within the illustration to be filled with a smooth transition between two colors.

Gray scale: A term for a black & white photographic image or a scanner setting. Refers to the range of 256 grey tones that make up the image.

JPEG: Joint Photographic Experts Group Compression. A method to save storage space by compressing files. Most of the images you see on the internet are JPEG images files.

Paint: A category of graphics program defined by its use of individual pixel elements to create images on the computer screen.

Pixel: The smallest building block within a scanned line-art or photographic image. A pixel is the small square picture element that is filled with a color, or black or white. Resolution is measured in pixels per inch (PPI.)

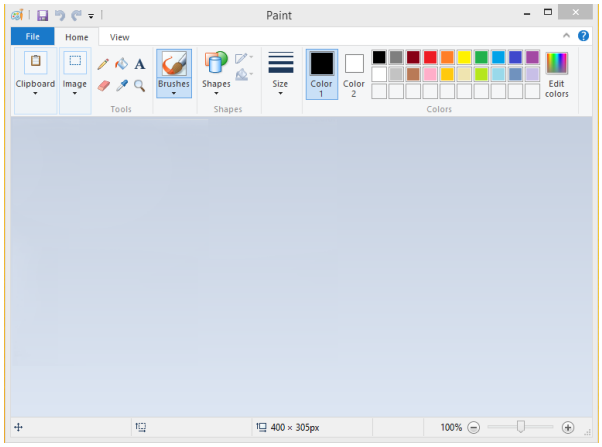
Resolution: The sharpness and clarity of an image on a computer screen or a paper print-out.

Screen Capture: Refers to the act of copying what is currently displayed on a screen to a file or printer.

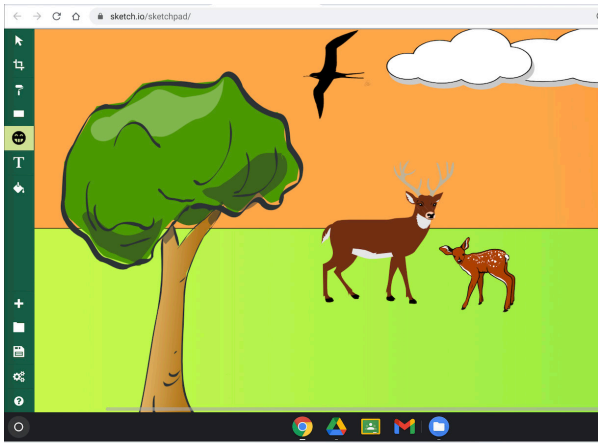
Video Card: Part of the internal circuitry of a computer which governs the it's output to a monitor. Different cards vary in speed and resolution.

Painting Tools

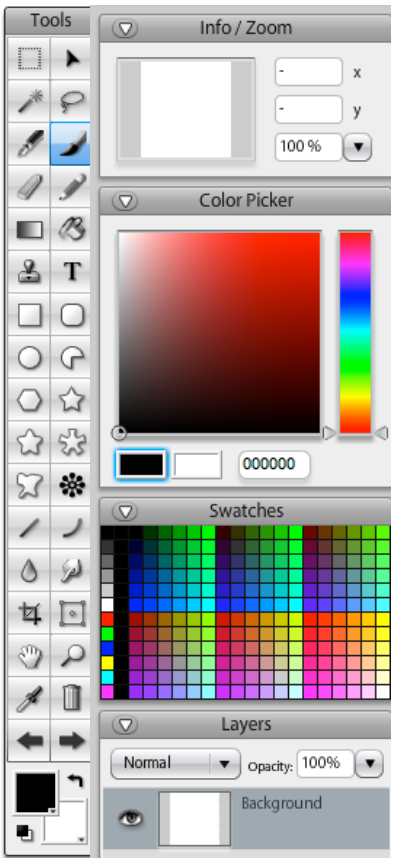
For the purposes of this introductory course, you will be using a simple, free, online computer graphics program called **jspaint**. The tools are very retro - harkening back to the old Windows Paint program. If you look closely at the tool palettes illustrated below, you will see some tools common to all the programs, from the simple online **jspaint** to the pricey Adobe Photoshop.



Windows Paint



sketch.io

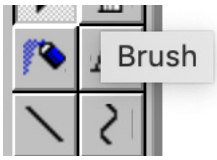


Adobe Photoshop

sumopaint.com

Painting Tools

Below is the tool palette for **JSPaint**. All tools are (hopefully) labeled by a representative icon. Operation if straight-forward click on a tool and use it by click-dragging on the workspace.



The palette features 'tool tips' - hovering the mouse over a tool will reveal its label. A very handy feature most programs share.

FREE-FORM SELECT

SELECTION RECTANGLE

ERASER

FILL WITH COLOR

COLOR PICKER

MAGNIFIER

PENCIL

(PAINT) BRUSH

AIRBRUSH

TEXT

LINE

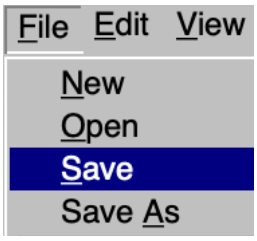
CURVE

RECTANGLE

POLYGON

ELLIPSE

ROUNDED RECTANGLE



JSPaint also has Save and Open functions - both of which you will use in the upcoming projects.

LINE

LINE AND FILL

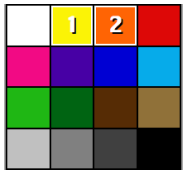
FILL

COLOR PALETTE

Pencil 

To use the Pencil:

1. Select the Pencil from the tool panel if not already selected (it is usually selected as the default, set to black).
2. Select a color (if other than black is desired) from the Color Palette.
3. Click once to paint a single dot or drag the Pencil to draw a line.



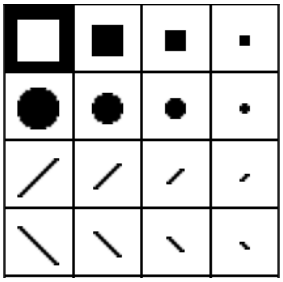
Brush 

To use the Brush:

1. Select the Paint Brush from the tool panel.
2. Click once to paint a spot. Click and drag to paint a line.

To change the brush shape or size:

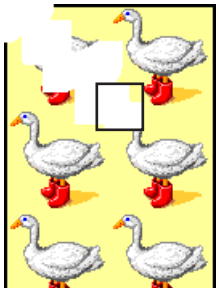
. Select a shape from the Brush Shape palette.



Eraser 

To use the Eraser:

1. Select the Eraser from the tool panel.
2. Click to erase only what is underneath the Eraser, or click and drag the Eraser to erase large areas.



Airbrush 

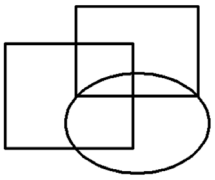
Use the Spray Can to “spray paint” the fill color, pattern, wallpaper, or gradient.

To use the Airbrush:

1. Select the spray can icon in the Tools panel.
2. Choose a fill color or other attribute from the Tools or Accents window.
3. Hold down the mouse button to spray continuously or drag to spray an area.

Shape Tools 

Each shape tool comes in two types, Filled and Empty. The empty shape tool produces a certain shape, as defined by its outside lines. The interior of the shape is transparent. By creating several overlapping shapes, you can see the transparent nature of each shape, as all lines are visible.



Filled shapes, on the other hand, are solid, as the interior of the shape is opaque. The color of the fill is determined by using the fill color palette and / or the pattern palette.

The shapes are filled via the Color Palette. There are two parts to a filled shape, the outside (called the **Pen**) and the interior, called the **Fill**.

Selection Rectangle 

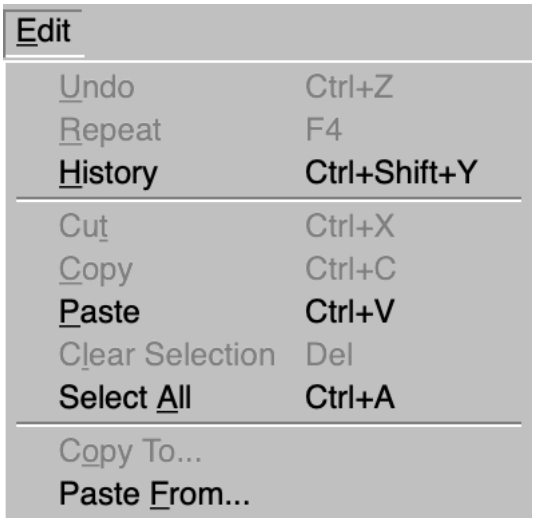
To use the Selection Rectangle:

1. Select the Selection Rectangle Tool from the tool panel. The pointer will look like a cross-hair  when you move it in to the work space.
2. Position the crosshair at a corner (usually the upper left-hand corner) of the image you want to select. With the mouse still depressed, drag down and to the right to define a rectangle which encompasses the image you wish to select.

When you release the mouse button you will know the selection is complete as it will now be surrounded by animated dotted lines (giving the appearance of 'marching ants') which will remain around the selection until the mouse is clicked somewhere other than inside the selection.

Moving the cursor within the dotted lines will change the cursor to an arrow icon. Once this cursor is visible, you can move it, copy it, and rotate it.

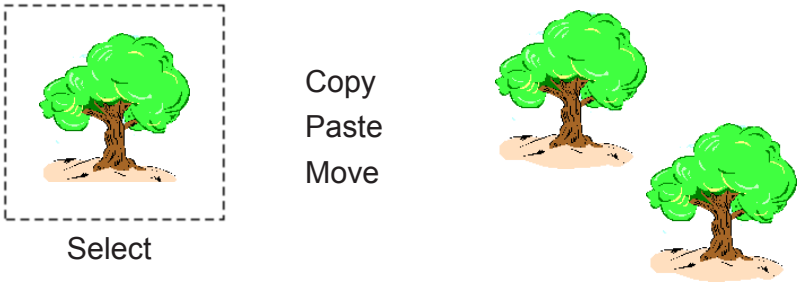
Cut, Copy and Paste



As with most programs, there is an Edit menu which lists several functions which will effect all or part of a document. In the case of a Paint program, the effect is limited to part of the painting which are selected with the lasso.

To copy (duplicate) an image:

1. Select what you want to copy with the Selection Rectangle.
2. Choose **Copy** from the Edit menu.
3. Choose **Paste** from the Edit menu. A the copy of the selected item will appear on screen.
4. Mover the cursor over the new item - the cursor will change



Cutting an image will remove it from the screen, but you can still Paste it (multiple times if needed) back into your painting.

Clear Selection (from the Edit menu) an image will erase it from the painting. To erase the entire screen, choose **Select All**, then choose **Clear Selection**.

Other Tools

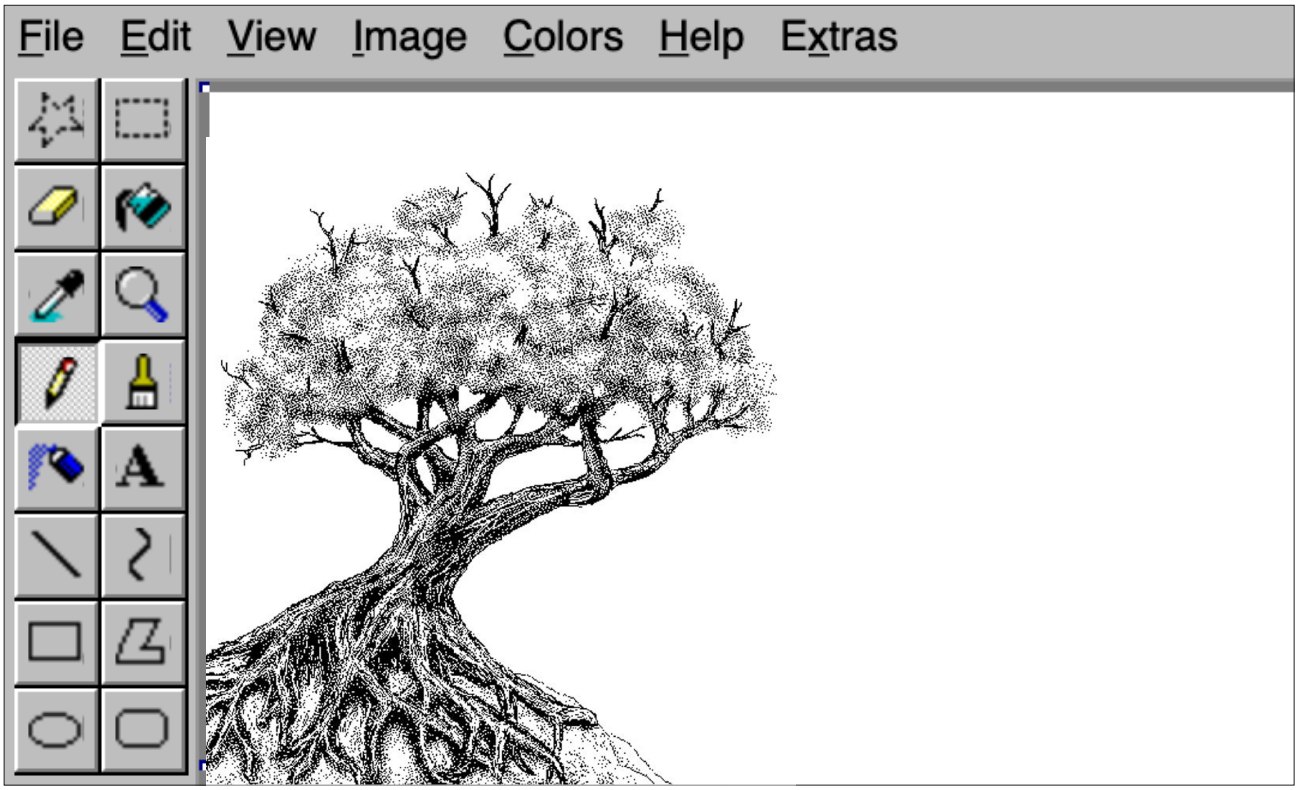
Jspaint has a few other tools which are not used for the projects addressed in this course. You are welcome to experiment with them, as well as explore ther computer graphics programs.

Paint Projects

The following projects will introduce you to the use of the most basic computer graphics tools. It is beyond the breadth and scope of this course to make you a master of computer graphics - I just want you to get a 'taste' of where you can 'go' with computer graphics and determine whether or not they could ultimately enhance delivery of instruction. Keep in mind this is the simplest, most basic computer graphics program. If you are comfortable using another program to complete the projects, you are welcome to do so.

My goal is to whet your appetite, increase your confidence, and get you thinking about ways in which you can integrate graphics across your curriculum, engaging and motivating students.

Once you've mastered a technique, try it in your own paintings; perhaps an illustration for a class paper or an overhead presentation. Keep in mind that I chose this particular program because it has the basic tools I wanted to address and is accessible to all users. There are many, many programs which are much more sophisticated than jspaint, including a good number of free ones.

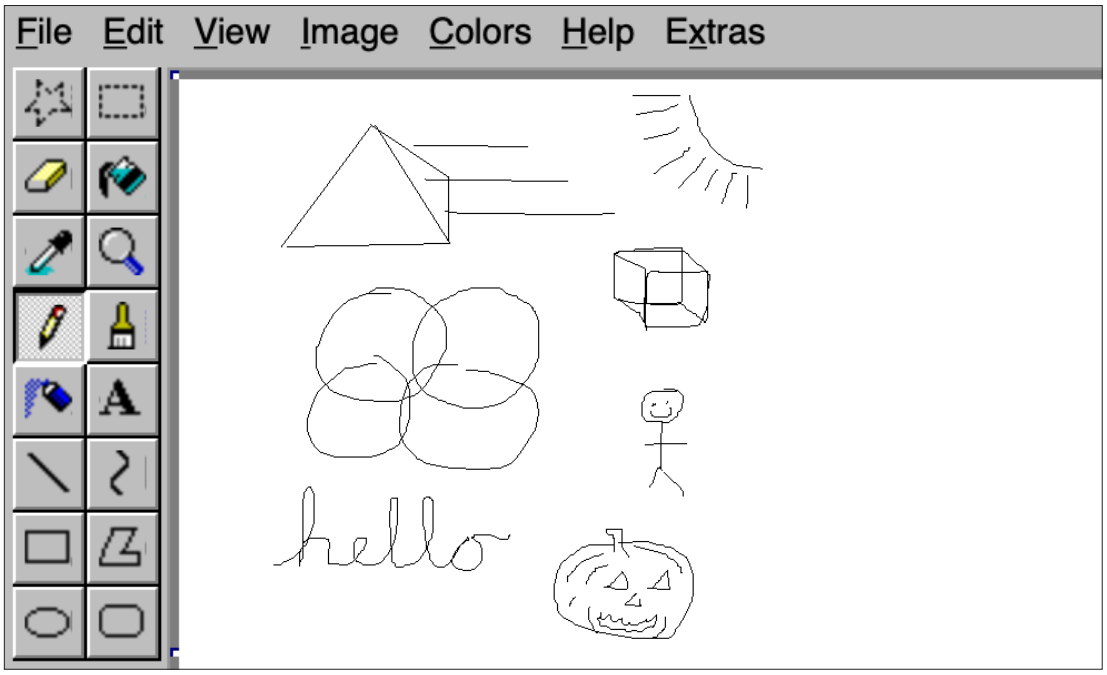


Project 14: Painting

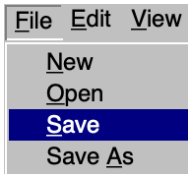
Learning Objectives: Familiarize yourself with painting tools.

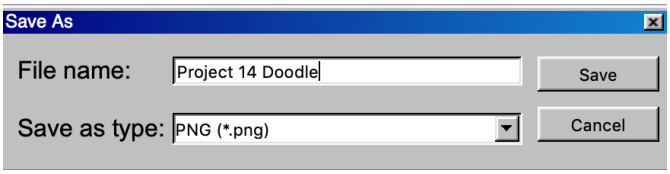
Setup: Go to **www.jspaint.app** The link is on the course website; jspaint is a very simple graphics program, patterned after Windows Paint. The tools are rudimentary, but share DNA with all other modern computer graphics programs.

Step 1: Play! Try out the different tools. Keep in mind that you are experimenting, so there is no such thing as a mistake! But if you are not satisfied with your results, you can go to the FILE menu and choose NEW - providing you with a "clean slate" on which to work. Spend as much time as you like doodling and tinkering around with the tools. Remember, you are not only getting used to the paint program and its tools, but handling the mouse (or using the trackpad) as well. Using a variety of tools and techniques, as below, tinker around and show me what you've got! **Doodle are good - I prefer that you don't just 'scribble'.**

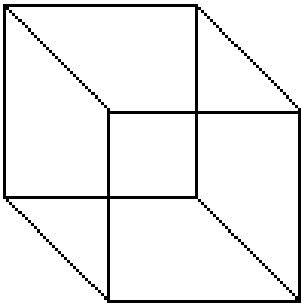


Step 2: From the File menu, **Save a copy to upload to Moodle at the end of the course.**





Project 15: Painting



Learning Objectives:
- Mouse control
- Selecting the appropriate tool
- Using the fewest steps possible
- Transparent shapes & objects

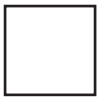
Generally, the larger image you draw, the easier it is to control. Your box should be at least 2" wide. Anything smaller and you will be forced to draw any details in a very small area.

Setup: Go to **www.jspaint.app**

Step 1: Click on the SQUARE (*not the FILLED SQUARE)* tool in the tool palette

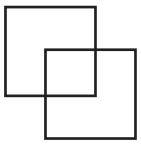
Step 2: Position the cursor in the middle of the screen.

Step 3: Press and hold the mouse button down. Move the cursor (mouse) down and right to define a square. Let up on the mouse button.



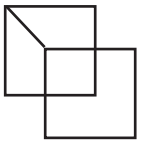
Step 4: Position the cursor in the middle of the square you just drew.

Step 5: Press and hold the mouse button down. Slowly move the mouse down and right to define a second square. It should be the same size and shape as the first square you drew. Let up on the mouse button.



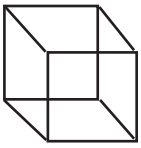
Step 6: Click on the LINE tool in the tool palette.

Step 7: Move the cursor to the upper left-hand corner of the first square. Hold the mouse button down to begin painting a line. Move the mouse (thus, the line) to the upper, left-hand corner of the second square, connecting the two.



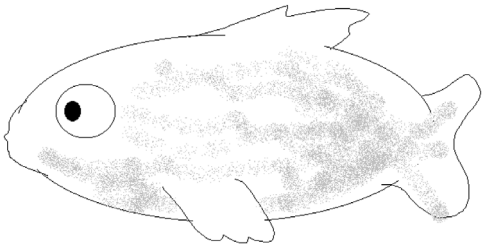
Step 8: Following the steps in 7, connect the other three corners of the first square with their counterparts in the second square.

Step 9: From the File menu, **Save a copy to upload to Moodle at the end of the course.**



HINT: Make the screen bigger for better control: Hold the **Command** key and tap the plus sign (**+**) on a Mac. Hold the **Control** key and tap the plus sign (**+**) on a Windows computer.

Project 16: Painting



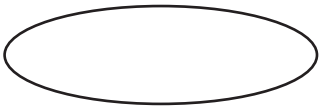
Learning Objectives:
- Using the shape tools
- Using the paintbrush
- Using patterns
- Freehand drawing

Setup: Go to **www.jspaint.app.**

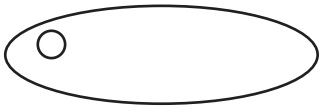
Step 1: Select the CIRCLE tool in the tool palette. Make sure the LINE rectangle is selected at the bottom of the palette (see below).

Step 2: Position the cursor on the mid-left hand corner of the screen. Remember you can always UNDO and action.

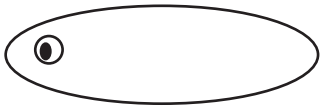
Step 3: Press and hold the mouse button down. Slowly move the mouse down and right to define an oval (at least 3"- 4" long). Let up on the mouse button.



Step 4: Still using the circle tool, draw a small circle toward the left-hand side of the oval. This will be the eye.



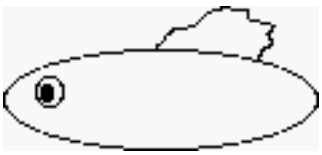
Step 5: Select the CIRCLE TOOL then click the FILL rectangle. The default color is black.

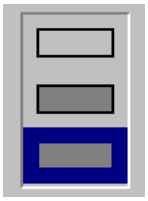


Step 6: Draw an even smaller circle inside the eye circle. This will be the pupil.

Step 7: Select the PENCIL tool from the tool palette.

Step 8: With the pencil tool, you are in freehand painting mode. Position the cursor near the top-middle part of the body oval. While holding the mouse button down, paint the dorsal fin.





LINE

LINE AND FILL

FILL

Step 9: Still using the pencil tool, paint in the tail and side fins.

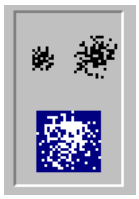
Step 10: Click on the ERASER tool in the tool palette.

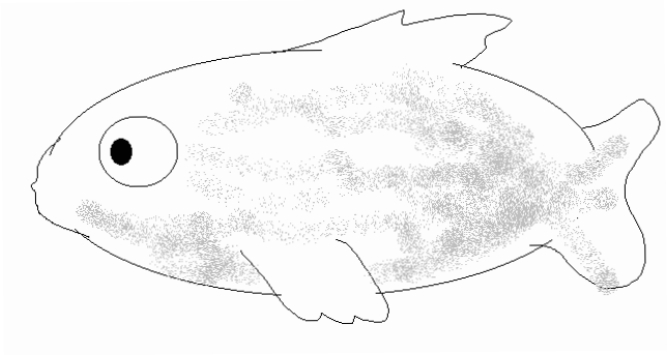
Step 11: Erase the line segments where the tail fin and side fin overlap the body.

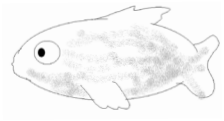
Step 12: Click the AIRBRUSH tool. There are three sizes of spray patterns. I would suggest the largest.

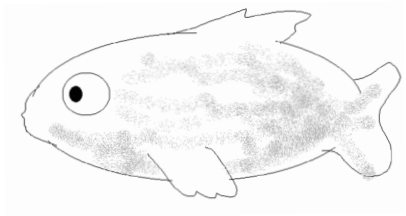
Step 13: Click on the light grey color from the color palette.

Step 14: Spray on some shading - just enough to give the impression of texture and shadow.









Step 15: From the File menu, **Save a copy to upload to Moodle at the end of the course.**

Project 17: Import and Edit

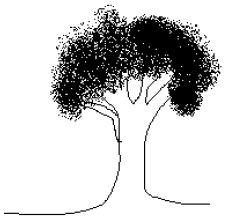
Learning Objectives: Importing clip art, using the pencil tool to embellish an image

It is possible to modify artwork to 'make it your own'. In this assignment you will import some clip art and add detail to it using the pencil tool.

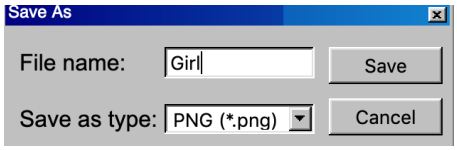
Clip art is available from many sources and can be downloaded from the Internet or transferred from a camera. Here you will be using an image that is located in the 'TEC 923 Resource' folder you downloaded earlier.

Step 1: Go to **www.jspaint.app.** Chose OPEN from the FILE menu. A window will open enabling you to search your computer to locate the TEC 923 Resources folder.

Step 2: Once you have located it, open the folder and click the 'girl' icon, then click OPEN.



Step 3: Using the pencil, eraser and other tools, modify the image by adding a background or other elements. Remember you can UNDO an action or even reload the image to start over.



Step 4: **Save a copy to upload to Moodle at the end of the course.**

Note: On a Windows computer, the file should appear in the DOWNLOADS folder, and will need to be transferred to your portfolio folder. On a Mac, the file will be saved to the Downloads folder or the Desktop, and will need to be transferred to your portfolio folder.

If you wish to use another graphics program to complete this assignment, you are welcome to do so.

Introduction to the Internet

A **network** is a collection of computers that are wired together to allow people on one computer to share data, programs or resources on another computer. The computers at your school most likely are on a network. If they are, the Macintosh, PC or Chromebook on your desk connects to the network via an Ethernet cable (a high speed data connection) or you can use a modem to connect to the network via a phone line.

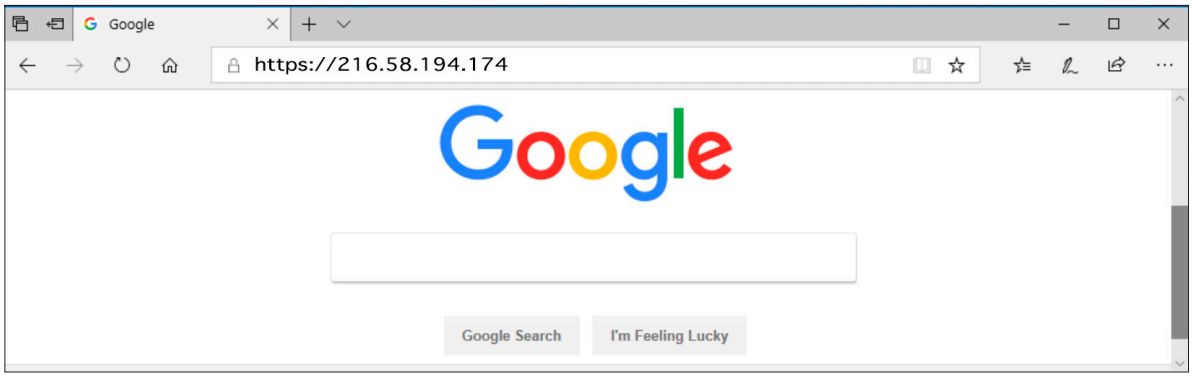
The **Internet**, or **World Wide Web**, is a collection of thousands of networks around the world. A single computer or an entire network connects to an **Internet Service Provider** (ISP) network, which in turn connects to the Internet backbone - the main cables capable of carrying thousands of internet activities at one time.

The Internet was created in the 1970's originally for the military. It was created so the military could access and transfer data quickly and could function even if one portion of the network was attacked. Academic institutions used the same system to create their own 'network of networks' in conjunction with the National Science Foundation. Businesses then wanted access to this vast area of information, which lead to one integrated Internet.

The Internet is not owned by any one person or organization. Each individual network which makes up the internet is controlled by those individual people or organizations. There are, however, organizations that oversee and standardize what happens on the Internet and assign IP addresses and domain names, such as the National Science Foundation, the Internet Engineering Task Force, ICANN, InterNIC and the Internet Architecture Board.

Internet-connected computers each have a unique numerical address, called an **Internet Protocol** (IP) number which is used to locate that computer on the Internet. These addresses are represented by four number groupings – such as 129.170.20.10 However, it is much easier for people to remember names - not long strings of numbers.

For example, the IP number for Google.com is 216.58.194.174



Therefore, an intermediary system was developed which translates names that people understand into numbers that computers understand. This system is called the **Domain Name System** (DNS). A computer name in the DNS can contain up to four parts: machine name, sub-domain, domain, type of organization. These parts help people identify the specific computer to which they want to connect. For example: www.discovery.com.

The DNS system stores the names of each computer on their network in a table, with the corresponding IP number for each computer. So, when you type in a computer's name, the DNS table provides the IP number for that computer, which your computer then uses to make the connection. You can make a connection using the computer's name or the IP number.

The internet's popularity has increased because of all the different things you can do: e-mail, access information, transfer files, log on to remote machines, participate in scholarly discussions, read and debate issues, etc.

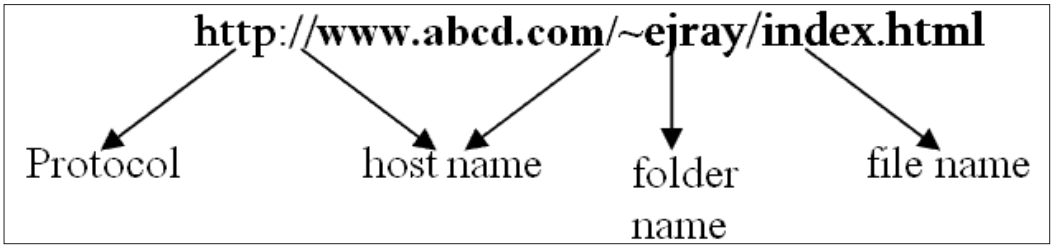
From an internet address, you can tell what type of organization controls the website. Common organization types are:

* .com - Commercial entities
* .net - Organizations directly involved in Internet operations, such as ISPs
* .org - Miscellaneous organizations, including non-profit groups
* .edu - Four-year, accredited colleges and universities
* .gov - US Federal Government entities
* .mil - US military

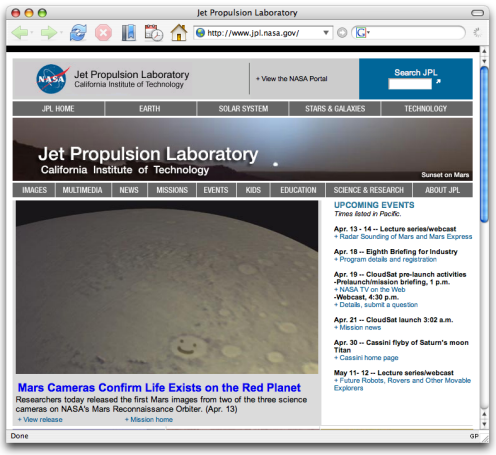
When trying to connect to another computer, there can be no spaces in the name, and no typos. A computer doesn't know that "discovry.com" is supposed to be "discovery.com".

Once you know the name or IP number of the computer to which you want to connect, you have to decide the protocol you want to use to connect to that computer - in what language you want your computer to talk to the other computer. You have a variety of options. **HTTP** (Hyper Text Transport Protocol) is by far the most common.

URL stands for Uniform Resource Locator. The first part of the string specifies the protocol (computer language) one computer uses to talk to another computer. The name of the computer to be communicated with is then specified. You can further specify a particular folder, and/or file on the remote computer that you want to view, by entering it after the protocol and computer name.



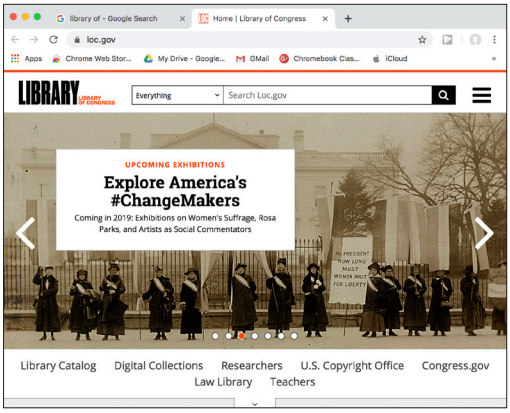
The World Wide Web (WWW) has become synonymous with “Internet”. However, it is actually a graphical interface to the resources available on the Internet. This interface is called HyperText Transfer Protocol (HTTP). Common applications that use this interface are web browsers such as Chrome, Internet Explorer, Firefox, and Safari. Web Browsers can also use other types of protocols.



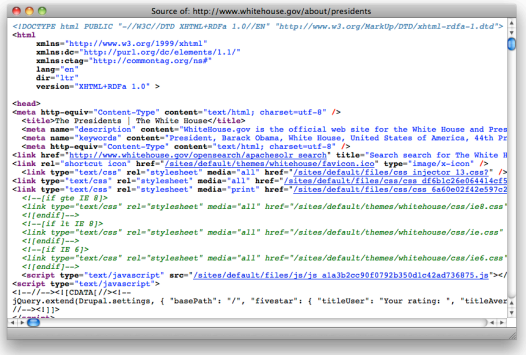
Firefox

HTTP allows you to link a document on one computer to a document on another computer, no matter where in the world those two computers are located. You could read one document, click a word and jump to a second document, click on another word and jump to a third document, and so on. Using hypertext, you can move from one computer to another, located all over the world, using nothing but the links in those documents.

These documents must be created using Hypertext Markup Language (HTML) in order to include these links. The HTML code for these documents contain URLs, which point you to other documents at other locations. There are many different ways to locate information on the Internet. There are web sites to help you find general information, and other sites which help you find a particular type of information - such as an e-mail address.

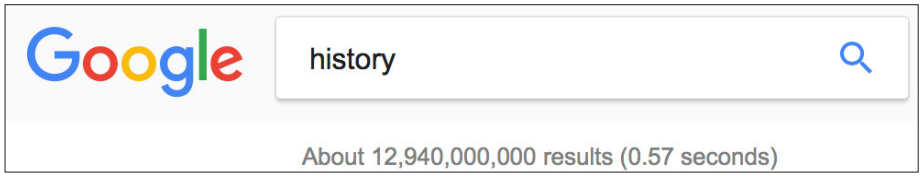


Google Chrome

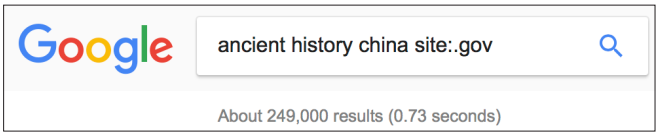


This is the HTML programming code for the White House web pages seen above. It is this text your computer 'sees' when you connect to a web site, which is then interpreted by the web browser into a familiar looking page.

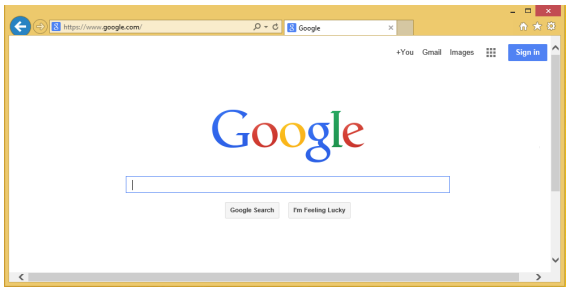
Search Engines are akin to your phone book yellow pages. They gather information from the millions of web sites around the world and build a cross-indexed register of those sites. You can then search that catalog, using key words and phrases. A broad search, such as 'history' will yield a large number of results (see below).

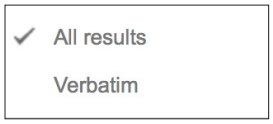


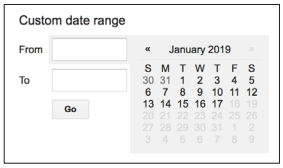
Obviously, almost 13 billion web pages would take several lifetimes to read, so it is best to use multiple search words to narrow a search.



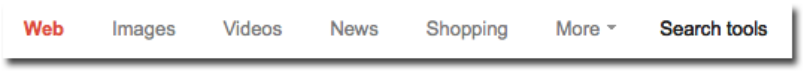
The search above has been narrowed to 'history ancient china' and Google has been asked (site:gov) to only show sites with the .gov suffix (official government web sites). Most search engines have advanced search options, which help you narrow a search in different ways.







Google can limit search results by date. To see the search options, click 'Search Tools' after you do an initial search.



Downloading Software

If you are interested in downloading software from the internet, go to the web site of the company that developed the program (such as www.k12software.com). They usually have links to their distributors' sites, or allow you to purchase the software directly from them. In many instances you can download a demonstration copy of the program. Many companies put updates and 'fixes' to their programs on their web sites. If you have their program installed, you can download any product updates directly from the Internet. Additionally, there are web sites where you can download free software, “shareware” or trial versions of programs. Two such sites are: *http://www.download.com/* and *http://downloads.zdnet.com/*

Learning More

The best way to learn is by using the Internet. To learn about it online at your own pace, go to *www.learnmyway.com/get-started/internet* where you'll find an introduction to the history and content of the Internet and World Wide Web; a review of the necessary components you'll need for connecting to the Internet; tips and instruction for communicating with other Internet users, using the Web to locate information, and observing proper etiquette.

Network Glossary

Acceptable Use Policy or **AUP** - Common in school, rules governing how network/computers used, often restricting material publicly available; many AUPs ban transmission of offensive material.

Adobe Acrobat Reader - A reader for graphic files (PDF-printer definition files).

ASCII Text - American Standard Code for Information Interchange (ASCII) - A text file in which each byte represents one character. ASCII files are sometimes called plain text files.

Attached file - A file that is embedded into an email message.

Bookmarks - An index of network addresses that the user frequently visits stored in the browser.

Browsers - A term referring to a software application that allows you to visit different Internet addresses and browse web pages. The most popular are Firefox and Microsoft Internet Explorer.

Bulletin board system (**BBS**) - An electronic message center that serves specific interest groups. They allow you to dial in with a modem.

Cable modem - An device linking a computer to the internet using service provided by a cable television provider. Thls bypasses the need for a phone modem, and the cable connection is always on.

Social Network - Interactive online communication enabling typed conversations to occur in real-time so messages instantaneously relayed to all members.

Client - A computer system or process that requests a service of another computer system or process. A workstation requesting the contents of a file from a file server is a client of the file server.

Cloud Storage: the generic name for placing files onto remote internet - accessible servers. Popular cloud storage services include Dropbox, iCloud, Google Cloud and OneDrive.

Cyberspace - The place where computer networking hardware, network software, and people using them converge.

DNS - Domain name server. Service used with TCP/IP hosts, housed on multiple servers. Maintains database for figuring out and finding (or resolving) host names and IP addresses on the Internet.

Domain - Categorizes entities. .com=commercial; .gov=government; .edu=educational institution.

Download - Retrieving a file from another computer.

Electronic mail / **E-mail -** Method whereby computer users exchange messages with each other over a network. E-mail is probably the most widely-used communications tool on the Internet.

Emoticon - A sideways face created by using special characters on the keyboard to express emotions without words, for example ;-) or :^(

Ethernet network and cards - A standard and probably the most popular connection type for Local Area Networks (LANs).

Exchange - Electronic mail software by Microsoft. A Windows' software package.

Fiber optic cable - Thin, flexible, medium capable of conducting modulated light transmission. Compared with other transmission media, fiber-optic cable is capable of high data rates.

Firewall - Controls unwarranted access to a network. In schools, firewalls are used to help filter out unwanted internet content.

Homepage - A web page that is typically the main source of information about a particular person, group, or concept.

Hotspot - An area where wireless networking (WiFi) is available.

HTML - The standard way to mark text documents for publishing on the World Wide Web.

HTTP - Hypertext transfer protocol. Underlying protocol used by the WWW. When you enter an address in your browser, this sends an HTTP command to the Web server to 'get' the requested page.

Hub - A device connected to several computer and printer to a network.

Hypertext - Text that includes links or shortcuts to other documents, allowing the reader to easily jump from one text to related texts, and consequentially from one idea to another, in a non-linear fashion. Coined by Ted Nelson in 1965.

Internet - Everyone's computers hooked together. Not an entity in itself. Always capitalized, the word Internet can also be referred to as the "Net."

Internet Service Provider (**ISP**) **-** Company who maintains a network that is linked to the Internet via a dedicated communication line, usually for a fee.

Intranet - Use of Internet technologies within a company via internal network sharing software and network equipment, fenced off from the outside Internet by "firewalls".

IP address - Internet Protocol address. Every resource has a unique numerical IP address, represented in dotted decimal notation. IP addresses are the closest thing the Internet has to phone numbers.

Java - Programming language with features that make it well suited for use on the WWW.

LAN - "Local Area Network". Allows subscribers to share resources like files, printers, modems, etc.

Mailing list - A list of email addresses used to forward messages to groups of people. When you subscribe to a mailing list, you receive all mail sent to that list.

Malware - software that is intended to damage or disable computers and computer systems. Usually download in inadvertently from a malicious website.

Modem - An early (1980s) device used to convert computer data for transmission and reception over telephone lines.

Multimedia - A combination of sounds, animation and video on a computer workstation.

Netiquette - Informal rules of behavior that have evolved in Cyberspace, including the Internet and online services, i.e. using all capital letters is considered the equivalent of "YELLING".

Network - Group of computers connected by a series of servers, cables and network cards.

NIC Card - network interface card. Computer circuitry that allows it to use a high speed (Ethernet) network.

Protocol - The "language" spoken between computers to help them exchange information.

Public domain - Any program that is not copyrighted. Public-domain software is free and can be used without restrictions. Often used incorrectly to include freeware, free software that is copyrighted.

Search engine - An internet site that allows for keyword searching online information.

Server - A computer that provides resources, such as files and other information. Common Internet servers include file servers and name servers of Domain Name Service.

Shareware - Copyrighted computer programs made available on a trial basis; use requires a fee (sometimes optional) to be paid to the author of the program.

Spam - Unsolicited "junk" e-mail sent to large numbers of people to promote products or services.

TCP/IP - Transmission Control Protocol/Internet Protocol (TCP/IP). TCP/IP is the standard communications protocol required for Internet computers.

Upload - To transmit a file to another user or computer.

URL - Universal Resource Locator (URL). Unique address for an Internet resource which begins with letters that identify the resource type, followed by a colon and two slashes.

Web based - Referring to a program (app) which is located remotely online, and requires a web browser to run.

Web page - A single online document containing information that can be accessed over the WWW.

WiFi - Wireless networking allowing a computer to access the internet without a cable.

Wireless Networking - The use of radio frequency signals to access networks without the need to be physically connected by cables.

World Wide Web - The "Web". Online documents, housed on Internet servers worldwide, "coded" in HTML. Requires a web browser to access.

Project 18: Internet

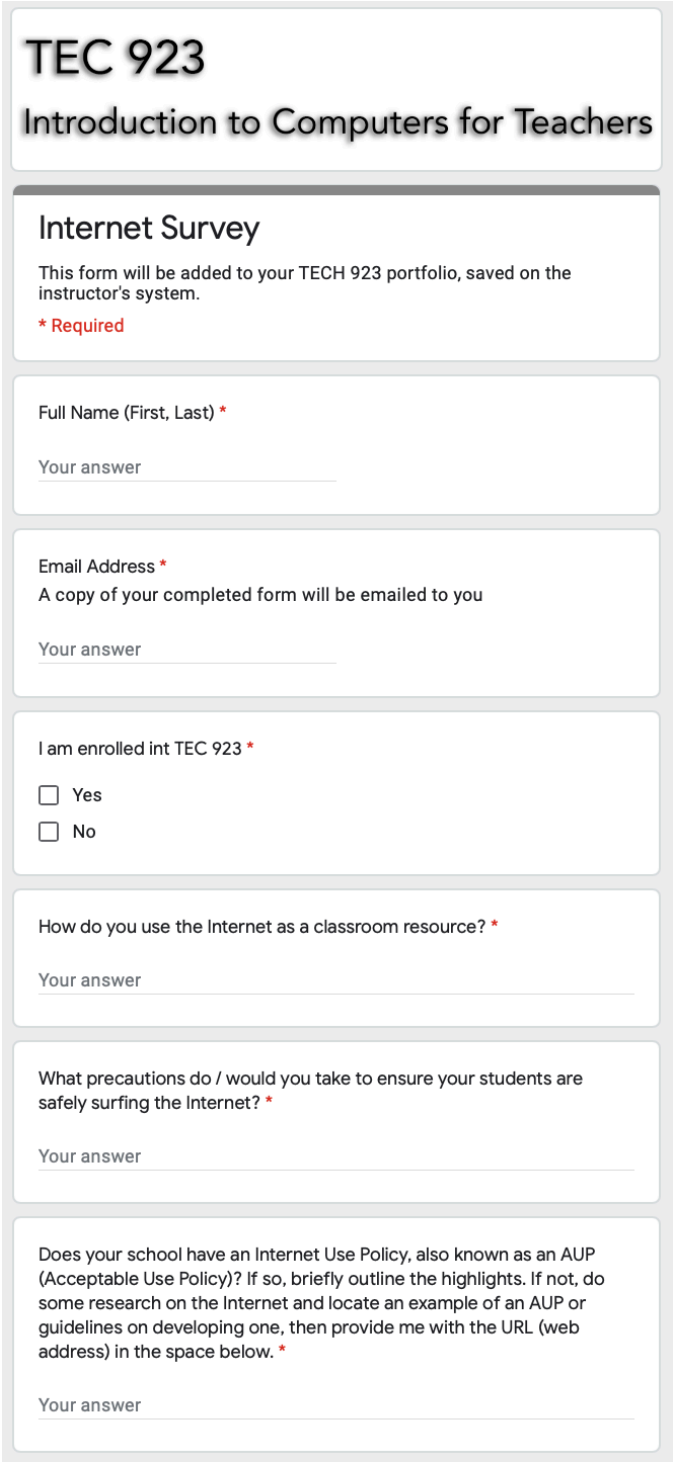
Learning Objectives: Discussion of the educational uses of the internet.

To fill out and submit this form, please go to the Internet Survey link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website. A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice - NOTE the last prompt asks for a more complete and thorough response.

How do you use the Internet as a classroom resource?

What precautions do / would you take to ensure your students are safely surfing the Internet?

Does your school have an Internet Use Policy, also known as an AUP (Acceptable Use Policy)? If so, briefly outline the highlights. If not, do some research on the Internet and locate an example of an AUP or guidelines on developing one, then provide me with the URL (web address) in the space below.



TEC 923

Introduction to Computers for Teachers

Internet Survey

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

Yes

No

How do you use the Internet as a classroom resource? *

Your answer

What precautions do / would you take to ensure your students are safely surfing the Internet? *

Your answer

Does your school have an Internet Use Policy, also known as an AUP (Acceptable Use Policy)? If so, briefly outline the highlights. If not, do some research on the Internet and locate an example of an AUP or guidelines on developing one, then provide me with the URL (web address) in the space below. *

Your answer

Project 19: Internet Site

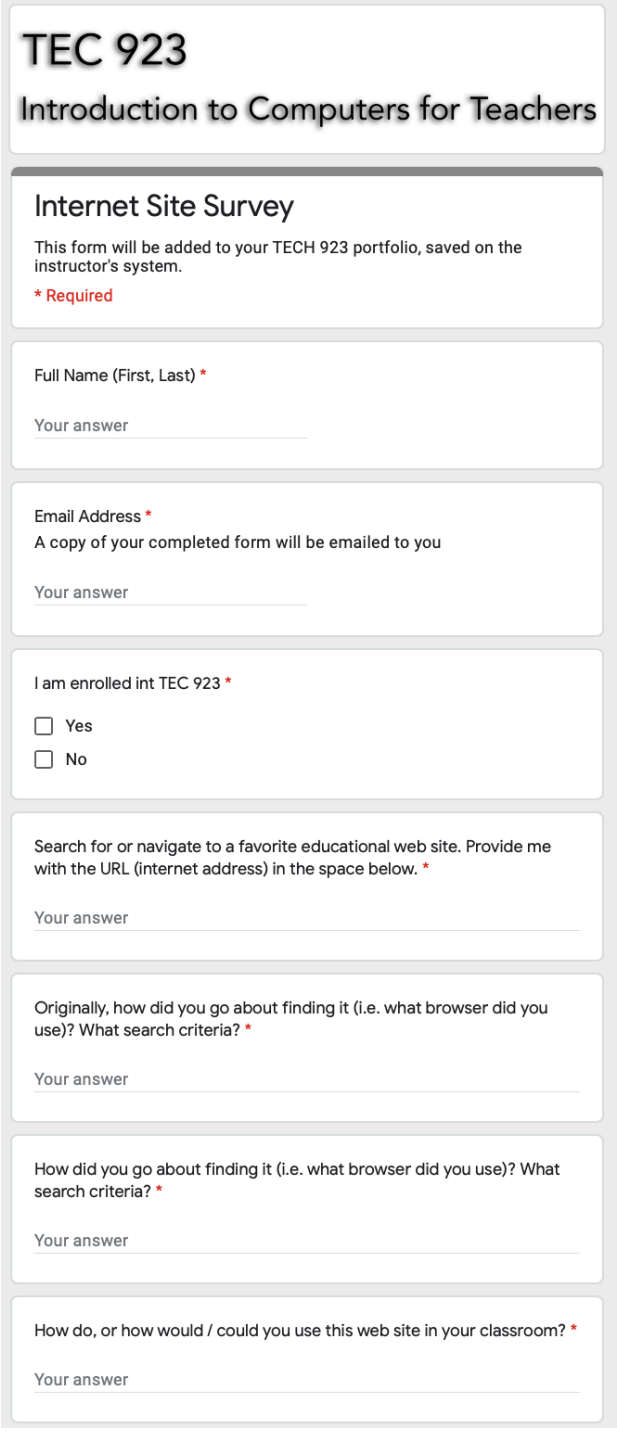
Learning Objectives: Searching the Internet; Discovering educational web sites

To fill out and submit this form, please go to the Internet Site Survey link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website. A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice

Search for or navigate to a favorite educational web site. Provide me with the URL in the space below.

How did you go about finding it (i.e. what browser did you use)? What search criteria?

How do, or how would/could you use this web site in your classroom?



TEC 923

Introduction to Computers for Teachers

Internet Site Survey

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

- [ ] Yes
- [ ] No

Search for or navigate to a favorite educational web site. Provide me with the URL (internet address) in the space below. *

Your answer

Originally, how did you go about finding it (i.e. what browser did you use)? What search criteria? *

Your answer

How did you go about finding it (i.e. what browser did you use)? What search criteria? *

Your answer

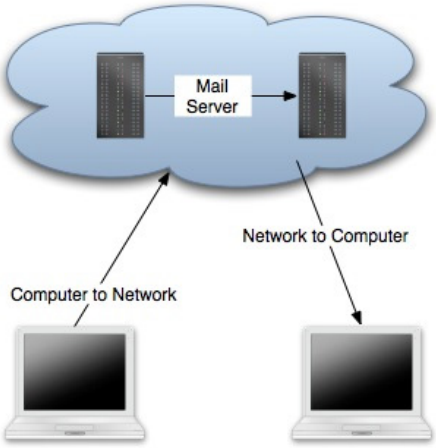
How do, or how would / could you use this web site in your classroom? *

Your answer

E-mail

E-mail is short for electronic mail. As with traditional mail, several pieces of information have to be included with each letter.

•Recipient - Who are you sending it to.
•Address - Their location, place to deliver the mail.
•Message - The contents of your letter.
•Sender - Your return name and address.



Most e-mail programs use the same analogy to create the message. E-mails, like letters, can be complex or simplistic, plain or dressy.

When you send a message, the e-mail program sends it to a predefined mail server, which is a computer at your school district office or somewhere on the Internet. The message is then relayed to the recipient (if they are part of the same domain or organization) or to another mail server and finally to the recipient.

To create a new message, open your e-mail program or navigate to your e-mail web page. Click on 'New Mail', and a window will pop up.

The 'new mail' window contains text fields, where you type in the needed information.

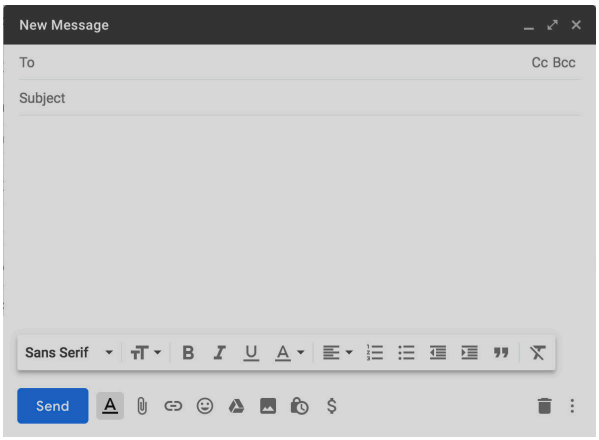
'To:' - this is the main address of the e-mail recipient.

'CC:' - (optional) this is a carbon copy to send to another, with the original message.

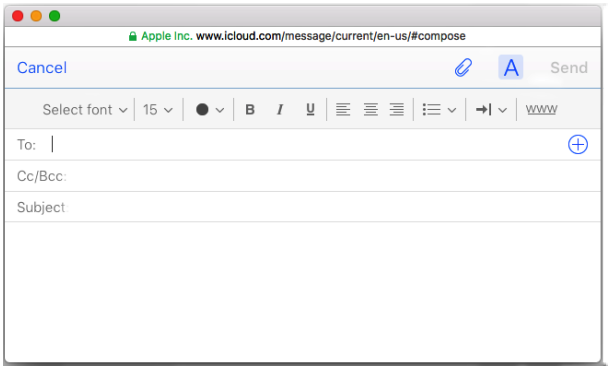
'BCC:' - a 'blind carbon copy' sent to another, with the original message. The 'blind' means the other recipient(s) will not know the message was sent to another party.

'Subject:' - a title or description of the message contents. It is important to fill in this area so the recipient can read the subject line before opening the e-mail. It is also important to check subject lines in delivered e-mail to prevent opening objectionable material.

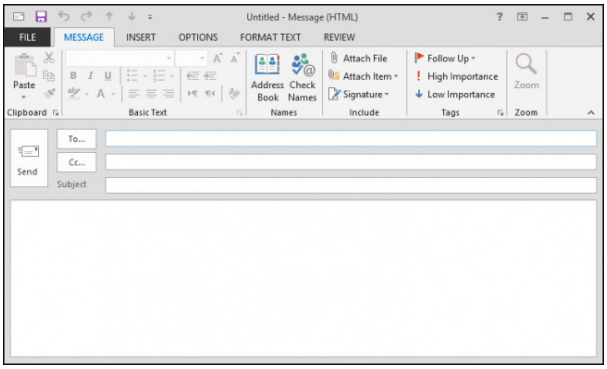
Message Body: - Type or paste in the text of your e-mail message.



GMail (Google) - teacher@gmail.com

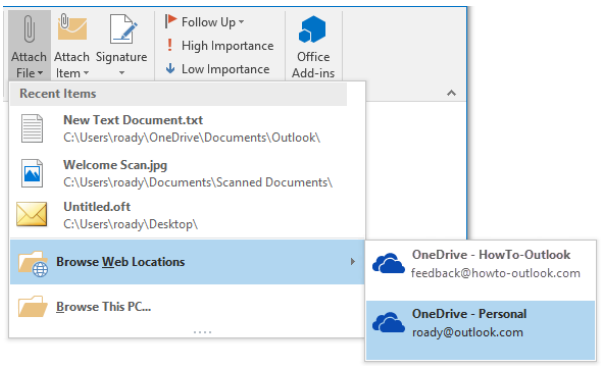


iCloud Mail (Apple) - teacher@icloud.com



Microsoft Outlook - teacher@outlook.com

It is also possible to send pictures, word processor files and other documents along with your e-mail. These files are called **attachments**.



When you need to include an attachment, click on 'Attach' button or icon from the menu bar and a window will open, allowing you to choose the file to you want to attach. Once you find the file you want to send, select it and click the 'Attach' button.

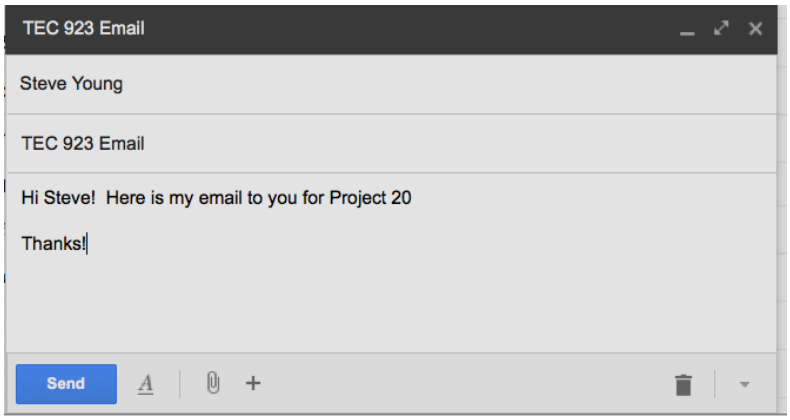
When you are satisfied with the message, click on 'Send' button or icon and the message will be sent if you are online, or will be stored in the 'Outbox' to be sent later when you go online.

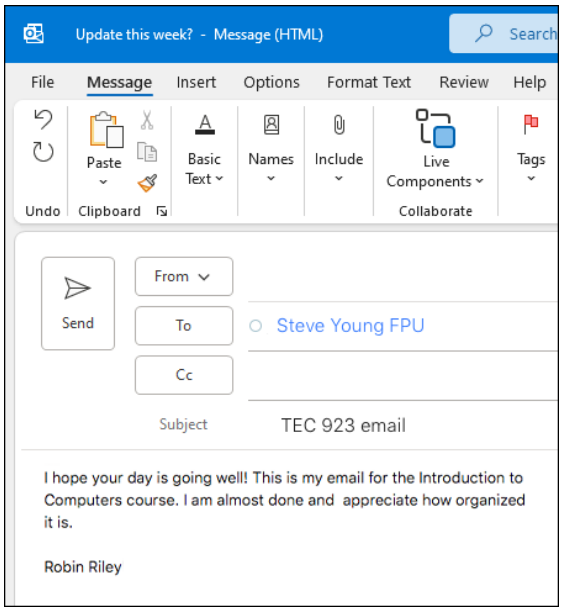
Project 20: E-mail

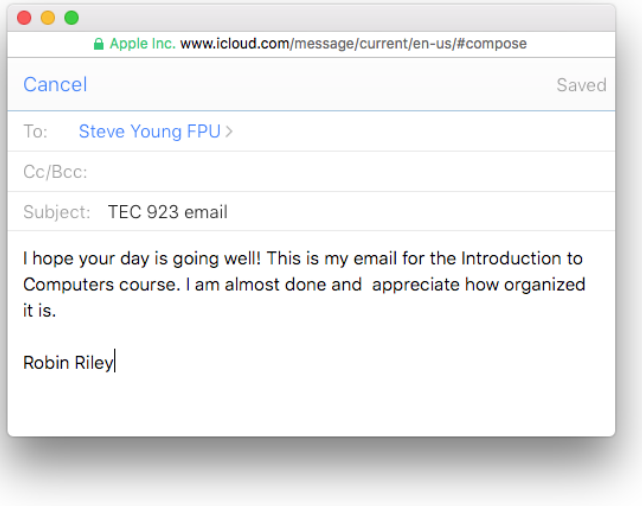
Learning Objectives: Using e-mail to communicate with a colleague.

If you would, please, **send me an email!** Using 'TEC 923 Email' as the subject line, send me a short note to check in and say hello. Send to my email address of:

steveyoungfpuniv@aol.com







Standards Correlation

By designing and presenting lessons to your students using the understanding and experience you have gained from this course, you will fullfil several of ISTE's Technology Standards for Teachers. These have been defined as necessary tools for today's teaching professional. This course does not address any specific states' technology standards. It does, though, reinforce the ISTE educator standards.

It is important you understand these standards and their performance indicators, and can effectively apply them for practical use. For the purpose of this next assignment you will be asked to select any 5 projects presented in this course, then align them to the **ISTE Educator Standards**. You can find the standards detailed further at: ***www.iste.org/standards***

Once the web page is loaded, scroll down a bit and click on the 'Learn More' link under the center 'Educators' column.

You can also see the standards on the 'Resources' page of my website, ***www.steveyoungfpu.net***

You will be asked to record your findings on the following page for three (3) assignments. To assist you in completing this project, please refer to the sample below.

Example:

To correlate Project #13, the "Hair Color Survey," to the ISTE educator standard, the digit '2' indicates that the project meets standard 2. - "Leader." Next, the letter 'c' is the relevant Performance Indicator for Standard 2: "Model for colleagues the identification, exploration. . ."

In explanation of the rationale underlying the selections, when you create spreadsheet charts for your classroom that you now have the skills to create, you have certainly met the goal of this standard and performance indicator! Congratulations! So, in putting it all together, this is how the completed Standards Correlation Chart would appear had you chosen Project #13 - "Class Survey Hair Color Chart"

NOTE: You do not need to explain the rationale behind your selections; I did so only to illustrate the concept.

Name of Project: *Hair Color Chart* Standard *Leader*

Performance Indicator *C*

Project 21: Standards Correlation

To fill out and submit this form, please go to the Standards Correlation Chart link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website.

Project Standard

Name of Project: Performance Indicator

Project Standard

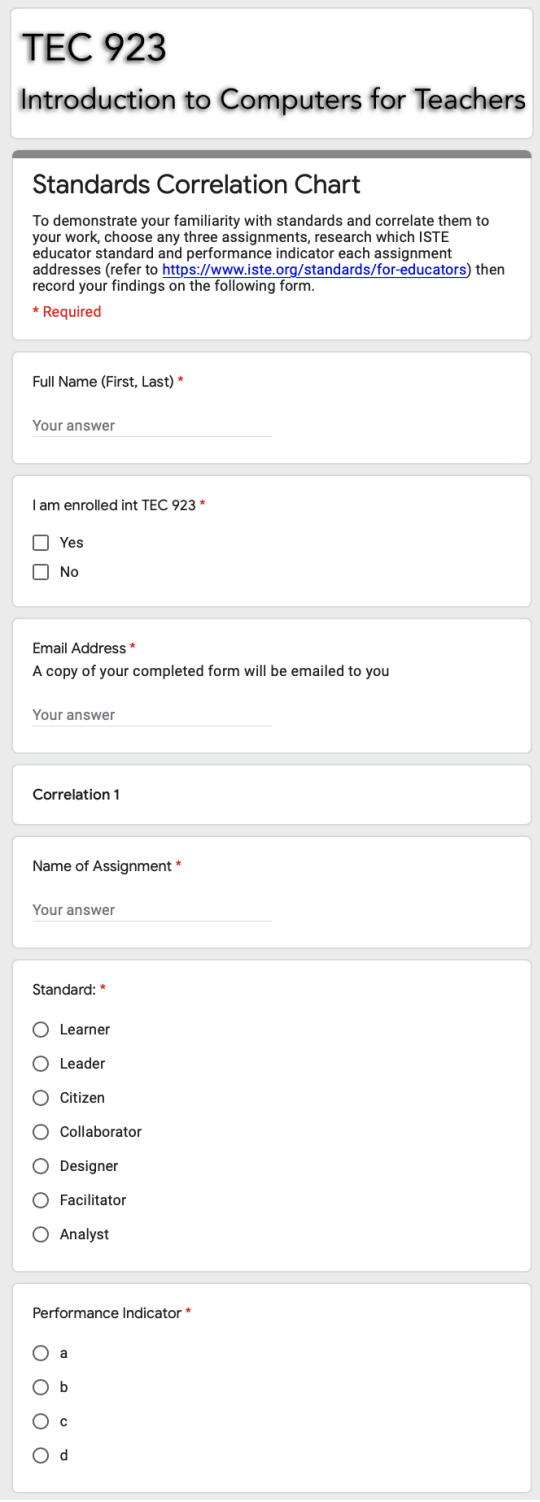
Name of Project: Performance Indicator

Project Standard

Name of Project: Performance Indicator

Narrative Response:

Does your district/school have a policy addressing technology integration in to the curriculum? If so, briefly describe it; if not, what sort of policy you would like to see implemented.



TEC 923

Introduction to Computers for Teachers

Standards Correlation Chart

To demonstrate your familiarity with standards and correlate them to your work, choose any three assignments, research which ISTE educator standard and performance indicator each assignment addresses (refer to https://www.iste.org/standards/for-educators) then record your findings on the following form.

* Required

Full Name (First, Last) *

Your answer

I am enrolled int TEC 923 *

- [ ] Yes
- [ ] No

Email Address *

A copy of your completed form will be emailed to you

Your answer

Correlation 1

Name of Assignment *

Your answer

Standard: *

- ○ Learner
- ○ Leader
- ○ Citizen
- ○ Collaborator
- ○ Designer
- ○ Facilitator
- ○ Analyst

Performance Indicator *

- ○ a
- ○ b
- ○ c
- ○ d

Project 22: Post-course Teacher Survey #2

To fill out and submit this form, please go to the Post-Course Survey link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website. A copy of your completed form should be e-mailed to you after submitted. A couple brief, succinct sentences should suffice

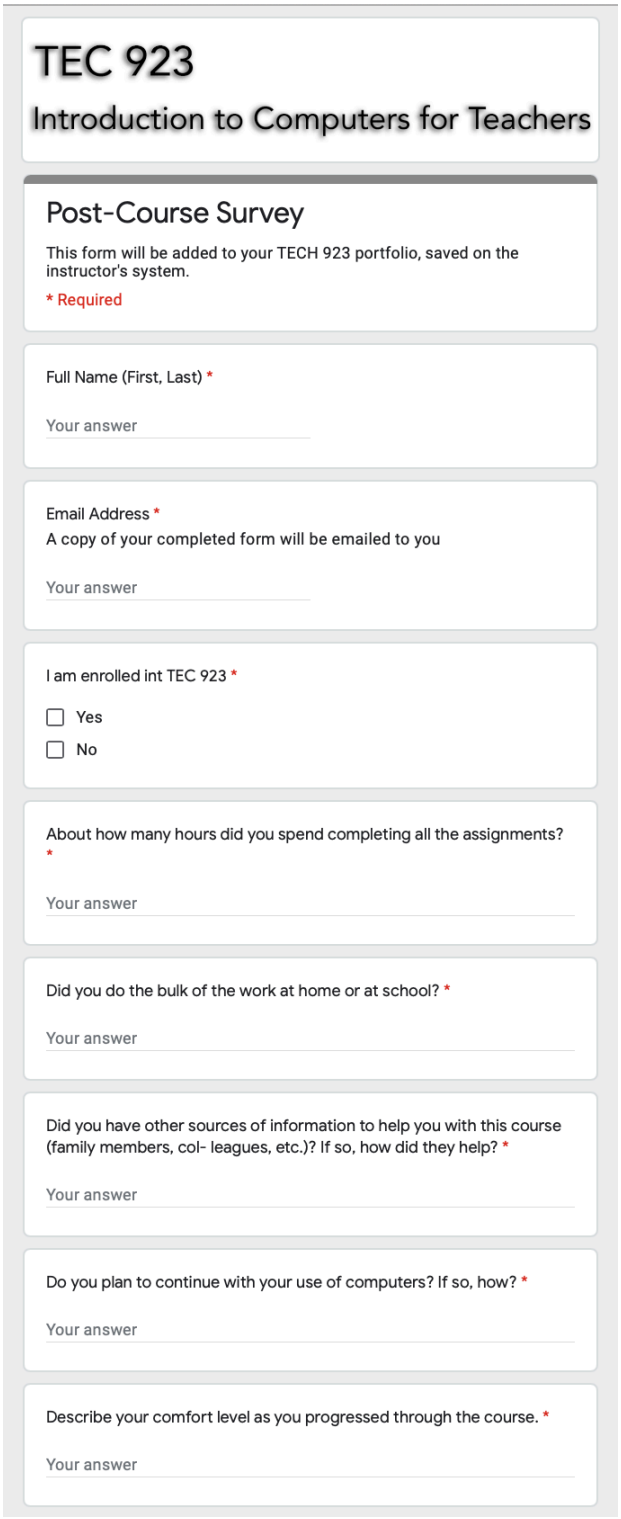
About how many hours did you spend completing all the assignments?

Did you do the bulk of the work at home or at school?

Did you have other sources of information to help you with this course (family members, colleagues, etc.)? If so, how did they help?

Do you plan to continue with your use of computers? If so, how?

Describe your comfort level as you progressed through the course.



TEC 923

Introduction to Computers for Teachers

Post-Course Survey

This form will be added to your TECH 923 portfolio, saved on the instructor's system.

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

Yes

No

About how many hours did you spend completing all the assignments? *

Your answer

Did you do the bulk of the work at home or at school? *

Your answer

Did you have other sources of information to help you with this course (family members, col- leagues, etc.)? If so, how did they help? *

Your answer

Do you plan to continue with your use of computers? If so, how? *

Your answer

Describe your comfort level as you progressed through the course. *

Your answer

Project 23: Course Evaluation

To fill out and submit this form, please go to the Pre-Course Survey link on the course website. I have copied the survey here merely for reference; you will submit your responses via the Course Website.

Did this course meet your expectations? Please briefly explain.

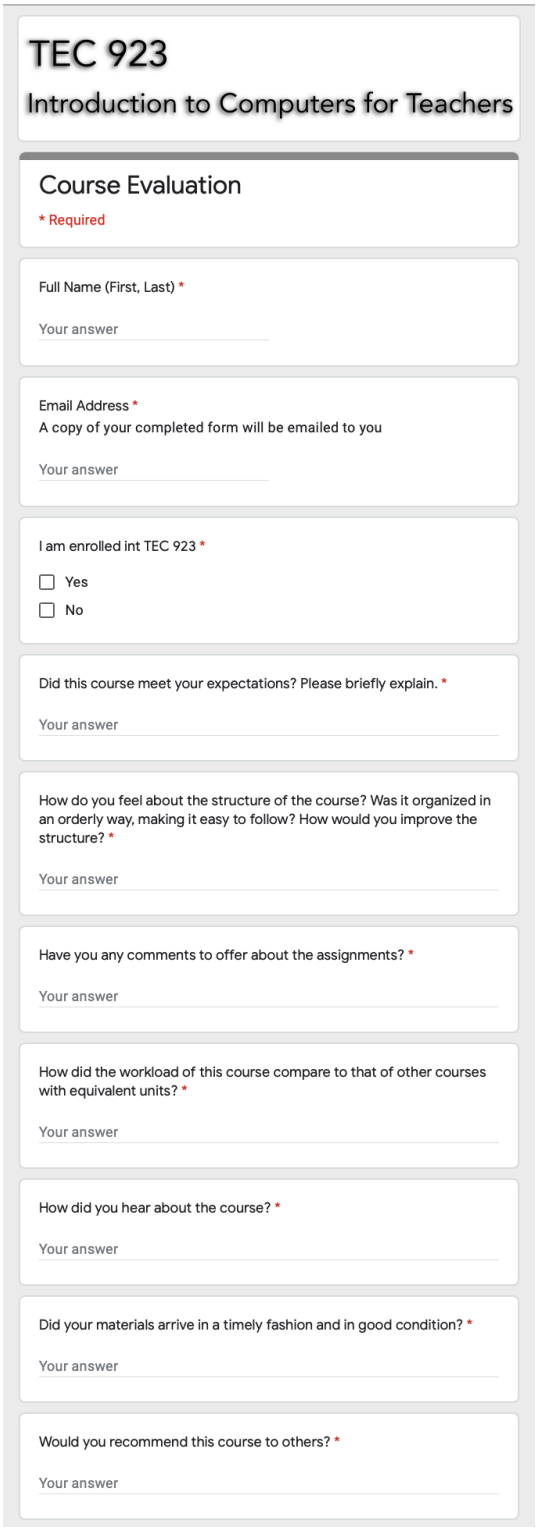
How do you feel about the structure of the course? Was it organized in an orderly way, making it easy to follow? How would you improve the structure?

Have you any comments to offer about the assignments?

How did the workload of this course compare to that of other courses with equivalent units?

How did you hear about the course?

Would you recommend this course to others?



TEC 923

Introduction to Computers for Teachers

Course Evaluation

* Required

Full Name (First, Last) *

Your answer

Email Address *

A copy of your completed form will be emailed to you

Your answer

I am enrolled int TEC 923 *

Yes

No

Did this course meet your expectations? Please briefly explain. *

Your answer

How do you feel about the structure of the course? Was it organized in an orderly way, making it easy to follow? How would you improve the structure? *

Your answer

Have you any comments to offer about the assignments? *

Your answer

How did the workload of this course compare to that of other courses with equivalent units? *

Your answer

How did you hear about the course? *

Your answer

Did your materials arrive in a timely fashion and in good condition? *

Your answer

Would you recommend this course to others? *

Your answer

About Your Instructor ...

I was born in 1953 at the Presidio in San Francisco, California. The second child of Maj. John and Bette Jane Young, I was enthusiastically welcomed by my only sibling - a brother, six years my senior. After my dad retired from the Army he still had a touch of the wanderlust so we spent the next few years exploring Wyoming and Colorado. In 1963 we settled in Durango where my brother and I spent our days climbing trees, skipping stones across the Animas River, and exploring the La Plata mountains, which were our backyard.

In the late 1960s my parents moved back to the Bay area of California where I finished high school then went off to college, enrolling at California State University in Fresno. I majored in Mass Communications - a combination of English, Theater Arts and the technical aspects of radio, television and film production. I had those typical, youthful aspirations of becoming a 'rich and famous' script writer and filmmaker. Upon graduation I partnered with a local film production company and spent the next several years writing, producing and filming documentaries and television commercials. A combination of the reality of parenthood and a souring economy in the early '80's guided my decision to return to school to obtain my teaching credential. The birth of my daughter in 1983 cemented my decision to opt for the stability of teaching over the uncertain world of the arts. I began as a classroom teacher at the same time computers were first being introduced to the public, in general, and schools. I have always had an affinity for machines and gadgets so I soon transitioned from 'traditional' teaching to working with technology in education; the best decision ever!

Within a year I was the Technology Teacher/Coordinator for a small high school; teaching programming in a lab and setting up local area networks. As technology evolved and became more affordable, the District purchased classroom computers and I, seeing the need, began writing record-keeping and database programs for teachers.

By the early '90's I was assisting with technology District-wide and speaking at regional and state conferences. It was at this time I began teaching summer and weekend seminars at Fresno Pacific University (then Fresno Pacific College) on integrating technology in to the classroom. Through membership in CTAP (California Technology Assistance Project) I also provided professional development, planning, and implementation assistance to help schools utilize technology to support teaching and learning.

I recently retired after more than 30 years of service to Madera Unified School District. With my 'extra' time, I will be developing new courses for Fresno Pacific. My wife, Becky, and I enjoy interacting with teachers from all over the country - we recently began traveling across the US on Amtrak and have already logged over 10,000 miles riding the rails, making whistle stops at many of your hometowns!

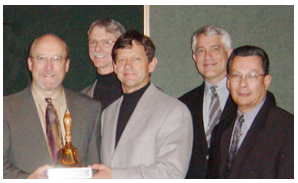
Using a Steadicam during the filming of a commercial for a regional TV station in the days before gray hair!

My beautiful bride Becky, on our wedding day! After all these years she's still the love of my life (and the world's greatest cook!).

Taking a break at my desk at Madera Unified, while administering an early (circa 1990) school-wide network.

Scuba diving (a passion of mine) with my daughter off the coast of Maui, in the beautiful state of Hawai'i.

Fishing the Animas River in Durango, CO, where my brother and I used to roam. Pretty nice catch! We only keep what we eat, and this one was delicious!



In San Francisco receiving California's prestigious Golden Bell Award for an exemplary program in technology, with Madera Unified school board trustees.

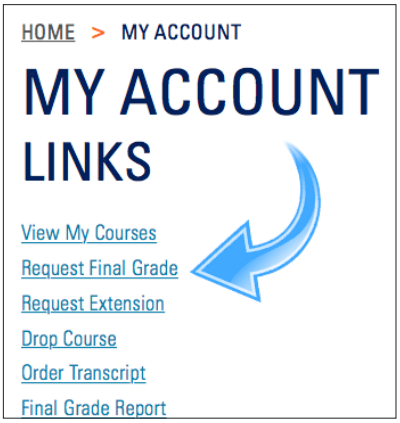
Visiting the St. Louis Arch with my wife - a day trip from Indianapolis after our annual trip to the Indy 500.

Me with Becky's family, including her three children and all eight (so far!) of our grandkids, at Becky's parents' 60th wedding anniversary celebration.

DIRECTIONS FOR SUBMITTING A REQUEST FOR ONLINE GRADING

FPU requires I submit your grade online. For me to do that you must request online grading via your FPU account. When you've submitted your completed coursework (no sooner):

- Login to your account on the CPD website at ***https://ce.fresno.edu/my-account***
- Click on 'Request Final Grade'
- Select this course from the list of ungraded courses in which you are currently enrolled
- Click the box confirming accuracy of the information
- Click Submit
- FPU will email me that you have completed the course and are ready to be graded



Please submit your request for online grading the same day you submit your completed coursework (no sooner). I cannot submit your grade until online grading has been requested.

If I receive your final coursework but you've yet to request online grading, expect a delay while I attempt to contact you in reminder. If you encounter technical difficulties with the on-line grading system please contact FPU directly; I am unable to troubleshoot their system.

Once I have submitted your grade to FPU I will notify you via email that this has been ac-complished. Processing grades submitted electronically is not automatic; FPU strives to post grades the same day, but it may take up to 2 business days to certify and post your grade (FPU will email you once your grade has been posted).

Prior to ordering a transcript, particularly a '*RUSH'* transcript, verify your grade has *officially* been posted. Login to your FPU account and click Final Grade Report. If your grade in this course appears, print off your Final Grade Report (FPU no longer mails Grade Reports - you must print them out yourself) and proceed with ordering transcripts.

If this course does not appear, although I notified you I submitted your grade, please contact FPU (1-800-372-5505) directly with your inquiry. It may be they are 'holding' your grade for whatever reason, typically if you are overenrolled.

I hope you found the course beneficial. I'll keep an eye out for your packet, and look forward to reviewing your work! Again and as always, thanks!