

anniecannons

6-Week Digital/Tech Empowerment Program
Student Manual and Resource Book



"Life shrinks or expands in proportion to one's courage."
- Anais Nin

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“ Know how to learn.
Then, want to learn. ”

- KATHERINE JOHNSON

Badges

Unit 1: Typing Badge

Skills	Assignment	Completed
Typing correctly, quickly, and efficiently	Complete 3 minute timed test in typing.com at 45 WPM	
Correct hand and body placement	Complete 3 minute timed test in typing.com at 45 WPM with 98%	

Unit 2: Computer Basics Badge

Skills	Assignment	Completed
Computer Basics	Computer Basics Knowledge Party	
Understanding Computer Hardware	Computer Checklist Exercise	
Understanding Computer Software and Operating	Complete Computer Skills Check on a Mac	

Unit 3: G Suite Badge

Skills	Assignment	Completed
Using Gmail	Gmail Exercise	
Using Google Docs	Google Docs Exercises (Formatting Exercise, List Making, Calendar, Letter to the Mayor)	
Using Google Sheets	Complete Google Sheets Classroom Activity	
Using Google Sheets	Personal Budget Exercise	
Using Google Slides	Google Slides Pitch Deck and Presentation	
Using Google Hangouts	Complete G Suite Skills Check	
Putting it all together	Complete G Suite Knowledge Party	

Badges

Unit 4: Online 101

Skills	Assignment	Completed
What is the Internet? Understanding browsers	Internet Knowledge Party	
Cybersecurity	Nova Labs Game	

Unit 5: SDLC and Design

Skills	Assignment	Completed
SDLC 101	SDLC Knowledge Party	
Design Principles	User Flow Project	
Toolbelt Checks	Skills check on Asana and Harvest	

Unit 6: Data Cleanup and Management

Skills	Assignment	Completed
Data Management and Cleanup	Complete Data Cleanup Exercise	
Spreadsheet Functions	Data Cleanup Knowledge Party	

Unit 7: Financial Management

Skills	Assignment	Completed
Financial Management Tools	Financial Literacy Knowledge Party	
Personal Budget	One-to-one coaching	

Cheatsheet

Slack: Our team name is anniecannonsinc.com. Please use your own AnnieCannons email (your handle) for the username/email.

Your password is: _____

Gmail: Your email is your handle @anniecannons.com.

Your password is: _____

typing.com. You set this up with your own email address.

Your password is: _____

My Computer: The username is your handle.

Your password is: _____

Other passwords:

1. Website/Tool _____

 1. Password: _____

2. Website/Tool _____

 1. Password: _____

3. Website/Tool _____

 1. Password: _____

4. Website/Tool _____

 1. Password: _____

5. Website/Tool _____

 1. Password: _____

6. Website/Tool _____

 1. Password: _____

Typing Unit

Slides: <https://anniecannons.github.io/ac-digital-literacy/#/19>

Notes from Lectures:

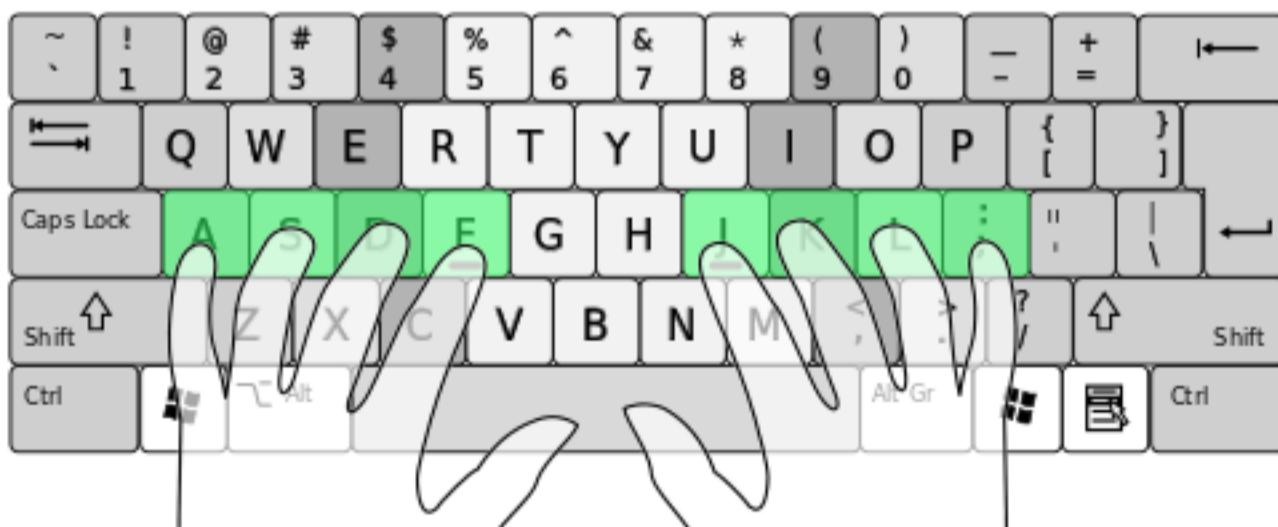
Typing

Tips for success:

- When you practice typing - don't look at the keyboard - not even a quick peek! Look only at the screen.
- The basic position can be easily found without looking at the keyboard - feel the bumps on 'F' and 'J'.
- At first typing tutorials, practiced letters won't spell out words. As you get to know the keys, "real" words and sentences will be used. That is the only way to learn typing correctly.
- Remember to type test your speed periodically. With our typing test you can check for both speed and accuracy progress. The number of words per minute indicates your typing level. If you are still unsatisfied with the results - go back to the typing tutors and keep practicing!

Home Keys and Correct Hand Position

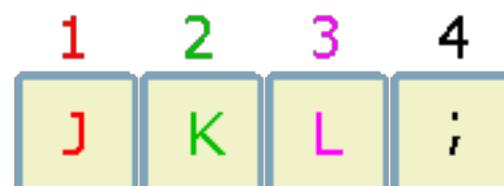
The two images below shows the **Home Keys** for the left and right hand. They are called the **Home Keys** because these are the keys your fingers must return to after typing any other key. The first image shows correct finger position for **Home Keys**. The second image has color and number codes for each finger.



Place your left hand
over these keys



Place your right hand
over these keys



Computer Basics Unit

Slides: <https://anniecannons.github.io/ac-digital-literacy/#/24>

Notes from Lectures:

Computer Basics

Computer = Power + Simplicity

The computer has the power to do hundreds of thousands of calculations faster than any human. However, the computer must be told exactly what to do by a programmer. Computers cannot think on their own, but good programmers can have them running multiple programs and interacting on various networks as long as all of that information has been broken down for the computer to understand.

What is <code>?

Code is the set of instructions that a computer programmer tells the computer to run. Everything you see on computers is fueled by code!

Hardware vs. Software

Hardware is the physical components of your computer. Software is any set of instructions that directs a computer to perform specific operations. Computer software consists of computer programs, libraries and related data. It is the non-physical stuff of the computer.

Think of it like a piano: The physical instrument part is like the hardware and the sheet music is like the software



Computer Languages

The computer can only read and understand code that is written in certain computer languages. These languages have specific words and syntax (think: punctuation) that you have to use to get a program to run. Consider two main types of computer languages: front-end languages and back-end languages. Front-end languages (HTML, CSS, JavaScript) create everything that the user of a computer sees. The back-end languages deal with databases and servers (basically, everything the user doesn't see).



Computer Basics

Computer Basics and Vocabulary

Application: Another word for a program or software



Bold: A font style that names letters and words darker

These words are bold.
These words are not.

Center Processing Unit or CPU: Where all of the information you put into the computer is stored



Clicking: Pointing to something on the screen and then pushing the button on the mouse is called clicking



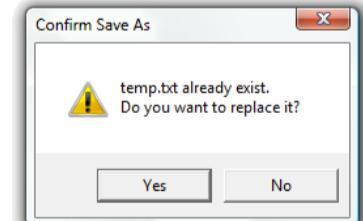
Cursor: The line or arrow that you control by moving the mouse



Desktop: The screen you see first when your computer turns on. This screen has many icons



Dialogue Box: A window that opens and asks you questions



Document: Anything you create with a Word Processor and has a .doc file name



File: A piece of computer information such as a document or part of a computer program



Computer Basics

Folder: Like a file folder in a filing cabinet, a folder is where all computer files are kept.



Font: The way letters and words look on the computer.

Lorem Ipsum
LOREM IPSUM
Lorem Ipsum *Lorem Ipsum*
Lorem Ipsum

Format: Changing the way that text looks on the page.

THIS is formatted.
This is not formatted.

Hardware: All the part of the computer that you can touch; the monitor, CPU, printer, mouse, and keyboard.



Hard Drive: The place inside your computer where programs and files are stored



Highlight>Selecting: Click and drag across a word or a sentence to highlight it. When it is highlighted, you can make changes to it.

This text is not highlighted
This text is highlighted.

Icon: Symbols or pictures that you can click on to perform an action. Each program has its own icon.



Italics: A font style that slants words to the right.

This text is not italicized.
This text is italicized.

Monitor: Your computer's screen.



Mouse: The tool you can use to tell the computer what to do. For example, you can open programs and files by clicking or double clicking.

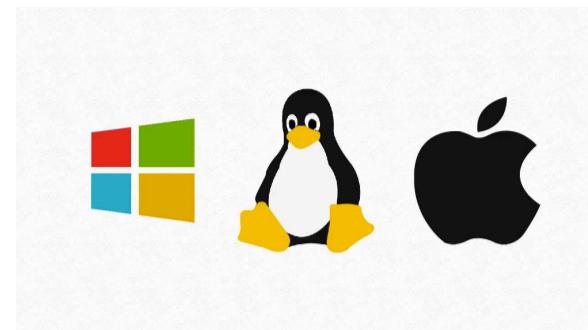


Computer Basics

Open: A command on the File menu that brings files onto the screen so that you can see them.



Operating System: The most important program in your computer. This program is like the “manager” of all of the other programs.



Point: The size of text

12 point 20 point **32 point**

Programs: Another word for software or applications



Screensaver: A design on the screen that turns on if you don't use your computer for a few minutes



Scroll Bars: The bars on the sides of the screen that allow you to move up or down the page



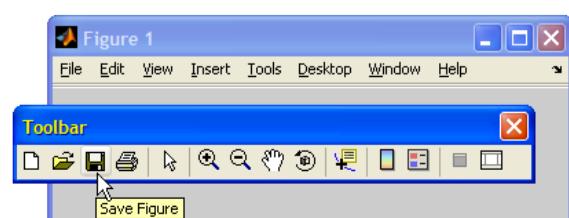
Software: Another word for programs, instructions in the computer that help us do different tasks.



Spell Check: When you are using a Word Processor, you can click this button to look for spelling and grammar mistakes.



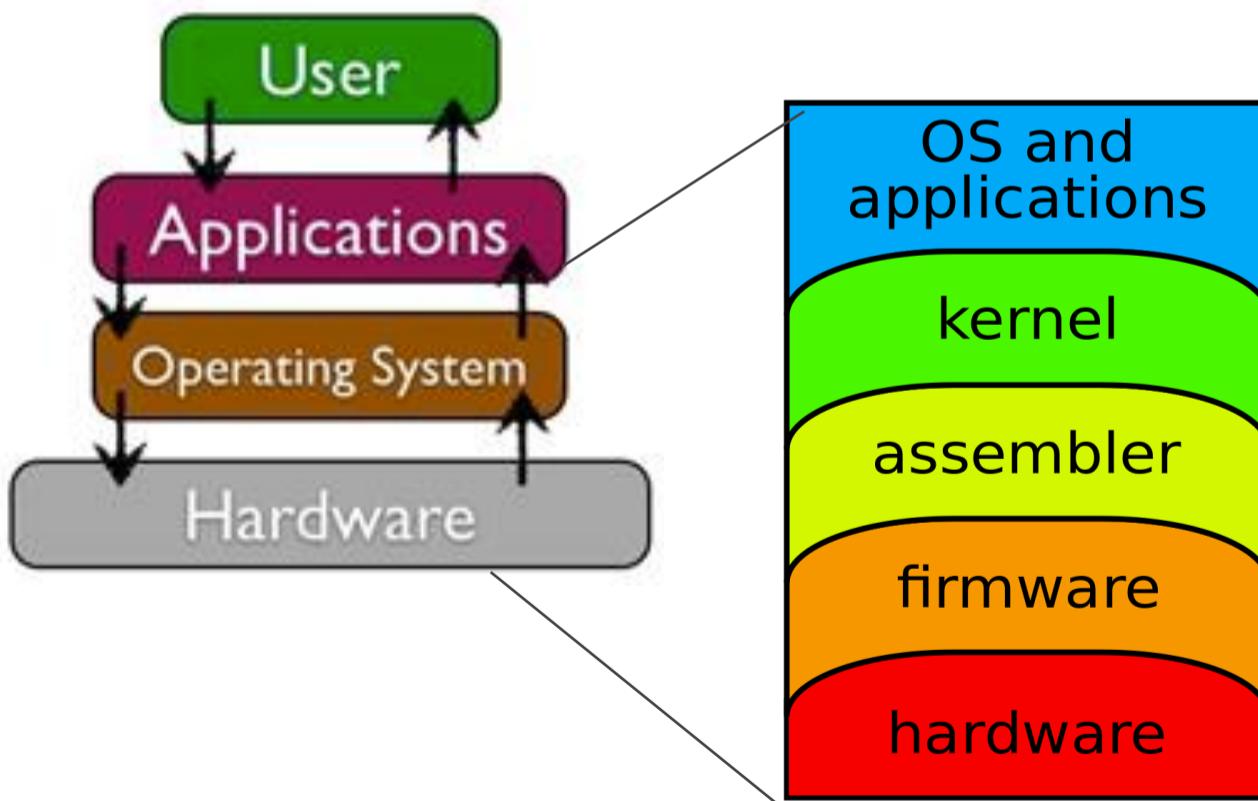
Tool Bars: The bars across the top of the screen that have icons you click on to do different things.



Computer Hardware

Understanding Computer Hardware

- Why care about hardware?
 - All of the different parts of the computer don't need to be memorized, but understanding the big picture will give you a framework for thinking about how the software you're using or learning to build interacts with the physical machine you are using - and other physical machines in the world!
 - We're previewing how software goes from what you see on a screen to the tiny bits of information that make things happen on your computer.
- Software and Hardware, working together.
 - Computer hardware is any physical device used in or with your machine, whereas software is a collection of code installed onto your computer's hard drive.
 - Applications (like Microsoft Word) are pieces of software that talk to an *operating system* (also software code), which talks to the computer's *motherboard* (with MORE code).
 - Other software helps the operating system interact with the hardware



Kernel functions include:
“booting” the operating system when hardware turns on; creating and destroying memory space as well as monitoring application access to memory; allows an application to access components like the network card; manages the file system and CPU allocation while programs run on the OS.

Assemblers translate source code into *object code* (binary code) that hardware can understand. They may be referred to as *compilers* also. The first computer programs functioned as compilers.

Firmware is software, usually custom built for each device you use, that explains to the assembler/compiler how to execute their commands on a device (ex: turn “Action” light on TV remote) and understand what user inputs on a device mean (ex: “turn the volume down”).

Computer Hardware

The Building Blocks Of A Computer

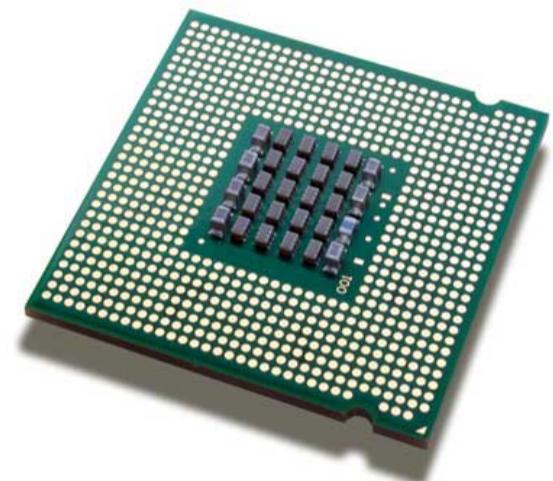
1. The Motherboard

- The Motherboard connects everything! It directs information to and from computer parts plugged into it.



2. CPU - Central Processing Unit

- Called the "brains" of the computers. The CPU does the active "running" of code, manipulating data, while the other components have a more passive role, such as storing data. When we say that a computer can "add two numbers, a billion times a second" .. that's the CPU.



3. Graphics Card

- This stores the GPU (Graphics Processing Unit), which is a specialized processor used for monitor displays. It is what makes your video games on your computer look really great.



4. BIOS - Basic Input/Output System

- This is one of the first parts of a computer to be built - it basically just tells the Motherboard "you've got power, go on."



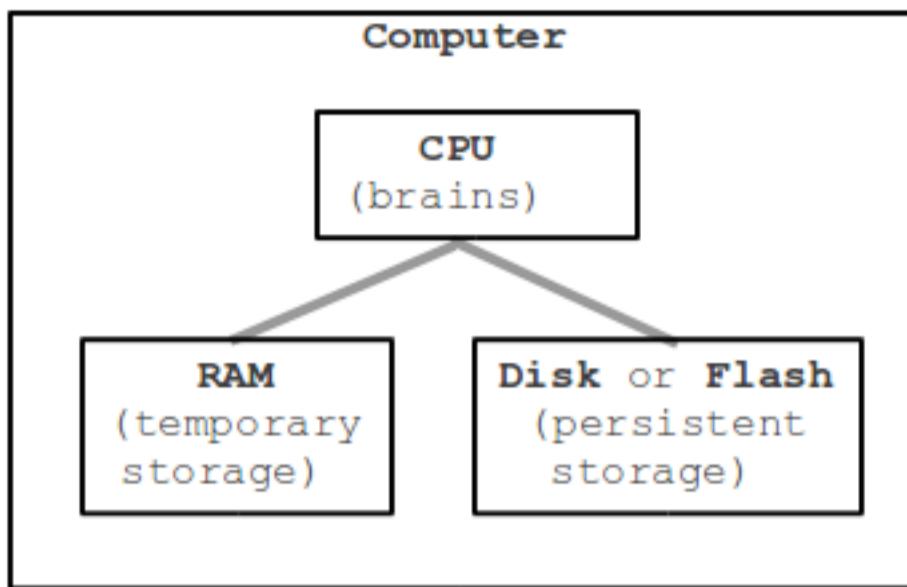
- Instructions are distributed to ports, add-on cards, memory, and storage.

- Ports as ways for other devices to plug into the computer system (like USB, your mouse, keyboard, headphones, ethernet, etc)
- Add-on cards act like mini-motherboards with their own processors for specific processes, like producing detailed sounds or reaching out to a network.

A storage device is any computing hardware that is used for storing, porting and extracting data files and objects. It can hold and store information both temporarily and permanently, and can be internal or external to a computer, server or any similar computing device. It refers to computer components and recording media that retain digital data. Data storage is a core function and fundamental component of computers.

Computer Hardware

Memory



The space that data takes up in the computer is measured in bytes. One byte is big enough to hold a single typed letter, like 'a'.

RAM - Random Access Memory, or just "memory". RAM is the working scratchpad memory the computer uses to store code and data that are being actively used. RAM is effectively a storage area of bytes under the control of the CPU. RAM is relatively fast, able to retrieve the value of any particular byte in a few nanoseconds (1 nanosecond is 1 billionth of a second). Suppose you are working on your computer and it suddenly loses power and the screen goes blank. You understand that what you were working on is gone .. RAM has been wiped clean, leaving you only with what you last saved to disk.

***** RAM is like your short term memory. I can tell you my phone number, and you will remember it for a short period of time. But if you don't write it down, you will forget it.**

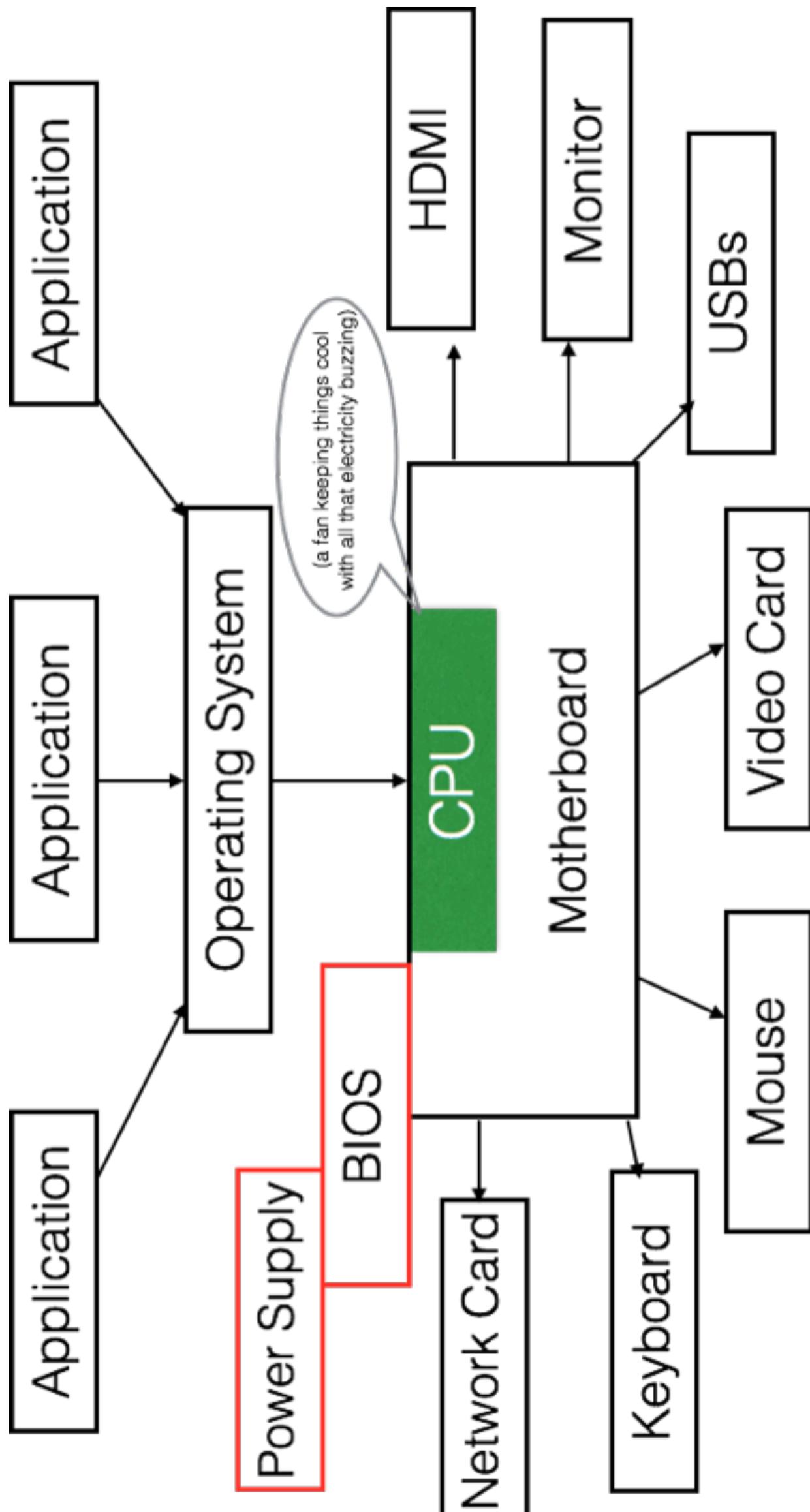
Persistent storage - long term storage for bytes as files and folders, sometimes called "ROM". "Persistent" indicates that the bytes are stored, even when power is removed. A laptop might use a spinning hard drive (also known as "hard disk") for persistent storage of files. Or it could use a "flash drive", also known as a Solid State Disk - SSD, to store bytes on flash chips. The hard drive reads and writes magnetic patterns on a spinning metal disk to store the bytes, while flash is "solid state" .. no moving parts, just silicon chips with tiny groups of electrons to store the bytes. In either case, the storage is persistent, in that it maintains its state even when the power is off.

A flash drive is faster and uses less power than a hard disk. However, per byte, flash is significantly more expensive than hard drive storage. Flash has been getting cheaper, so it may take over niches at the expense of hard drives. Flash is much slower than RAM, so it is not a good replacement for RAM. Flash storage is what underlies USB thumb drives, SD cards for use in cameras, or the built-in storage in a tablet or phone.

***** Persistent storage is like your long term memory, or just writing something down.**

Computer Hardware

Common parts of a computer:

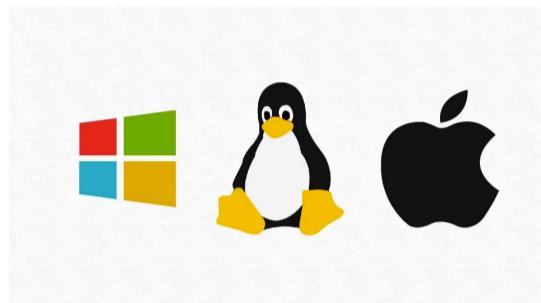


Operating System

The Role of the Operating System

The Operating System handles the interactions between the user (you) and the software, and between software and the hardware

Main Operating Systems (for computers)



Mac OS X
Microsoft Windows
Linux

Main Operating Systems (for devices)

iOS
Android



An operating system has three main functions: (1) manage the computer's resources, such as the central processing unit, memory, disk drives, and printers, (2) establish a user interface, and (3) execute and provide services for applications software. Keep in mind, however, that much of the work of an operating system is hidden from the user; many necessary tasks are performed behind the scenes. In particular, the first listed function, managing the computer's resources, is taken care of without the user being aware of the details. Furthermore, all input and output operations, although invoked by an applications program, are actually carried out by the operating system. Although much of the operating system functions are hidden from view, you will know when you are using an applications software package, and this requires that you invoke-call into action-the operating system.

You can think of it like a bank. Whenever a user process wants something from the bank, they have to go through the bank teller. The bank teller makes sure they don't touch anything that isn't theirs and only take money from accounts they are allowed to withdraw from.

Operating systems for mainframe and other large computers are even more complex because they must keep track of several programs from several users all running in the same time frame. Although some personal computer operating systems-most often found in business or learning environments-can support multiple programs and users, most are concerned only with a single user. We begin by focusing on the interaction between a single user and a personal computer operating system.

Types of Computer Files

Understanding Computer Files

The structure of a computer filename (with an “extension” that tells you a lot about what the file does):

image.jpg

filename

period
aka dot

file extension

File Extension	Description
.doc	Microsoft Word File (later versions are .docx)
.xls	Microsoft Excel File (later versions are .xlsx)
.exe	Executable File - one that starts up a software application, for instance
.txt	A plain text file, can be read by Word, Notepad, Wordpad and many others
.pdf	A file format used to present and exchange documents reliably, independent of software, hardware, or operating system.
IMAGE FILE TYPES	
.jpg/jpeg	A compressed picture file. It can be made VERY small but will lose detail in the compression process
.gif/giff	Compressed image file where no detail is lost in compression
.png	Portable Network Graphics, compressed, but high quality and large sized with great color retention. Similar to a GIF.
.tif/tiff	TIF(F) stands for Tagged Image File Format. It's a large, highly detailed type of image file.
.raw	Raw image files contain data from a digital camera (usually). They contain all the data, so need to be converted before images can be edited or compressed.
.bmp	A picture file created with paint (this one is rare)

AUDIO FILE TYPES

.wav

.mp3 (aka MPEG)

.aca

VIDEO FILE TYPES

.MV4 .AVI

.M4A .AVC



THESE ARE ONLY A FEW EXAMPLES. WHEN YOU ENCOUNTER NEW FILE EXTENSIONS YOU DON'T RECOGNIZE, GOOGLE THE EXTENSION BEFORE OPENING OR USING THEM. PRO TIP: NEVER OPEN EXE FILES UNLESS YOU INTEND TO INSTALL AND EXECUTE A SPECIFIC PROGRAM

Computer Checklist Exercise

Pick one of the following components to investigate:

1. Processor/CPU
2. RAM
3. Hard Drive
4. Monitor
5. Graphics Card
6. BIOS
7. USB Port
8. Keyboard
9. Mouse
10. Motherboard

For each of the components write down:

- What it is used for (try to write in your own words)
- What are the different options or sizes for the components (2-3 each)
- The different companies that make the component (2-3 each)

Using a Mac

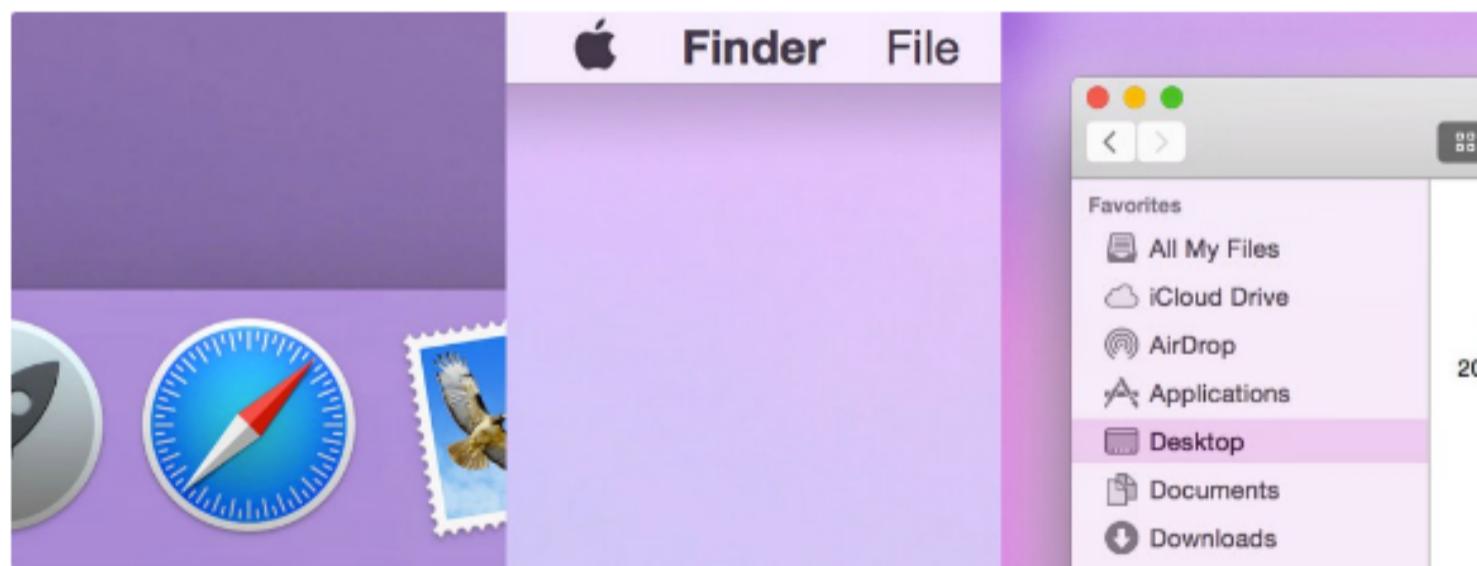


Mac OS X — An Overview

The home of your Mac is the desktop. Think of it as a physical desktop — a place where you may temporarily spread out your work while performing a task. For example, you may put an image from the internet on the desktop, make some modifications, and then drag it to an email. Just remember, while the Desktop is a great workplace it is not a good place to store things longterm.



Mac OS X is the operating system of your Mac. It's the basic system that enables your Mac to work. All the files, folders, and programs are handled by Mac OS X as well as internet connectivity, battery consumption and more.



You will use the operating system in many different ways:

- When viewing the desktop
- When you're browsing through files
- When searching for files with Mac OS X's "Spotlight"
- Through the application bar (called the "dock")
- As the system that runs your applications

Using a Mac



Menus

At the top of the screen, you will see some menus. These menus change depending on what application you are using at the moment. If there is ever anything you want to do in a certain application, try to find it in these menus.



Menu Extras

Look at the top of your screen. To the right of the menus, you will see symbols such as the WiFi icon, battery icon, time, spotlight, and sound icon.



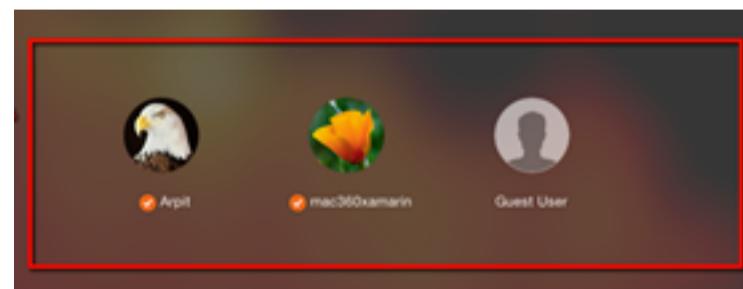
The Dock

In the bottom of your screen, you should see “the Dock” — a bar with convenient shortcuts to your favorite applications. The icons in the Dock are just shortcuts. You can add or remove items without affecting the actual applications just by clicking and dragging the icon into or out of the Dock.



Users

Mac OS X offers a really nice way to switch between the different user accounts on the Mac. By clicking on the Apple icon in the top left corner you can sign out of your account and into a new one on the Mac. Make sure all of your accounts are password protected.



System Preferences

It is easy to customize your computer. Just click the Systems Preferences icon in the dock and a new window will appear with several types of settings you can change. You can easily search for the item you want to customize in top right corner, as with any Finder window.



Try to accomplish the following tasks:

1. Change the background image (aka wallpaper, desktop image)
2. Change your trackpad setting so that you can click by simply tapping.

Fine the name of your wireless network.

Set your "Hot Corners"

Using a Mac



The File System

Understanding it

Your hard drive contains millions of files - both your personal files such as documents, photos or music files, but also system files that your Mac needs to operate properly. If all these files were in the same place, it would be very hard for you to find your material. This is why the operating systems organizes files into **folders**. You can think of a folder as a box to put your things inside. You can put folders inside other folders. For instance, you can create a folder called "coding materials" and put inside a "practice" folder.



This is called the **Finder** window. The Finder window allows you to explore the contents of your hard drive.

You can resize the Finder window or change the view options for how you view your files:

Resize



Viewing Options



The hard drive of a brand new Mac contains four folders:



Applications



Library



System



Users

Using a Mac



Inside your hard drive

Applications

The Applications folder contains all your applications

Library and system

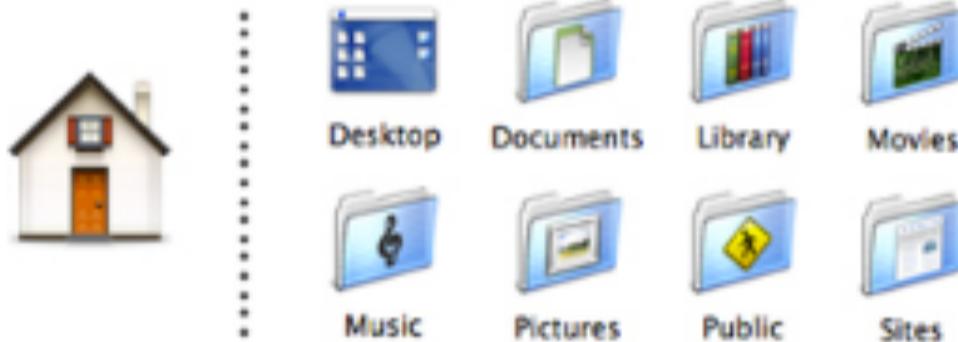
The two folders called Library and System are important for the functionality of the computer itself.

Users

The Users folder contains one folder for each user plus a Shared folder where the users can put things that they want all the users of the computer to have access to. The folder associated with the user currently logged in (you) looks a bit different. Instead of looking like a folder, it looks like a house. This folder is called your Home Folder.

Home Folder

Every user on a Mac has a Home Folder. It allows you to organize your files in a smart and easy way.



Desktop

Within your Home Folder, there is a folder called Desktop. It is an exact reflection of your real desktop. All files in that folder are visible on your real desktop.

Downloads

Here you will find files you have downloaded, with the most recent downloads at the top by default. All types of files (software, documents, music) will be here.

Movies, Music, Pictures

Remember, these folders contain large files, and too many movies can slow down your computer and fill up the storage. You can access these files in iTunes and iPhoto.

Documents

Put your Documents as well as your code in this folder.

Public

If you want to share a file with another user, just put it in the Public folder and he/she can access it (your other folders can't be accessed by other users)

Library

The Library folder inside Mac HD contains files for the whole computer, while the Library folder inside your Home folder contains files unique for your user account.

Using a Mac



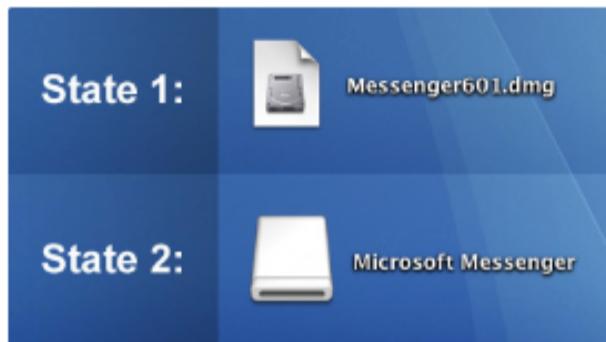
Installing an Application

Installing applications on a Mac is very important and very straightforward to learn.

Disc Image + Application

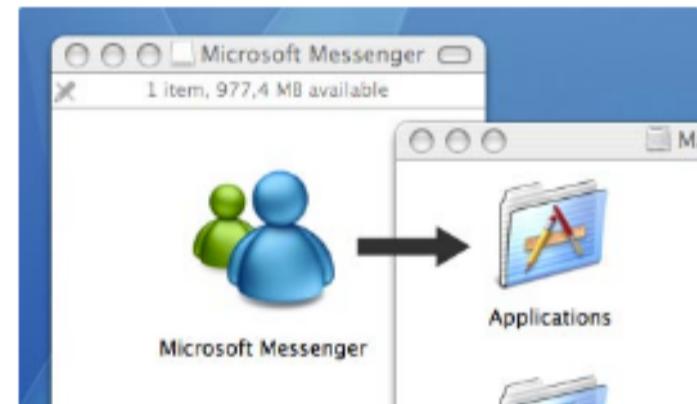
It is very common that applications are put in a so-called “disk image” file (**.dmg**).

Sometimes you need to click a file (state 1) in order to extract the disc image, but the disc image often does this by itself (state 2). You just need to click on the state 2 icon and inside you will find your application.



All you have to do is drag the downloaded application into your Applications folder and it will be copied (installed).

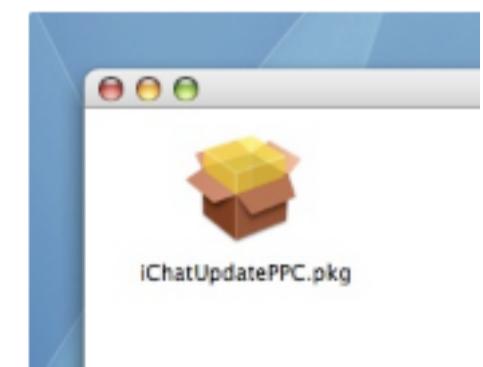
When the copying process is done, you can throw the disc image file away (move them to the Trash). Note that Mac OS X calls this “ejecting a disc image” and not “throwing it away”, but don’t worry, just drop the file and it will disappear. You can now find your application in the Application folder and you can drag it to your Dock, if you wish.



Installers

Some applications need to put a few files in different folders on your Mac. To make the process easier, the developers of these applications often create installers (**.pkg**).

When you download an application and it contains an installer, just click the installer and you will be guided through the process. When it is done, you can throw the installer away.



How to exit an application that isn't responding

If you wish to force quit an application, press **command, alt, and escape**. After a few seconds a small window with a list of the open applications will appear. You can also access this menu by clicking on the Apple icon in the top left of your screen and clicking “Force Quit”.

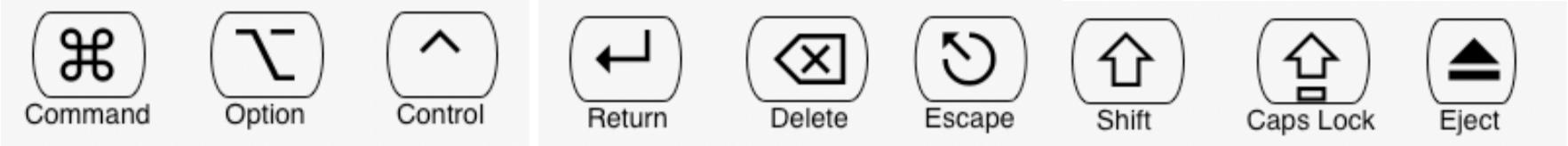


Using a Mac



The Keys

Below is a list of the most important keys on your Mac's keyboard. They may vary on different computers.



Right-clicking

Just like PCs, the Mac supports right-clicking. However, on your Mac, press the control key and click in order to “right-click” (or set a gesture in System Preferences).

Shortcuts for your Keyboard

Here are some useful key strokes to know:

Save

Most applications where you edit something (e.g. Word, Pages, Photoshop) use the command-s shortcut in order to save.

Open

To open a document, image or something else, most applications use the command-o.

Copy

In most applications, you can copy an item by using command-c.

Paste

If you wish to paste a copied object, just press command-v.

Take a screenshot

If you wish to take a screenshot, just press command-shift-3. If you wish to take a screenshot of a selection, use command-shift-4.

Practice using these commands every time you use an application! It will help dramatically with your efficiency when you start coding or working on a client project.

Using a Mac



Keyboard Shortcuts

1. Application switching

If you press command-tab, a window containing all open applications will appear. Keep command pressed down and press the tab key repeatedly to browse between the applications and when the right one is selected, release the keys and the application will appear in front of the others. Timesaving!



2. Quitting applications

To close an application, simply press command-q and the application will quit immediately. Much faster than using the mouse. Make sure you have saved first though!

3. Closing windows

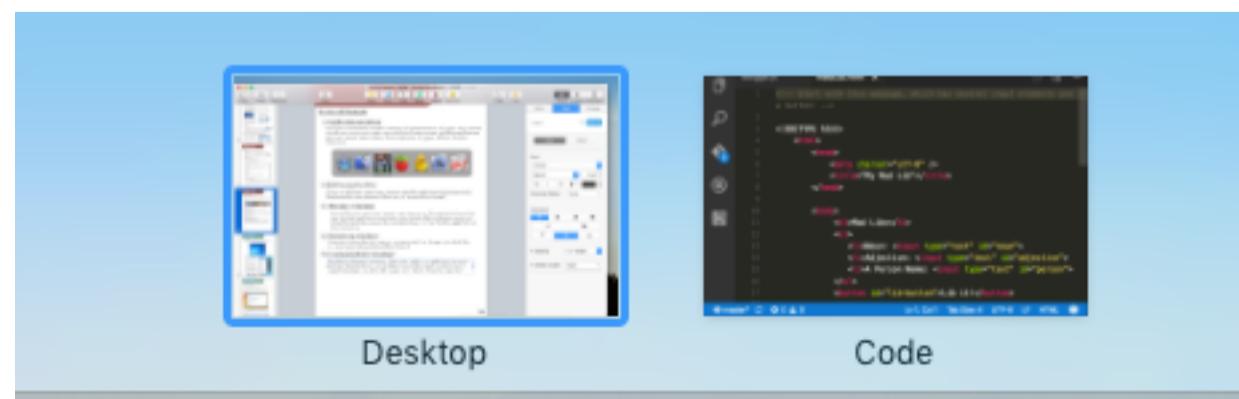
If you wish to close your current window, press command-w. Please notice that this will not cause the whole application to quit, just the active window. Most applications can be open without having an open window, like Safari for instance. To close the whole application, just press command-q.

4. Minimizing windows

Command-m causes the active window to minimize itself into the right of the dock. This is a smart way to hide a window without closing it.

5. Creating multiple “desktops”

By clicking on the green “maximize” button in the top left of an application screen, you will open the application in a new desktop. If you use three fingers on the trackpad to swipe left and right, you will be able to easily move between the screens. Super fun!

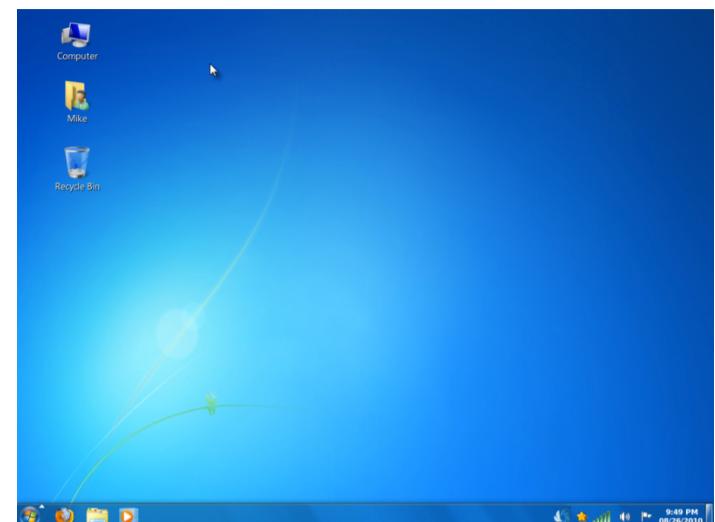
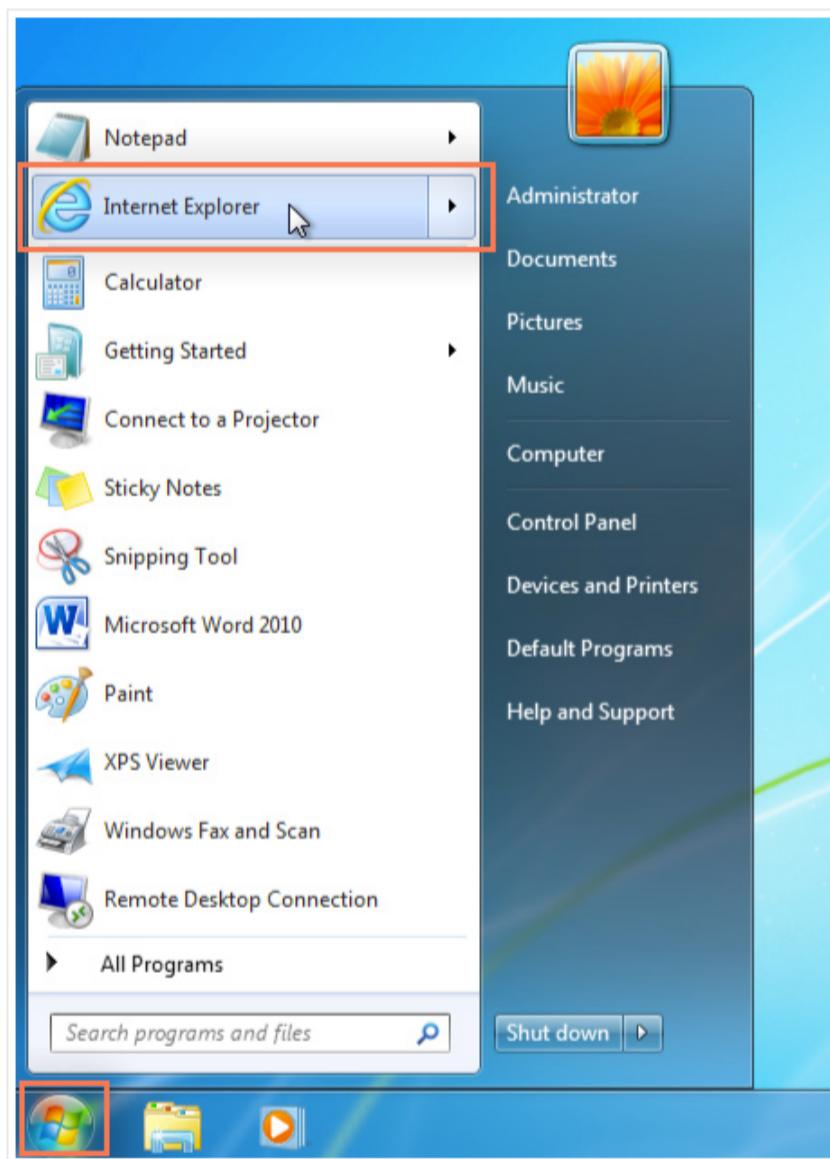


Using Windows



Desktop

Once your computer has finished starting up, the first thing you'll see is the desktop. This desktop is the same as the Mac—from here, you can view and manage your files, open applications, access the Internet, and much more.



To open an application:

Using your mouse, click the Start button, then select the desired application. If you don't see the one you want, click All Programs to see a complete list of applications.

Whenever you open a file, folder, or application, it will appear in a new window. You can have multiple items open at the same time in different windows. You'll use windows all the time, so it's important to know how to switch between open windows, how to move and resize windows, and how to close windows when you're done using them.

Minimize



Maximize

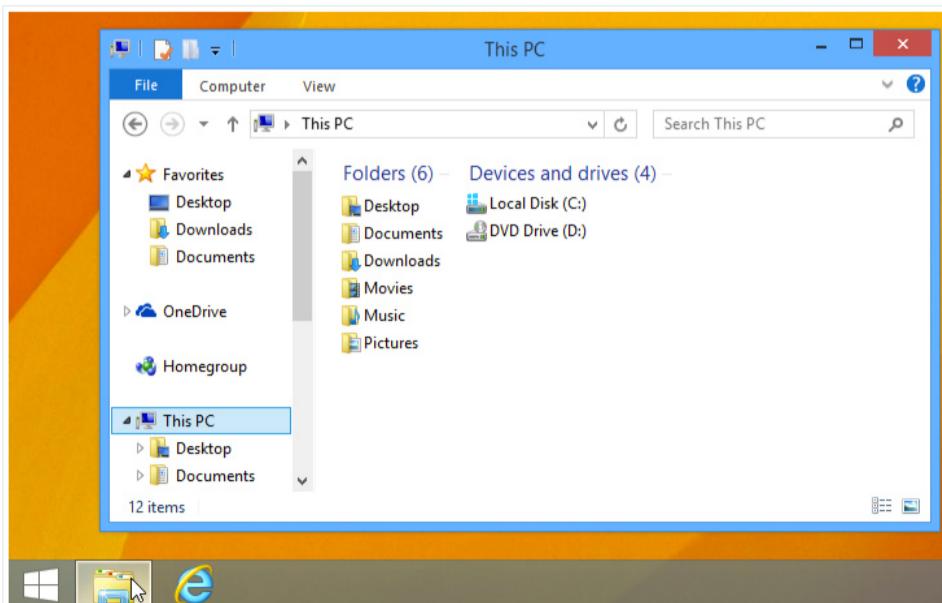


Close



Windows Explorer

You can view and organize files and folders using a built-in application known as Windows Explorer (called File Explorer in Windows 8).



To open Windows Explorer, click the Windows Explorer icon on the taskbar, or double-click any folder on your desktop. A new Windows Explorer window will appear. Now you're ready to start working with your files and folders. From Windows Explorer, double-click a folder to open it. You can then see all of the files stored in that folder.

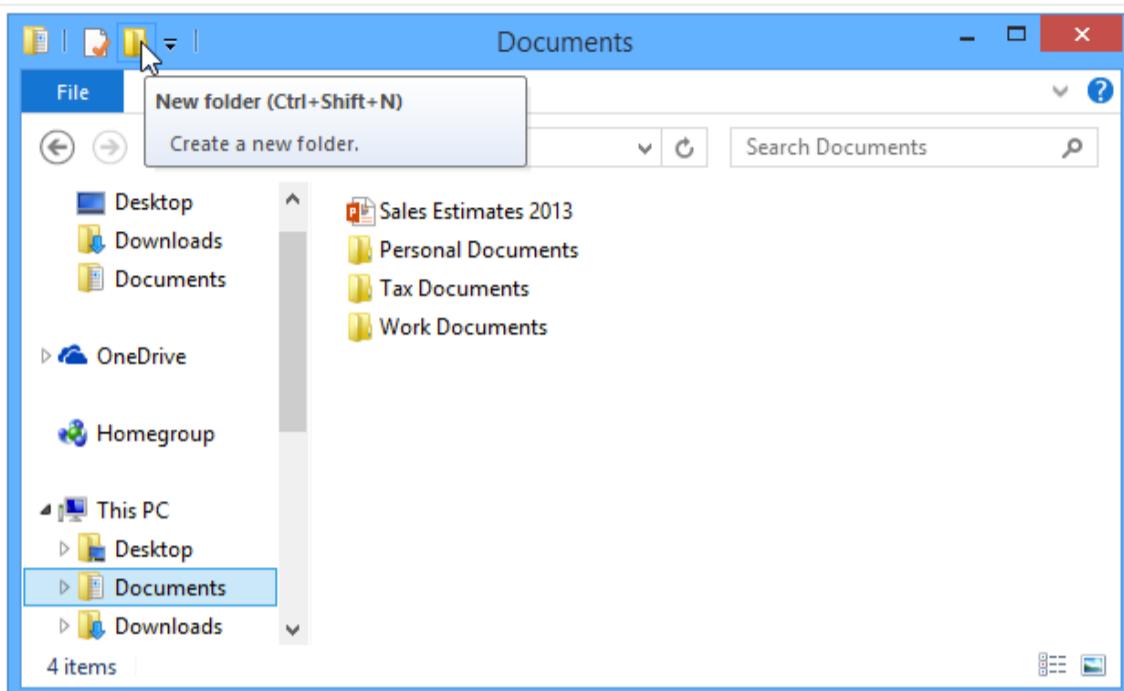
Using Windows



Folder/File System

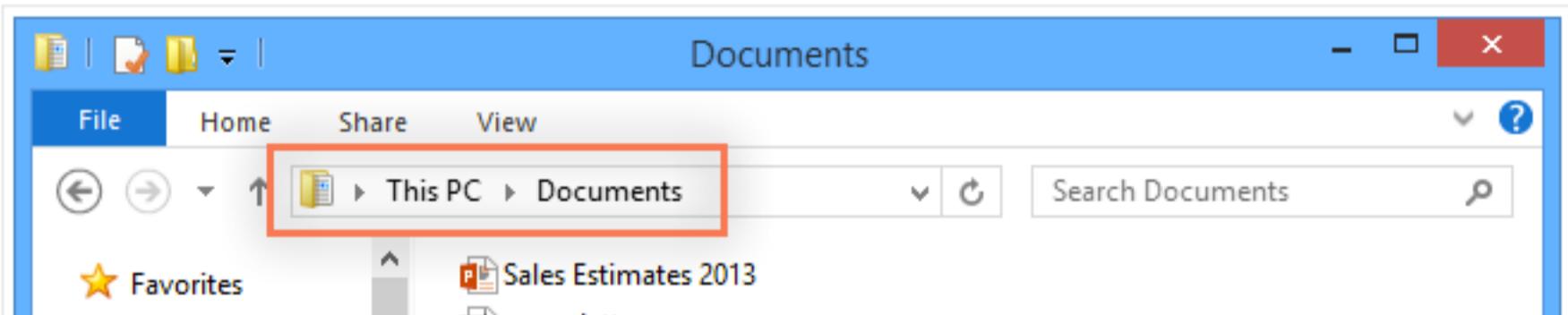
To create a new folder:

Within Windows Explorer, locate and select the New folder button.



The new folder will appear. Type the desired name for the folder and press Enter. The new folder will be created. You can now move files into this folder.

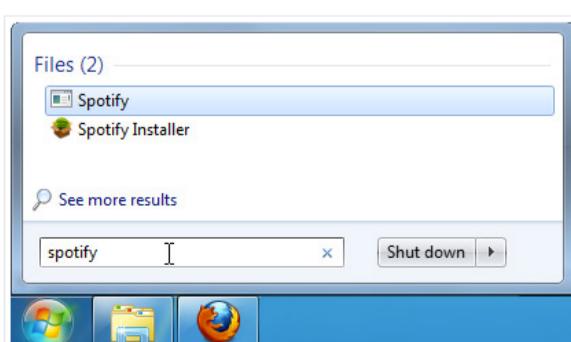
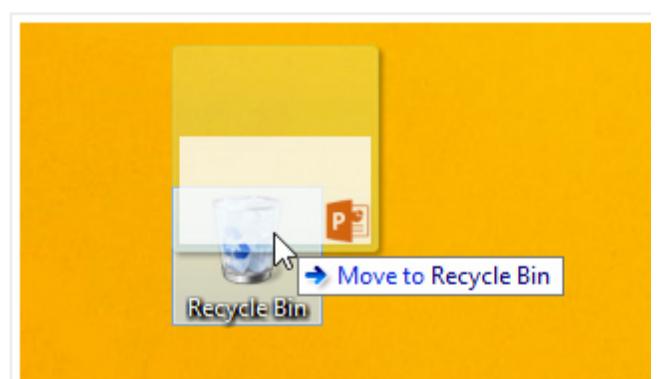
Notice that you can also see the location of a folder in the address bar near the top of the window.



To delete a file:

If you no longer need to use a file, you can delete it.

When you delete a file, it is moved to the Recycle Bin. If you change your mind, you can move the file from the Recycle Bin back to its original location. If you're sure you want to permanently delete the file, you will need to empty the Recycle Bin.



To search for a file:

Click the Start button, type the file name or keywords with your keyboard, and press Enter. The search results will appear. Simply click a file or folder to open it.

Using Windows

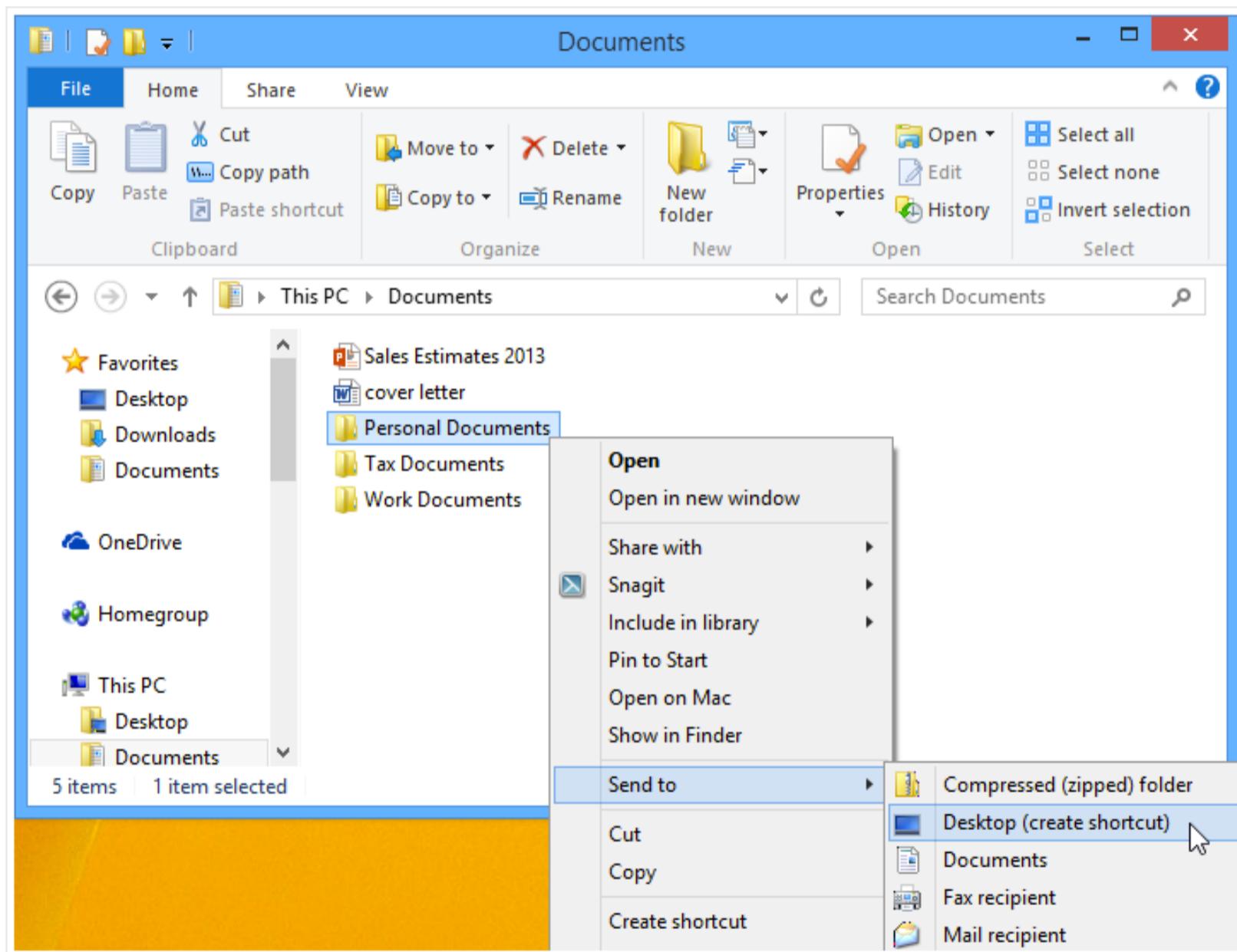


Desktop Shortcuts

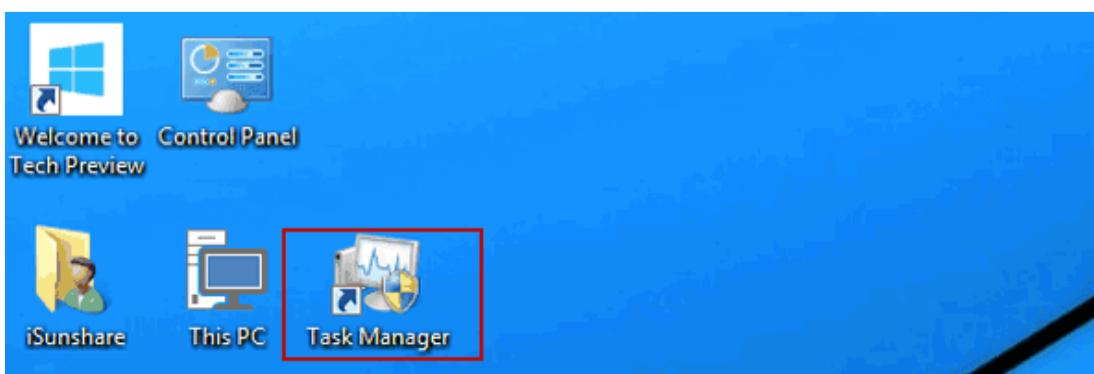
If you have a file or folder you use frequently, you can save time by creating a shortcut on the desktop. Instead of navigating to the file or folder each time you want to use it, you can simply double-click the shortcut to open it. A shortcut will have a small arrow in the lower-left corner of the icon.

Note that creating a shortcut does not create a duplicate copy of the folder—it's simply a way to access it more quickly. If you delete a shortcut, it will not delete the actual folder or the files it contains.

Locate and right-click the desired folder, then select Send —>Desktop (create shortcut).



A shortcut to the folder will appear on the desktop. Notice the arrow in the lower-left corner of the icon. You can now double-click the shortcut to open the folder at any time.



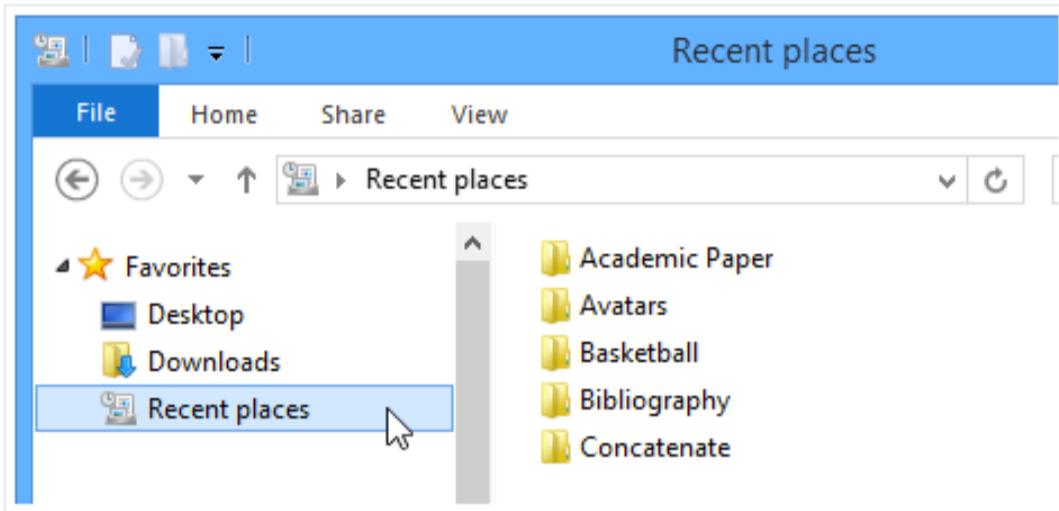
Using Windows



Finding Files

Here are some common places to look for files:

- 1. Recent places:** If you recently edited the file you need, you can try looking in the Recent places folder. To view the Recent places folder, open Windows Explorer, then locate and select Recent places (below Favorites on the left side of the window). A list of recently used folders and settings will appear. Try looking in some of the recently used folders to see if you can locate the file.



- 2. Downloads:** By default, your computer will place downloaded files in a specific folder, known as the Downloads folder. If you're having trouble finding a file you downloaded from the Internet, such as a photo attached to an email message, this is the first place you should look. To view the Downloads folder, open Windows Explorer, then locate and select Downloads (below Favorites on the left side of the window). A list of your recently downloaded files will appear.

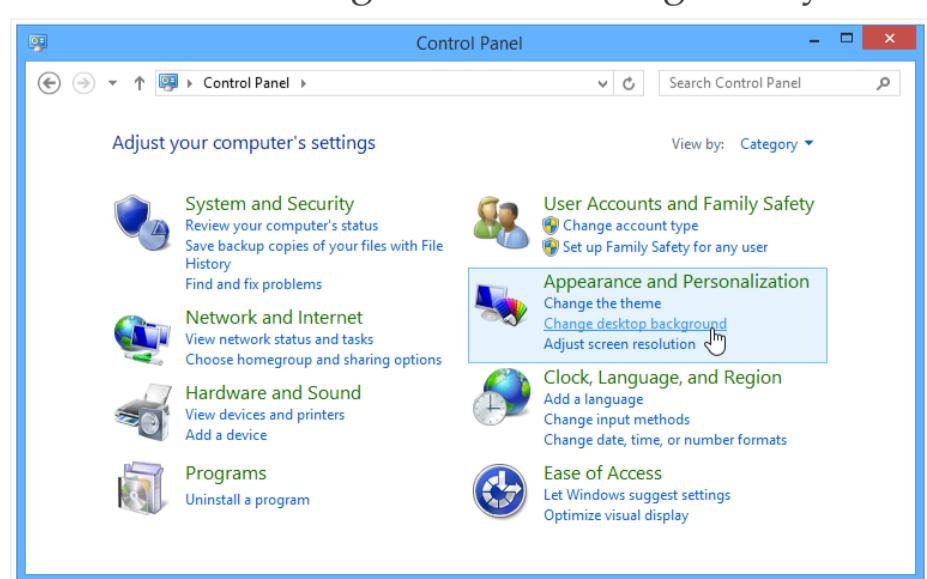
- 3. Default folders:** If you don't specify a location when saving a file, Windows will place certain types of files into default folders. For example, if you're looking for a Microsoft Word document, you could try looking in the Documents folder. If you're looking for a photo, try looking in the Pictures folder. Most of these folders will be accessible on the left side of the Windows Explorer window.

Adjusting Settings

At some point, you may want to adjust your computer's settings. For example, you might want to change your desktop background or modify your Internet settings. You can change many different settings from the Control Panel.

To open the Control Panel: Click the Start button, then select Control Panel.

Similar to a Mac, you can scroll the different icons to see the different features of the Windows OS. You can also see the different User accounts on the computer itself.



Tech Brainstorming

Problems to Solve:

Tech I Like Using:

Tech Ideas:

G Suite Unit

Slides: <https://anniecannons.github.io/ac-digital-literacy/#/68>

Notes from Lectures:

Exploring Google Drive

Uploading files to Google Drive

Google Drive gives you **15 gigabytes** (15GB) of free storage space to upload files from your computer and store them in the cloud. There are two main types of files you can store on your Google Drive:

- **Files you can edit**, like Microsoft Office files, PDFs, and other text-based files
- **Files you cannot edit**, like music, videos, compressed archives (.zip files), and most other files

Once you upload a file — no matter what type of file it is — you'll be able to manage, organize, share, and access it from anywhere. And because the files on Google Drive are synced across your devices, you'll always see the most recent version of a file.

You can also preview many different file types, even if you don't have the software required on your computer. For example, you can use Google Drive to preview a Photoshop file, even if Photoshop is not installed on your current computer.



Can you name all of the different Apps that come with Google (also known as the G Suite?)

Working With Gmail

Gmail is a free email service provided by Google. In many ways, Gmail is like any other email service: You can send and receive emails, block spam, create an address book, and perform other basic email tasks. But it also has some more unique features that help to make it one of the most popular email services on the Web.



Gmail Drop-Down Menu

The Gmail drop-down menu allows you to navigate to your Mail, Contacts, and Tasks List. If you're ever lost, you can just click the Gmail option to go back to the default view.

Action Buttons

The action buttons are located just above the inbox. When no message is selected the available actions are Select all and Refresh. When a message is selected,

several buttons will appear above the inbox. You can use these options, including Archive, Report spam, and Delete, to help organize your messages.

Search Box

If you're having trouble finding an important email, you can start typing in the Search box to find it.

A screenshot of the Gmail inbox interface. At the top left is the Google logo and a 'Gmail' dropdown menu. To its right is a search bar with a magnifying glass icon and a blue '+' button. Below the search bar are three small buttons: a square with a minus sign, a circle with a plus sign, and a triangle pointing right. To the right of these are page navigation arrows and a gear icon. The main area shows the inbox with 7 messages. The first message is from 'Google+' with a red '+' button next to it. The second message is from 'Merced Flores'. The third message is from 'Lisa Paik'. The fourth message is from 'Elena Casarosa'. The fifth message is from 'Grace Ellington'. The sixth message is from 'Henri Rousseau'. The seventh message is from 'Olenna Mason'. Below the inbox, there's a note about storage usage: '0.17 GB (1%) of 15 GB used' and a 'Manage' link. At the bottom of the screen, there are several icons: a person, a phone, a mail, and a gear. Arrows from the surrounding text boxes point to the 'Gmail' dropdown, the action buttons, the search bar, and the gear icon.

Left Menu Pane

The left menu pane allows you to Compose a new email, navigate to your Mail, view your Sent Mail, and manage your Labels, among other tasks.

Labels

Labels allow you to organize the messages in your inbox. You can apply more than one label to any message and create new labels to organize your messages any way you want. You can also choose colors for your labels to help them stand out.

Inbox

Your inbox is where your received messages will appear. You can click a message to read it.

Gear Icon

Whenever you want to change your settings, simply click the gear icon and select Settings. You can also select Help if you're having trouble.

Working With Gmail

Recipients

Recipients are the people you are sending the email to. You will need to type the email address for each recipient. Most of the time, you'll add recipients to the To: field, but you can also add recipients to the Cc: or Bcc: fields.

Cc and Bcc

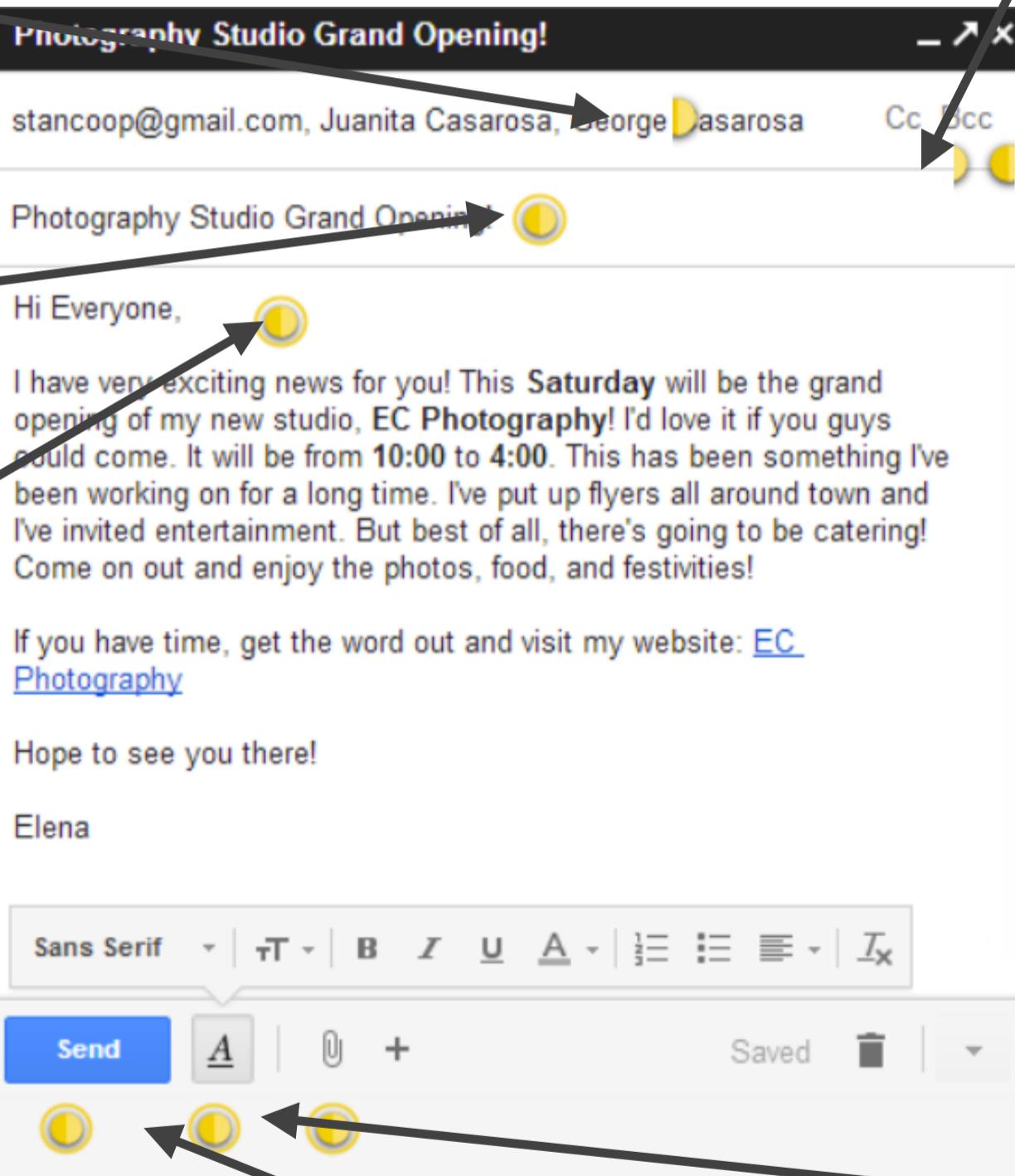
Cc stands for carbon copy. This is used when you want to send an email to someone who is not the main recipient. This helps to keep that person in the loop while letting them know that they probably don't need to reply to your message. Bcc stands for blind carbon copy. It works almost the same way as Cc, except all of the email address in the Bcc fields are hidden, making it ideal when emailing a large number of recipients or when privacy is needed.

Subject

The subject should say what the email is about. Keep the subject brief, but give the recipients a reasonable idea of what's in the message.

Body

The body is the actual text of the email. Generally, you'll write this just like a normal letter, with a greeting, one or more paragraphs, and a closing with your name.



Send Button

When you are satisfied with your message, click Send to send it to the recipients.

Formatting Options

Click the Formatting button to access formatting options. Formatting allows you to change the look and feel of your message. For example, you can change the font style, size, and color, and include links.

Add Attachment

An attachment is a file (such as an image or a document) that is sent along with the email message. Gmail allows you to include multiple attachments. Click the Attachment button to include an attachment with the email.

Working With Gmail

Reading Emails

The screenshot shows a Gmail inbox with several orange callout boxes highlighting specific features:

- Back to inbox**: Points to the "Back to inbox" button in the top navigation bar.
- More actions**: Points to the "More actions" dropdown menu icon.
- Newer and older messages**: Points to the "Newer" and "older" message navigation buttons.
- Show details**: Points to the "Show details" button in the message preview area.
- Reply options**: Points to the "Reply options" button in the message header.

The inbox list shows several messages from different senders, including Henri Rousseau, with a paperclip icon indicating attachments.

Opening Attachments

Sometimes you'll receive emails that contain **attachments**. Generally, you will need to **download** the attachment to view it. However, many common file types like **Word documents** and **images** can be viewed within a browser window. If the attachment is an image, you'll also see a smaller copy of the image—called a **thumbnail**—inside the body of the email. You can tell which emails contain attachments because they will have a **paperclip** icon to the right of the **subject**.

To open an attachment:

1. Open the **email message** that contains the attachment.

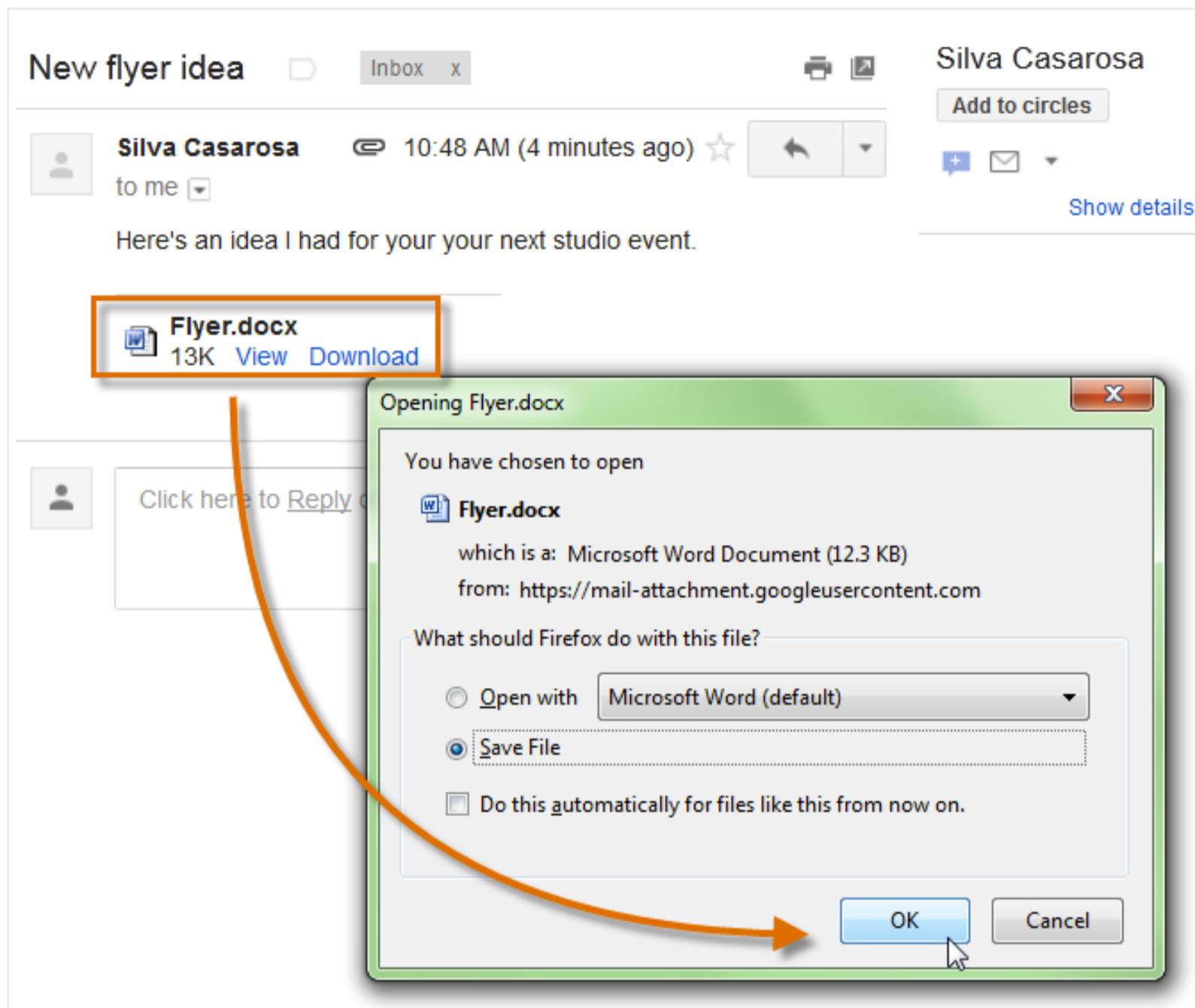
Silva Casarosa me ... Juanita, Silva (8)	New flyer idea - Here's an idea I had for your next	10:48 am
Henri Rousseau	Grand Opening this weekend! - I'm proud of you, Ele	10:10 am
George Casarosa	Sib	9:50 am
Barry Hubbard	Gr	9:41 am
Juanita Casarosa	it do you want us to say	9:40 am
me, Barry (2)	ooked over the list and	9:39 am
	ndering what I should te	9:36 am
	Package Price List - Thank you Elena, I look forward to i	

Emails with attachments will have a paperclip icon

2. Click **Download** or the **icon** of the file to save the attachment to your computer. If your computer asks whether you want to **Open** or **Save** it, choose **Save**. You can then locate the file on your computer and double-click it to open it. Alternatively, you can click **View** to open the file within your browser if it is a file type Gmail recognizes.

Working With Gmail

Opening Attachments

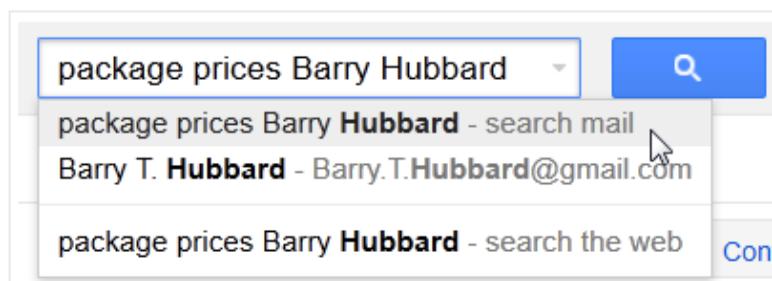


Searching Mail

The **Search Mail** feature allows you to perform a **Google Search** in your email. This means you can find any message, no matter how new or old. It searches every part of the message, so you can find a message even if you don't remember who sent it or if you never labeled it.

To search for a message:

1. At the top of the page, type some search terms in the Gmail search box, then click **search Mail**.



Using A Word Processor

A Word Processor is a program or machine for storing, manipulating, and formatting text entered from a keyboard and providing a printout. Word Processors offer many features that help you edit (change) text in a document.

You can add, delete, and rearrange text, as well as check your document for spelling and grammar errors. You can also format a document to enhance the appearance of the document by using various fonts, styles, and colors to emphasize important text. You can also center text on a page, adjust the spacing between lines of text, change the margins and create newspaper columns. Processors come with many types of pictures, or graphics, that you can use to make a document more interesting and entertaining.

Microsoft Word is one of the most common word processors. We will also use Google Docs.

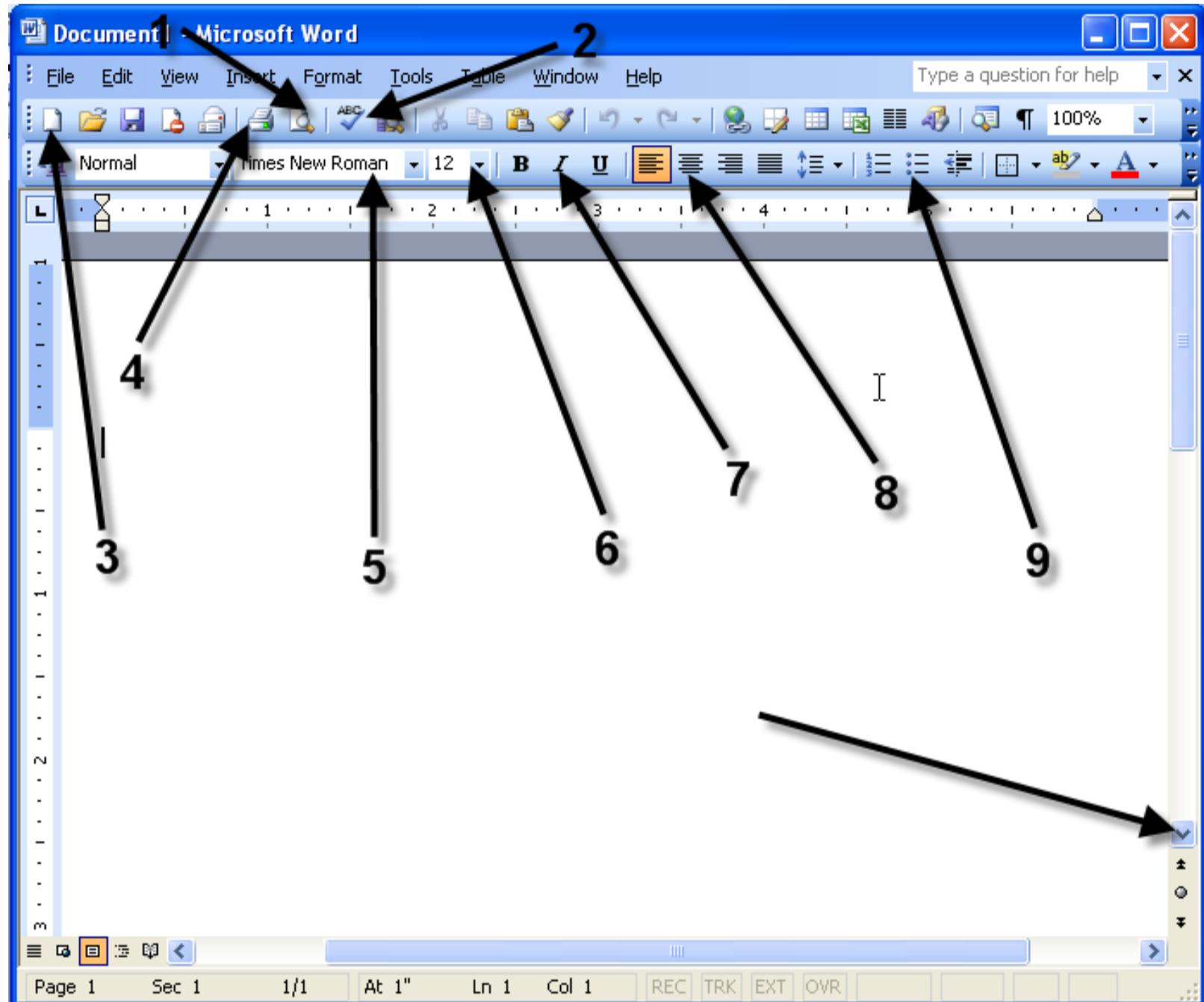


Features	Google Docs	Microsoft Office™ 2010
Create documents, spreadsheets, drawings and presentations	✓	✓
Advanced (niche) formatting features	✗	✓
Multi-user editing and real-time update capabilities	✓	✗
Cursor presence and instant messaging	✓	✗
Storage in the cloud	✓	✗
Mobile web access	✓	✗
No patches or updates to manage	✓	✗
Cost	Included with Google Apps	\$499 per user before discounts, plus administrative overhead

Using A Word Processor

Understanding the Word Processor

Everything it can do!



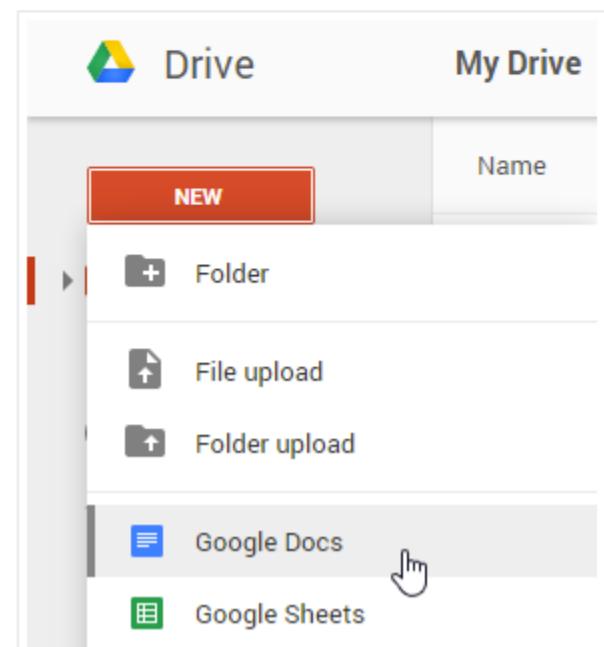
1. _____
3. _____
5. _____
7. _____
9. _____

2. _____
4. _____
6. _____
8. _____
10. _____

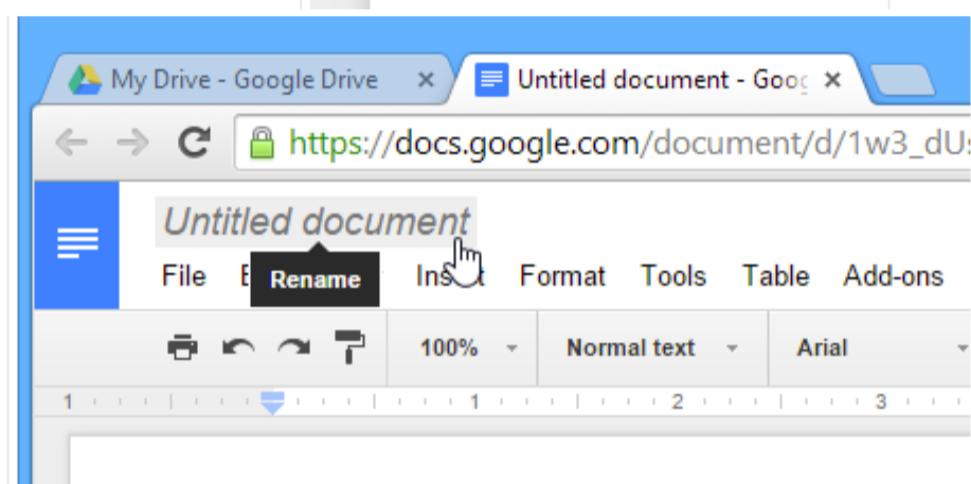
Exploring Google Docs

To create a new file:

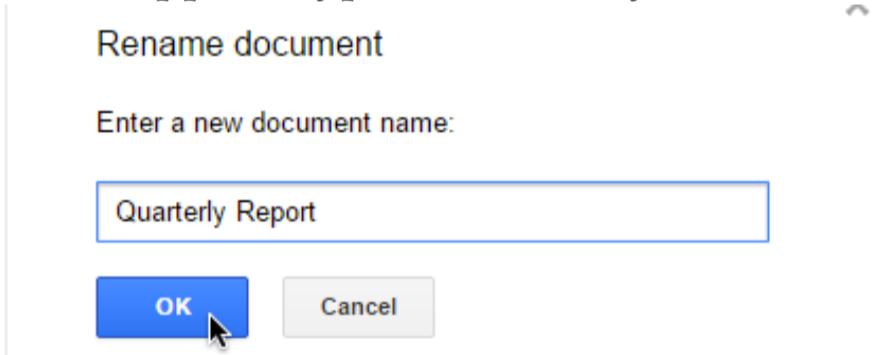
1. From Google Drive, locate and select the **New** button, then choose the type of file you want to create. Select Google Docs to create a new document.



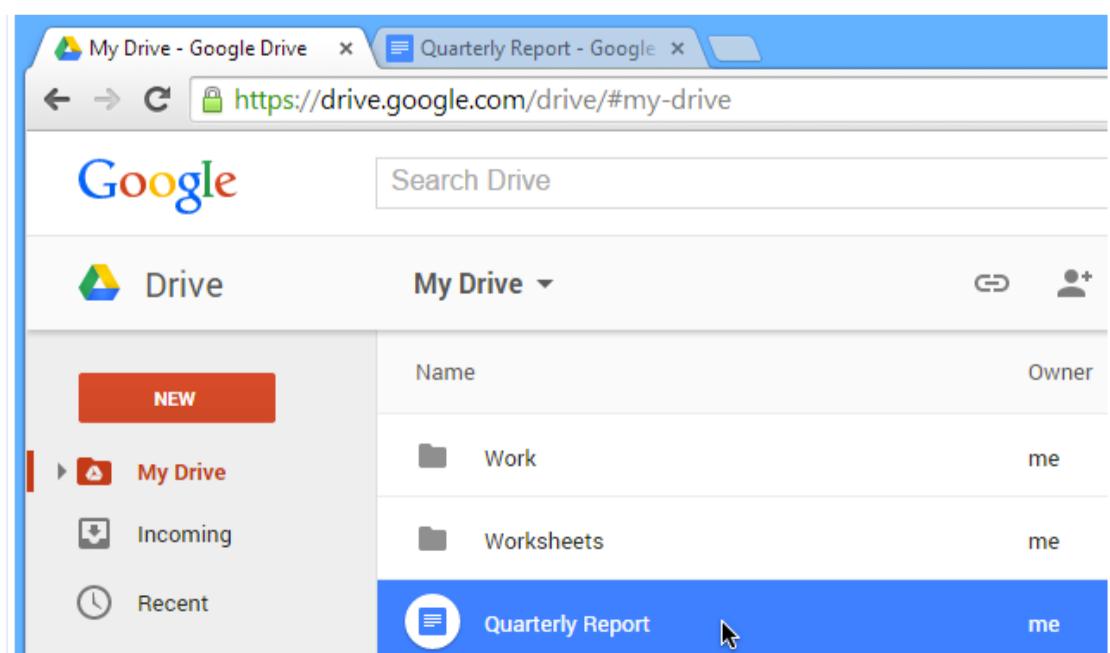
2. Your new file will appear in the new tab on your browser. Locate and select **Untitled document** in the upper-left corner.



3. The **Rename** dialog box will appear. Type a **name** for your file, then click **OK**.



4. Your file will be renamed. You can access the file at any time from your Google Drive, where it will be saved automatically. Simply double-click to open the file again.



Exploring Google Docs

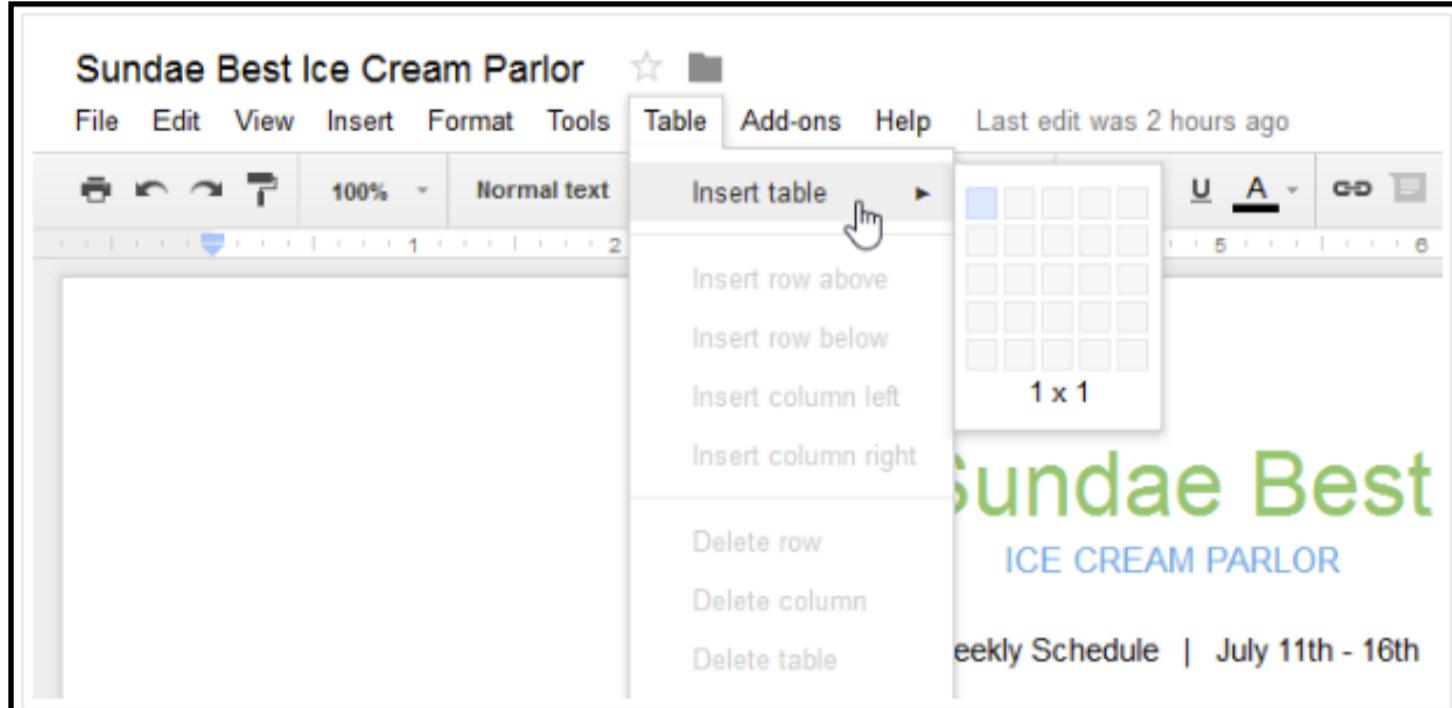
Creating a Table

A table is a grid of cells arranged into rows and columns. Tables can be customized and are useful for various tasks, like presenting text information and numerical data.

To insert a table:

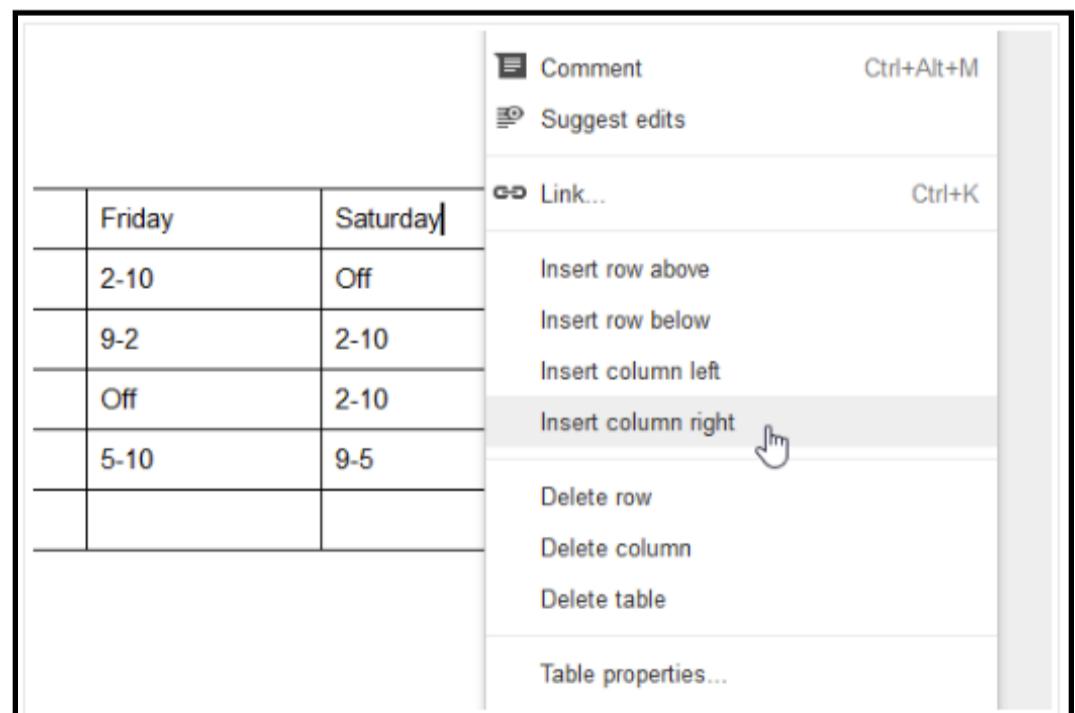
Place the insertion point at the location where you want to insert a table.

Click the Table drop-down menu and hover the mouse over Insert table. A grid of squares appears.



Drag the mouse over the grid of squares to select the number of columns and rows in the table. Click the mouse, and the table appears in the document. The insertion point will now be in the top-left cell.

To edit or delete the table, right-click anywhere on the table and select from the menu that appears. You can also add comments, links, or edit the table properties such as cell dimensions, alignment, border size, and color.



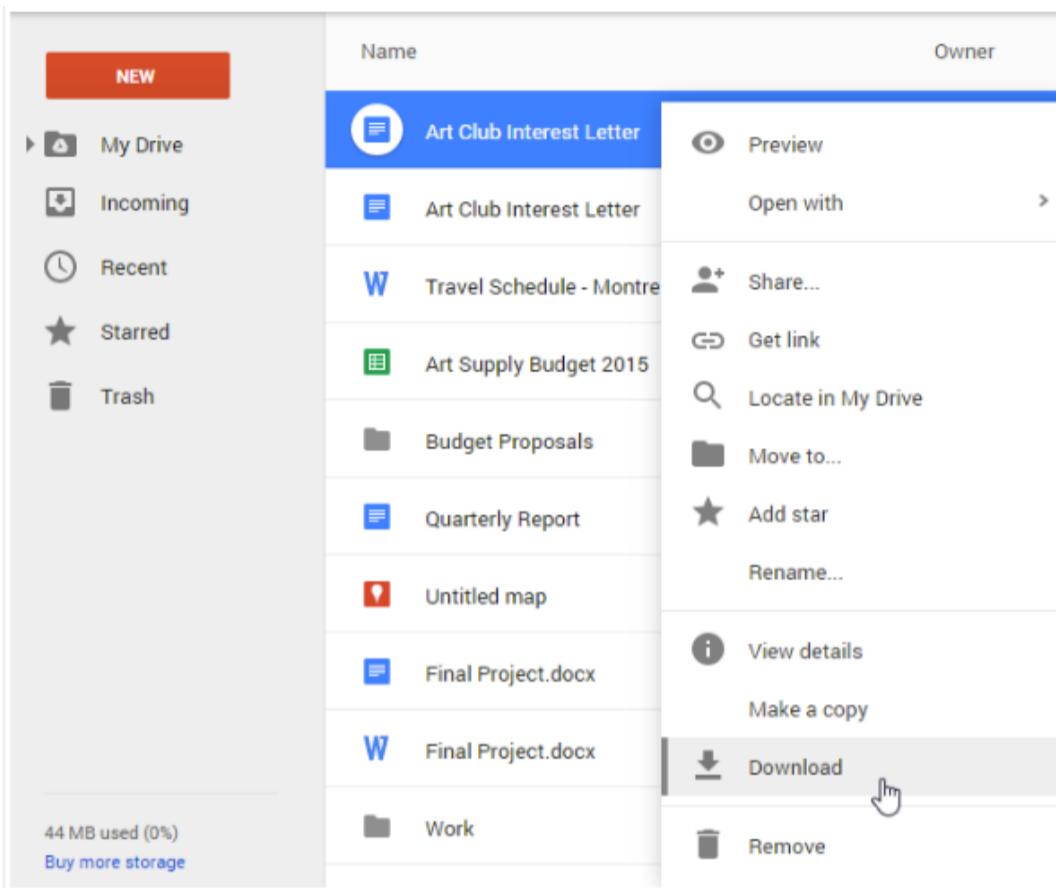
To merge cells:

Highlight the cells that you would like to merge and click on the Table key in the Menu. You will be able to click on "Merge Cells". This is helpful for formatting your table to make it easier for users to read.

Downloading and File Type

To download a file:

1. Locate and right-click the file you want to download, then select **Download**.

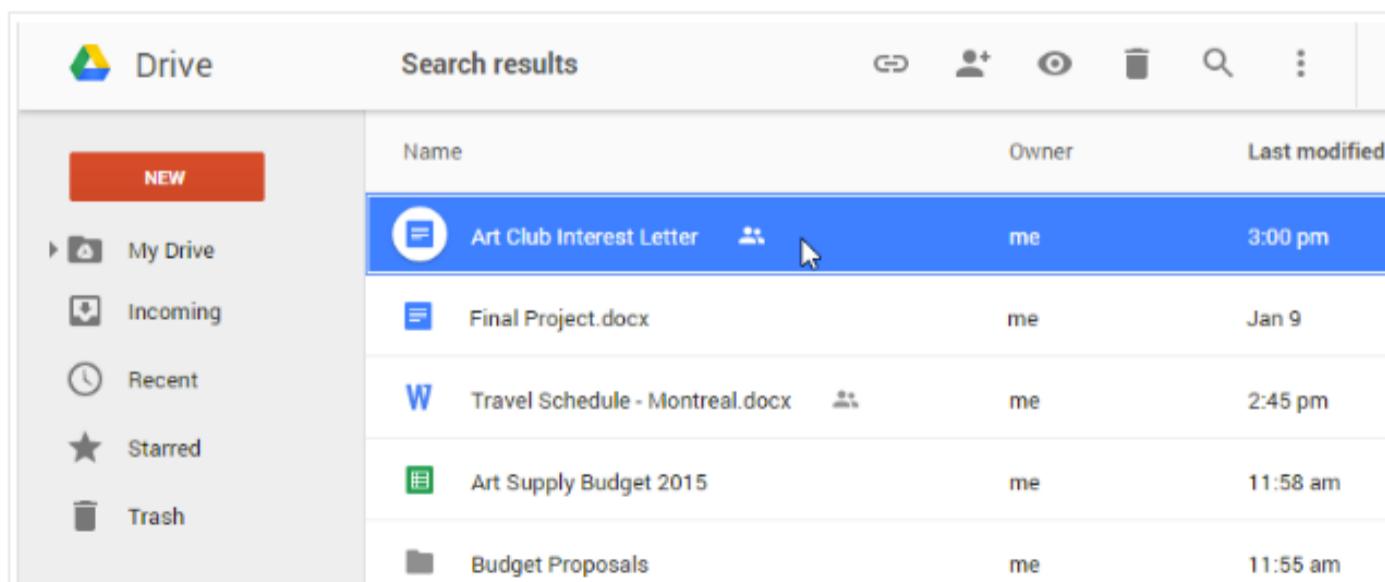


2. The file will be downloaded to your computer.

To choose a file format:

By default, Google Drive will choose the most common file format whenever you download a file. For example, if you download a Google Document, it will automatically be saved as a .docx file, which is used by Microsoft Word and most other word processors. However, there may be times when you want to choose a different format, such as a PDF.

3. Double-click the desired file to open it.



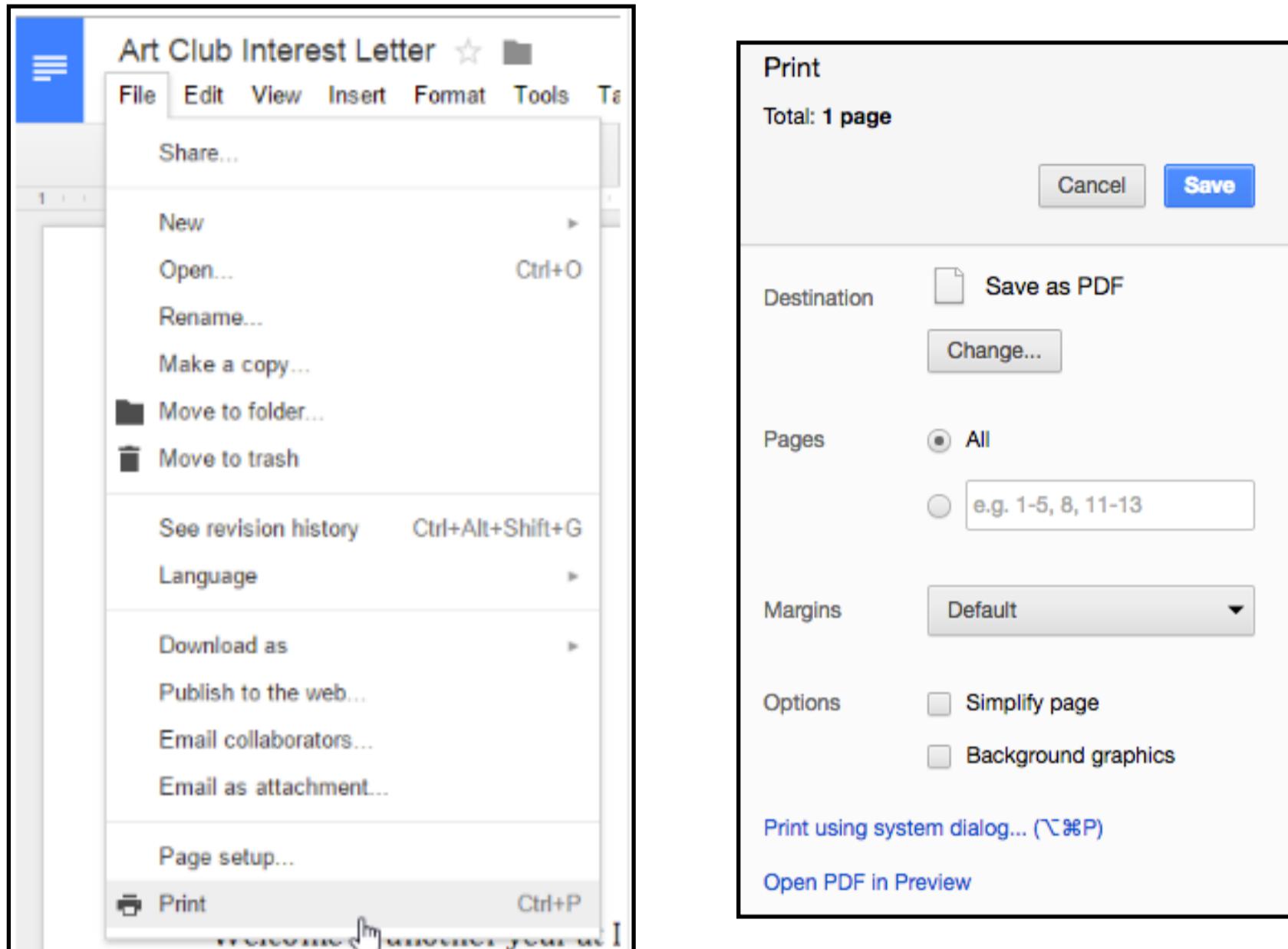
4. The file will appear in a new tab, **Select File — Download as**, then choose the desired file type.

5. The file will be downloaded to your computer in the desired type.

Printing a Google Doc

To print a file:

1. Double-click the desired file to open it.
2. Select File —>Print or click Ctrl + P



3. The Print dialog box will appear with a preview of your file on the right.

4. Choose the desired options

- Which printer to send to
- Single or double-sided
- The number of copies
- Color vs black and white
- Size of margins
- Which pages to print
- Preview the document you are about to print as a PDF

and then click **Print**.

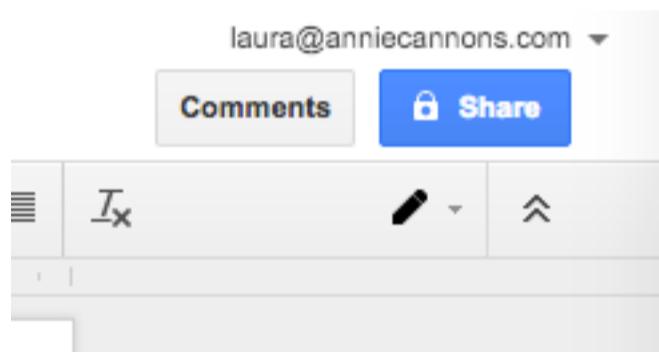
If your computer is not connected to an available printer, you will only be able to save the document. You can choose which type of file format is most appropriate to save the file as (.doc or .pdf). You can also choose to open the PDF in a preview to mode to see what the file looks like.

Sharing Google Docs

To share a doc

When you create a Google document or upload an existing document, this document stays private to you only on the server. You decide the visibility of the documents, that is, whether you want to keep the documents private or share them with others. You are in control of the permission access of the documents, namely, whether others can edit, comment, or view only. Sharing Google documents allows you to collaborate with others to edit or view comments in real time or at any time. Another advantage is to avoid email attachments. You can share your documents with as many or as few people as you want.

1. Click the Share button at the upper right corner.
2. A Sharing settings window will open as below. To share your document with specific people, add their email addresses in the Invite people box at the bottom.



3. Determine what access permission you want to assign to your guests, such as, Can edit, Can comment, Can view, and select your desirable option. If you want include a message when you notify people via email, click the Add message blue text link to open the message box to enter your message. If you want to send a copy to yourself, check the box next to Send a copy to myself.
4. Click Share & save button when done and a new window will open. A list of your guests will appear in the Who has access area with the appropriate access permission you have assigned.

Share with others

Get shareable link

People

Enter names or email addresses...

Can edit

You can also select “Get sharable link”. This allows you to create a URL of the document that you can send to anyone by email or post online. Be careful that you check the permissions, especially if you don’t want people to be able to edit your document.

1. Google Doc Formatting Exercise

Practice with Google Docs

Complete the following tasks, and explore all of the options available to you in Google Docs.

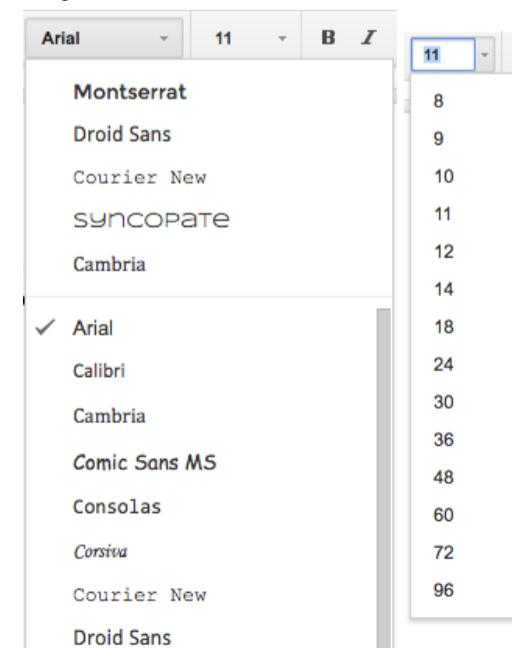
1. Navigate to the Google Docs webpage in your browser.
2. Click to add a Blank Document.
3. Rename the document to “Practice File”.
4. Slowly Move the Cursor across the Standard Toolbar. It looks like the picture below. Don’t Click. When you point to a picture, you will see the name for that picture or tool.



5. Type the alphabet in lower-case letters. No spaces.
Like this: abcdefghijklmnopqrstuvwxyz
6. Click and Drag from the “a” to the “z”. This is called Highlighting (when all the letters are highlighted). There is another way to highlight the letters. Use your left hand to Hold Down the SHIFT key. Use your right hand to Press the Right Arrow Key many times until all the letters are highlighted.
7. Copy the text - to do this, you can hold “command” and the letter “c” at once (fastest and preferred), or go to Edit —> Copy. The computer will remember the text that is highlighted. (if you want to remove the text the computer remembers, use Edit—> Cut or “command” + “x”)
8. Now, select the line under your first text and click the Paste button (Edit —> Paste OR COMMAND V). Look at what happened. You should now have two alphabets.
9. Click on the EDIT menu. You will see a drop down menu. Click on SELECT ALL (or “COMMAND” + “a”). This will select all of the content in the area where your cursor currently sits.

BONUS: Command” + “z” or Edit —> Undo will reverse the last action you took. “Command” + “y” will redo what you just undid.

10. Now, look at your Formatting Toolbar.
Click on the little arrow next to “Arial”. Click on another font name to change the way the letters look. Change the font 3 times for practice.
11. Click on the arrow next to the number 11. Click on a larger number. This will change the size of the letters.
12. Click between the “n” and “o” in the first alphabet to place the cursor there. On your keyboard, Press the DELETE key several times to erase everything before “o.”



1. Google Doc Formatting Exercise

13. Highlight all of the text. (Click and drag across the letters), and click on the Center button from the Formatting Toolbar.



14. When the text is highlighted, Click on the B to make the text bold.



15. Click on the I button on the Formatting Toolbar to make the text italic.



16. Click on the Underline button to add a line under the words.



17. Click on the UNDO button on the toolbar.

This button will let you go back one step. It is a good way to correct your mistakes.

18. Click the REDO button on the toolbar.

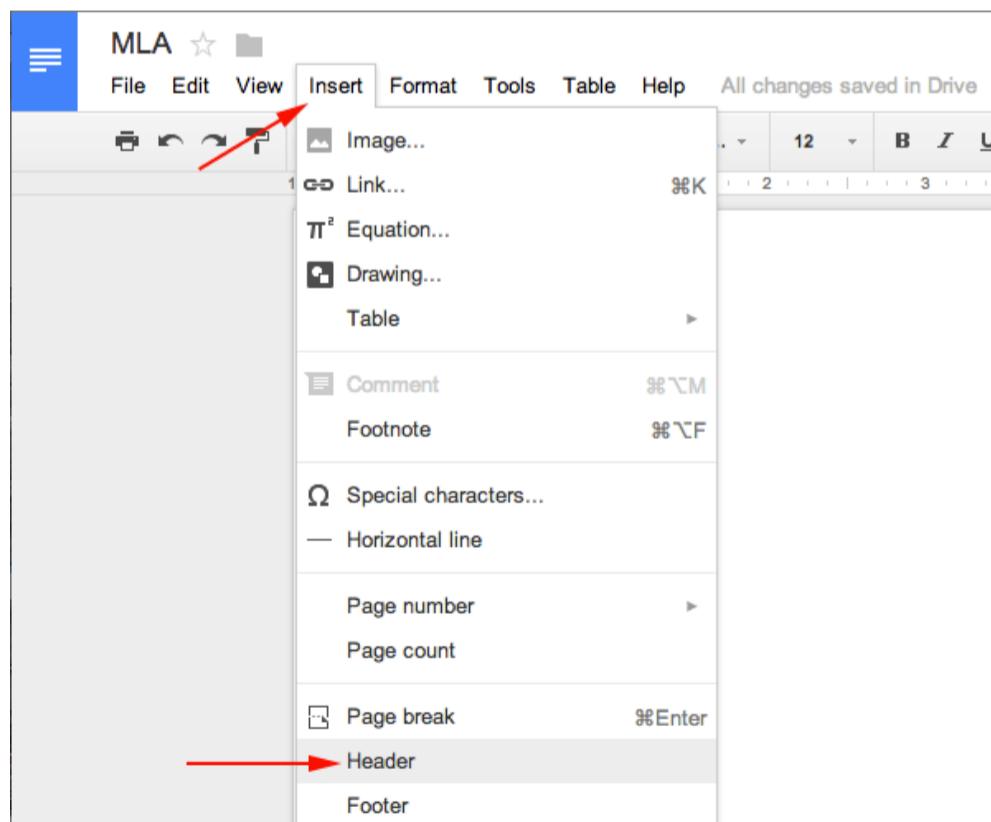
This button will let you go forward one step after you have used the undo button.

19. Share the file with your instructor.

BONUS! Add a header/footer/page numbers

Headers and footers and page numbers

You can modify the layout of your document by utilizing the header and footer sections and inserting page breaks. Headers and footers usually contain additional information like page number, date, document name, and footnotes. Page breaks and horizontal lines create separation in the text and can increase readability.



To insert a header or footer:

Click Insert, then select either Header or Footer from the drop-down menu. Depending on your selection, the insertion point will relocate to either the top or bottom margin of the page. Type the desired text. When you're finished, press the Esc key on your keyboard to close the header or footer. After you close the header or footer, it will still be visible, but it will be locked. To edit it again, just click anywhere on the header or footer, and it will become unlocked.

To insert a page number:

Google Docs can automatically label each page with a page number and place it in a header or footer. If you want to display the word Page as part of the page number, you will need to type Page at the desired location in the header. Click Insert and hover the mouse over Page number, then select Top of page or Bottom of page.

2. Google Doc List Exercise

You will do web research to find the top 5 Hardcover Fiction Books of 2015. You will format them like the page below. In the next couple weeks, we will use this list to make a website with this information.

New York Times Best Sellers

Hardcover Fiction

February 13, 2011

1. Tick Tock

1. James Patterson and Michael Ledwidge
2. \$27.99
3. The New York detective Michael Bennett enlists the help of a former colleague to solve a rash of horrifying crimes that are throwing the city into chaos.

2. The Girl Who Kicked the Hornet's Nest

1. Stieg Larsson
2. \$27.95
3. The third volume of the Millennium trilogy, about a Swedish hacker and a journalist

3. The Inner Circle

1. Brad Meltzer
2. \$26.99
3. An archivist discovers a book that once belonged to George Washington and conceals a deadly secret.

4. Strategic Moves

1. Stuart Woods
2. \$25.95
3. In the 19th Stone Barrington novel, the New York lawyer works with the C.I.A. to transport a fugitive

5. The Help

1. Kathryn Stockett
2. \$24.95
3. A story about a young white woman and two black maids in 1960s Mississippi

3. Google Doc Table Exercise

In this exercise you will practice:

- Creating a table
- Changing the margin size
- Changing the page orientation
- Navigating and using tools on different tabs

1. **Open a new Google Doc**
2. On the File Tab, click the **Page Setup**. In the **Page Setup page**, click **Landscape**. This will change the direction the document will print on a piece of paper. Portrait orientation prints the document vertically. Landscape orientation prints the document horizontally.
3. On the Menu Bar, click the **Table Tab**. Hover over the **Insert Table** button. A menu with little squares should appear.
4. Move the cursor over squares until the top of the menu shows **7x7 Table** and then click. This tells Google Docs you want a table with 7 rows and 7 columns. The table should appear in your document.
5. Your document should now have a table.
6. Click in the **cell in the top left corner** of the table, you should see your cursor flashing there. Each box that is part of your table is called a cell.
7. Type: **April**
8. Click in the cell below April. Type: **Sunday**
9. Press the **Tab Key** on the keyboard. This will move the cursor to the next cell. Type: **Monday**
10. Use the **Tab key** to type **Tuesday, Wednesday, Thursday, Friday, and Saturday** in the next 5 cells.

3. Google Doc Table Exercise

11. Click in the cell **below Friday**. You should see your cursor flashing there. Type: **1**
12. Use the **Tab** key to **fill in the rest of the calendar dates** like the picture below. Pressing Tab at the end of a row will automatically bring you down to the first cell in the next row.

April						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
3	4	5	6	7	1	2
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

13. **Select All** to highlight the entire table.
14. Change the font size to 20, and then click before the word April to clear the highlighting. Look in the Font group to find the Font Size dropdown menu.
15. **Make the table bigger until the bottom row is near the bottom of the page.** You may need to click and drag several times.
16. Highlight the **top row of cells**.
17. On the **Table tab**, in the **Merge group**, click **Merge Cells**. This will combine all the columns in the top row into one for the title.
18. Keep the top row highlighted and then **Center** the text, change the font size to 48 and change the font to Corsiva.
19. Hold your cursor over the **line below Wednesday**. The cursor should change and allow you to change the cell height.
20. **Click and drag up** until there is **very little white space** below the days of the week.

The screenshot shows a Google Doc table. The first row contains the word "April" centered in a large, bold, black font. Below it is a standard 7x1 grid table. The first column is labeled "Sunday", the second "Monday", the third "Tuesday", the fourth "Wednesday", the fifth "Thursday", the sixth "Friday", and the seventh "Saturday". In the second row, the first three columns are empty. The fourth column starts with the number "1" and has a small downward arrow indicating it can be edited. The fifth column is empty. The sixth and seventh columns contain the numbers "2" and "3" respectively. The entire table is enclosed in a thick black border.

April						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1		2	

3. Google Doc Table Exercise

21. Highlight the **top row** of the table.
22. On the **More tab**, click **Background Color** to show a menu of colors you can choose to shade your table.
23. Click a **green** square. The background of the top row should be green. You will need to click to clear the highlighting to see the color of the row.
24. Highlight the **second row** of the table. This is the row with the days of the week. Change the background color to light green.
25. Click the **File tab** to open the Backstage View. Click **Print** to look at a print preview of the document. It should look like this:

April						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

26. Name the document **April 2011 Calendar**.
27. Share your finished product with the insutrctor!

4. Google Doc Letter Exercise

Write a letter to the Mayor about an issue that is important to you.

Use the layout of the letter on the next page. Include your name and address, the date, the Mayor's address, a greeting, the body of the letter, and a closing.

Use the Google Docs tools you have used in class to make the letter look nice. Try to use the formatting tools appropriately, for example, the entire letter should not be bold, but you can bold an important idea to make it stand out. Use the list below to guide you.

Try to use these tools:

- Bold
- Underline
- Italic
- Change the font
- Change the font size
- Change the font color
- Right alignment
- Left alignment
- Center alignment
- Change the margins
- Use a bulleted or numbered
- Save with a file extension of .doc AND pdf
- Share with your instructor
- Remove the space after paragraphs
- Double space

When you finish typing your letter, **use spell check**. You should also look at the **Print Preview** by clicking on the File tab and then clicking Print.

4. Google Doc Letter Exercise

Your Name
Date

Office of the Mayor
1 Frank H Ogawa Plaza #3,
Oakland, CA 94612

Dear Mayor Schaaf,

This is the body of the letter. You should write about **a topic that is important to you**. Sample topics could include:

- City Services you use
- Suggestions you have for the city government

Remember to use *all* the tools you learned!

Sincerely,

Your Name

Spreadsheets

Spreadsheets (either Microsoft's Excel or Google Sheets) allow you to organize, edit, and analyze different types of information. In order to be proficient at Spreadsheets, you will learn the basic ways to work with cells and cell content, including how to select cells, insert content, and copy and paste cells. Spreadsheets can also be used to run math operations on sets of rows and columns. Like other Google applications, you can easily share your spreadsheets with others to collaborate.

A	B	C	D	E
1	Classroom Budget: Fall 2012			
2	Item	Price	Type	To be reimbursed?
3	New boombox	\$69.99	Other	No
4	Rolling plastic bins	\$42.78	Storage	Yes
5	Pastels	\$71.80	Art Supply	Yes
6	Tissues	\$31.23	Classroom Supply	No
7	Clothespins	\$15.10	Classroom Supply	No
8	Clothesline	\$21.14	Classroom Supply	No
9	Water Colors	\$67.00	Art Supply	Yes
10	Total	\$319.04		
11				
12				
13				
14				
15	Budget for Fall	\$300.00	New Stools	
16	Budget for Spring	\$350.00	Price per unit	\$14.99
17	Total for 2012-13		# of Students	18
18			Total	
19				
20				
21				
22				

Plan a budget



Sheets

You create a new Google Sheet the same way that you create a new Google Doc Page by clicking “Add Blank”. You can also select a Google Sheets Template. This has formatted sheets that make certain tasks like budgeting or making a calendar easier.



Drive

Creating a New Spreadsheet

Untitled spreadsheet

File Edit View Insert Format Data Tools Add-ons Help

Comments Share

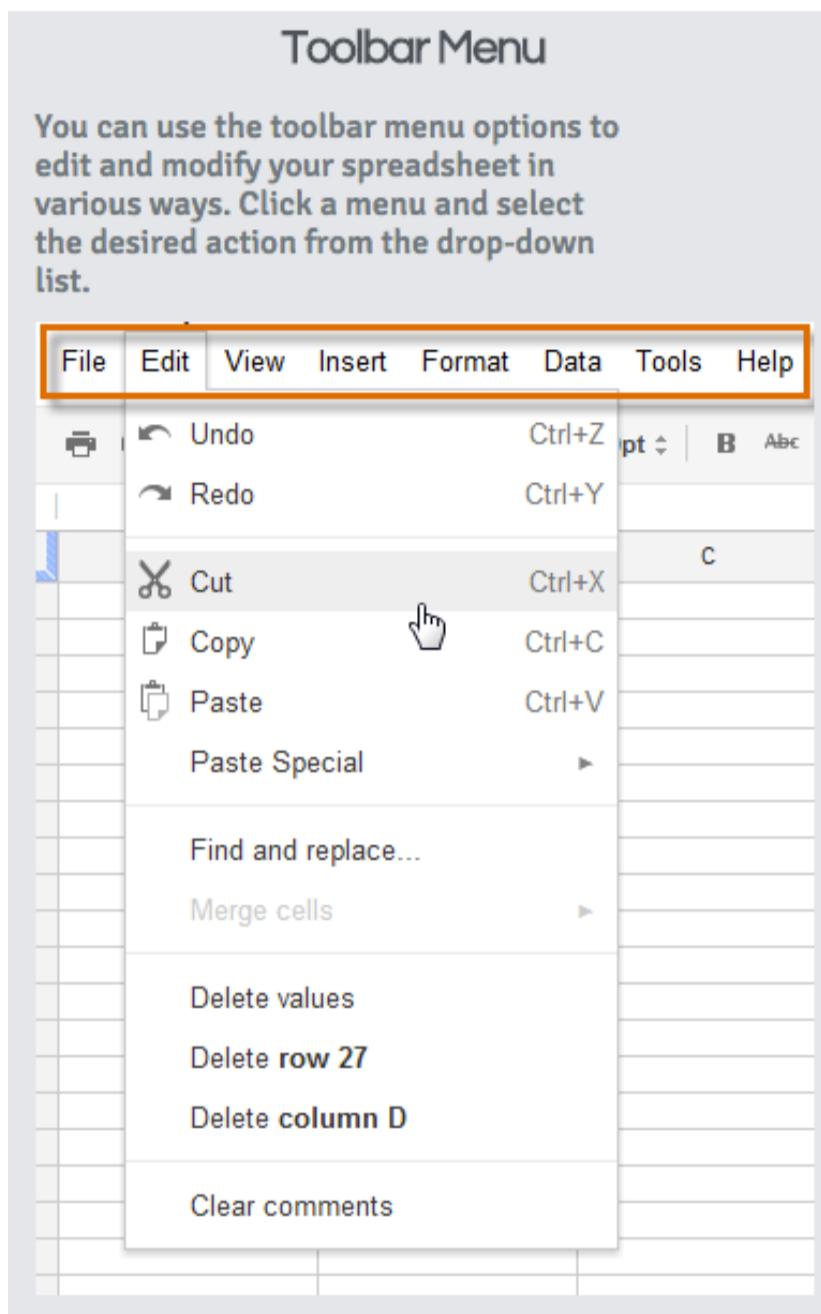
A B C D E F G H I J K L

1 2 3 4 5 6 7 8 9 10 11

=A1+B1

Spreadsheets

Tools you can use in Google Sheets



Shortcut Toolbar

This toolbar provides convenient shortcut buttons for formatting the data in your spreadsheet, like font size, text alignment, and text color.

10pt 6pt
7pt
8pt
9pt
10pt (checkmark)
11pt
12pt
13pt
14pt

Sheets Toolbar

Every spreadsheet can have multiple sheets. Select the sheet tabs to navigate among sheets, and click the Add Sheet + command to add a new sheet.

Add Sheet

Sheet1 ▾ Sheet2 Sheet3

You can easily make copies of Google Sheets to work on!

Sheets Business Templates

File Edit View Insert Format Data Tools Form Add-ons Help Last edit was 2 days ago

Share... 10pt B I F A

New Open... Rename... Make a copy... Move to folder... Move to trash Import... See revision history ⌘+Option+Shift+G Spreadsheet settings... Download as

	C	D	E	F
1	How did you find this survey?	Company	Company Website	Email
2	michaelGrubbs.com	MichaelGrubbsCom	http://www.michaelgrubbs.com	michael@michaelgrubbs.com
3	Serial	Mobilized	http://www.moblized.com	michael@mobilized.com
4	Blog	Zapier	http://www.zapier.com	johnny@zapier.com
5	Google Search	Google	http://www.google.com	google@google.com
6	Serial	McScrooge Corp	http://www.disney.com	Donald@duck.com
7	The Inspiration	Ageless Cream Inc	http://www.ageless.com	Button@Benjamin.com
8	Google Search	MarketerMan	http://www.Marketer.com	mark@eterman.cc
9				
10				

Cell Basics

Cell

Each rectangle in a spreadsheet is called a cell.

A cell is the intersection of a row and a column.

Click to select a cell. Cell B5 is selected in this example.

	A	B	C
1			
2			
3			
4			
5			
6			
7			
8			

Column

A column is a group of cells that runs vertically from top to bottom. Columns are identified by letters. Column C is selected in this example.

B	C	D

Row

A row is a group of cells that runs horizontally from side to side. Rows are identified by numbers. Row 10 is selected in this example.

7						
8						
9						
10						
11						
12						
13						

Every spreadsheet is made up of thousands of rectangles, which are called cells. A cell is the intersection of a row and a column. Columns are identified by letters (A, B, C), while rows are identified by numbers (1, 2, 3).

Each cell has its own name—or cell address—based on its column and row. In this example, the selected cell intersects column C and row 10, so the cell address is C10. Note that a cell's column and row headings become darker when the cell is selected.

Cell Basics

To copy and paste cells:

It's easy to copy content that is already entered into your spreadsheet and paste this content into other cells.

1. Select the cells you want to copy.
2. Press Ctrl + C (Windows) or Command-C (Mac) on your keyboard to copy the cells.

	A	B	C	D	E
1	Art Museum Field Trip Checklist				
2					
3	Student	Attending	Not Attending	Permission Slip Returned	
4	Anderson, Stewart	x		x	
5	Bledsoe, David	x		x	
6	Carter, Angela	x			
7	Flint, Tony		x		
8	Jimenez, Alfonso	x		x	
9	Jones, Drew	x		x	
10	Martin, Billy		x		
11	Quince, Tim		x		
12	Polanski, Lisa		x		
13	Olsen, Stephanie				
14	Stephenson, Anneke				
15	Stubbs, Amelia				
16	Tims, Marie				
17	Zimmerman, Jude				

3. Click and drag the fill handle over the cells you want to fill. A dotted black line will appear around the cells that will be filled.

4. Release the mouse to fill the selected cells.

After you have added a lot of content to a spreadsheet, it can sometimes be difficult to view and read all of your information easily. Formatting allows you to customize the look and feel of your spreadsheet, making it easier to view and understand.

Like Google Docs and other word processors, you can change a font's size, style, color, boldness, and alignment.



You can also modify the vertical alignment of the text (not just the horizontal



Cell Formatting

Vertical alignment

1. Select the text you want to modify, then click the Align button in the shortcut toolbar.
2. Choose the desired alignment from the drop-down menu.
 1. Top align: Aligns content to the top border of the cell.
 2. Center align: Aligns content an equal distance from the top and bottom borders of the cell.
 3. Bottom align: Aligns content to the bottom border of the cell.

A screenshot of a Microsoft Excel spreadsheet titled "Garden Inventory". The spreadsheet has three columns: "Date Planted", "Seed Name", and "Row Number". The first row contains the column headers, and the second row contains data: "4/12/2012", "Sunflower", and "1". The "Date Planted" cell is selected. The Excel ribbon is visible at the top, and the formula bar shows "Date Planted". The alignment dropdown menu is open on the right side of the toolbar, with the "Bottom" option highlighted by a blue selection box. Other options like "Top" and "Center" are also visible.

Change text background color:

You can change the background color of any cell, which is known as the text background color.

1. Select the cell or cells you wish to modify.
2. Locate and select the Fill button from the shortcut toolbar.
3. Select a color from the drop-down menu.

A screenshot of the same "Garden Inventory" spreadsheet. The "Date Planted" cell is still selected. The font dropdown menu is open on the right side of the toolbar, with the "Text background color" option highlighted by a blue selection box. The menu also includes other options like "Font", "Font Style", "Font Size", and "Font Color". The spreadsheet structure remains the same with columns A, B, C, D, and E and rows 1 through 3.

Cell Formatting

To add cell borders:

1. Select the cell or cells you wish to modify.
2. Locate and select the Borders button from the shortcut toolbar.
3. Choose the desired border options. “All” is often a popular choice.

A screenshot of a Google Sheets document titled "Garden Inventory". The document contains a single row of data with three columns: "Date Planted", "Seed Name", and "Row Number". The "Date Planted" cell is selected and has a blue border. The "Borders" button in the toolbar is highlighted with a red box. The toolbar also includes other buttons for print, refresh, undo, redo, and various text and number formats.

To apply number formatting:

1. Select the cell or cells you wish to modify.
2. Locate and select the Number Formatting button from the shortcut toolbar.
3. A drop-down menu will appear with various number formatting options.
4. Select the desired formatting.

A screenshot of a Google Sheets document showing the "Number Format" dropdown menu open over a cell containing the date "4/12/2012". The menu includes options like "Normal", "1,000", "1,000.12", "Custom Decimals...", "(1,000)", "(1,000.12)", "1.01E+03", "Financial rounded", "Financial", "Scientific", "Currency", "More currencies", "10%", "10.12%", "Percent rounded", "Percent", "9/26/2008", "9/26-08", "9/26", "09-26", "26-Sep", "26-Sep-2008", "September 26, 2008", "Plain text", and "Sep-26". The "123" button in the toolbar is highlighted with a red box.

This is very helpful when you are working with a budget or using dates. Google sheets will often apply number formatting without you telling it to. If this formatting is incorrect (ie, it is displaying a number as a date instead of a plain number), you can always use this menu to change it back.

Spreadsheet Formulas

Creating simple formulas

A convenient and time-saving feature of Google Sheets is its ability to add, subtract, multiply, and divide numerical information for you. Google Sheets uses mathematical expressions called **formulas** that make handling these calculations easy. Most of the time, you will be using a cell's address in the formula. This is called using a cell reference. The advantage of using cell references is that you can change a value in a referenced cell and the formula will automatically recalculate. Using cell references in your formulas will make sure the values in your formulas are accurate.

Mathematical operators

Google Sheets uses standard operators for formulas: a plus sign for addition (+), minus sign for subtraction (-), asterisk for multiplication (*), forward slash for division (/), and caret (^) for exponents.

All formulas must begin with an equals sign (=). This is because the cell contains—or is equal to—the formula and the value it calculates.

Using cell references

When a formula contains a cell address, it is using a **cell reference**. Creating a formula with cell references is useful because you can update the numerical values in cells without having to rewrite the formula.

By combining a mathematical operator with cell references, you can create a variety of simple formulas in Google Sheets. Formulas can also include a combination of a cell reference and a number.

=A1+A2	Adds cells A1 and A2
=C4-3	Subtracts 3 from cell C4
=E7/J4	Divides cell E7 by J4

The screenshot shows two parts of a Google Sheets interface. The top part shows a 4x2 grid with columns A and B. Row 1 has values 1 and 7. Row 2 has values 2 and 3. Row 3 has a formula cell containing '=A1+A2' with a blue selection border, and the result 7 is displayed in cell B3. Row 4 is empty. The bottom part shows a similar 4x2 grid. Row 1 has values 1 and 7. Row 2 has values 2 and 3. Row 3 has a formula cell containing '=C4-3' with a blue selection border, and the result 10 is displayed in cell B3. Row 4 is empty.

	A	B
1	7	
2	3	
3	? =A1+A2	7
4		

	A	B
1	7	
2	3	
3	10	
4		

Google Sheets will not always tell you if your formula contains an error, so it's up to you to check all of your formulas.

Spreadsheet Formulas

Creating formulas

1. Select the cell that will display the calculated value.

JUNE BUDGET	\$1,200
JULY BUDGET	\$1,500
TOTAL	

2. Type the equals sign (=).
3. Type the cell address of the cell you want to reference first in the formula. A dotted border will appear around the cell being referenced.

JUNE BUDGET	\$1,200
JULY BUDGET	\$1,500
TOTAL	=D10

4. Type the operator you want to use. For example, type the addition sign (+).
5. Type the cell address of the cell you want to reference second in the formula.

JUNE BUDGET	\$1,200
JULY BUDGET	\$1,500
TOTAL	=D10+D11

6. Press the Enter key on your keyboard. The formula calculates, and Google Sheets displays the result.

JUNE BUDGET	\$1,200
JULY BUDGET	\$1,500
TOTAL	\$2,700

To see how the formula recalculates, try changing the value in either cell. The formula automatically displays the new value. Rather than type cell addresses, you can point and click the cells you want to include in your formula. To edit a formula, double-click the cell containing the formula you want to edit. The formula will be displayed in the cell. Make the desired edits to the formula and press the Enter key on your keyboard. The formula recalculates, and the new value displays in the cell.

Spreadsheet Formulas

Complex Formulas

More complex formulas can contain several mathematical operators, such as $5+2*8$. When there's more than one operation in a formula, the order of operations tells Google Sheets which operation to calculate first. To write formulas that will give you the correct answer, you'll need to understand the order of operations.

Order of operations

Google Sheets calculates formulas based on the following order of operations:

1. Operations enclosed in **parentheses**
2. **Exponential** calculations (3^2 , for example)
3. **Multiplication** and **division**, whichever comes first
4. **Addition** and **subtraction**, whichever comes first

It's especially important to follow the order of operations when creating a formula. Otherwise, Google Sheets won't calculate the results accurately.

P
E
M
D
A
S

How would you solve the following equation?

$$x = 10 + (6-3)/2^2*4-1$$

Example

MENU ITEM	UNIT PRICE	QUANTITY	LINE TOTAL
Tamales: Carnitas	\$2.29	20	\$45.80
Tamales: Vegetable	\$2.29	30	\$68.70
Empanadas: Nutella & Banana	\$3.99	40	\$159.60
TAX ?			$= (D3+D4+D5)*0.055$
TOTAL			

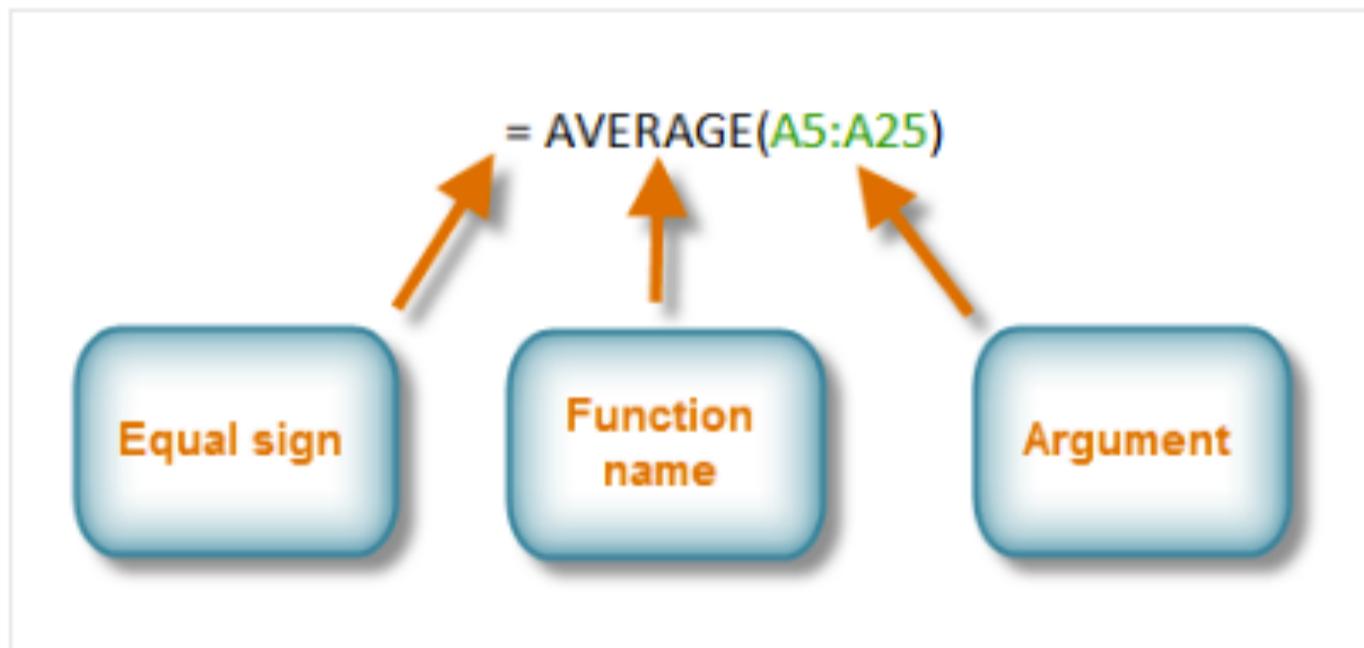
Google Sheets follows the order of operations and first adds the values inside the parentheses: $(D3+D4+D5) = \$274.10$. Then it multiplies by the tax rate: $\$274.10 * 0.055$. The result will show that the tax is \$15.08.

Write out the order of operations as well as what this equation would look like below:

Spreadsheet Functions

Google Sheets provides a variety of common functions that can be useful for quickly finding the sum, average, count, maximum value, and minimum value of a range of cells. It also provides access to hundreds of functions for financial, statistical, and other complex calculations.

A **function** is a predefined formula that performs calculations using specific values in a particular order. One of the key benefits of functions is that they can save you time because you do not have to write the entire formula yourself. Google Sheets has several functions readily available and provides access to hundreds of other functions to assist with your calculations.



Types of Functions

SUM: The SUM function adds all of the values of the selected cells in the argument. This function is useful for quickly adding values in a range of cells.

AVERAGE: The AVERAGE function will find the average of the values included in the argument. It calculates the sum of the cells and then divides the sum by the number of cells in the argument.

COUNT: Using the COUNT function will display the number of cells that have been included in the argument. This function is useful for quickly counting items on the sheet.

MAX: The MAX function displays the highest cell value included in the argument.

MIN: The MIN function displays the lowest cell value included in the argument.

Think of a function like a washing machine. You put in different inputs (like light clothes or dark clothes), tell the function what you want to do with the input (like wash with detergent, or slow cycle), and then get an output (your clean clothes!).

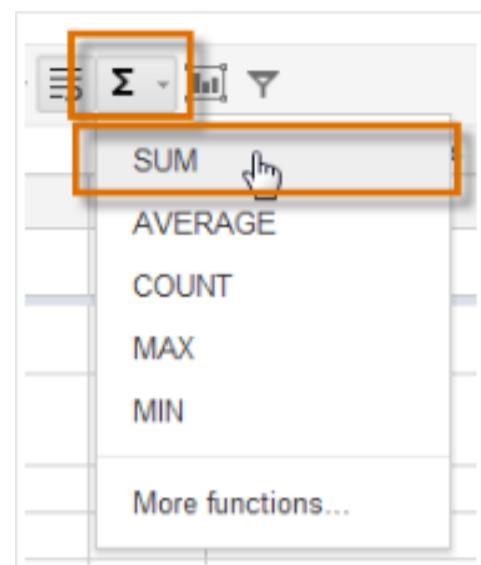
Spreadsheet Functions

Creating a Function

The Function button allows you to automatically return the results for a range of cells. The answer will display in the cell below the range.

1. Select the range of cells you want to include in the argument.

2. Click the Functions button, then select the desired function from the drop-down menu (SUM, for example). In the cell directly below the selected cells, the function appears. Press the Enter key on your keyboard, and the answer appears.



	C	D	E
1			
19	Running Log		
20	Date	Distance (miles)	Time (hrs:mins)
21	6/25	3.50	0:45
22	6/26	4.00	0:44
23	6/27	4.25	0:42
24	6/29	5.00	0:44
25	6/30	5.00	0:45
26	7/2	3.80	0:44
27	7/3	4.50	0:30
28	Total	=SUM(D21:D27)	
29			

	C	D	E
1			
19	Running Log		
20	Date	Distance (miles)	Time (hrs:mins)
21	6/25	3.50	0:45
22	6/26	4.00	0:44
23	6/27	4.25	0:42
24	6/29	5.00	0:44
25	6/30	5.00	0:45
26	7/2	3.80	0:44
27	7/3	4.50	0:30
28	Total	30.05	
29			

Similar to formulas, functions can be copied to adjacent cells. Select the cell that contains the function, and the fill handle displays. Click, hold, and drag the fill handle over the cells you want to fill.

Lift	15	35	10	35	15	35
Extension	15	35	20	35	17	35
Average	13.9					
Average	13.9	50.5	12.5	54	11	58.5

Spreadsheet Sorting

Sorting

Google Sheets allows you to analyze and work with a significant amount of data. As you add more content to your spreadsheet, knowing how to locate specific information in it becomes important. Google Sheets allows you reorganize your data by sorting and applying filters to it. You can sort your data by arranging it alphabetically or numerically, or you can apply a filter to narrow down the data and hide some of it from view.

Types of sorting: When sorting data, it's important to first decide if you want the sort to apply to the entire sheet or to a selection of cells.

Sort sheet organizes all of the data in your spreadsheet by one column. Related information across each row is kept together when the sort is applied. In the image below, the Name column has been sorted to display client names in alphabetical order. Each client's address information has been kept with each corresponding name.

	A	B	C
1	Name	Address	City, State and Zip
2	Cotton, Freda	4996 Tennessee Ave	Southfield, MI 48034
3	Machado, James	4539 Harley Brook Ln	Salisbury, PA 15558
4	Sanchez, Billy	2381 Wildrose Ln	Southfield, MI 48075
5	Schoolcraft, Rafael	862 Browning Ln	Syracuse, NY 13221
6	Ward, Monica	1979 Davisson St	Indianapolis, IN 46225

Sort range sorts the data in a range of cells. When working with a sheet that contains several tables, you may want to sort the data of a single table. Sorting a range will not affect the data on the rest of the sheet, and it will keep related information across the row together.

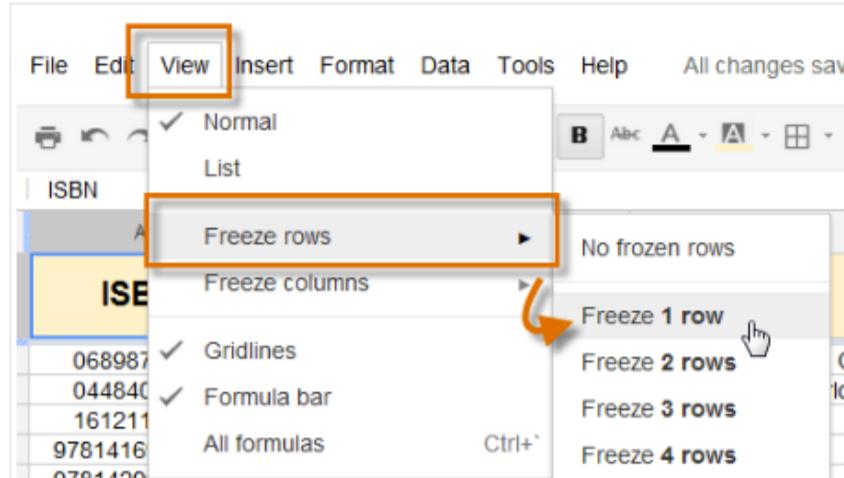
Running Log		
Date	Distance (miles)	Time (hrs:mins)
6/25	3.50	0:45
6/26	4.00	0:44
6/27	4.25	0:42
6/29	5.00	0:44
6/30	5.00	0:45
7/2	3.80	0:44
7/3	4.50	0:30
Total	30.05	

Selecting a range of cells to sort

Spreadsheet Sorting

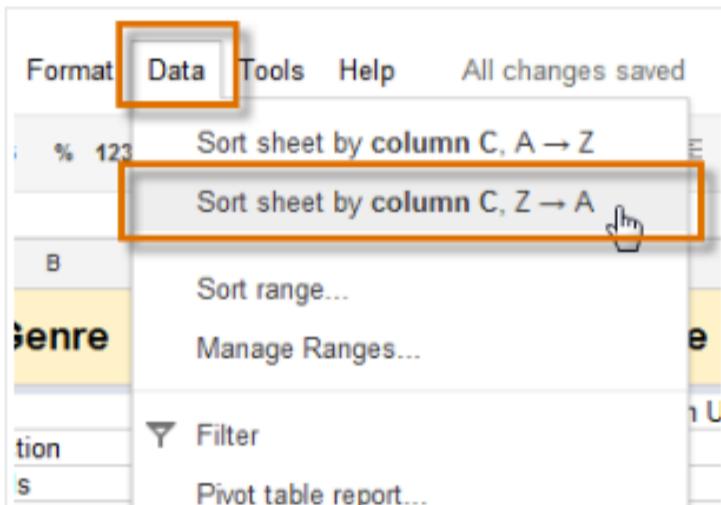
To sort a sheet

Freeze the header row so the header labels will not be included in the sort. Click View and hover the mouse over Freeze rows. Select Freeze 1 row from the menu that appears.



The header row freezes. Decide which column will be sorted, then click a cell in the column.

Click Data and select Sort Sheet by column, A-Z (ascending) or Sort Sheet by column, Z-A (descending). The sheet will be sorted according to your selection.



B	C	D
Genre	Loan Count	Title
Fiction	8	The Adventures of Captain Under
Non-fiction	8	Two Trains Running
Animals	7	Ants
Animals	7	Chameleons
Nature	7	Volcano
Non-fiction	6	All Around the World
Fiction	6	Magic Tree House Collection
Nature	5	Fun with Nature

To sort a range

Highlight the range of cells you want to sort.

Click Data and select Sort range... from the drop-down menu. The Sorting dialog box appears. Select the desired column you want to sort by, then select ascending or descending.

Running Log		
Date	Distance (miles)	Time (hrs·mins)
6/25	3.50	0:45
6/26	4.00	0:44
6/27	4.25	0:42
6/29	5.00	0:44
6/30	5.00	0:45
7/2	3.80	0:44
7/3	3.00	0:30
Total	28.55	

Highlight the range of cells you wish to sort

Sort range from C21 to E27

Data has header row

sort by

A → Z Z → A

+ Add another sort column

Select the column you wish to sort the data by

Select ascending or descending

Click Sort.

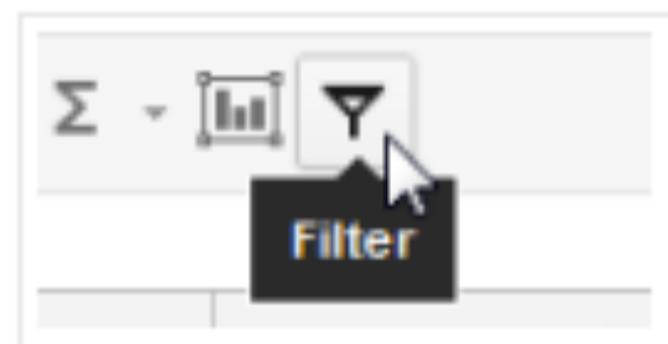
Spreadsheet Filters

Filters

Filters can be applied in many different ways to improve the performance of your worksheet. They are useful for displaying only the data that interests you. For example, you could apply a filter to a party guest list to view only the people who responded to the invitation, or sort the genres of a song list to display only rock-and-roll songs or classical music.

To create a filter: Click any cell that contains data, and then click the Filter button.

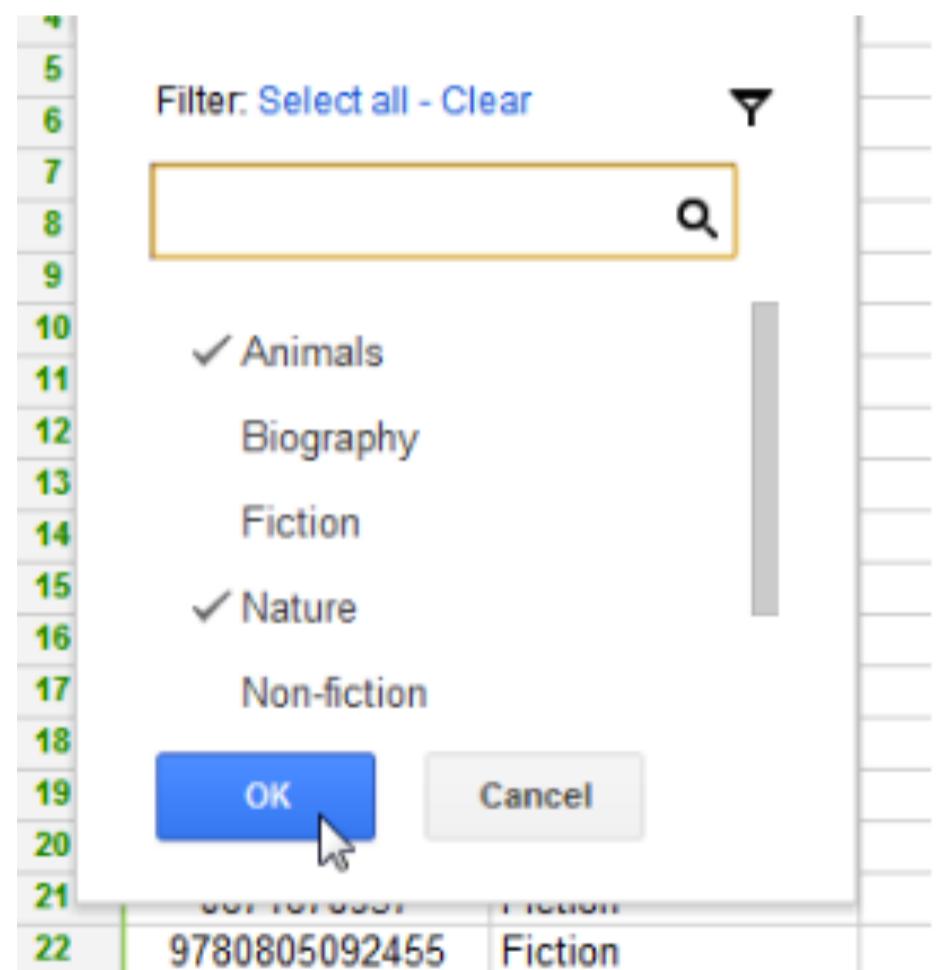
	A	B	C	
1	ISBN	Genre	Loan Count	
2	1400043816	Non-fiction	8	Two Trains
3	9780590846288	Fiction	8	The Adventure
4	1612111661	Animals	7	Ants
5	9781429633208	Animals	7	Chameleon
6	0756637805	Nature	7	Volcano



A drop-down arrow appears in each column header.



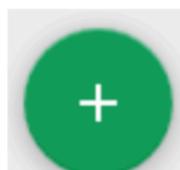
	A	B	C	
1	ISBN	Genre	Loan Count	
2	9780590846288	Fiction	8	The Adventure
3	1400043816	Non-fiction	8	Two Trains



Decide which column you will apply a filter to. Click the column's drop-down arrow, and a filtering options box appears. You will see the values from that column as a checklist inside the box. Select the data you want to display on the spreadsheet. In this example, we'll select Animals and Nature. Click OK. The sheet will be filtered according to your data selection. A filter symbol appears in the filtered column's header cell.

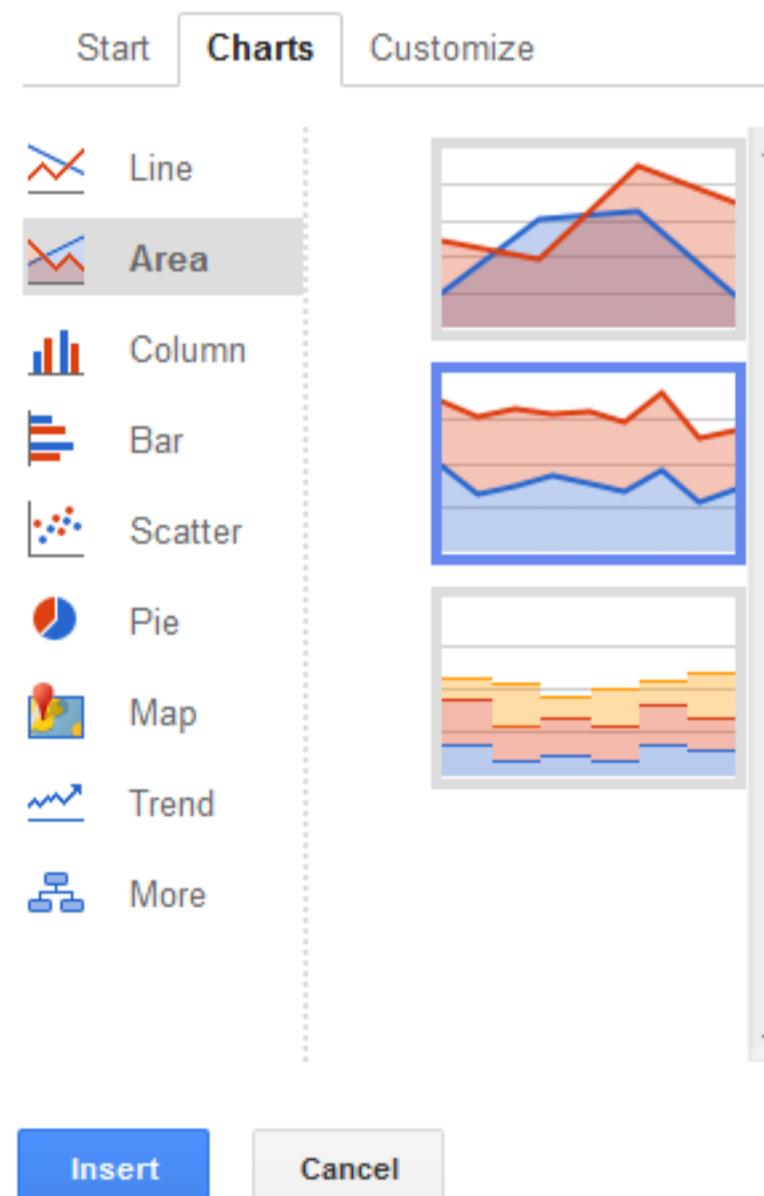
Drawing Charts

Charts and graphs are a great way of representing your data. Google Sheets offers almost every chart type and makes it easier to draw them so that your data can quickly understood in a graphical format.



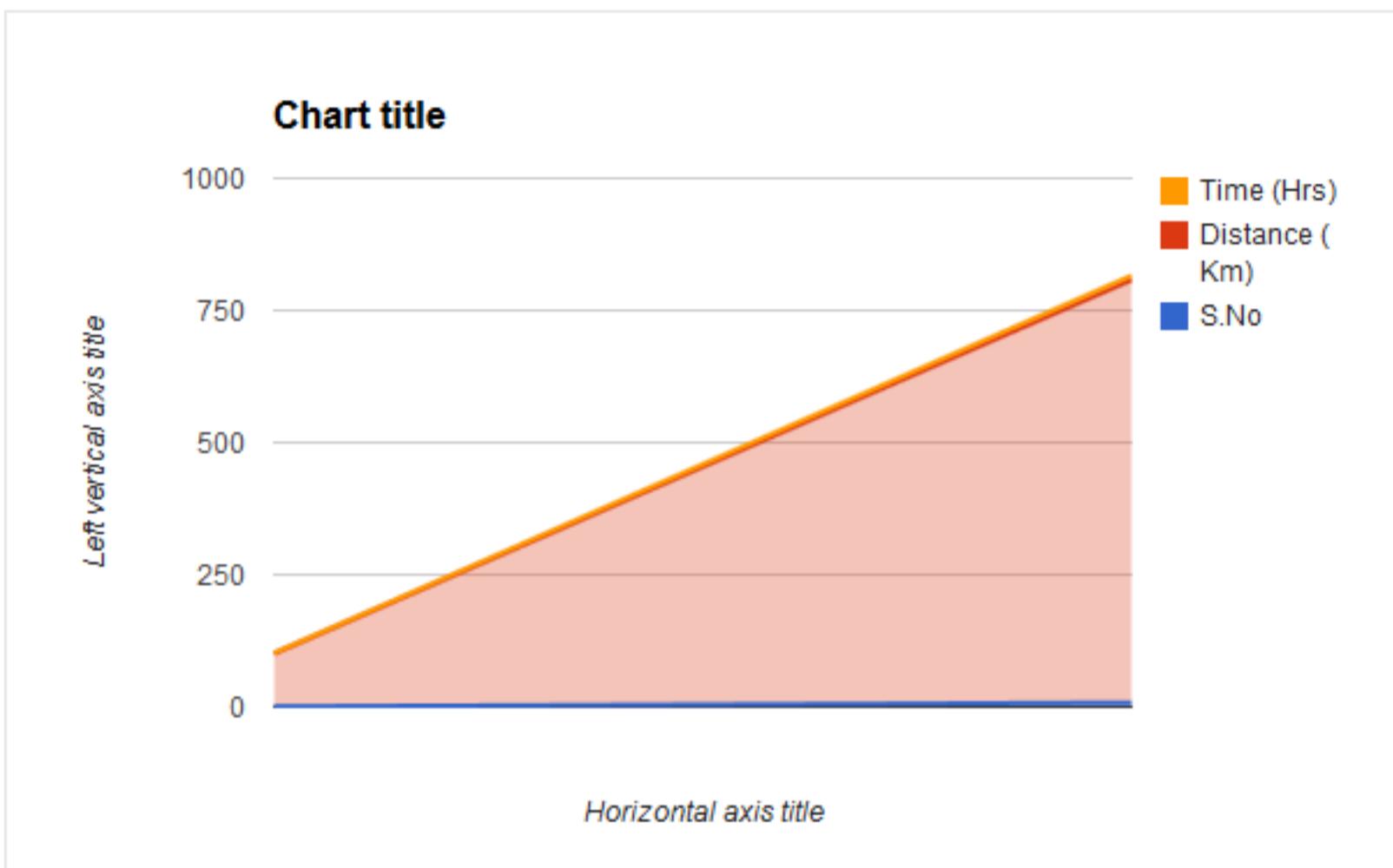
First create a new google sheet by pressing this button in the bottom right hand corner of Google sheets. Make sure that there is some data in your *Google Sheets* sheet and that your *Google Sheets* sheet does not contain any blank cells between the different columns, select the data you want to graph then click the insert chart button and choose the chart type that you wish to draw.

Chart Editor

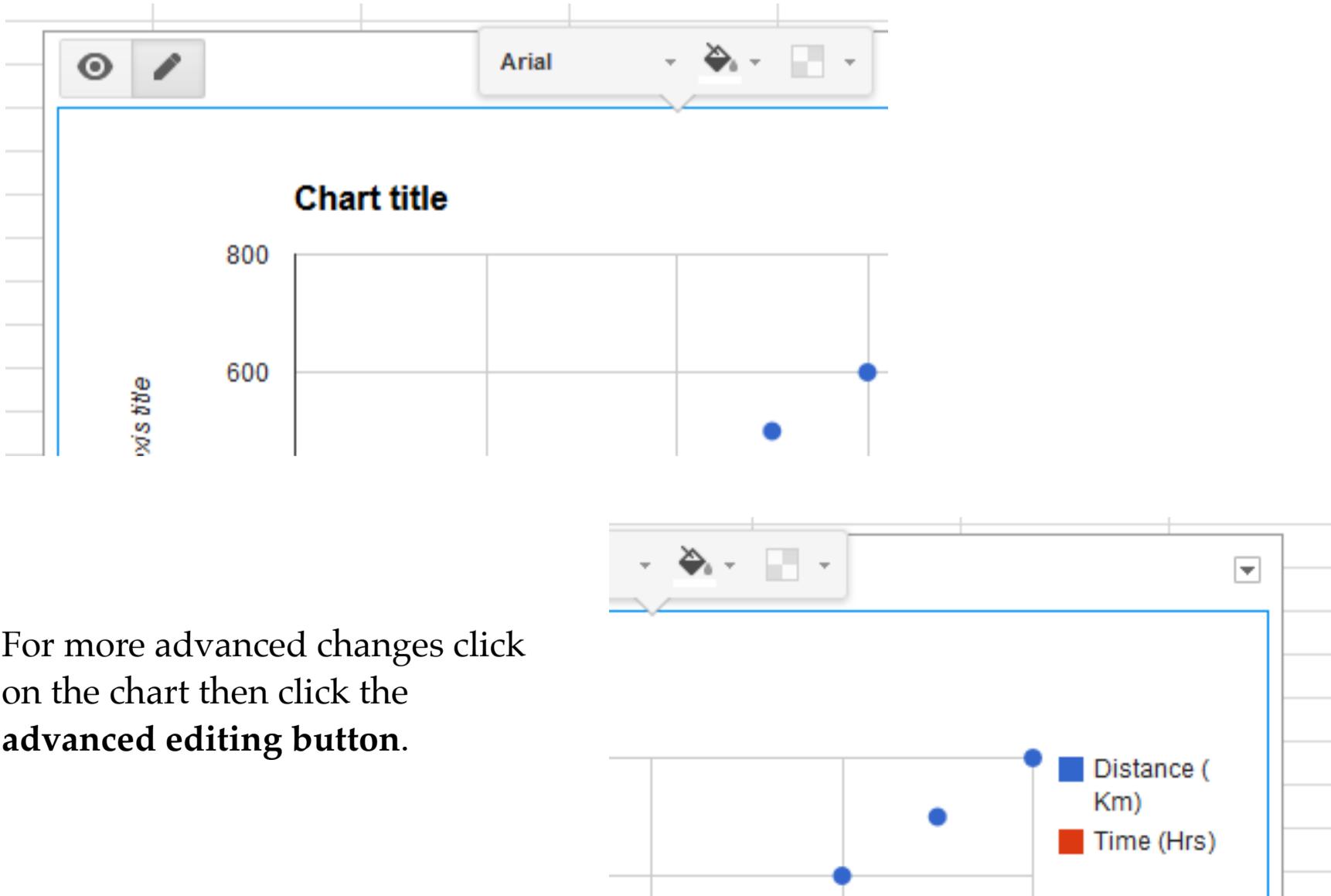


The data in your *Google Sheets* sheet will be organized as a chart.

Drawing Charts



Once the chart is drawn, it becomes very easy to change the attributes, click the quick edit button and you will see the options for changing chart types, data, and other formatting.



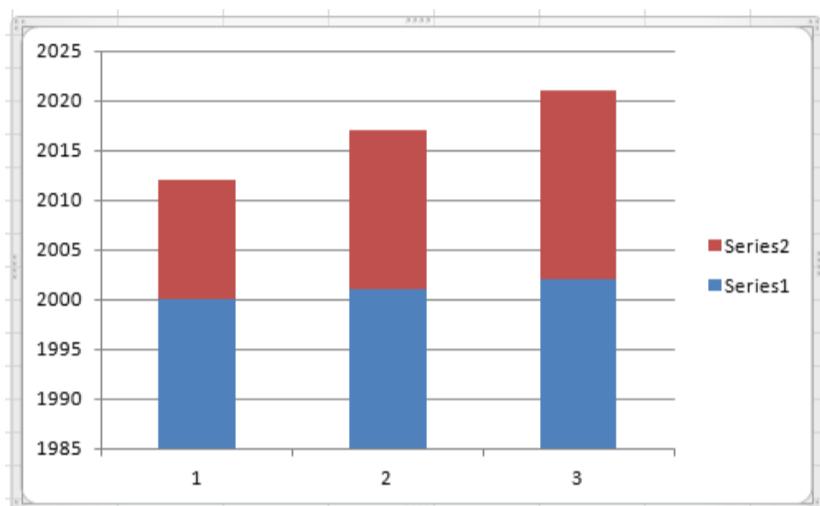
For more advanced changes click on the chart then click the advanced editing button.

Types of Charts

The chart or graph type will depend on the data for which you are going to plot the chart. The most commonly used types include Column Chart, Line Graphs, Pie Chart, Bar Graph, Area Chart, Scatter Graphs, Stock Chart, and Surface Chart, among many others.

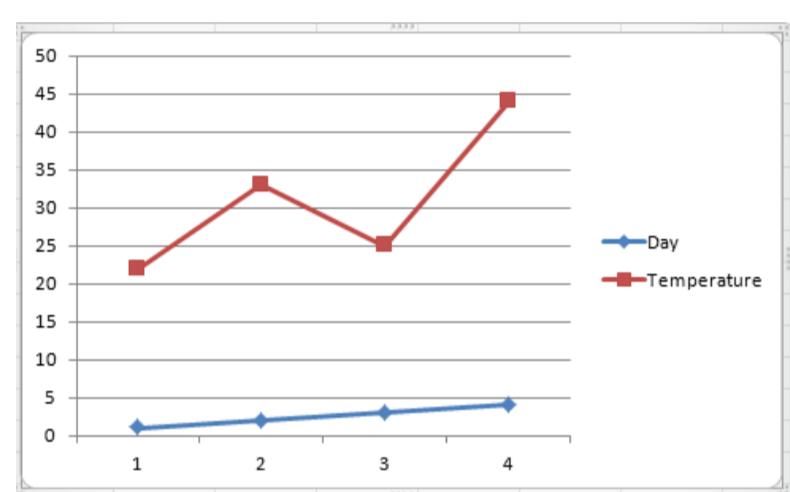
COLUMN CHART

The Column chart is one of the most commonly used chart type and is used to show the changes in data over a period of time or illustrate comparisons among items.



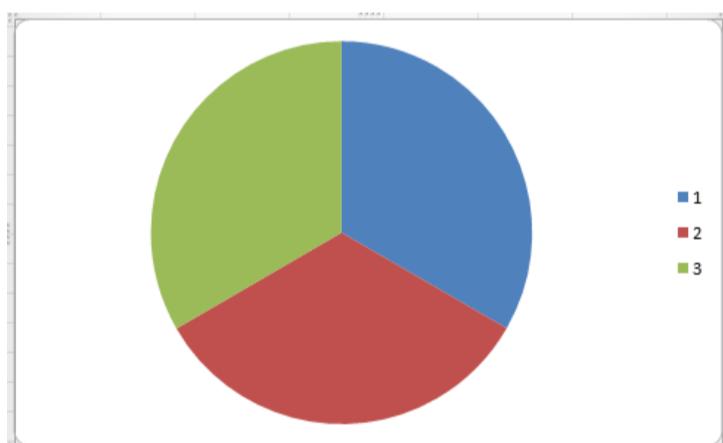
LINE GRAPHS

Line Graphs are mainly used to plot changes in data over time. The best example of this chart type can be the weekly change in temperature.



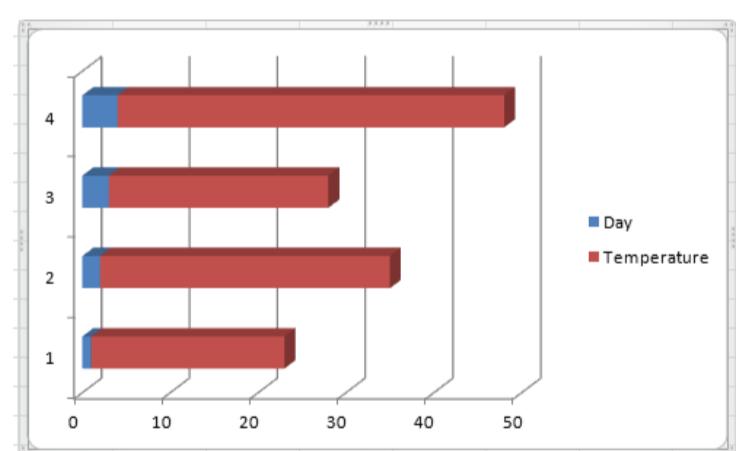
PIE CHART

The Pie Chart is very useful when you wish to emphasize on a significant element in the data. It represents data in the form of a pie.



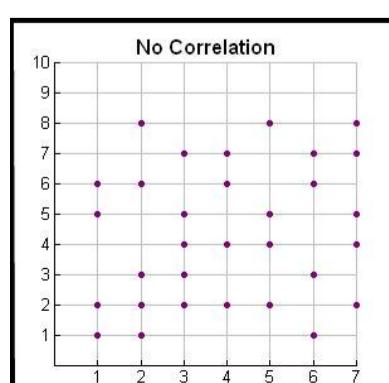
BAR GRAPH

A bar graph illustrates comparisons among individual items.



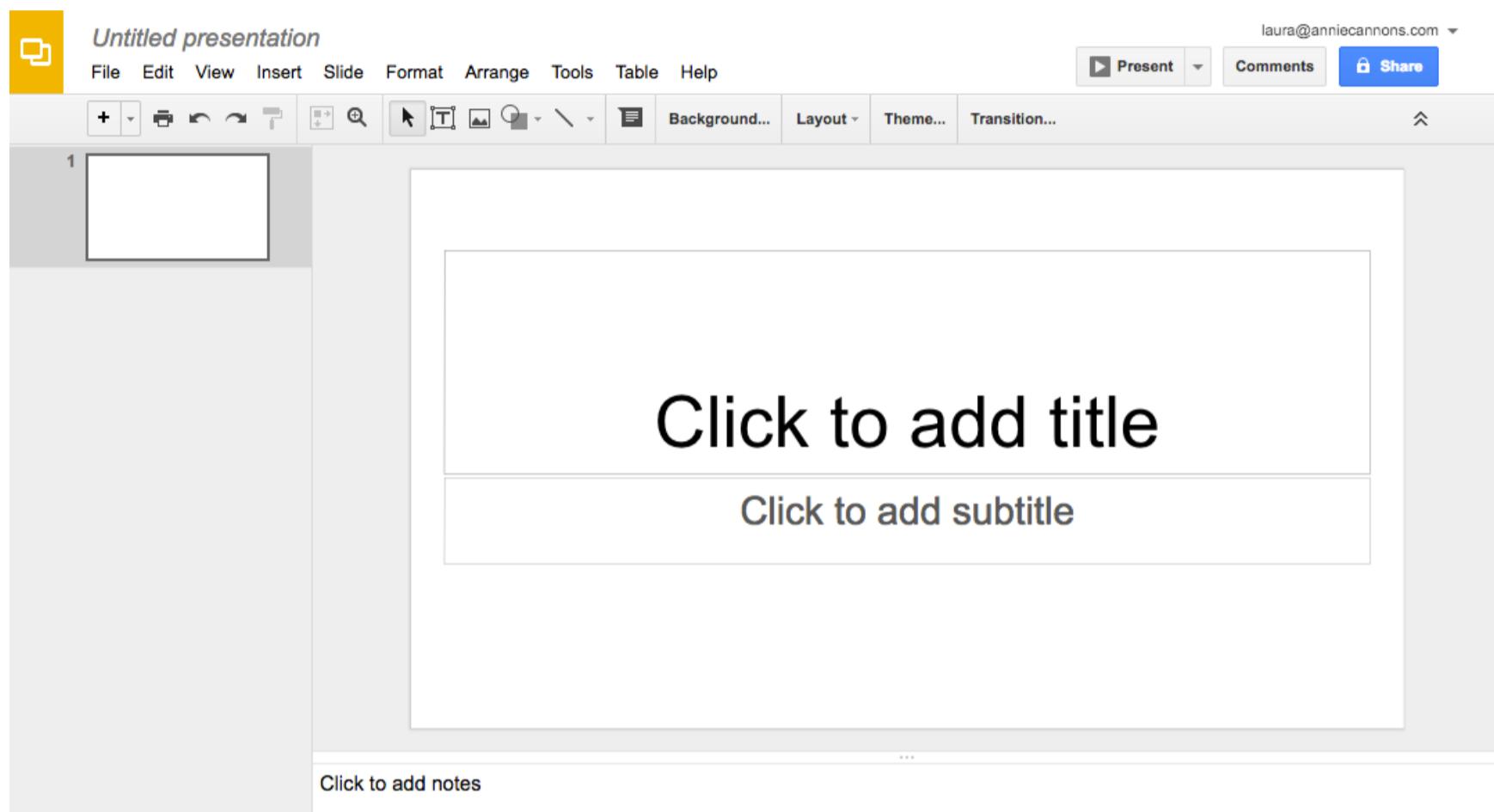
SCATTER PLOTS

The **purpose of a scatter plot** is to show the type of relationship, or correlation, that exists between two sets of data. For instance, a positive correlation means that as the value of one set of data increases, the other data will also increase.



Google Slides

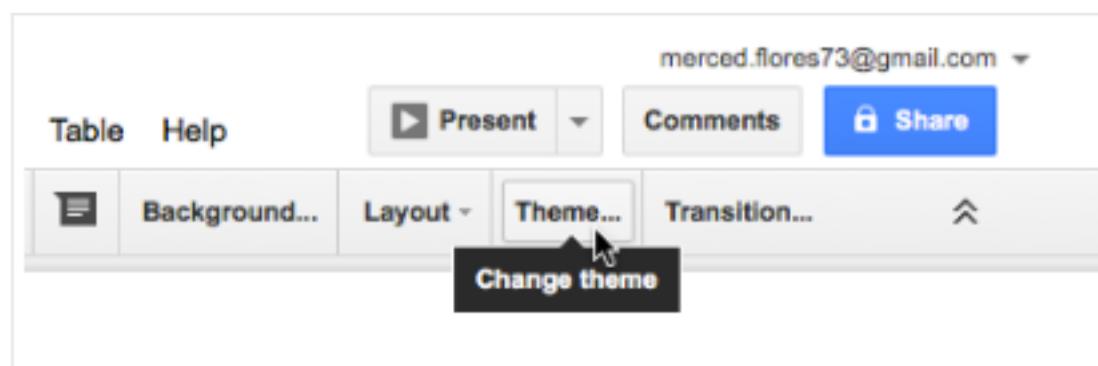
Google Slides allows you to create dynamic slide presentations. These presentations can include animation, narration, images, videos, and much more. It is important to know about the Google Slides interface and the basics of setting up your document, including the menu and shortcut toolbars, zoom settings, and choosing a theme.



Choose a Theme

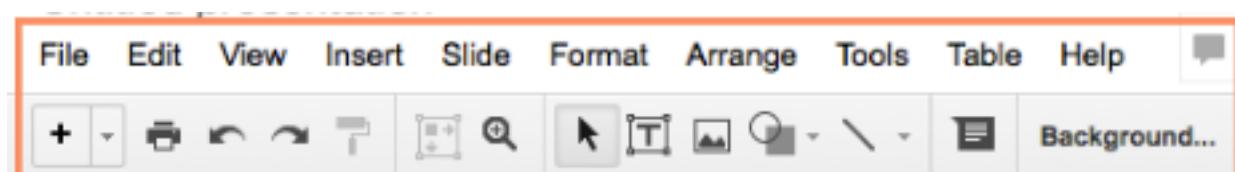
When you first create a new presentation, Google Slides will prompt you to choose a theme. Themes give you a quick and easy way to change the overall design of your presentation. Each theme has a unique combination of colors, fonts, and slide layouts. Select a theme from the panel on the right side of the window, and it will be applied to your entire presentation.

You can choose from a variety of new themes at any time, giving your entire presentation a consistent, professional look. If you want to change your theme, you can open the Themes panel again by clicking the Theme command on the shortcut toolbar.



Main Menu

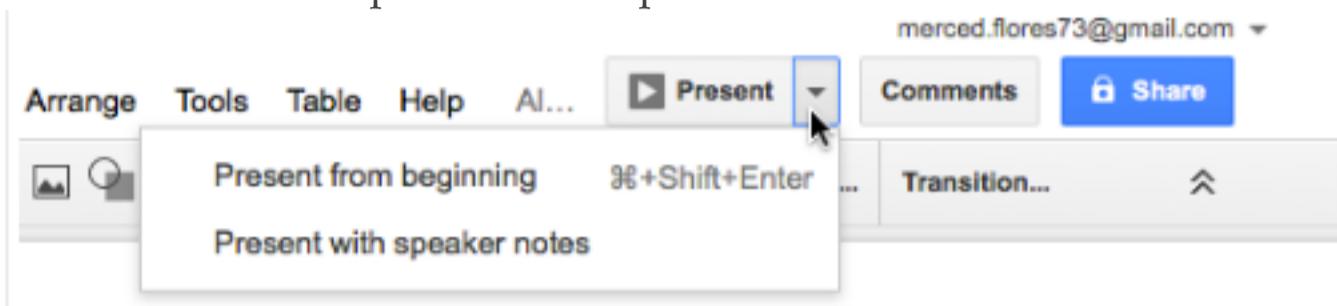
Google Slides has a standard menu that lets you insert, format, and arrange your slides.



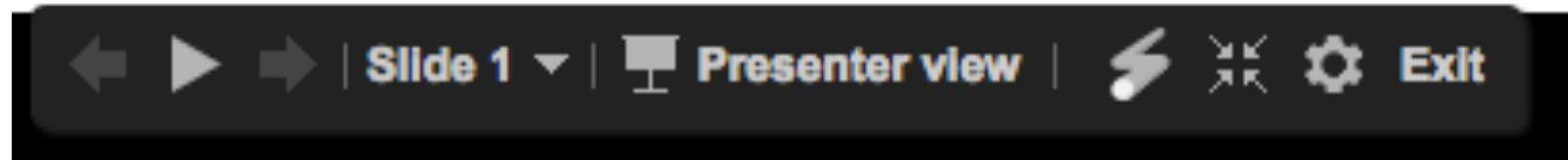
Google Slides

Presenting

When you are ready to show your presentation—or if you want to see what it will look like during a presentation—click the Present button to the right of the menus. You can also click the drop-down arrow for additional presentation options.



The presentation will appear in a maximized window. A navigation bar in the lower-left corner provides you with several options for displaying your presentation.



You can advance to the next slide by clicking your mouse or pressing the spacebar on your keyboard. Alternatively, you can use the arrow keys on your keyboard to move forward or backward through the presentation. This navigation bar also lets you activate laser pointers and use the Presenter View. The Presenter View allows you to see a timer, your notes, as well as the next slide that will be shown. You can also click the gear wheel to see more options.

Press the Esc key to exit presentation mode.

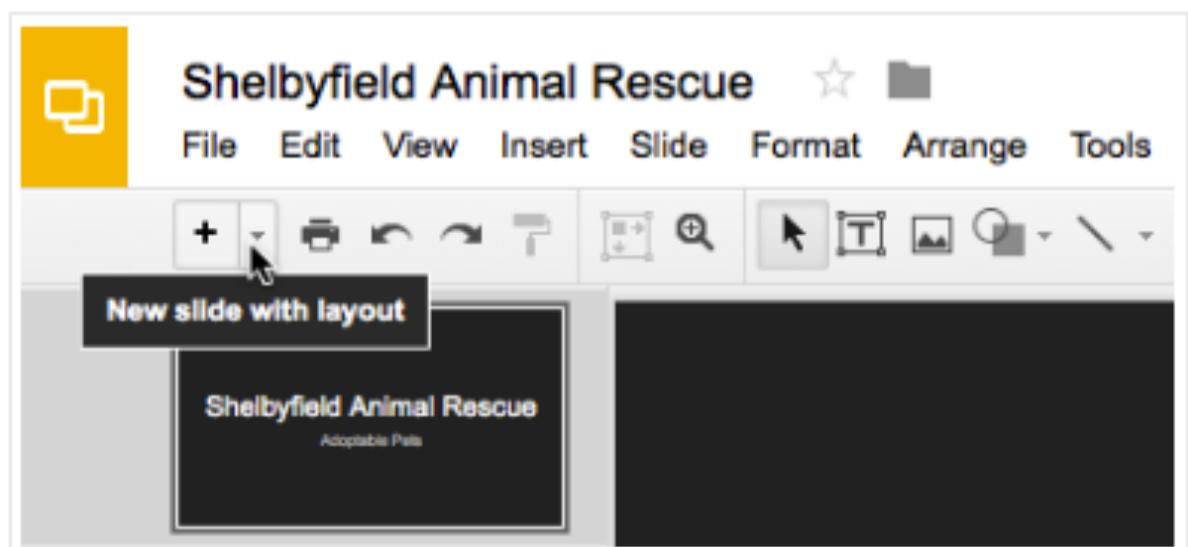
Slide basics

Every Google Slides presentation is composed of a series of slides. To begin creating a slide show, you'll need to know the basics of working with slides.

When you insert a new slide, it will usually have placeholders to show you where text will be placed. Slides have different layouts for placeholders, depending on the type of information you want to include. Whenever you create a new slide, you'll need to choose a slide layout that fits your content.

Whenever you start a new presentation, it will contain one slide with the Title Slide layout. You can insert as many slides as you need from a variety of layouts.

Click the drop-down arrow next to the New slide command.



Google Slides

Slide basics

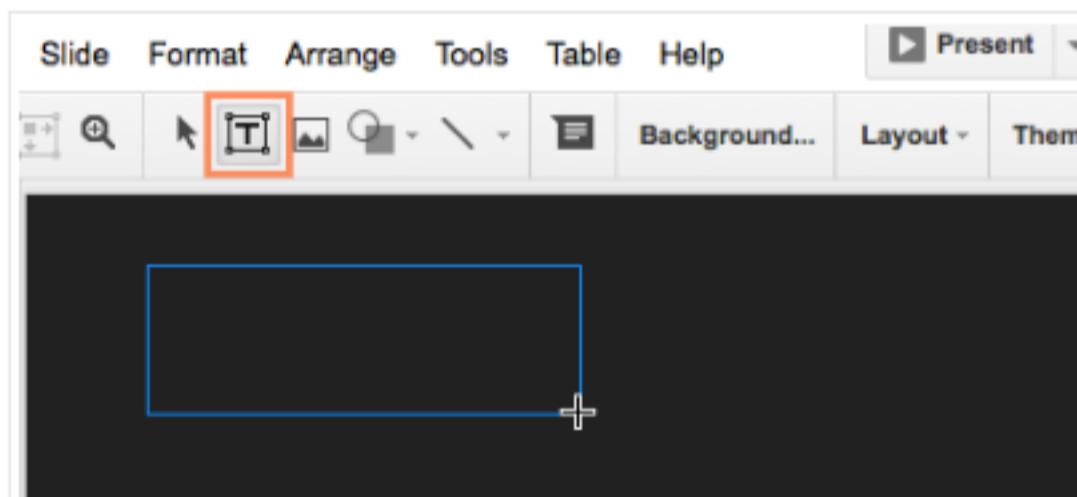
Choose the desired slide layout from the menu that appears. The Slide Navigation pane on the left side of the screen makes it easy to organize your slides. From there, you can duplicate slides, drag slides to rearrange, and delete slides in your presentation.

Sometimes you may find that a slide layout doesn't exactly fit your needs. For example, a layout might have too many—or too few—placeholders. You might also want to change how the placeholders are arranged on the slide. Fortunately, Google Slides makes it easy to adjust slide layouts as needed.

Text basics

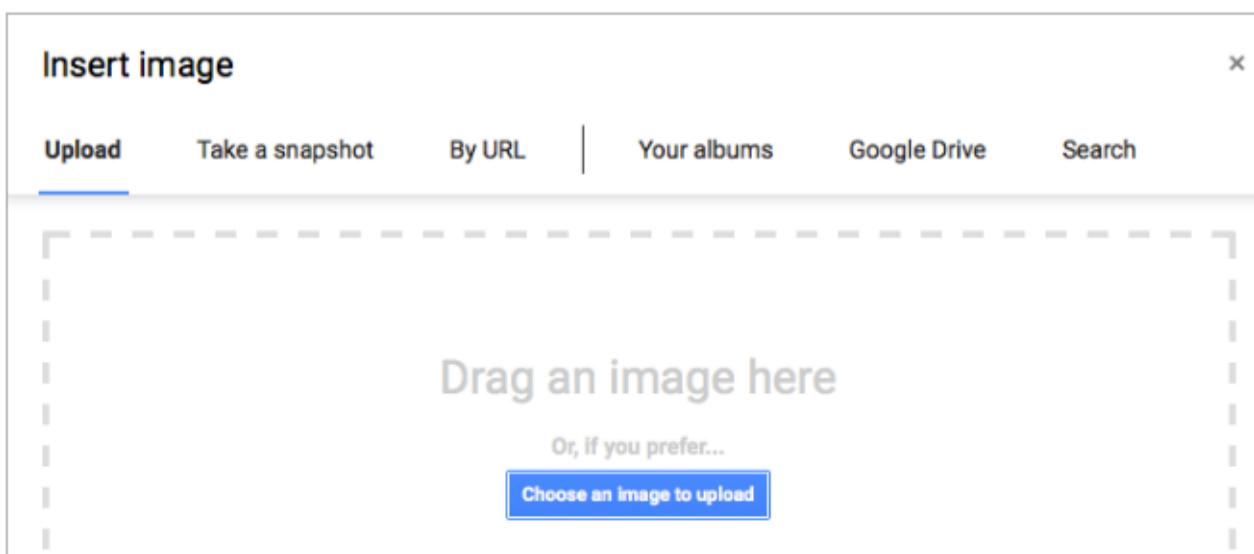
When you create a new slide, you can enter text in any of the placeholders on that slide. Just click the placeholder, and the insertion point should appear. Then you can type whatever you want.

You aren't confined to entering text only in the placeholders. You can also create a text box anywhere on the slide. To do this, click the text box command, then click and drag to draw the text box on the slide. Then you can click the text box and start typing.



Inserting Images

You can insert a picture from a file on your computer onto any slide. Google Slides even includes tools for finding online pictures and adding screenshots to your presentation. To insert a picture, open the Insert menu, then select Image. The Insert image dialog box will appear. You can upload your own picture, take a screenshot, or find a picture online.



Google Slides

Formatting Images and Shapes

There are a variety of ways to format the pictures in your slide show. Google Slides has tools to resize and rotate the picture, crop the picture, adjust the image, and more.

To crop an image: Select the image you'd like to crop, then click the Crop command. Cropping handles will appear around the image. Click and drag one of the handles to crop the image. Make sure the mouse is right over the black cropping handle so you don't accidentally select a resizing handle. Click the Crop command again. The image will be cropped.

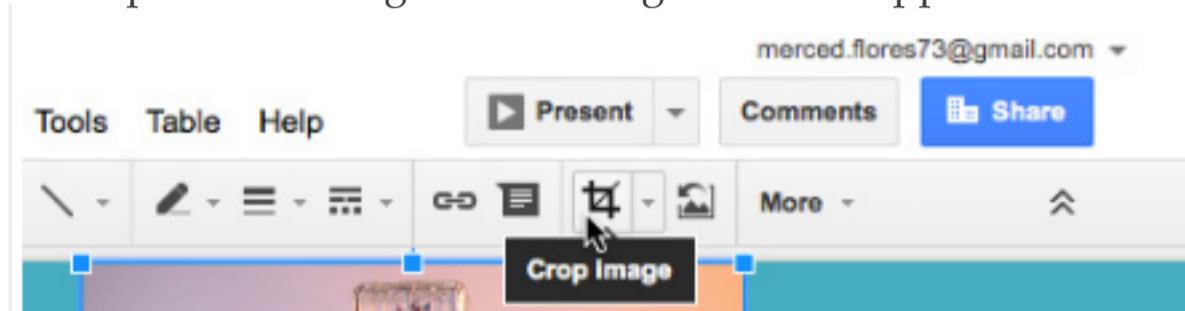
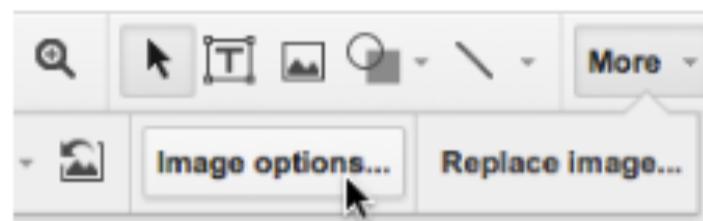
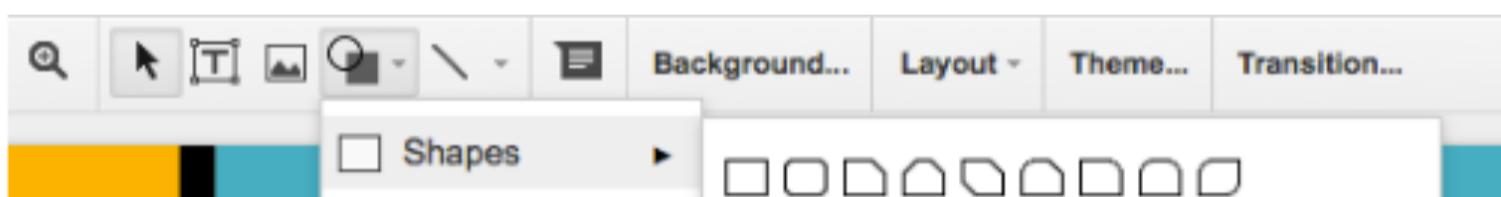


Image options: You can adjust the transparency, brightness, and contrast of an image, as well as recolor the image. To do this, select the image, then click Image options on the toolbar or in the Format menu. The Image Options pane will open.

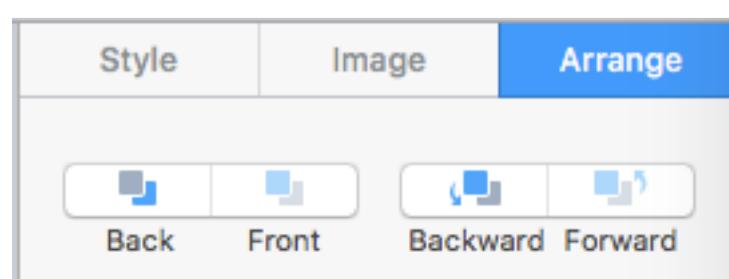


Shapes are a great way to make your presentations more interesting. Google Slides gives you a lot of different shapes to choose from, and they can be customized to suit your needs, allowing you to use your own color palette, preferences, and more.



To insert a shape: Click the Shape command on the toolbar to open the Shape menu. Select one of the categories, then select the desired shape. Some shapes have the option to change their dimensions and proportions. To adjust the proportion of a shape, select it, then click and drag the diamond handle.

You can arrange multiple overlapping objects using the Order commands.

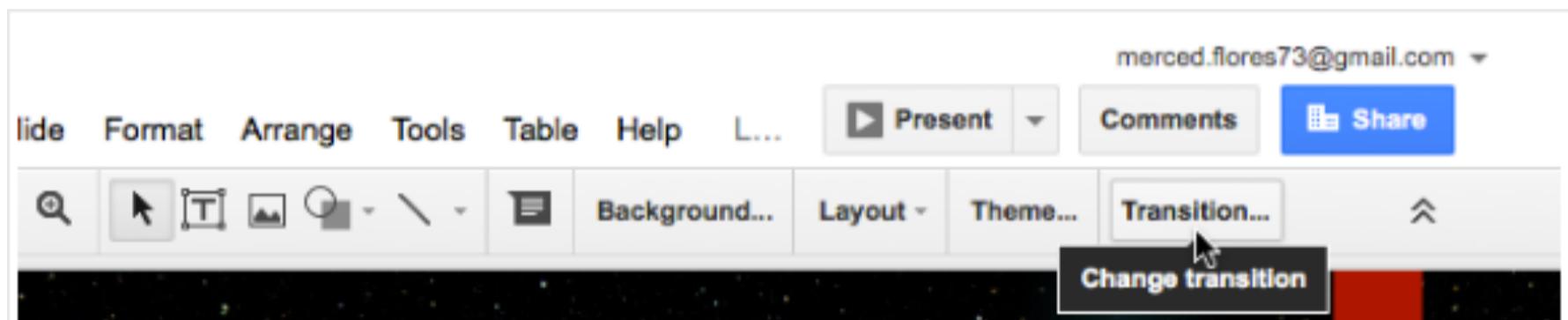


Google Slides

Transitions and Animations

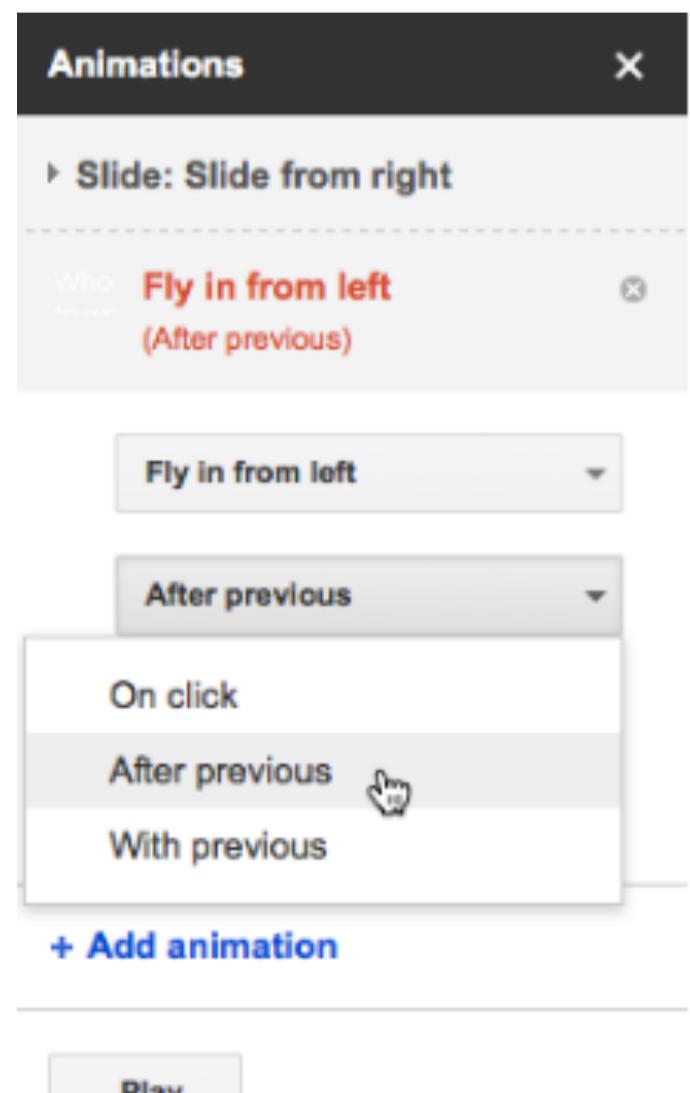
Presentations don't have to be a series of static slides. You can add animations to objects on slides or transitions to entire slides. A transition can be as simple as fading to the next slide, or it can be a more flashy effect. Any object can be animated, making it move or fade in or out of the slide. The **Animations pane** will allow you to configure the transition and all animations for the current slide.

Select the desired slide, then click the Transition command on the toolbar.



The Animations pane will appear. Open the drop-down menu at the top of the pane, then select a transition. The transition will be applied to the current slide. You also can adjust the speed of the transition or apply the same transition to all slides.

If the Animations pane is already open and you want to add more animations, you can select an object and click Add animation. You can also add multiple animations to one object.



By default, an effect starts playing when you click the mouse during a slide show. If you have multiple effects, you will need to click multiple times to start each effect individually. However, by changing the start option for each effect, you can have effects that automatically play after the previous effect or with the previous effect.

The best way to get better at adding animations is to practice yourself. Try creating blank slides that transition, and only add animations or transitions if it adds value to your presentation. You don't want them to be too distracting.

Google Hangouts

Installation

Make sure you have downloaded and installed the latest version of the plugin (<http://www.google.com/talk/>).

Start a Hangout

1. Sign up for or Sign In to a Google+ account
 - a. Make sure you enter the correct birthdate
2. There are a few ways you can start a hangout:
 1. Go to plus.google.com/hangouts and click the **Start a Hangout** button on the top right side of your screen.
 2. Click the Hangouts icon underneath an interesting post on your Home page to start a hangout about the post.

 3. Click the Hangouts icon on the left side of the page and click Start a hangout under the 'HANGOUT INVITE' section.
 4. You can also start a Hangout and send and receive Hangout invites from other Google properties including:
 - i. Google Chat properties (ie. Gmail, Google+, orkut).
 - ii. Google Calendar.

You'll be taken to an **invite screen** where you'll be able to:

- Make sure you're mic and camera are working correctly by looking at your video feed at the bottom of the page. You should be able to see yourself in the video feed, and when you talk, you should see a green bar appear at the bottom of your video. If you're having issues with your mic or camera, try these troubleshooting steps.
- Invite entire circles or specific individuals to join you in your hangout.

NOTE: Your video feed will not be visible to anyone else until you click the **Hang out** button on the Invite page.

NOTE: You may want to add all your friends to a circle before starting the hangout in order to make sure that you have included everyone. You may also want your friends to add you to their circle, so you can make sure you will be able to interact with them.

- You will then name your hangout.

Google Hangouts

Invite people to a hangout

No one owns a hangout so anyone in the hangout can invite anyone else. While your hangout could start with a group of people that you know, it could evolve into a completely different crowd.

Invite people at the start

1. Click **Start a Hangout** on the top right side of your screen.
2. Add entire circles or just individuals that you want to hang out with. You can choose to make the hangout only available to people who are 18 or older by clicking **Hangout Options** and selecting the checkbox next to **Restrict minors from joining this hangout**. Other hangout participants won't be able to invite minors and, the 18+ restriction cannot be changed once the hangout has started.
3. Invite phone participants to join the hangout by clicking the **Telephone** tab at the top of the page and dialing the phone number you wish to invite.
4. Click **Hang out** to start the hangout and send the notifications to the people you chose.

Share your screen

Screen sharing lets you give other people the ability to see what's on your computer screen. For example, if there's a picture open on your computer screen, hangout participants can look at it without having to download anything.

To share:

1. Click **Screenshare** on the side of your screen.
2. In the window that pops up, choose your desktop or choose the window you want to present.
3. Click **Share Selected Window**.

You can stop sharing your screen at any time by clicking **Screenshare** again.



Time Management

High Value

1

2

Low Effort

High Effort

3

4

Low Value

Online 101 Unit

Slides: <https://anniecannons.github.io/ac-digital-literacy/#/91>

Notes from Lectures:

What is the Internet?

The Internet is the global system of interconnected computer networks that is used to link billions of devices worldwide.



Bits and Binary Code

Bits are the atoms for information for the Internet - in fact, they are the basic unit of information in computing and digital communications. A bit can have only one of two values, and these values are most commonly represented as either a 0 or 1. Binary code is the combination of these 0's and 1's - of bits - to communicate information.

- Example: Every number can be represented by just 0's and 1's on the Internet. The number 147 is represented as 1001001 in binary.



Measuring Bits of information

- Bytes: A byte is made up of eight bits and is the basic unit of measurement for the size and storage of information on the Internet. (All you need to know is 1 Byte=8 Bits, and Bits are very small pieces of information)
- Kilobytes: 1 Kilobyte = 1,000 Bytes
- Megabytes: 1 Megabyte = 1,000 Kilobytes. Most songs you download are about 3 to 4 Megabytes

How do we talk about data speed?

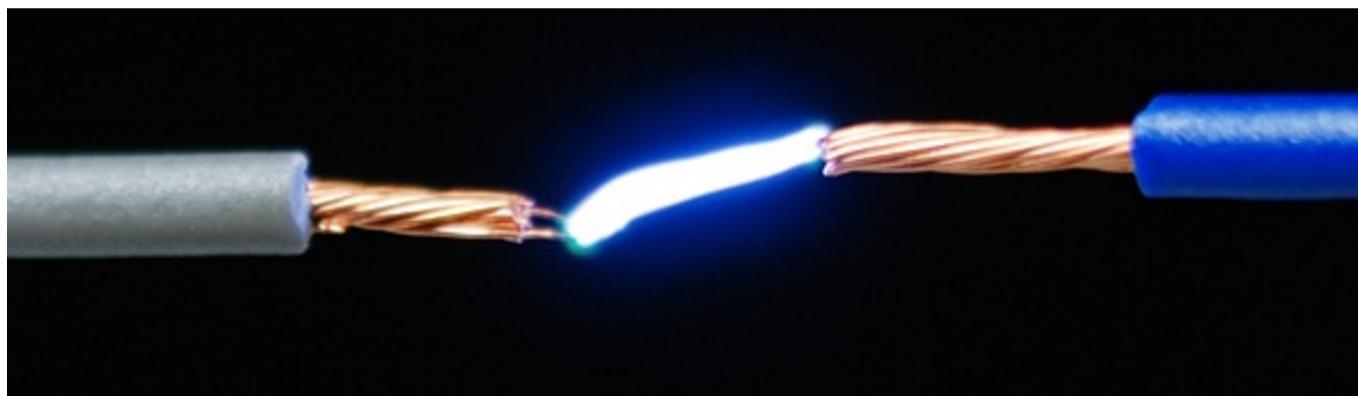
- **Bandwidth** is the transmission capacity of a certain device or system. This is most often explained by bitrate and is helpful to know because it allows you to analyze how fast a system will work or how much memory your device will need to store or run the programs you are creating.
- **Bitrate** is a measurement of bits transmitted by time until of measure (usually, in bits per second). Bitrate tells you how many bits your device transfer in the span of one second. Most computers can send hundreds of thousands if not millions of bits per second!
- **Latency** is the time it takes to send megabytes from one sender to one receiver. This is a different way of measuring how quickly information can be sent over the Internet. It is more often used to measure the amount of delay in a transmission getting to its destination, where bitrate is more concerned with the speed of release to the bits' ultimate destination.

What is the Internet?

How are bits transmitted over the Internet?

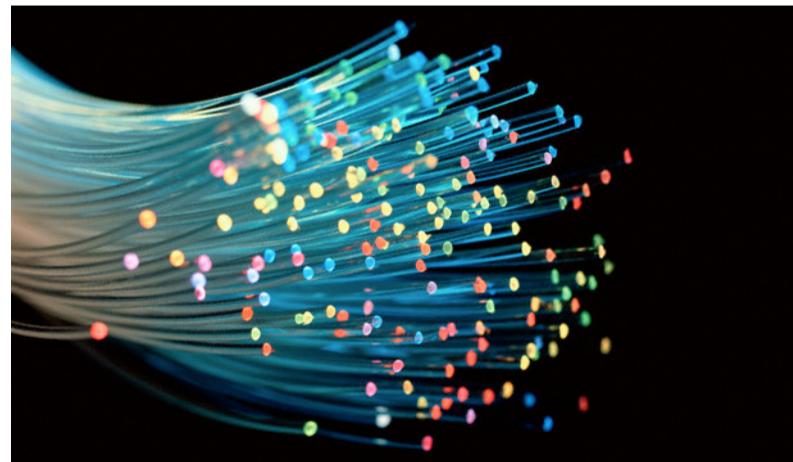
There are three main types that we use to send bits (aka pieces of information) across the Internet:

Electricity: We use electrical signals to represent the 1's and 0's (as current "on" or "off") and these signals are transmitted through copper wires. If you have to plug your computer into an Ethernet Cable to be connected to the Internet, you are using electricity to receive the electrical currents.



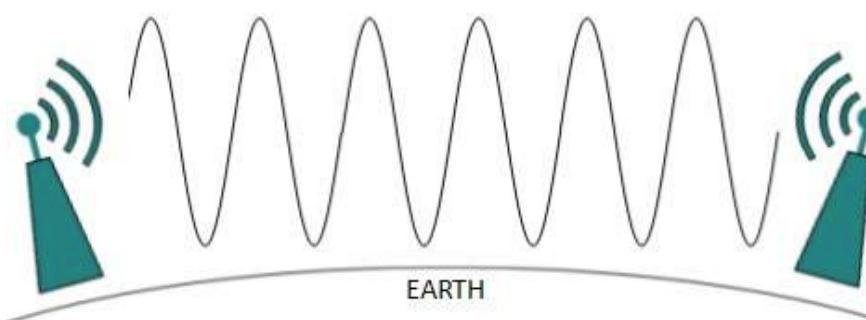
electricity through copper wires

- **Light:** Light is used in fiber optic cables to send the 1's and 0's over very long distances (these cables are hundreds of miles long and placed at the bottoms of oceans). By traveling at the speed of light, information can be sent very quickly, but it is also very expensive.



glass strands that allow light to bounce back and forth

- **Radio Waves:** We use radio waves when we are using Wi-Fi. Radio waves have two different frequencies which represent the 1's and 0's. The radio waves cannot travel very far, so that is why you can lose Wi-Fi signal so easily. Most Wi-Fi receivers (also called routers) are connected to modems which connects the user to the electrical system (see #1) of the internet so that you can access information at farther distances.



What is the Internet?

Where is the information of the Internet stored and how does my computer access it?

HTTP: Hyper-Text Transfer Protocol: This is the language that the computer (more specifically the web browser) uses to send and receive information from servers over the Internet.

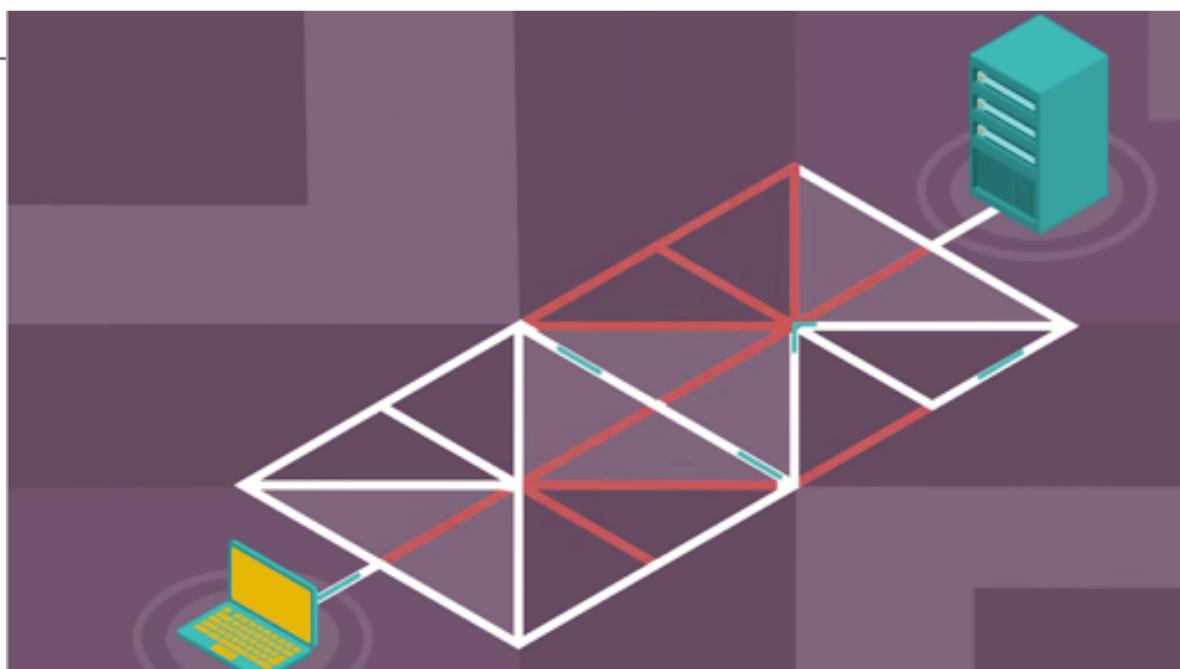
Get Requests: These are types of requests that allow the web browser to pull information (aka code) from a server to load into a page.

The web browser can also send “**Post Requests**,” which give the servers a piece of information and ask for a response that relates to that information.

For example, when you fill out your username and password on Facebook, your Web Browser sends a Post Request with that information to Facebook. Facebook then knows to send you all the information that corresponds with your specific Facebook page to load.

Servers: In its simplest form, a server is a computer or a machine that waits for requests from other machines or software (clients) and responds to them. Servers often store a lot of information that other computers access all the time. We covered two different types of servers so far:

- **DNS Servers:** These servers store the IP Addresses that correspond with the domain name of a website. When your computer is looking to find an IP address, it will go to a DNS Server. These servers are grouped by region according to the end of the domain name (such as .com, .org and .net).
- **Content Servers:** These are servers that store the information of a website or application. For example, companies like Google have tons of servers around the world that store all the data that your computer will access every time you go on their website.

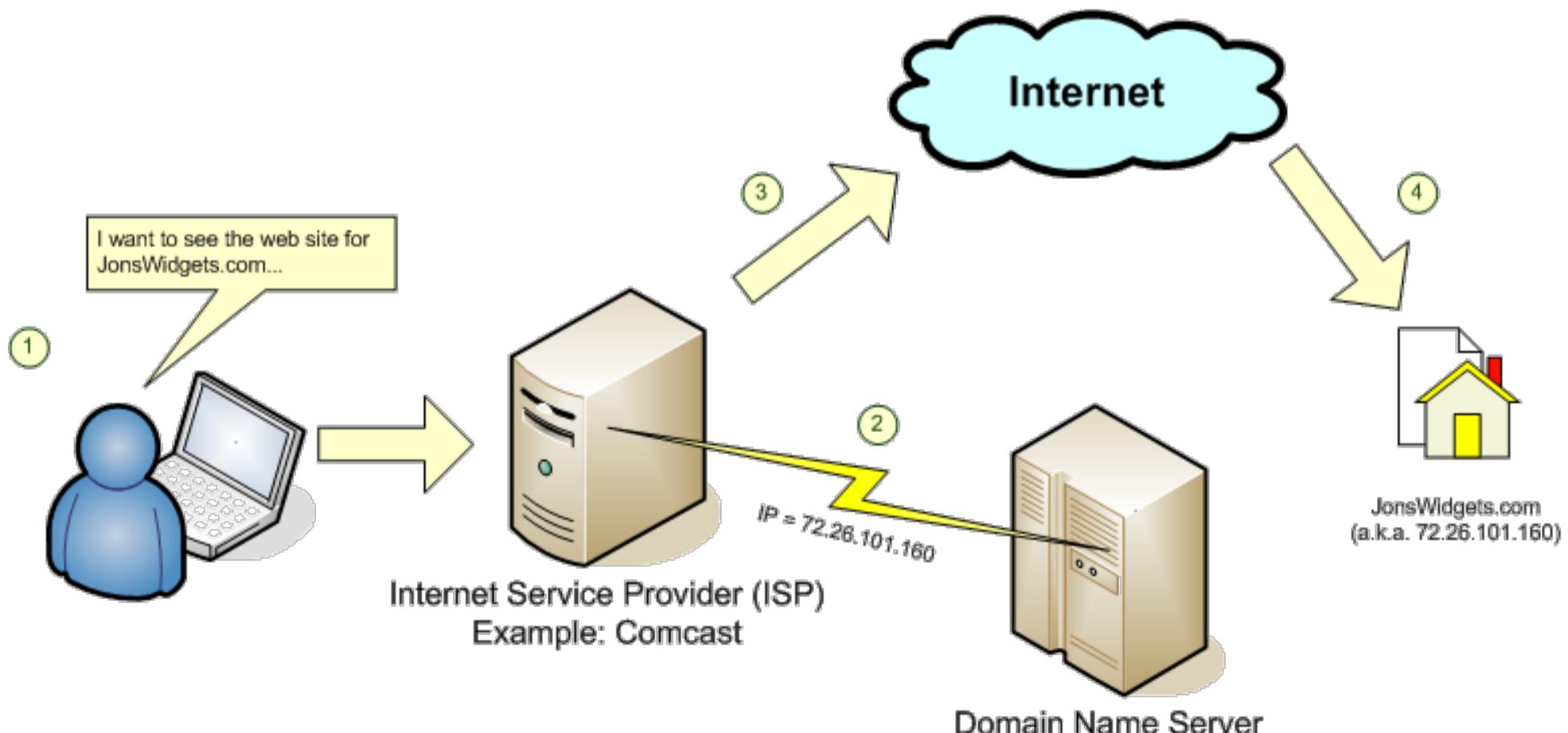


What is the Internet?

How do computers know where to send and receive information?

- **Internet Protocol:** The Internet Protocol was set up as a way for devices and servers all over the world to communicate over the Internet. This Protocol has certain rules and procedures that ensure that the Internet remains for the most part open and free.
- **IP addresses:** An IP address is a numerical label assigned to each device (e.g., computer, printer) participating in a computer network that uses the Internet Protocol for communication. You are able to surf the Web by finding the other IP Addresses of websites. Most IP addresses look like this: 154.64.257.35
- **DNS: Domain Naming System.** Every device and website has an IP Address, but we needed a way to refer to these addresses besides memorizing all the numbers. So, the Domain Naming System was created to give websites domain names to go along with their IP Addresses. This way, we can enter a domain name that is much easier to remember (like “google.com”), and we can be directed by a DNS Server to the proper IP Address. Once the DNS server has told us the corresponding IP Address for “google.com”, our computer can immediately find the server that hold all of the Google webpage information and access it.

Check the flow below to see how Jon can get access to the internet from his home computer.



What is the Internet?

In your own words....

1. Megabytes:

2. Bandwidth:

3. DNS:

4. HTTP:

5. Internet Protocol:

6. Cybersecurity:

7. Wi-Fi:

8. Bits:

9. Servers:

10. Computer Networks:

What is the Internet?

In your own words....

1. “Get” Requests:

2. Latency:

3. Hacking:

4. URL:

5. Bytes:

6. Binary Code:

7. “Post” Requests:

8. IP Address:

9. Web Browsers:

10. HTML:

What is the Internet?

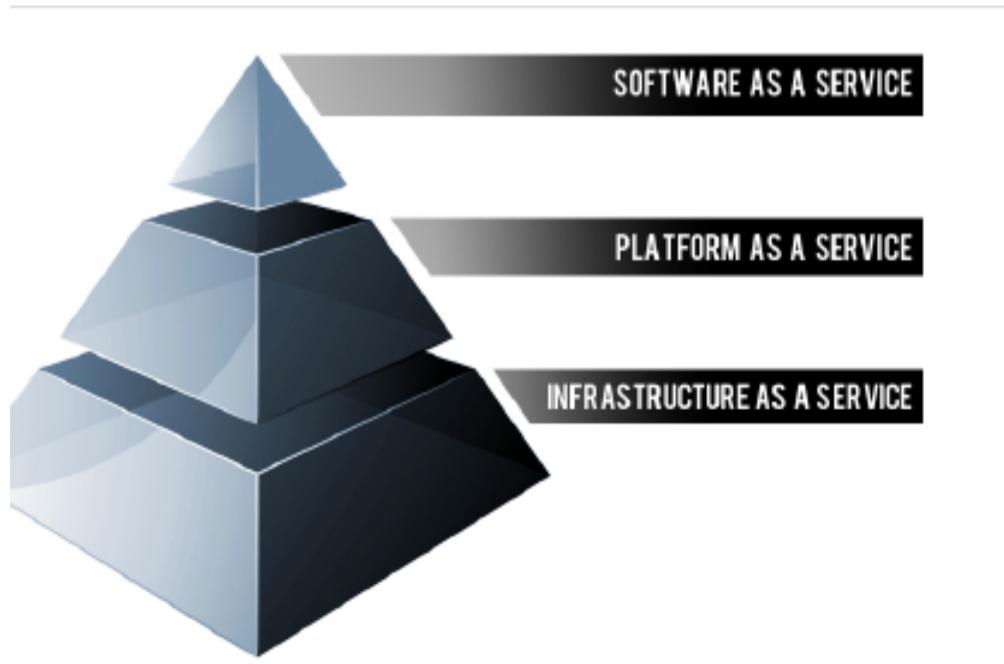
What is the Cloud?

Cloud Computing is a broad term that describes a broad range of services. Many companies have seized the term “Cloud” and are using it for products. Cloud Computing is often described as a “stack” as a response to the broad range of services built on top of one another under the moniker “Cloud”. Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

What this means in plain terms is that you don't have to be Google to and build your own huge data centers or expensive processors to have the same access to server resources and computing resources located far away.

The different types of Cloud Computing services:

- **Software as a Service (SaaS):** designed for end-users' use, delivered over the web
- **Platform as a Service (PaaS):** the set of tools and services designed to make coding and deploying those applications quick and efficient
- **Infrastructure as a Service (IaaS):** the hardware and software that powers it all – servers, storage, networks, operating systems



By itself, infrastructure isn't useful - it just sits there waiting for someone to make it productive in solving a particular problem. Imagine the Interstate transportation system in the U.S. Even with all these roads built, they wouldn't be useful without cars and trucks to transport people and goods. In this analogy, the roads are the infrastructure and the cars and trucks are the platform that sits on top of the infrastructure and transports the people and goods. These goods and people might be considered the software and information in the technical realm.

Web Browsers

What is a Web Browser?

A software application for retrieving, presenting, and traversing information resources on the World Wide Web. An information resource is identified by a Uniform Resource Identifier (URI/URL) and may be a web page, image, video or other piece of content. Hyperlinks present in resources enable users easily to navigate their browsers to related resources.

Different Types of
Web Browsers



Internet Explorer

Internet Explorer was created in 1995. Most people started out using Internet Explorer the majority of the time when browsing the internet, checking emails, listening to music online, shopping online, and etc. This was the first web browser. In 2012, 26% of the users on the Internet were using Internet Explorer. Now, most people are using Google followed by Firefox.

Pros	Cons
Free to download at no cost	More susceptible to bugs.
Offers help options	Huge target for hackers and cyber-thieves
Easy to use	No longer being updated
Mostly easily found through out the world	Lack of cross-platform experience (ie. used in Windows but not Mac)



Safari

Safari is web browser that was produced and developed by Apple Inc. which functions on a Mac OS, iOS, and Windows operating system. It was first put out in public on January 7, 2003 by Apple Inc. Safari is generally for Mac users who are operating Mac OS X 8.1 and onwards for later systems.

Pros	Cons
Ease of use	Lack of customization options many competitors offer
Page-load times impressive	Support system is missing some options for users
Provides all of security features	Trouble with Google built-in search engine
Great for Mac users and free to download	Difficulty deleting cookies on exit automatically



Web Browsers Continued

Google Chrome

Google Chrome is a freeware browser developed by Google using the WebKit layout engine. It was first released on Microsoft Windows operating system on September 2, 2008 in 43 different languages. Currently, it is available in 52 languages.

Pros	Cons
Fast browsing performance	Lack of parental controls
More control over your tabs	Minor site incompatibilities
More dynamic home page for common used search engines and bookmarks	
Has sync capabilities that allow you to access your customized browser from any computer	
Great developer tools and great security	



FireFox

Firefox is a free and open source web browser developed for Microsoft Windows, Mac OS X, and Linux coordinated by Mozilla Corporation and Mozilla Foundation. It was first version 1.0 released on November 9, 2004. It is now available in about 78 languages worldwide. It is popular with programmers for its features and secure downloads.

Pros	Cons
Secure privacy mode and downloading	Resource heavy
More intuitive navigation	Uses a heavy portion of memory to run
Contains minimalist interface	
Offers lot of help and support on Firefox tutorial	



Important Note: We will be using Google Chrome in this class. It is the easiest, best, and safest for developers!

Safety and Cybersecurity

Activity 1: Evaluate a Website

If you are trying to do research on the Internet, you should have a set of guidelines to help determine if you have come across a good or bad source. Practice evaluating websites by following the steps below.

FOLLOW THESE STEPS

1. Go to the following websites, find an article or story, and review the key areas listed below.
 - Cnn.com [<http://www.cnn.com>]
 - The Onion [<http://www.theonion.com>]
 - National Geographic [<http://www.nationalgeographic.com>]
 - Natural News [<http://www.naturalnews.com>]
2. Look for the page's author or source (Authority).
3. Find some facts or statistics that can be cross-checked (Accuracy).
4. Check to see if the site is up-to-date (Currency).
5. Determine if the content is overly biased (Objectivity).
6. Follow up on any links or resources provided on the page (Links).
7. Keep website domain types in mind when researching. For example, .com or .edu (Domain).

Notes:

Safety and Cybersecurity

Activity 2: Your Digital Footprint

Each time we interact with computers on the Internet, we leave behind data. Sometimes this digital footprint is helpful. Our browser history allows us to easily find websites we have visited previously, and website cookies can help make our online experiences more personal. Knowing how to monitor and erase this footprint, however, is important to keeping your information safe online, especially if you interact with public computers and networks. Follow the steps below, to practice viewing and deleting your browser history and cookies.

FOLLOW THESE STEPS

1. Open the Internet browser you use most often.
2. Find your browsing history.
3. If you use your history to revisit websites just look through what information is recorded here. If you are using a public computer or would like to delete this information, try "clearing" this history.
4. Locate the option for deleting cookies in your browser and "clear" them.
5. Explore the other privacy options available on your browser, and remove data or update your preferences as you like..

*And remember, always try to be a good member of online communities!

Notes:

Safety and Cybersecurity

Activity 3: Learning to Identify Scam Emails

Directions: Find the parts of the email below that indicate that this is a scam email.

To: John Smith
From: Account Manager <manager165@hotmail.com>
Subject: URGENT ALERT!



Dear Valued Customer

We have noticed unauthorized access to your account fund and will need you to verify your information.

Please proceed to the following website to update your information:

http://www.sshhp_mybankwebsite.com/abcbank

It is urgent that you respond within 24 hours to avoid deactivation of your account!

Sincerely,
Bank Manager

Notes:

Safety and Cybersecurity

Activity 4: Shop Safely Online

If there is something you can buy, there is probably an online retailer selling it. Practice evaluating the trustworthiness of online shopping sites by following the steps below.

FOLLOW THESE STEPS

1. Go to one or more of these popular online retailers (or go to a shopping website of your choosing) and look for the security features listed below.
 - Amazon.com [<http://www.amazon.com/>]
 - Overstock.com [<http://www.overstock.com/>]
 - Walmart.com [<http://www.walmart.com/>]
 - 1800Contacts.com [<http://www.1800contacts.com/>]
2. Look for a secure web address that begins with "https:". Remember, you may have to enter a secure part of the site before you see this.
3. Look for the padlock icon in the address bar.
4. Look for links to the privacy and return policies.
5. Verify the company's contact information.
6. Confirm that the site accepts payments by credit card.
7. Check to see that only relevant information is collected when creating an account.
8. Check to see if the retailer is accredited by an outside organization (for example, the Better Business Bureau).

Notes:

Safety and Cybersecurity

What is malware?

- Malware is basically any type of software that can cause harm. Malware can take the form of viruses that infect your computer and cause it to react in certain ways (clone itself to steal information, break down, etc).



What does hacking mean?

- Hacking refers to using creative problem solving to get an answer to a problem. It can also refer to using something in a different way to solve a problem. We discussed examples of “real life hacks”, such as using trash bags to cover your shoes when it is raining. Hacking in computer programming can refer to breaking into program or server to make sure it is more secure, and hacking can also refer to all the ways in which computer programs can steal information, such as people’s identity. Hacking, at this point, has developed a bad reputation, but it can refer to changing something to create something new (and to help solve a problem in society).

Why do we have a problem with security on the Internet?

- Everything on the Internet was built to be open. Therefore, we all have problems with keeping our data secure.



What is DNS spoofing?

- This is when someone hacks into a DNS server and changes a website's IP Address to a fake address. This fake address directs the user to a website that can then be used to steal information such as passwords, emails, or credit card information.

Cybersecurity Glossary

Antivirus software

Computer programs that can block, detect, and remove viruses and other malware.

Backups/backing up files

Extra copies of computer files that can be used to restore files that are lost or damaged.

Botnet

Multiple computers on a network that are infected with a program that can be controlled remotely. The infected computers are usually used to cause damage that couldn't be achieved with a single computer.

DDoS

A distributed denial of service attack attempts to make an online service, like a website, unavailable by overwhelming it with a flood of traffic from a team of computers.

Encryption

The process of using codes to make readable information unreadable. Encrypted information cannot be read until it is decrypted using a secret key.

Firewall

Software designed to block malware from entering protected networks.

Hacktivist

Someone who uses computers and computer networks to disrupt services or share secret information in an effort to draw attention to political or social issues.

Keylogger malware

A program that records every key struck on a keyboard and sends that information to an attacker.

Phishing

Attempting to trick people into revealing sensitive information, such as passwords and credit card numbers, often by using emails or fake websites that look like they are from trusted organizations.

Ransomware

A type of malware that holds victims' computer files hostage by locking access to them or encrypting them. It then demands a ransom if the victim wants his or her files back.

Software patch

A piece of software designed to update a computer program in order to fix a software vulnerability or improve the program.

Spam

Unsolicited emails sent to many addresses. The purpose of most spam is to make money through advertising or identity theft.

Website Safety Check

Sample Website Evaluation Rubric				
Authority				
Is the author identified?		Yes	No	Unsure
Does the author have appropriate qualifications with respect to the information being presented?		Yes	No	Unsure
Purpose				
Is the purpose to inform or give factual information?		Yes	No	Unsure
Coverage				
Is the information primary or secondary in nature?		Yes	No	Unsure
Is the information presented comparable to information on the same topic presented by other sites?		Yes	No	Unsure
Accuracy				
Is the information free of factual errors and properly referenced?		Yes	No	Unsure
Do the conclusions appear to be well-reasoned and supported by the facts presented?		Yes	No	Unsure
Objectivity				
Is the information free from obvious bias?		Yes	No	Unsure
Does the author avoid the use of emotional or inflammatory language?		Yes	No	Unsure
Does the author avoid trying to sell something or persuade the reader of a particular viewpoint?		Yes	No	Unsure
Currency				
Is the information up-to-date?		Yes	No	Unsure
Are there creation and revision dates?		Yes	No	Unsure
Appearance				
Does the site have a professional appearance?		Yes	No	Unsure
Does it use proper grammar, spelling, and composition?		Yes	No	Unsure

SDLC Unit

Slides: <https://anniecannons.github.io/ac-qa-testing>

Notes from Lectures:

Software Lifecycle

Introduction to Software Quality Assurance (QA) Testing

We test software - ALL THE TIME - by using it. Before software is released to the public for use, developers must test if it works properly. In our QA testing module, we will discuss this in much more detail. Briefly, tests looks for

- if the software does what it should
- if the software has bugs, or errors, especially where used on devices or in environments unlike the development environment
- if it's missing something
- if users understand what they are using and what it is doing adequately

A GREAT software test finds MANY things that aren't right and need to be fixed. Don't worry, the software doesn't have feelings!

Testing is only one piece of the **software development lifecycle**. Critical parts of this cycle: the creation of **requirements** for the software, designing and **developing** software, **testing**, and **iterating** to improve it.



Software Lifecycle

Software Development Life Cycle (SDLC), in systems engineering and software engineering refers to the process of creating or altering systems, and the models and methodologies that people use to develop these systems. The concept generally refers to computer or information systems.

Each project will alter the framework for planning and controlling the creation of an information system the software development process.

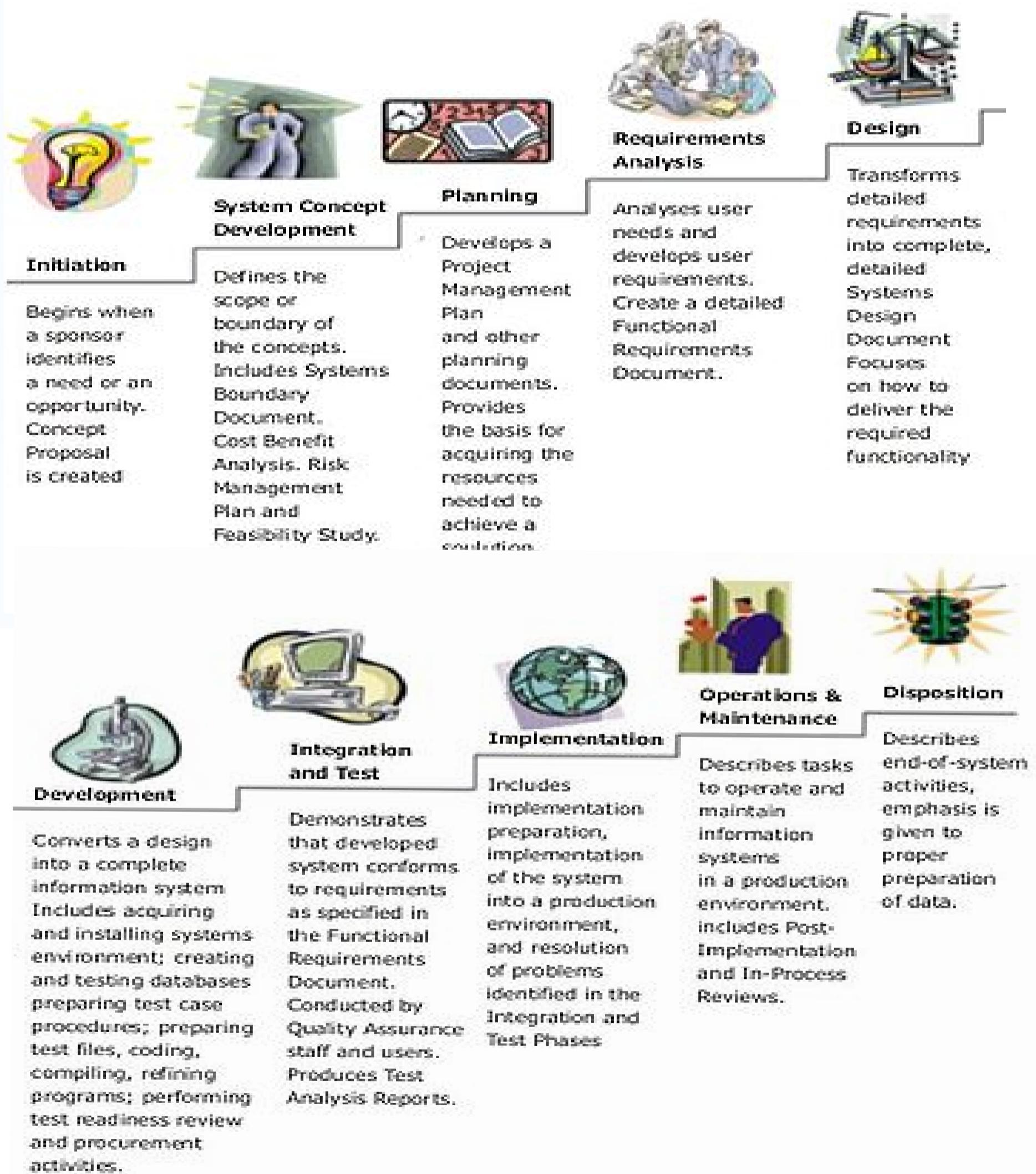


Software Development Phases

The SLDC adheres to important phases that are essential for developers, such as planning, analysis, design, and implementation, and are explained in the section below. There are several SDLC models in existence. The oldest model, that was originally regarded as "the Systems Development Life Cycle" is the waterfall model: a sequence of stages in which the output of each stage becomes the input for the next. These stages generally follow the same basic steps but many different **waterfall** methodologies give the steps different names and the number of steps seems to vary between 4 and 7. There is no definitively correct Systems Development Life Cycle model, but the steps are usually organized in a similar way: requirements, design / planning, development, testing, revising, and maintaining - and the cycle repeats.

Software Lifecycle

SDLC



Software Lifecycle

Initiation/Planning

To generate a high-level view of the intended project and determine the goals of the project. The feasibility study is sometimes used to present the project to upper management in an attempt to gain funding. Projects are typically evaluated in three areas of feasibility: economical, operational, and technical. Furthermore, it is also used as a reference to keep the project on track and to evaluate the progress of the team. This phase is also called the analysis phase.

Requirements Gatherings and Analysis

The goal of systems analysis is to determine where the problem is in attempt to fix the system. This step involves breaking down the system in different pieces and drawing diagrams to analyze the situation. Analysts project goals, breaking down functions that need to be created, and attempt to engage users so that definite requirements can be defined.

Design

In systems design functions and operations are described in detail, including screen layouts, business rules, process diagrams and other documentation. The output of this stage will describe the new system as a collection of modules or subsystems.

Build or Coding

Modular and subsystem programming code will be accomplished during this stage. Unit testing and module testing are done in this stage by the developers. This stage is intermingled with the next in that individual modules will need testing before integration to the main project. Planning in software life cycle involves setting goals, defining targets, establishing schedules, and estimating budgets for an entire software project

Testing

The code is tested at various levels in software testing. Unit, system and user acceptance testing are often performed. This is a grey area as many different opinions exist as to what the stages of testing are and how much if any iteration occurs. Iteration is not generally part of the waterfall model, but usually some occurs at this stage.

Types of testing:

- Data set testing, Unit testing, System testing, Integration testing, Black box testing, White box testing, Module testing, Regression testing, Automation testing, User acceptance testing

Operations and Maintenance

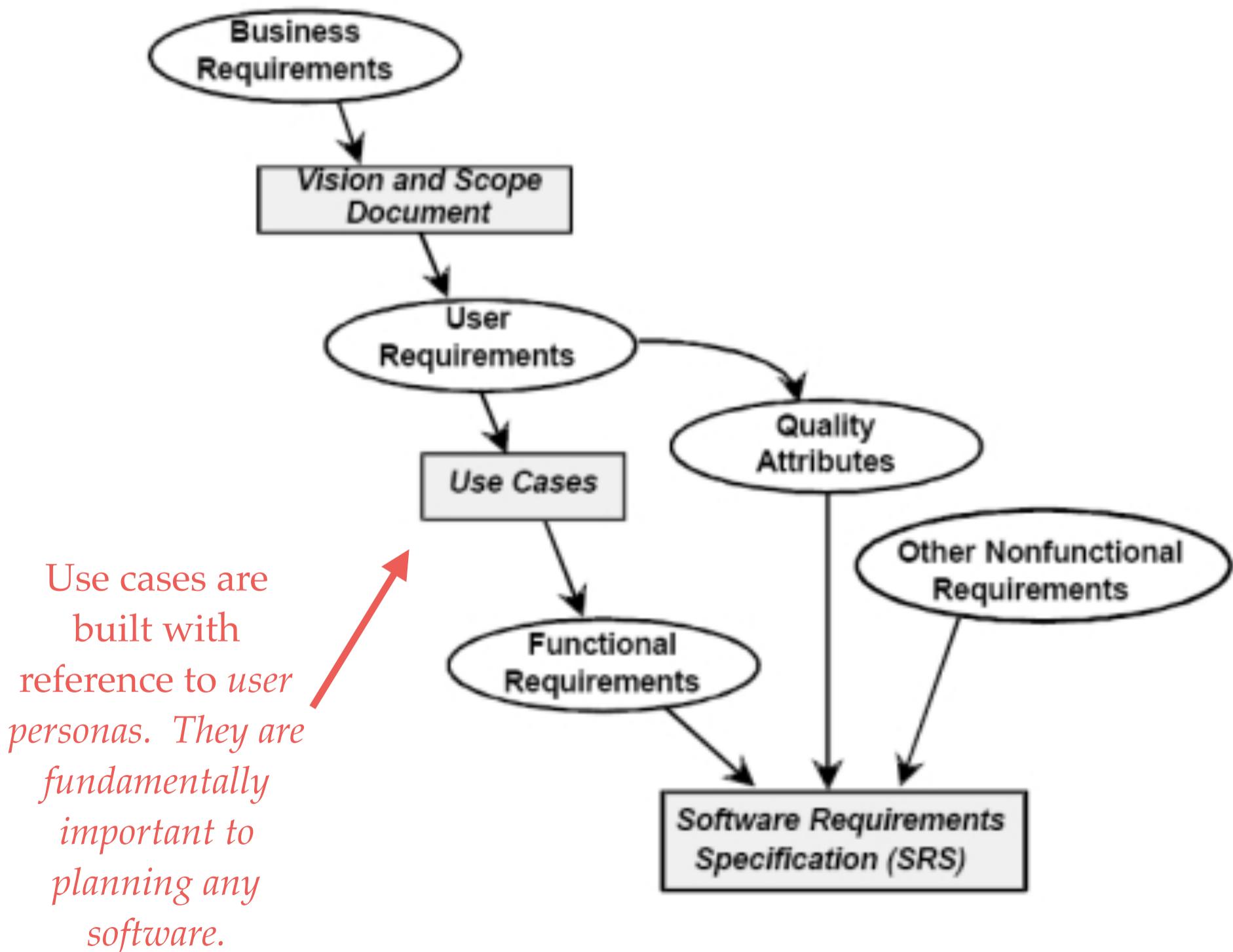
The deployment of the system includes changes and enhancements before the decommissioning or sunset of the system. Maintaining the system is an important aspect of SDLC. As key personnel change positions in the organization, new changes will be implemented, which will require system updates.

Software Lifecycle

Requirements

What are Requirements and why are they so important?

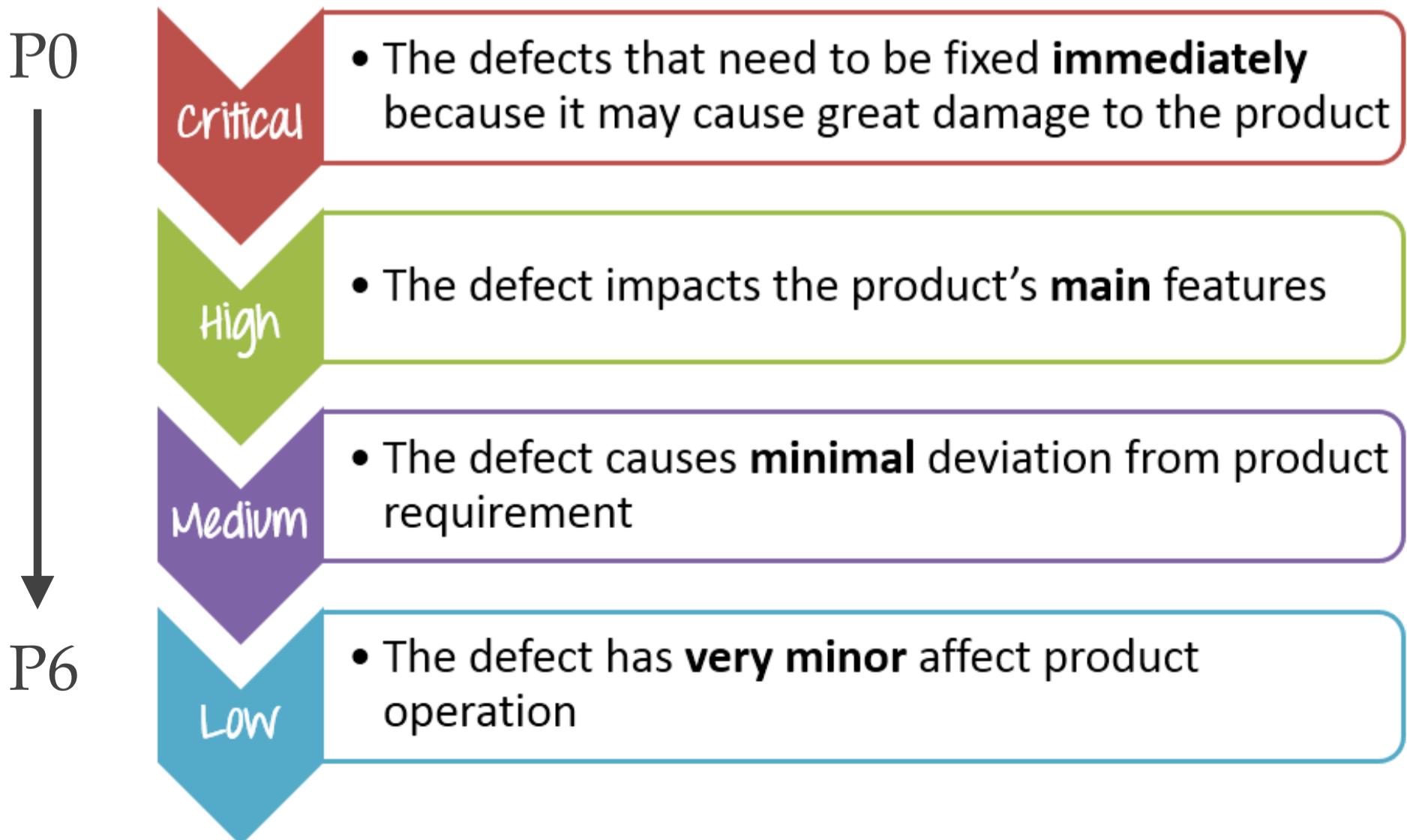
- Requirements are the detailed plans for the software that you are building. There are three types of requirements:
 - **Marketing requirements:** Who is this product for? And what do you want to sell?
 - **Product requirements:** What are you building? What operations does your product need to complete?
 - **System requirements:** What external resources does the product need in order to run properly?
- Requirements are the critical first step to ensure that the development runs smoothly and that the product is made correctly and efficiently. Bad requirements can cause confusion between teams and can create chaos at the workplace. As a tester, you need to be able to read requirements and find requirements that don't meet the standard of being: Necessary, Concise, Unambiguous, Verifiable, Complete, or Feasible.



Software Lifecycle



- There are five different types of **testing** that you can work on:
 - **Unit Testing** (an individual piece of software),
 - **Integration Testing** (testing the interactions between different pieces of the software),
 - **Systems Testing** (making sure the entire product runs properly and on as many different devices as possible), and
 - **User Acceptance Testing** (testing how the user likes and interacts with the product).
 - **Hardware Testing** (testing that a physical product functions safely and as it should)
- You will be working on test cases (also called use cases) for each type of product that you are testing. This refers to the specific User Type, Usage, and Result of a piece of the product.
 - In class, we will work on logging test cases appropriately in Google Sheets as well as in a company specific bug report.
 - When you are testing, you will keep track of the test cases as well as the bug report. With bug report, you will document where the bug was found, how you found it, and the severity of the bug - use screenshots wherever possible.
 - **The scale ranges from a huge problem or a defect that renders the product useless (P0) to a minor problem in the product (P6).**

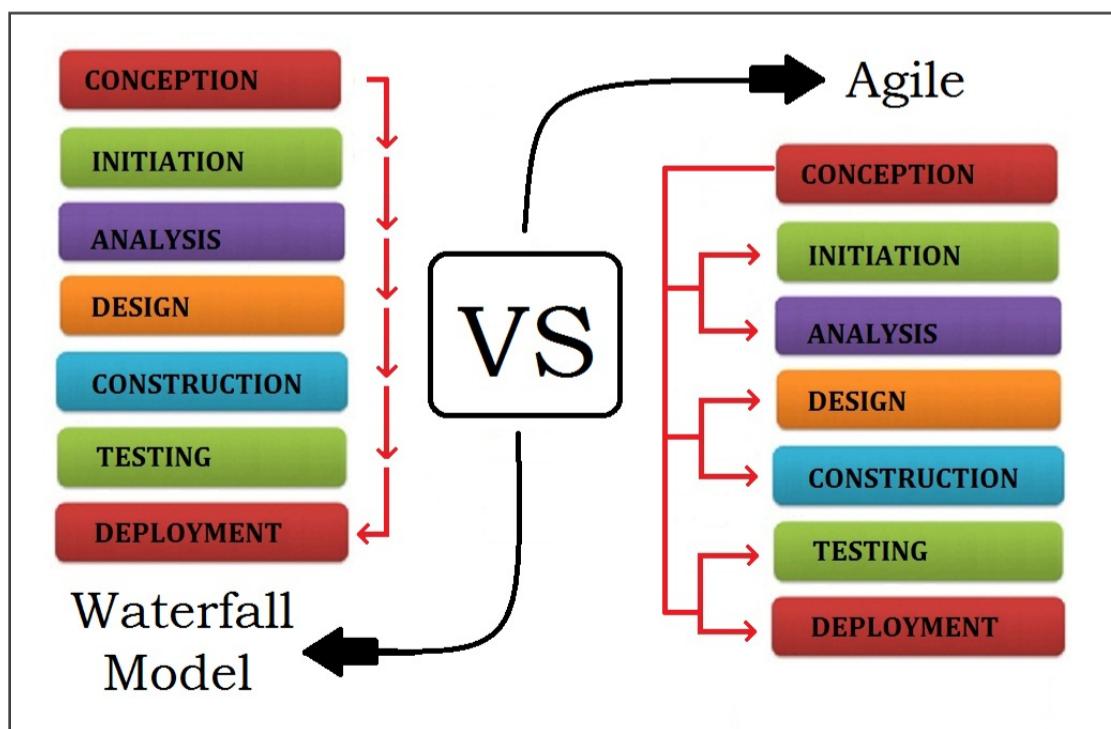


Software Lifecycle

SDLC Methods

Companies use different methods to create and test their software products. Because of this, these are different SDLC methods.

- 1) **Agile:** This method promotes a project management process that encourages frequent inspection and adaptation. The system works on a series of sprints (aka 2-3 week periods) in which a piece of the product is planned, developed, and tested. Then, the entire process is reviewed and analyzed before continuing on with building the product.
 - Our example was to use the analogy of a house. In Agile, the foundation of the house would be planned, built, tested, and evaluated by the customer before the first wall is built. That whole process would be considered the first sprint. Once the foundation is finished and accepted, the team would move on to the next piece of the house.
- 2) **Waterfall:** This method is called a “plan driven” method, and it has the team plan out the entire product, build the whole thing, and then test at the end.
 - In our example, we would plan every detail of our house, build the entire thing, then have the testers come in and run inspections.
- 3) **Spiral:** This method is a version of the two previous methods. In this case, the team plans and build a full prototype of the final product and has testers work on the prototype. Once this is approved, more prototypes are made and this cycle is repeated until the operational prototype or final product is made.



In our example, this would be like making a miniature house for testers to analyze and customers to give their feedback on. The team would take those suggestions and go back to make an improved prototype. This process would repeat until they are ready to build the entire house based on the most recent prototype.

Software Lifecycle

Quality Assurance Matching

1. The process of finding and removing the causes of software failures

Debugging

2. Testing one particular module, functionality heavily.

Use Case

3. Testing conducted to enable a user / customer to determine whether to accept a software product

Unit Testing

4. A document describing the scope, approach, resources, and schedule of intended testing activities. It identifies test items, the features to be tested, the testing tasks, who will do each task, and any risks requiring contingency planning.

Test Plan

5. Testing of individual software components.

Integration Testing

6. Testing of combined parts of an application to determine if they function together correctly.

Acceptance Testing

Software Lifecycle

Quality Assurance Matching

1. The process of finding and removing the causes of software failures

Debugging

2. Testing one particular module, functionality heavily.

Use Case

3. Testing conducted to enable a user / customer to determine whether to accept a software product

Unit Testing

4. A document describing the scope, approach, resources, and schedule of intended testing activities. It identifies test items, the features to be tested, the testing tasks, who will do each task, and any risks requiring contingency planning.

Test Plan

5. Testing of individual software components.

Integration Testing

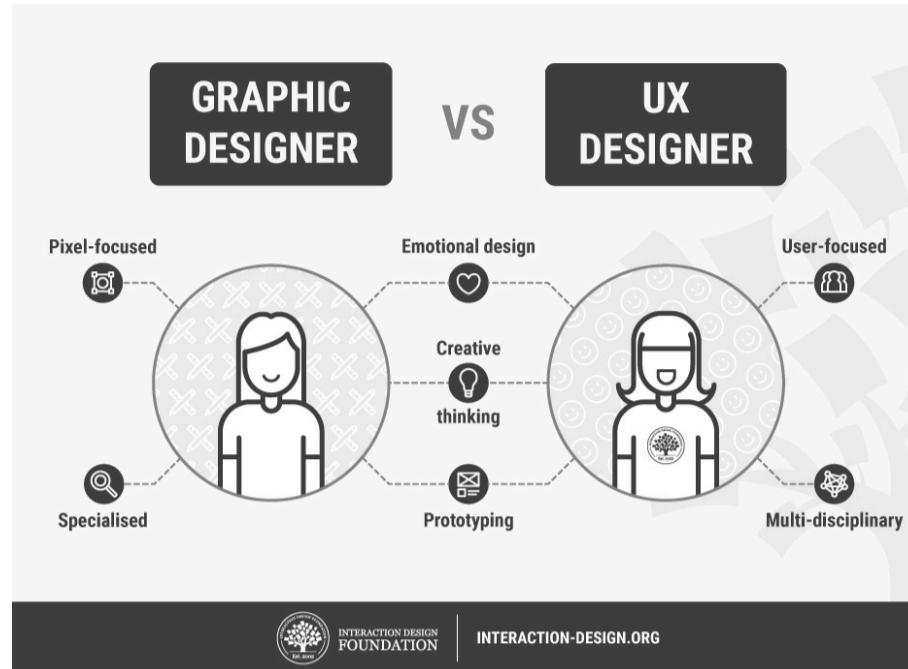
6. Testing of combined parts of an application to determine if they function together correctly.

Acceptance Testing

Designing

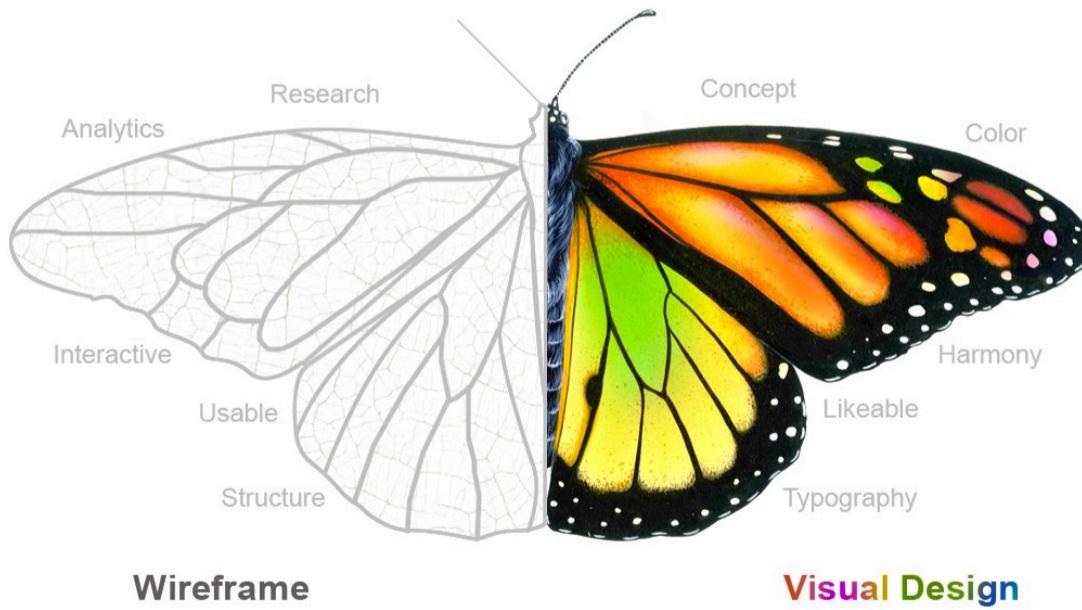
Different Types of Designers

(Sourced from [Karthik A S, Medium](#))



User experience designers are more concerned about how to create a prototype that will summarize the actual functionality of the app, does the app provide utmost satisfaction to user , is the app designed in such a way that business goals and user needs are overlapped, how to improve the performance of the app.

UX designers concentrate more on how the end users can perform / achieve their task efficiently and meaningfully, while visual designers are more towards how the users fell about the aesthetics of the app and how the users interact with app



Visual designing helps design a solution which is aesthetically good looking, it is an undeniable part of the way people experience a product or service. It could bring in a different perspective while designing a solution in terms of typography and visual identity, visual designers sweat the small details that others overlook. We can't forget about the fact that visual design is an important part in creating user interface, being a visual designer is often about being wonderfully creative and executing something beautiful.

Designing

Creating a User Persona

(Sourced from Usability.gov)

The purpose of personas is to create reliable and realistic representations of your key audience segments for reference. These representations should be based on user research and web analytics. Effective personas:

- Represent a major user group for your website
- Express and focus on the major needs and expectations of the most important user groups
- Give a clear picture of the user's expectations and how they're likely to use the site
- Aid in uncovering universal features and functionality
- Describe real people with backgrounds, goals, and values

NAME



PERSONA TEMPLATE

AGE _____
OCCUPATION _____
STATUS _____
LOCATION _____
TIER _____
ARCHETYPE _____

MOTIVATIONS (Shade bar to desired level)

Incentive
Fear
Achievement
Growth
Power
Social

PERSONALITY

Extrovert	Introvert
Sensing	Intuition
Thinking	Feeling
Judging	Perceiving

IMAGE

GOALS (The objectives this person hopes to achieve)

- _____
- _____
- _____

QUOTE

FRUSTRATIONS (The pain points they'd like to avoid)

- _____
- _____
- _____

BIO

TECHNOLOGY

IT and Internet
Software
Mobile Apps
Social Networks

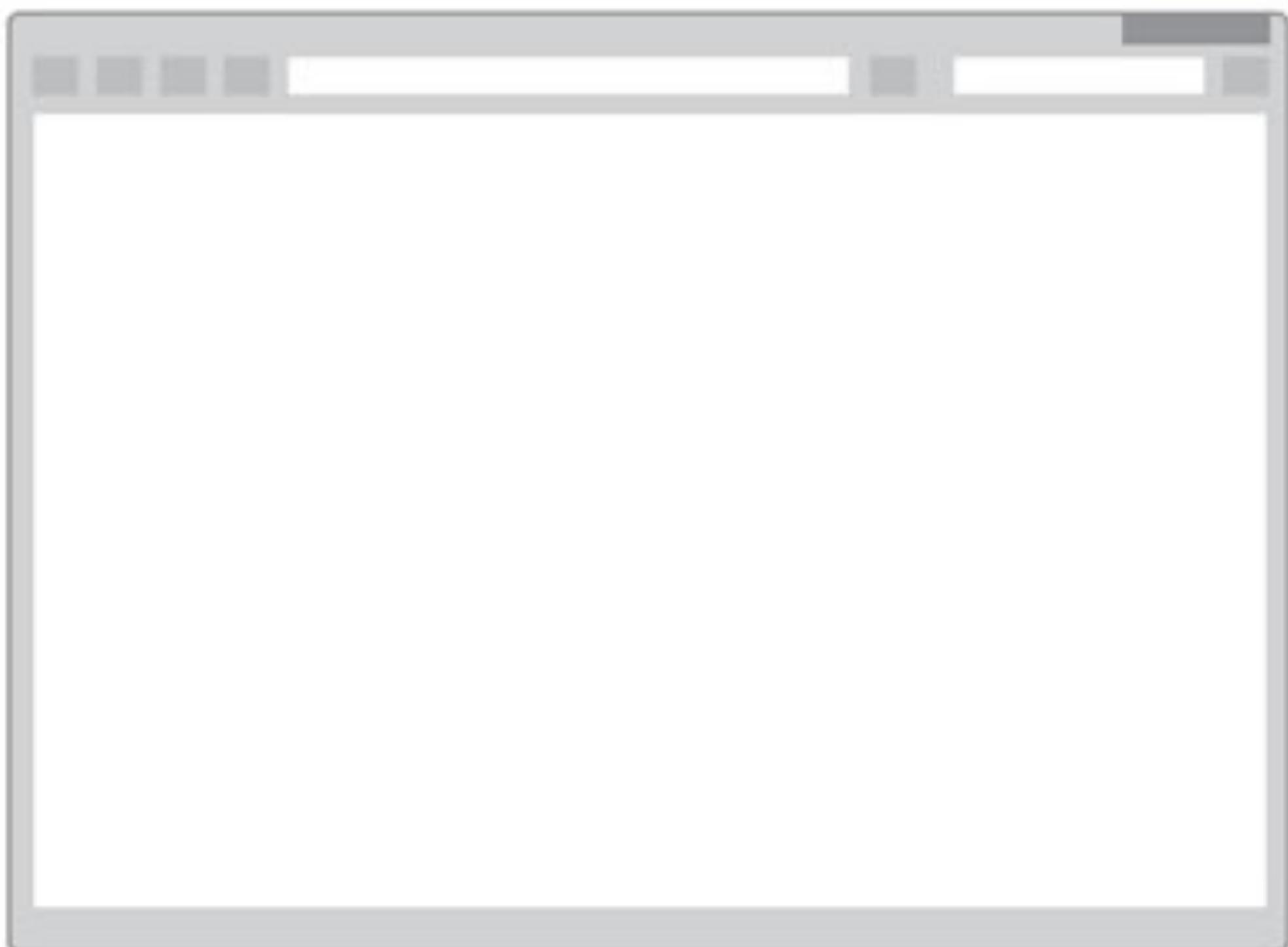
BRANDS

Other Notes:

Designing

Wireframes

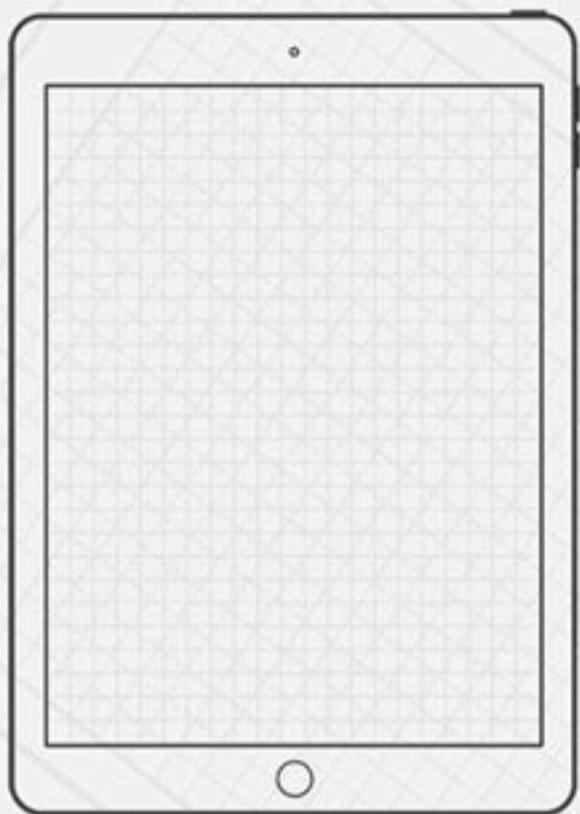
A website wireframe, also known as a page schematic or screen blueprint, is a visual guide that represents the skeletal framework of a website. Wireframes are created for the purpose of arranging elements to best accomplish a particular purpose. The purpose is usually being informed by a business objective and a creative idea. The wireframe depicts the page layout or arrangement of the website's content, including interface elements and navigational systems, and how they work together



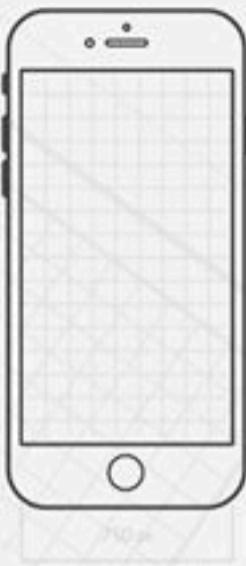
Designing

Wireframes

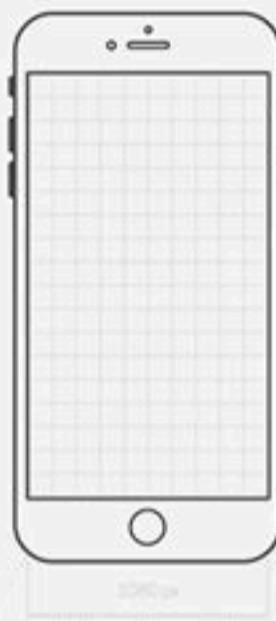
iPad Air 2
9.7-inch



iPhone 6s
4.7-inch



iPhone 6s Plus
5.5-inch



Notes:

Notes:

Notes:

Data Management

AnnieCannons Standards for Data Cleaning and Formatting

Rows vs. Columns

What data is represented by rows (or if working with a database, records) and what is represented by columns (or if working with a database, fields) is of utmost importance to proper data cleanliness.

Records (Rows): A record is a row of a database or spreadsheet. The data is grouped horizontally, and the content of those fields is unique to that row. In the example of a contact sheet, for each unique first name, last name combination you will have a unique phone number and address tied to that first name, last name combination. A database record is, basically, a row that contains unique data in each of the fields. No two records will be identical, or we qualify one of the records as a duplicate. A database or spreadsheet will usually contain a large number of records but only a small number of fields.

Fields (Columns): A field is single unit of data that is unique within each entry/row, but the overall data category is common to all entries. For example, "address" is a field that is common to all entries in a contact database or spreadsheet; however, the content of the address field will be unique for each named entry (or person). As a guideline, a field refers to the columns, or data categories, that are used by all records/rows.

When profiling a data project and moving on to standardization, it's important to look at the whole data set and determine where your fields will need specific categories and where they will be completely unique values. See the "Standardization" section for more on this.

Example: In a contact sheet, the Columns represent similar information that we want to collect about everyone (Like Address), while Rows contain all the unique fields related to one person.

	Field/Column A	Field/Column B	Field/Column C	Field/Column D
Record/Row 1	Value A1	Value B1	Value C1	Value D1
Record/Row 2	Value A2	Value B2	Value C2	Value D2

	First Name	Last Name	Address	Phone Number
Record/Row 1	Kira	Thomas	1234 Oak St.	(415) 990-1234
Record/Row 2	Taylor	Johnson	543 Jones Ave.	(510) 456-4321

Data Management

Formatting Values

Text Values

Text should all look the same in your spreadsheet to make it easier to read. This means making all your text the same size (usually 11 or 12 pt in Google Sheets) and font (Arial), with the same weight. For headers and information that you want to include on the spreadsheet outside of the data, you may want to use a different weight (like Bold), size, or fill color.

Example: In the example below, you'd want to change the “Header 2” column values to match the font and weight in the “Header 1” column.

Header 1	Header 2
Value	Value

Follow proper capitalization rules for text values like names and titles. You can use an extension like [Power Tools](#), a capitalization formula, or the built-in formatting menu to do this to an entire column or group of cells.

Example: “Jada Pinkett Smith”, not “jada pinkett Smith”

Name (correct)	Name (incorrect)
Jada Pinkett Smith	jada pinkett Smith
Title (correct)	Title (incorrect)

Remove any trailing or leading characters.

Example: get rid of special characters like periods, dashes, and colons. Check for leading and trailing spaces. Power Tools is especially helpful for stripping these characters.

Title (correct)	Title (incorrect)
The Titanic	-The Titanic.
Text (correct)	Text (incorrect)

Data Management

Look for clear spelling and grammar errors and correct them. If the data entry was manual there are likely to be spelling errors. Use your judgement here!

Example: if we're cleaning up a set of location data, and we come across a value under the "State" column that reads "Allabama", we can assume that the person entering the data meant "Alabama" and update it.

Numbers, Dates, and Currency

Use the formatting functions in Excel and/or Google Sheets to format numbers correctly based on **type** of numerical data.

Example (currency): "20" in a "Price" column should be "\$20.00"

Price (correct)	Price (incorrect)
\$20.00	20

If it's important to include decimal points, use judgement on how many to include based on how the other data was rounded or ask your project manager.

Example: 5.666667 could be reduced to 5.67 if all other values in the column had only two decimal points

All dates should be formatted mm/dd/yyyy unless otherwise specified in any instructions provided to you at the onset of a project.

Example: 09/02/1998

Contact Information

Emails should be formatted in lowercase and NOT hyperlinked unless otherwise instructed.

Example: sayre@anniecannons.com

Phone numbers should be formatted (xxx)xxx-xxxx unless otherwise instructed (you may need an additional number if dealing with data from another country, or an additional set of numbers and text for an extension).

Example: (415)249-2345

Example with an extension: (415)249-2345 ext. 3456

Data Management

Addresses should be formatted consistently, with state abbreviations and street names capitalized.

Example: 123 Bay Street, Oakland, CA 94610

3 Steps to Clean Data

Parsing

Parsing is a fancy term for breaking a data block into smaller chunks by following a set of rules, so that it can be more easily interpreted, managed, or transmitted by a computer. When we fill out a Google Sheet rather than write a sentence in a Google Doc, we're effectively “parsing” the sentence data into a more manageable format.

Example:

Rather than storing data about people I know like this...

My aunt, Janelle Dupree is a professor at City College and her phone number is (415)111-0101. My uncle Joe Jackson is a mechanic, works from home, and his phone number is (314)340-5675.

If I wanted to be able to easily read and add to the data, I might want to parse it out like this...

First Name	Last Name	Relationship	Occupation	Company	Phone Number
Janelle	Dupree	Aunt	Professor	CCSF	(415) 111-0101
Joe	Jackson	Uncle	Mechanic	Self-employed	(314) 340-5675

Unless otherwise instructed, you should have one piece of data per cell. This means that you should break data out into the most granular structure possible that still makes sense in the context of the project. This makes it easier for computers (and humans, we promise!) to read, especially when doing more advanced data analysis on the data we've cleaned up. Parsing data out also helps set standards for how data should be collected in the future to make the process more efficient and automatable.

If data is separated by commas, spaces, or specific strings of text, it usually can be broken out by a “split” formula. We call these separators “delimiters”.

Example: using a split formula, we can break out Jessica and Laura's favorite things into 3 separate columns and compare them. You'd use the “1st Favorite” column to write your formula, and reference the “Favorite Things” column as your “cell reference”. Google Sheets will automatically split the data out into the number of cells it needs to take up based on the delimiters, so make sure you have enough empty cells to the right of your formula.

Data Management

General Formula: =split(cell reference, “delimiter”) Example: =split(B2, “,”)

Handle	Favorite Things (ordered 1-3)	1st Favorite	2nd Favorite	3rd Favorite
Ihack	Pirates, Coding, Jane Fonda Workout Videos	Pirates	Ethical Hacking	Jane Fonda Workout Videos
hubs	Coach, Dismantling the Patriarchy, Painting	Coach	Dismantling the Patriarchy	Painting

Relative vs. Absolute Cell references in formulas:

If you want a formula to only reference a certain COLUMN even if copied to a different column or cell, put a “\$” in front of the column letter in the formula before copying to other cells.

Example: =split(\$D35, “ ”)

If you want a formula to only reference a certain ROW even if copied to a different row or cell, put a “\$” in front of the row number in the formula before copying to other cells.

Example: =split(D\$35, “ ”)

If you want a formula to only reference a certain CELL even if copied to a different row or column or cell, put a “\$” in front of the row number AND the column letter in the formula before copying to other cells.

Example: =split(\$D\$35, “ ”)

If you’re using a “\$” to “freeze” a formula to a row, column, or cell, then you are using an “Absolute Reference” and even when copied, the formula will use the value in the column or row that is referenced with the “\$”. If you are not, you’re using a “Relative Reference”, and when copied, the formula will adjust its inputs based on the location you’ve copied it to.

Standardization

If you’ve properly standardized your data, you will have done all of the checks listed above regarding text values, numerical values, and parsing. Once you’ve standardized your data, you’ll be able to report on it more accurately and efficiently.

Example: If we were reporting on types of food and sales for a grocery store, and we had a Column called “Category”, we would want a set of standard values within “Category” that represented all the foods on our list. Brand and Product may be unique in values in this case, but Category gives us another data field to report on if we wanted to get to totally Produce sold or total Snacks sold. If we had one Category called “Fruit” in the Apples row and one called “Produce” in the Bananas row it would not be as easy to report on how much Produce we sold (we’d have to add the Fruit and Produce together).

Data Management

Product	Brand	Category	Quantity Sold
Apples	Fuji	Produce	54
Beef Jerky	Oberto	Snacks	23
Sun Chips	Frito Lay	Snacks	34
Bananas	Dole	Produce	45

A great tool for making sure your data is standardized and that humans who are entering data are doing so in a standardized fashion is **Data Validation**.

To use data validation on your fields or columns in Google Sheets, follow these steps:

1. Click “Data” in the Google Sheets menu across the top of your sheet
2. Scroll down the menu and click on “Data Validation”
3. You’ll get a pop-up window that asks you to define the parameters of your validation
4. Enter the range of the data you want to validate (usually a single cell or full column) in the “Cell Range” field.

The screenshot shows the 'Data validation' dialog box. It includes fields for 'Cell range' (set to 'Raw Data!B31'), 'Criteria' (set to 'List from a range' with an example 'e.g., Sheet1!A2:D5'), and various options like 'Show dropdown list in cell' (checked), 'On invalid data' (set to 'Show warning'), and 'Appearance' (set to 'Show validation help text'). At the bottom are 'Save', 'Remove validation', and 'Cancel' buttons.

Cell range: 'Raw Data'!B31

Criteria: List from a range e.g., Sheet1!A2:D5

Show dropdown list in cell

On invalid data: Show warning

Appearance: Show validation help text

Save Remove validation Cancel

Data Management

1. Then, define the Criteria (or list of acceptable values). You can do this by creating a list in another sheet that you reference, or by choosing “List of items” and writing out a comma-separate list of the items you want available to your users. You can also limit the type of data that a user can input to “Text”, “Number”, “Date”, or a custom formula.
2. Keep the “Show dropdown list in cell” checked if you want your users to be able to choose from a list.
3. If you want a warning to show (red triangle in the top right corner of the cell), you can keep the “Show warning” radio button selected for the “On invalid data” field. If you want the sheet to reject any other value that the user inputs besides the value or type of value that is on the list or specified by the data validation rule, select “Reject input”.
4. If you want to provide an explanation or help text for your user, you can add that under the “Appearance” field.
5. Click “Save” to put your data validation in action.
6. Navigate to the section of the sheet that you’ve put validation on to test it.

To remove data validation:

1. Select the cell or group of cells for which you would like to remove validation rules
2. Click “Data” in the Google Sheets menu across the top of your sheet
3. Scroll down the menu and click on “Data Validation”
4. When you see the pop-up menu, click “Remove Validation”.

Deduplication

Delete or merge confirmed duplicates using a unique identifier and a formula.

Remember, there are some data sets where one unique identifier will not be enough to identify duplicates. For this example, we’ll keep it simple and assume that there is one unique identifier that exists that we want only one record for each set of values tied to that identifier.

Example: if you have a list of contacts that you are trying to clean up, the best unique identifier will be email. In order to deduplicate based on this identifier, you’ll need to:

1. Choose your unique identifier
2. Make sure all your data has been parsed and standardized before deduping or you’ll have to do it again. A good way to check this is to make sure all unique identifiers are in the same column and do not have any other data in the same field
3. In the column to the far right of your data, create a “Helper” column (this is a column that is not an original part of your data set but that you’ll use for formula work)

Data Management

1. Copy and paste the following formula into the first cell after the header of your helper column:

```
=IF(COUNTIF($A$2:$A2,$A2)>1,"Duplicate", "")
```

This particular formula finds all the duplicates by looking at the value in the cell with your unique identifier you point it to, then scanning the sheet vertically in the same column looking for the *second (or third or fourth and so on) instance* of the value (this is an important distinction!), counting whether the number of duplicates is greater than 1, and then stamping the word “Duplicate” in the helper column corresponding to the row with the identifier. If the formula doesn’t find a duplicate value, it leaves the corresponding helper column cell blank.

2. Copy the formula in your first cell, then paste it down the column (points if you do this not by dragging the cells, but with your keyboard only!)
3. Double check that your formula is working by looking at 1-2 duplicate values and finding their match. You ALWAYS want to check that a formula is doing exactly what you want it to before clearing anything.
4. Next, look through the duplicate values across all FIELDS to see if there is any data you will lose by deleting duplicates. For example, one duplicate record may have one piece of data that the other doesn’t. Depending on your data set, you may need to merge values if you don’t want to lose this data.
5. To remove duplicate values, sort your sheet on the “Helper” column from A-Z. This will group all your duplicates into one set of rows on the sheet.
6. From here, you can select all ROWS (by clicking the gray row number of the first row you’d like to select on the left hand side of the sheet, holding down shift, and clicking on the last gray row number you’d like to select).
7. Once selected, right click on the gray numbers to “Delete rows”. You’ve successfully removed your duplicates!



Financial Planning

Three Pillars of Financial Planning

- **Spend money mindfully.** This means to think carefully about the ways that you are spending money and to stop, drop and think before you purchase something.
- **Save money.** This means that each month, for your own financial safety and wellbeing, it is incredibly important that you are saving some money. It does not need to be a large amount of money; it could be a couple of dollars.
- **Use financial products safely.** A financial product can be anything from a credit card to a checking account or a savings account. There are a ton of different products in the market, and you need to understand the ones you use to be able to make smart decisions so you are financially secure.

Spending Money Mindfully

THREE RULES-OF-THUMB FOR SUCCESSFUL MONEY MANAGEMENT

1. **PAY YOURSELF FIRST.** Save 20% of your income

2. **SPEND LESS THAN YOU MAKE**

3. **FOLLOW THE 20/30/50 RULE!**

20% → Put 20% of money into savings

30% → Put 30% of money into wants

50% → Put 50% of money into needs

Spending Triggers

These can be things that happen when you are feeling a certain emotion, surrounded by certain people, in a certain place, or online

Remember to use the Stop, Think, and Wait it Out, especially when shopping online - the longer you consider your decision, the more likely you are to make a non-impulsive decision.

Types of Mindful Spending

It does not matter how much money you make. Spending your money mindfully will always be important! In early 2015, rapper 50 Cent filed bankruptcy despite being worth tens of millions of dollars. It turned out that he owed banks and other lenders more money than he had. Here are the different types of spending:

- **Good Spending** - When a purchase is made mindfully or towards a goal
- **Bad spending** - An unnecessary or unwise purchase
- **Didn't spend** - When a person decides to not purchase something or saves money on a purchase.
- **\$\$ Banked** - When money is put away in a safe place like a savings account

Saving

Ways to Earn More By Saving

Save this each week At	% Interest	In 10 years you'll have
\$7.00	5%	\$4,720
\$14.00	5%	\$9,441
\$21.00	5%	\$14,161
\$28.00	5%	\$18,882
\$35.00	5%	\$23,602



choosing a savings account

factors that determine the dollar yield on an account:

Interest rate (also called rate of return, or annual yield)

- All money earned comes from this factor.

the following factors reduce money earned and can even turn it into a loss:

Fees, charges, and penalties

- Usually based on minimum balance requirements, or transaction fees.

Balance requirements

- Some accounts require a certain balance before paying any interest.
- On money-market accounts, most banks will pay different interest rates for different size balances. (Higher balance earns a higher rate.)

Balance calculation method

- Most calculate daily. Some use average of all daily balances.

Interest

Interest is a charge a financial institution applies when they loan an individual money.

On the most basic level, this example shows how it works:

Principal (the amount you get in a loan) \$100,000	Interest Rate (the percent of the principal you pay to get the loan, which can be fixed or variable) 5%	Period (the frequency with which interest is assessed against principal) annually
--	---	---

$$\boxed{\$100,000} \times \boxed{.05} \quad \text{after year one, you owe: } \boxed{\$105,000}$$

Compound Interest is used in most loans. This means you calculate interest each period based on the new balance, including the interest from the previous period. So, if we apply compound interest to the simple example above:

Year 1	$\boxed{\$100,000} \times \boxed{.05}$ \$5000	after Year 1, you owe: $\boxed{\$105,000}$
Year 2	$\boxed{\$105,000} \times \boxed{.05}$ \$5250	after Year 2, you owe: $\boxed{\$110,250}$
Year 3	$\boxed{\$105,000} \times \boxed{.05}$ \$5512.50	after Year 3, you owe: $\boxed{\$115,762.50}$

As a debtor, the sooner you pay off loans, the less you pay. It makes a big difference to shop around for lower interest rates (by contrast, shopping for savings accounts - where a bank is basically borrowing YOUR money to loan to others - you should look for HIGHER interest rates).

Interest

Credit Cards are a very expensive way to borrow money because of their high interest rates.

Your credit card interest rate is the rate at which you are charged for borrowing money from a credit card company if you carry a balance. For example, if you borrow \$1000, and the credit card company charges you 10% interest, you will have to pay \$1100 if you do not pay your bill on time. While most bank loans like mortgages or lines of credit charge an interest rate from 3-10% per year (perhaps higher if your credit score is low), credit cards sometimes charge as much as **25% per month**. Some credit card companies also charge an annual fee to have the card in the first place.

For this reason, credit card debt is one of the most expensive ways to borrow money. You should NEVER use a credit card to make a purchase without the money to pay it off if it can be avoided. Always avoid using credit cards for “wants” unless you know you have funds to pay it off before interest “accrues” (is applied and begins to build up).



calculating interest

directions

Write the answers to the following questions in the blanks provided. Use the space below each problem to show how you arrived at your answers.

1. If you put \$200 in a savings account that paid 5.5% simple interest each year, how much interest would you earn in five years?
 2. If you put \$150 in a savings account that paid 6% compounded yearly, how much interest would you earn in five years?

Banking Accounts and Credit

What is the right banking account and card for you?

We should talk about it! Generally, checking accounts and debits cards are the way to go. You won't have to worry about getting charged with fees (like prepaid cards) or going into debit (with credit cards). You only have to make sure that you don't spend more with your debit card than you have in your checking account (this will cause an "overdraft fee").



advantages and disadvantages of using credit

advantages:

- Able to buy needed items now
- Don't have to carry cash
- Creates a record of purchases
- More convenient than writing checks
- Consolidates bills into one payment

disadvantages:

- Interest (higher cost of items)
- May require additional fees
- Financial difficulties may arise if one loses track of how much has been spent each month
- Increased impulse buying may occur

What is a credit score?

It is a numerical expression based on an analysis of a person's credit files, to represent the creditworthiness of the person. Lenders, such as banks and credit card companies, use credit scores to evaluate the potential risk posed by lending money to people. Lenders use credit scores to determine who qualifies for a loan, at what interest rate, and what credit limits. A credit score takes into account payment history, amounts owed, length of credit, new debt, and types of debt.

Credit Score

Here are some tips to “have great credit” (a high credit score):

Credit scoring systems are complex and vary among creditors or insurance companies and for different types of credit or insurance. If one factor changes, your score may change — but improvement generally depends on how that factor relates to others the system considers. Only the business using the system knows what might improve your score under the particular model they use to evaluate your application.

Nevertheless, scoring models usually consider the following types of information in your credit report to help compute your credit score:

- **Have you paid your bills on time?** You can count on payment history to be a significant factor. If your credit report indicates that you have paid bills late, had an account referred to collections, or declared bankruptcy, it is likely to affect your score negatively.
- **Are you maxed out?** Many scoring systems evaluate the amount of debt you have compared to your credit limits. If the amount you owe is close to your credit limit, it's likely to have a negative effect on your score.
- **How long have you had credit?** Generally, scoring systems consider your credit track record. An insufficient credit history may affect your score negatively, but factors like timely payments and low balances can offset that.
- **Have you applied for new credit lately?** Many scoring systems consider whether you have applied for credit recently by looking at “inquiries” on your credit report. If you have applied for too many new accounts recently, it could have a negative effect on your score. Every inquiry isn't counted: for example, inquiries by creditors who are monitoring your account or looking at credit reports to make “prescreened” credit offers are not considered liabilities.
- **How many credit accounts do you have and what kinds of accounts are they?** Although it is generally considered a plus to have established credit accounts, too many credit card accounts may have a negative effect on your score. In addition, many scoring systems consider the type of credit accounts you have. For example, under some scoring models, loans from finance companies may have a negative effect on your credit score.
- Scoring models may be based on more than the information in your credit report. When you are applying for a mortgage loan, for example, the system may consider the amount of your down payment, your total debt, and your income, among other things.

Improving your score significantly is likely to take some time, but it can be done. To improve your credit score under most systems, focus on paying your bills in a timely way, paying down any outstanding balances, and staying away from new debt.

Don't be afraid of credit counseling

If you're overloaded with high-interest debt and are in danger of falling behind on your payments -- or you already have -- consider working with a nonprofit agency such as Consumer Credit Counseling Service to set up a debt repayment plan. These services can negotiate lower interest rates and help you pay off your bills within a few years.

Creating Your Financial Plan

Establish your financial goals.

- Decide what you want your money to do for you.
- Determine what style of living you wish to achieve.
- List savings objectives.

Estimate and total your income.

- Determine how much money you receive from all sources for the plan period —earnings, gifts, bonuses, interest on savings, and allowance.

Estimate and total your expenses.

- List all your expenses, separating them into fixed and variable expenses.
- Add these expenses to determine how much money you spend during each plan period.

Analyze your current income and spending.

- Carefully examine the amounts you estimated for both income and expenses. Overestimating income and underestimating expenses is very easy to do and can cause big problems for your budget.
- Subtract your expenses from your income for each plan period. If you come out even or need extra money, consider ways to increase your income or cut your expenses. If you have extra money, decide how you want to apply it toward your savings goal.

Prepare a trial financial plan.

- A written plan listing your goals, your income, and your expenses reduces the temptation to overspend or spend carelessly.
- Put your financial plan into writing.
- Revise your plan and update it on a regular basis.

Put your plan into action and keep organized records.

- Keep track of your spending and savings.

Evaluate your financial plan periodically.

- Whenever your income, expenses, or goals change significantly, review your plan to see if you need to make any changes.
- Significant events all have an impact on your financial plan. These may include starting a new job, moving, marrying, having children, changing jobs, divorcing, or death.

Online Money Tools

Mint

Mint is probably the most comprehensive free budgeting tool out there. After you've given it permission to look at your bank transactions, Mint automatically sorts your expenses into categories like groceries, restaurants, and bills. This helps you understand exactly what you're spending money on, which should also make it easier to decide which expenses to cut. Once you've decided how much you want to spend, you can set a detailed budget with limits on each spending category.

Mint does an excellent job of visualizing your data. It automatically creates beautiful charts and graphs that let you see your spending habits and history at a glance. Mint also does a really good job of sending alerts when something's wrong, like if you've overspent or if your bank has charged you a fee.



PayPal

PayPal lets you make secure transactions without providing your credit card number to individual websites. Instead, you'll give your information to PayPal, which makes the payment on your behalf. PayPal was one of the first online payment systems, and it's generally seen as one of the most trustworthy. As a result, you can use it to make payments to many online stores, such as eBay, Etsy, Overstock, and a whole lot more. PayPal is also an easy way to send money to a friend or family member, as long as you both have a PayPal account.



If you're using PayPal to make a purchase from an online store, it's totally free to use. However, you may have to pay a small service fee to use PayPal to transfer funds to another person. You can review this page from PayPal to learn more about its fee structure. You will also need to connect PayPal to your bank account.

Google Sheets (Budget Template)

Google Sheets has both a monthly and annual template for keeping track of your personal budget. You enter in certain information about expenses, income, and savings, and the template has certain calculations and mathematical operations that can be applied.

Working as a Contractor

What is an independent contractor?

An independent contractor is a person, business, or corporation that provides goods or services to another entity under terms specified in a contract or within a verbal agreement. Unlike an employee, an independent contractor does not work regularly for an employer but works as and when required, during which time he or she may be subject to law of agency. Independent contractors are usually paid on a freelance basis.

Pros and Cons

Pros

- Set your own hours and vacation time.
- Work from home or any other convenient place
- Only take the work that you want to take
- Develop clients outside of AnnieCannons
- Take tax deductions on business expenses related to your working
- Have the time to learn new skills in digital literacy and computer programming

Cons

- No paid sick leave or vacation time
- You will not be working off a base salary, what you make is directly tied to how much you work and the projects you agree to
- Need to complete a 1099 form and deduct your expenses
- Your taxes will not be taken out of your paycheck so you must file taxes quarterly or be prepared to pay taxes once a year
- No ancillary benefits like healthcare.

When you work as an independent contractor, you have to pay income tax, just like an employee. Unlike an employee, however, you won't have any taxes withheld from your paycheck to cover income tax, Social Security, and Medicare. Also, unlike an employee, you can't wait until April 15 to pay all of your taxes due for the previous year. Instead, you have to pay estimated taxes four times a year. Fortunately, contractors can take advantage of some great tax deductions; for instance, the home office deduction can effectively reduce your taxes by a portion of your rent or mortgage.

1099 Form

If you perform services as an independent contractor, then you will receive Form 1099-MISC by the end of February. This form will tell you who paid you and how much. One copy of the form is sent to you and another copy is sent to the Internal Revenue Service, IRS.

When the IRS receives this form, it will cross-check to ensure you have reported all income. For example, if you receive a 1099-MISC for \$50,000 and only reported \$25,000 of gross receipts on your Form 1040 Schedule C, then you will most likely get audited.

Working as a Contractor

Business Expenses as an Independent Contractor

Business Expenses are expenses that are the cost of carrying on a trade or business, they are usually deductible if the business is operated to make a profit. To be deductible, a business expense must be both ordinary and necessary. This means they must be common in the industry and helpful and appropriate for your business.

The following image shows the gains to be made when you record your business expenses!

KEEP TRACK OF YOUR BUSINESS EXPENSES!			
Scenario 1		Scenario 2	
Income	\$35,000	Income	\$35,000
Business Expenses	\$ 0	Business Expenses	\$25,000
Taxable Income	\$35,000	Taxable Income	\$10,000
Self-Employment Tax	\$4,945	Self-Employment Tax	\$1,413
Personal Income Tax	\$3,518	Personal Income Tax	\$ 318
<u>Taxes You Owe</u>	<u>\$8,463</u>	<u>Taxes You Owe</u>	<u>\$1,731</u>

Examples of Business Expenses

- Clothing necessary to perform your job duties
- Food and beverages when you're on business meetings
- Supplies: Laptop, Cell phone usage. etc
- Car: Gas, Oil, Maintenance
- Health Insurance
- Home (if you work from home): A percentage of Rent, Electric, Utilities

App of Choice: Tabby
Free and easy to use, signup, link your credit cards, and record your business expenses

Categorize accounts based on Tax Form Schedule C

No more receipts

No more manual entry
www.trytabby.com

