Using the Cloud with Google Drive
Step-by-Step Guide

by Michael Angstadt
Montgomery County-Norristown Public Library
Computer Lab
Norristown, Pennsylvania
www.mc-npl.org

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Introduction

Google Drive is a platform for **storing**, **sharing**, and **editing** files on the "cloud" (the Internet). Think of it as a computer that runs inside of your web browser. Because the files are stored on the Internet, they can be accessed from any Internet-connected computer. Files can also be shared so that other people can view and edit them. You use **apps** to view and edit files (kind of like the apps on a smartphone). We'll cover all of these things in this course.

Why is Google Drive free?

- Google is allowing you to try out their service in the hopes that you will purchase one of their paid plans. Paid plans give you more storage space.
- By using Google Drive, you are more likely to use Google's other products (like Google Search and Gmail), which make money by showing you advertisements.

Opening your Drive

1. **Open** a web browser (**Firefox** in class, or you can use **Chrome** if you are following along at home)

2. **Navigate** to Google's homepage: www.google.com.

   a. In the Computer Lab, the browser's homepage is set to Google, which is why Google's homepage loads automatically.

3. **Click** on the blue "Sign in" button in the top-right corner of the screen (this area is called the **Google Bar**).
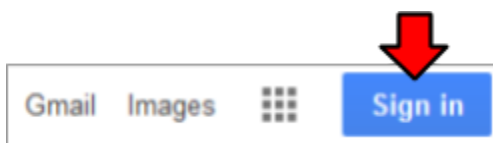
4. **Enter** your Google Account login credentials at the prompt.

5. If you see a message that says "**Don't get locked out of your account**", **click** **Done**.
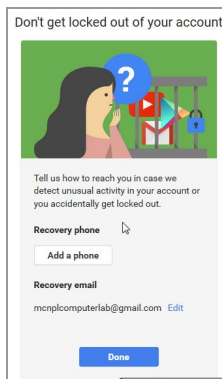
6. You will then be redirected **back** to the Google homepage.

7. The first letter of your first name will be displayed in a colored circle in the upper-right corner of the screen. If you assign profile photo to your account, your profile photo will be displayed here.
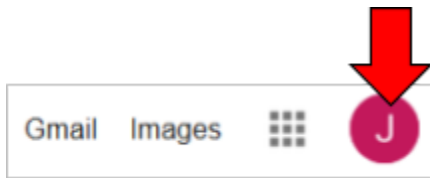
8. *Click* on the square "**Google apps**" icon. This displays all of the Google services that are available to you as a Google Account holder.
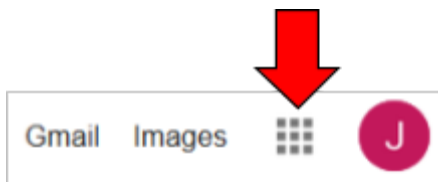
9. *Click* on "**Drive**" to go to your Drive.
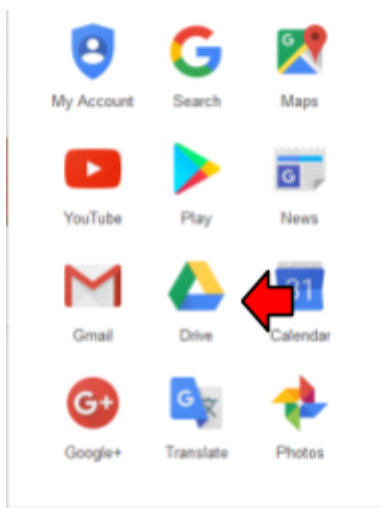
10. If this is the first time opening your Drive, you may see a **welcome dialog**. This dialog gives you a brief introduction to Google Drive. *Close* it by clicking the "X" in the upper-right corner.
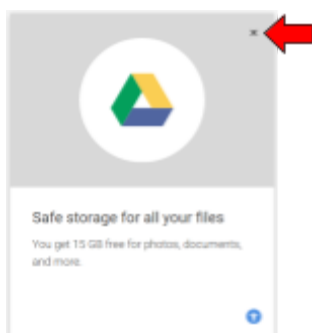
The Drive Home Screen
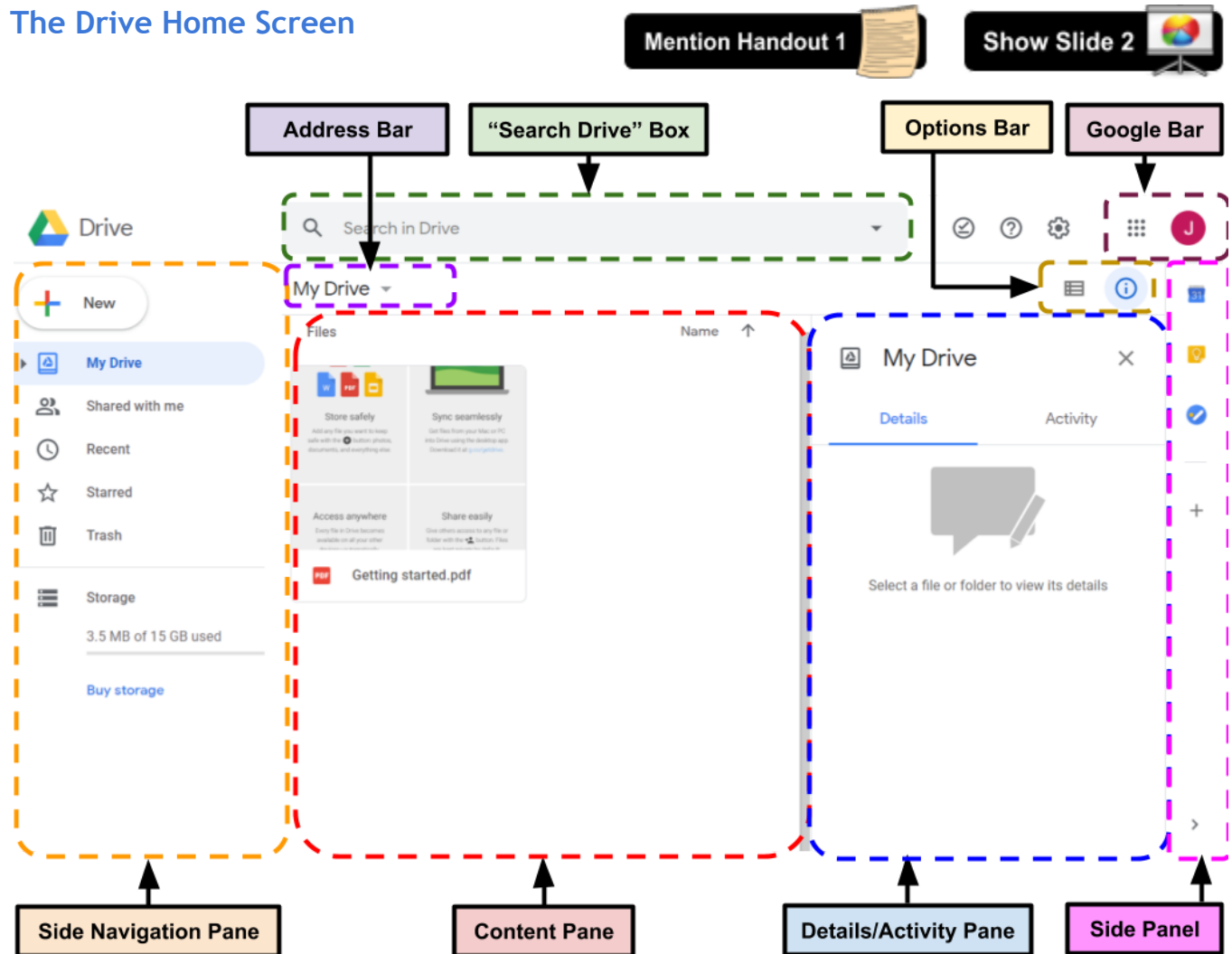
Side Navigation Pane	+ New	Creates new files, uploads files from your computer, and creates new folders.
	⬜ My Drive	Shows the files that are in your Drive account. Your Drive opens up in this location by default.
	👥 Shared with me	Shows files that other people have shared with you.
	🕐 Recent	Shows your recently-opened files.
	☆ Starred	Shows the files you've marked as important.
	🗑 Trash	Shows your deleted files. Deleted files stay in the Trash for 30 days before being permanently deleted.
Content Pane	Shows the files and folders in the currently selected folder (shown in the Address Bar).	
Details/Activity Pane	"Details" tab	Shows details about the file, such as the owner and last-modified date.
	"Activity" tab	Shows a log of all the edits that were made to the file.

Address Bar	Shows the folder you are currently in and all of its subfolders (similar to the address bar in File Explorer in Windows).	
"Search Drive" Box	Allows you to perform a search over all your files. The contents of each file will be searched.	
⊘ Ready for offline	If you are using the Chrome browser, you may see this button. It signifies that you can mark certain files as "available offline", which allows you to access them if your computer doesn't have an internet connection. This feature is only supported by the Chrome web browser.	
⚙ Settings	Edit your Drive account's settings. You can uninstall apps from this screen (called "disconnecting").	
⊙ Help	Search the online help documentation for instructions on how to accomplish specific tasks.	
Options Bar	▤ View Options	Changes the way files are displayed in the Content Pane (switches between "list" view and "grid" view).
	ⓘ Show Details	Shows/hides the Details/Activity Pane.
Google Bar	⠿ Google apps	Displays the other services you have access to as a Google Account holder.
	Ⓙ Google Account	Gives you access to your Google Account settings and also allows you to log out.
Side Panel	Provides quick access to other Google Apps, such as Google Calendar and Google Keep.	

Working with Files and Folders

Uploading a File

Let's start by uploading a file from our computer to our Drive account. Remember that our Drive account is like an online flash drive--we can use it to store whatever kinds of files we'd like.

1. *Click* on the "**New**" button on the left, and then *click* "**File upload**".

   a. Teacher's Note: Sometimes, when you click the New button, it erroneously opens the "New Folder" dialog. This is because Google Drive registers the click as a double-click for some reason. The New Folder dialog is opened because "New Folder" is the first menu item and the second "click" goes to this menu item because it is positioned directly above the New button.

2. **Before** we select a file to upload, *note* that an **Upload Pane** will appear in the bottom-right corner of the screen. This will display the progress of the upload.

3. In the file upload dialog box, *navigate* to the **Temporary Patron Drive** and *select* "**Library Of Congress.jpg**".

   Note to Home Students:

   You can either download this image from our Class Resources page, or use an image of your own choosing.

   www.mc-npl.org/class-resources

4. *Notice* the **Upload Pane** in the **bottom-right** corner of the screen. It will display a green checkmark when the file upload has completed.

Uploading 1 item	∨	✕
Less than a minute left		CANCEL
🖼 Library Of Congress.jpg	○	

1 upload complete	∨	✕
🖼 Library Of Congress.jpg	✅	
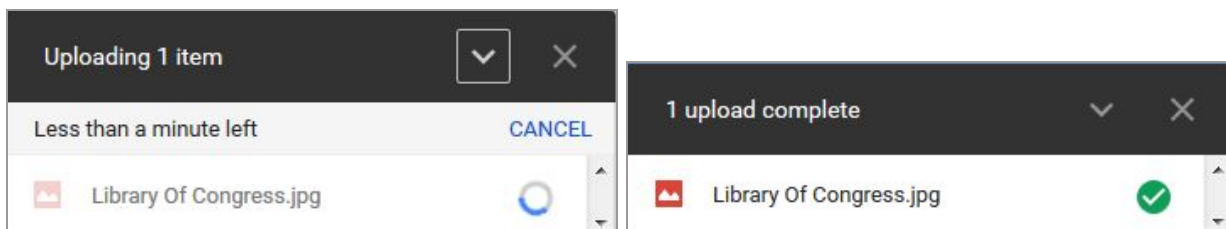
5. *Click* the **X** in the top right corner of the **Upload Pane** to dismiss it.

6. *Notice* how the file appears in the Content Pane when the upload completes.

   PDF Getting started.pdf   🖼 Library Of Congres...
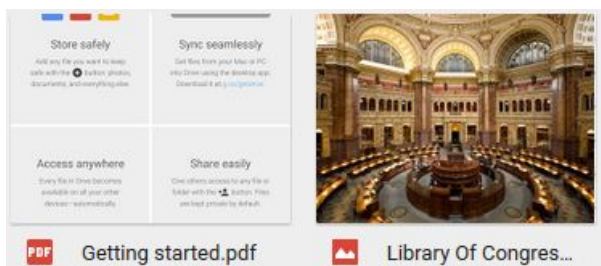
Selecting a file

1. *Click* on the image file. This **selects** the file.

2. *Notice* how the file name turned **blue** and how it has a **light blue background**. This means that the file is **selected**.
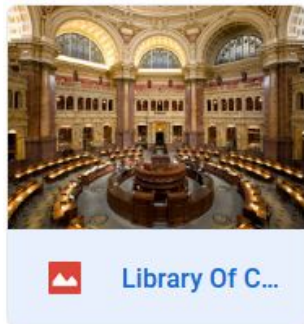
3. *Notice* how some **buttons** were added to the Options Bar. These buttons allow you to do certain things to the file. We will cover some of these buttons later.
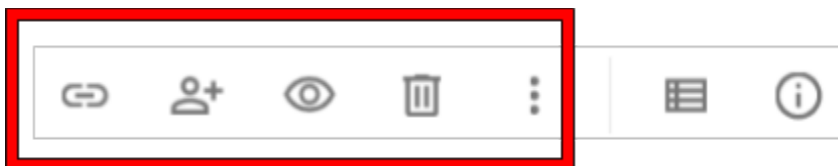
4. **Deselect** the file by *clicking* in a **clear space**.

   a. *Notice* how the file name no longer has a blue background.

   b. *Notice* how the extra buttons are gone from the Options Bar.

5. *Click* on the same image to **select** it again.

6. Now, *right-click* on the image. *Notice* the **context menu** that appears.

   a. *Note* that all of the buttons in the Options Bar can **also** be accessed from the right-click context menu.

   b. *Click* in a clear space to **dismiss** the context menu.
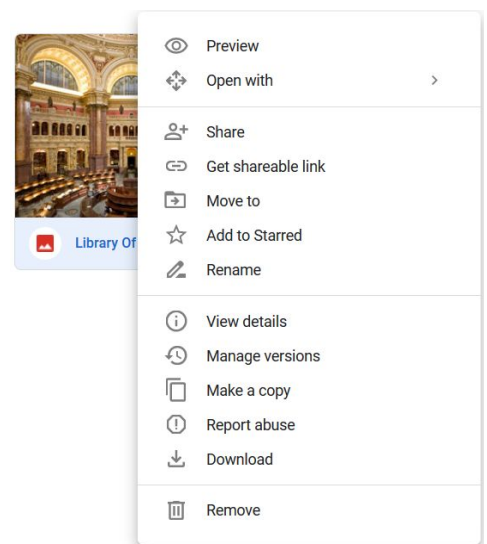
Deleting a file

Deleting a file from your Drive is a lot like deleting a file from your laptop or desktop computer.

When you delete files from your Drive, they are first sent to the **Trash**. Drive calls this "**removing**" a file. If a file is in the Trash, it can be **recovered** or "undeleted". Once a file has been sitting in the Trash for **30 days**, Google Drive will permanently delete it automatically. Once it has been permanently deleted, the file cannot be recovered.

Let's delete our image file.

1. *Note* that, when a file is removed, a **black status bar** will appear in the bottom-left part of the screen.

    a. We will see the **black status bar** a lot throughout the course. It is often displayed when you perform an action of some kind. Sometimes it gives you the option to **undo** the action you just performed, but not always.

    b. When we remove our file, the status bar will **confirm** that we just removed a file and will give us the opportunity to **undo** our action in case we removed it by mistake.

    c. The status bar **disappears** after only a few seconds, so keep your eyes sharp!

2. *Right-click* on the image and *select* "**Remove**" from the context menu.

3. *Notice* the **black status bar** in the bottom-left of the screen. It is confirming our action and giving us the opportunity to **undo** it.
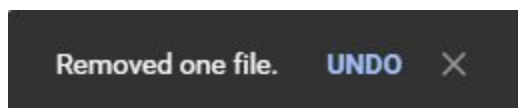
4. **Removing a file does not delete it forever**. It moves it to the **Trash**, which allows you to recover it at a later time if you decide you need it back. However, you only have 30 days to do this. After 30 days of sitting in the Trash, Google Drive will permanently delete the file automatically.

5. Let's **recover** the file we just deleted.

    a. ***Click*** on "**Trash**" in the Side Navigation Pane.

    b. ***Right-click*** the image and ***select*** "**Restore**".
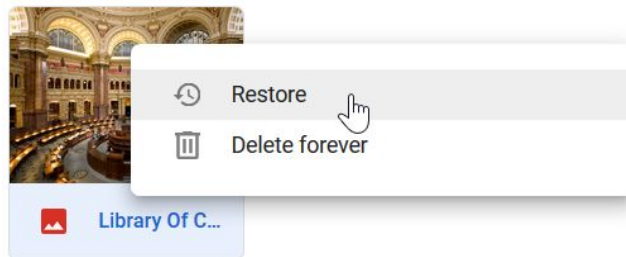
    c. Notice the black status bar in the bottom-left of the screen, confirming our action.
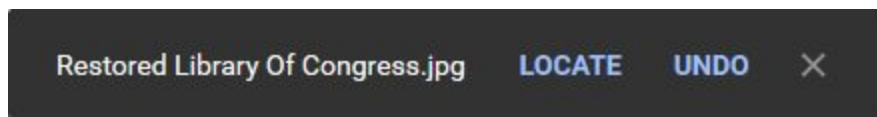
6. ***Click*** on "**My Drive**" in the Side Navigation Pane. ***Notice*** how our file is back where it was before we deleted it.

Renaming a File

Just like on your computer, files in your Drive can be renamed. We are going to rename our image file.

1. *Notice* how the "My Drive" icon in the Side Navigation Pane is **blue**. This indicates that we are currently inside of this location.
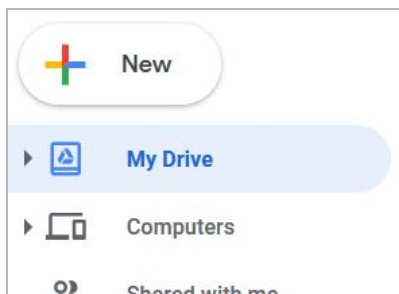
2. *Select* the image file by clicking on it.

3. *Right-click* the image and *select* **Rename**.

4. *Type* your **first name** in the Rename dialog box.
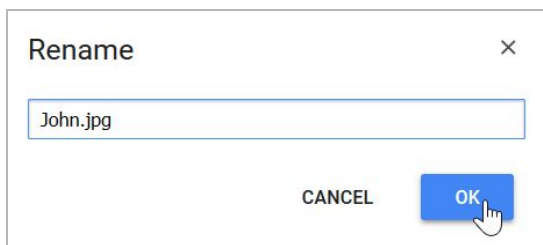
5. *Click* OK.

6. *Notice* the **black bar** in the bottom-left corner of the screen, confirming our rename operation.

    Tech Tip:
    Because we uploaded this file from our computer, the file name still contains the file's **extension** (".jpg"). However, unlike desktop computers, Drive **does not** rely on file extensions to tell what kind of file it is (a photo, a letter, a spreadsheet, etc). Therefore, you may **remove** the file extension if you wish.
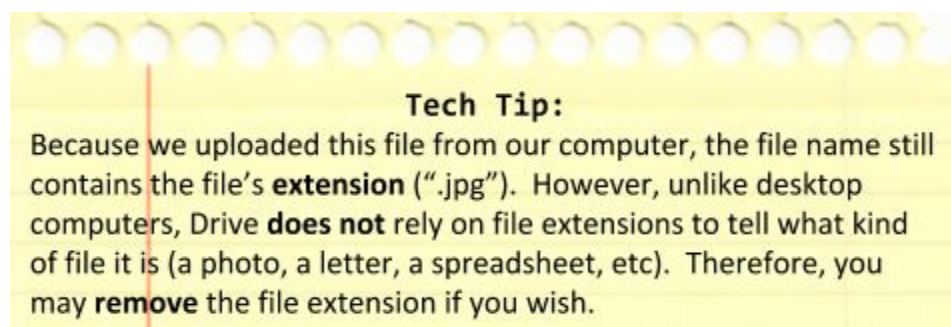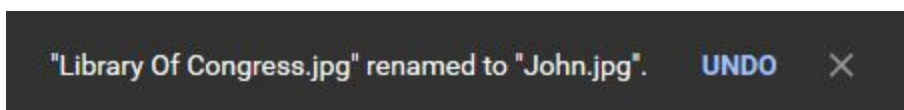
Starring a file

If you want to mark a file as important you can "star" the file. Starring a file makes it easier to find.

1. *Right-click* on the image file and *select* "**Add to Starred**" from the context menu.

2. *Notice* how the **black status bar** in the bottom-left corner of the screen is confirming our action and giving us a chance to undo it.
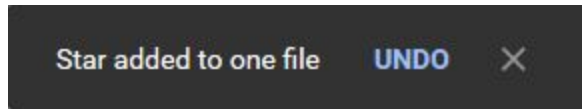
3. *Click* on "**Starred**" in the Side Navigation Pane to view your starred files.

4. *Notice* how our image file is shown in the Content Pane on the right.

5. To unstar a file, simply *right-click* on the file and *select* "**Remove from Starred**".

6. *Notice* how our file has disappeared. That's because we are currently on the screen that shows us our starred files. However, we don't have any starred files anymore because we removed the star from our picture file.

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Downloading a file

Sometimes, you need to download a copy of the file to your computer in order to work with it. For example, if we wanted to use an advanced image editor such as Photoshop to edit our image, we would need to first download a copy of the image to our computer's hard drive so that we can open it in Photoshop.

1. *Click* on "**My Drive**" in the Side Navigation Pane to return to the complete listing of all the files in your Drive.

2. *Right-click* on the image file and *click* "**Download**".
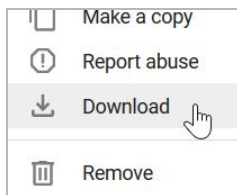
3. *Notice* the dialog box that appears.

   a. We are now **out** of the **Google Drive** environment and **into** the **web browser** environment of our personal computer.

   b. Firefox, our web browser, has chosen to display a dialog box asking us what we want to do with the downloaded file.

   c. *Select* **Save File** and *click* **OK**.
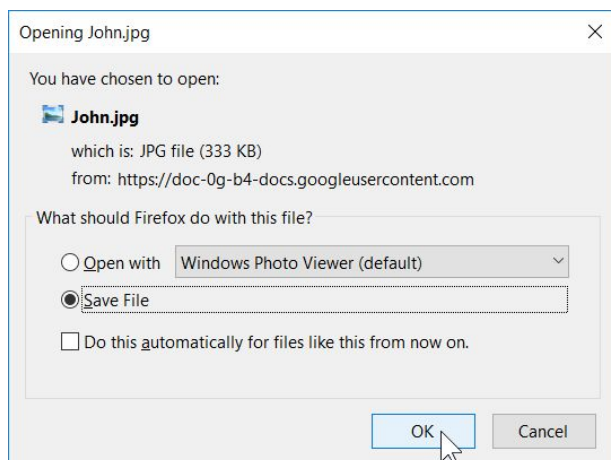
4. Next, we are prompted for a save location and file name. In the interest of time, we will accept the default location and file name. *Click* **Save**.
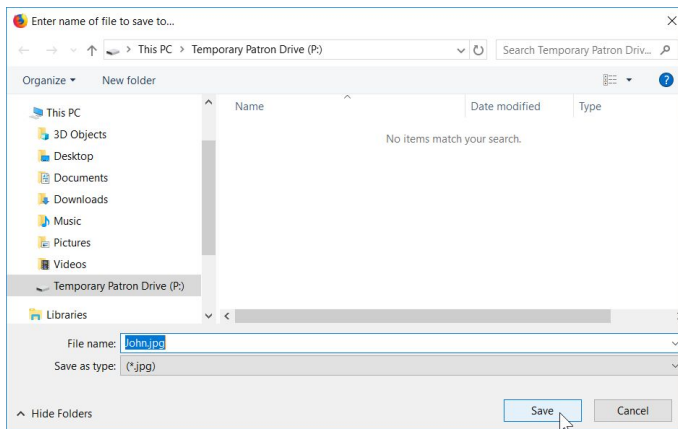
5. The file is now saved to the computer's hard drive.

Working with Folders

Google Drive allows you to organize your files into folders, just like you can on a laptop or desktop computer. Let's create a folder for our image.

1. *Click* on the "**New**" button, then *click* "**Folder**".

2. A dialog box will appear ask you for the name of the folder. *Type* "**Library Photos**" then *click* "**Create**" (or press Enter).

Note:
Just like with files, Drive makes it possible to have multiple folders with the **same exact name**. However, it's best not to do this in order to avoid confusion.
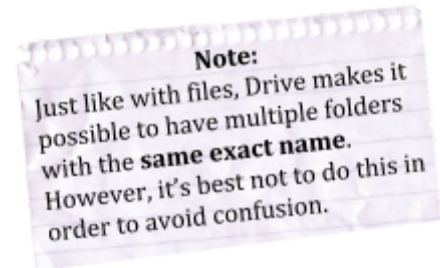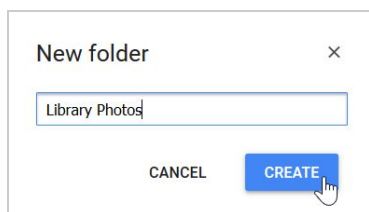
3. *Notice* how the folder appeared **above** the files. *Also notice* that it's **blue**, which means it is **selected**.
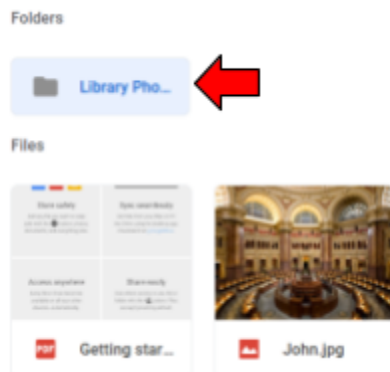
4. *Click* on the **chevron** (the triangle) next to "My Drive" on the Side Navigation Pane.

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5. *Notice* how the folder we just created appears below "My Drive". This is showing us all the folders that are in "My Drive".

6. *Click* on the chevron again. This will **hide** the folders.

7. Next, we're going to move our photo into our new folder. But before we do that, *note* that the **black status bar** will appear in the bottom-left corner of the screen, confirming our move operation and give us a chance to **undo**.

8. Now, let's move our image file into the folder.

    a. *Right-click* on the file and *select* "**Move to…**"
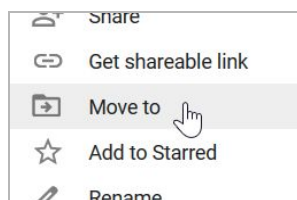
    b. *Notice* the options that appear below the file. It's asking us where we want to move the file.

    c. *Click* on "Library Photos" to select it.

    d. *Notice* how it's given a **blue background**. This indicates that it is **selected**.

    e. *Click* **Move**.
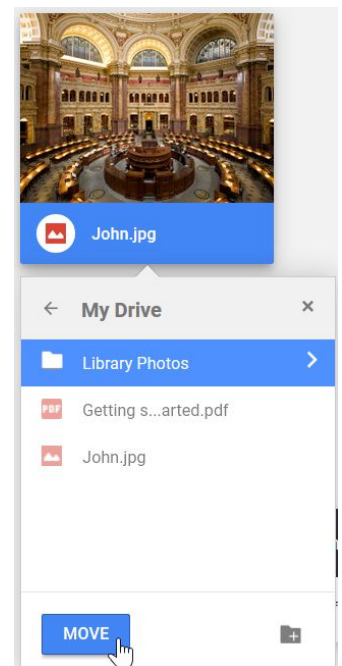
Teacher's Note:
The "Move" button may be hidden off the screen, due to the small resolutions of the monitors. *Scroll down* to see the button. **You will see a scroll bar on the right, but only the mouse wheel works!**

9. ***Notice*** the familiar **black status bar** in the bottom-left of the screen. Google Drive is telling us that a file was just moved, and is giving us the option of **undoing** our move operation.

> John.jpg has been moved from My Drive to "Library Photos".   **UNDO**   ✕
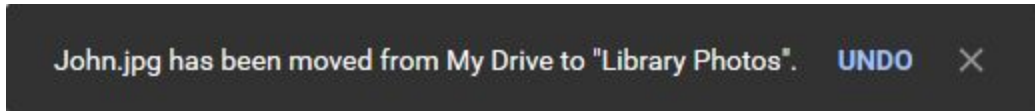
10. In the Content Pane, ***double-click*** on the folder to open it. ***Notice*** how the **Address Bar** changes to show that we are currently viewing the contents of the "Library Photos" folder.

My Drive > **Library Photos** ▾

Files

🖼 John.jpg
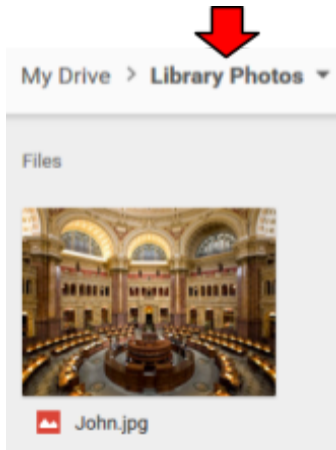
11. Clicking on a folder in the Address Bar will take you to that folder. Let's go back to the **root folder** by ***clicking*** on "**My Drive**".

My Drive > Library Photos ▾

Tech Tip:
The **root** is the location that's at the very bottom of a folder hierarchy. Files located at the root are not inside of any folders.

In Google Drive, the root folder is the "My Drive" folder.
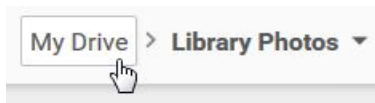
12. You can change the **color** of a folder in the Content Pane.

   a. ***Right-click*** on the **Library Photos** folder.

   b. ***Point*** to "**Change Color**".

   c. ***Click*** on a color of your choice.

Rename
Change color   >
Search within Library Photos

View details
Download

Vern fern
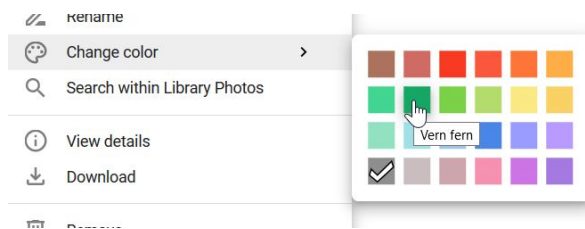
13. ***Notice*** its new color.
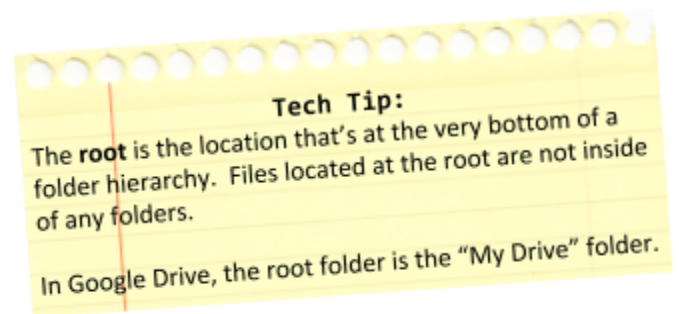
📁 Library Photos

Details/Activity Pane

1. In the Content Pane, *double click* on the "**Library Photos**" folder to open it.

2. *Click* on the image to **select** it.

3. *Open* the **Details/Activity Pane** by clicking the "**View details**" button in the Options Bar. ⓘ

4. *Notice* the pane that appears on the right. The pane consists of two tabs: "**Details**" and "**Activity**".

5. *Click* on the "**Details**" tab. This tab displays additional information about the file, such as its file size and creation date.

   a. **Type:** The type of file (for example, "Image" or "Google Doc")

   b. **Size:** How large the file is. If the file is a **Google app** file (such as a Google Doc or Google Sheet), it will not have a size for the following reason: In an effort to entice people into using their office productivity programs, Google does not count these files against your storage quota.

   c. **Storage used:** When you edit or update a file in Google Drive, it will keep a copy of the old version of the file. This field displays the sum total amount of storage space used by these older versions, plus the storage space used by the current version. Google app files will always display "0" here, because they do not count against your storage quota.

   d. **Location:** The folder that the file is stored in.

   e. **Owner:** The person that owns the file. We will talk more about owners later.

   f. **Modified:** When the file was last edited. Clicking the "clock" icon displays a listing of the file's previous versions. You can use this to restore an older version of the file.

   g. **Opened:** When the file was last opened, and by who.

   h. **Created:** When the file was initially created.
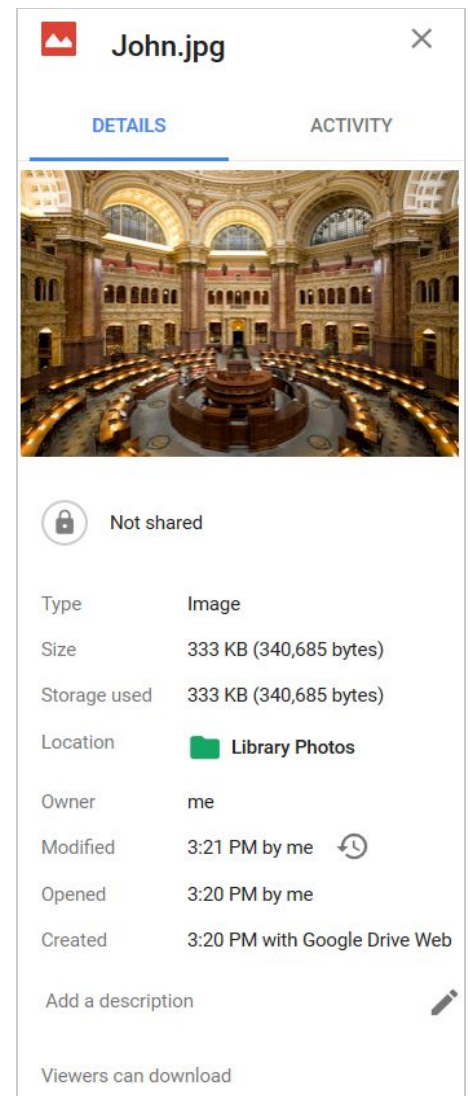
6. *Click* on the "**Activity**" tab. This tab shows a record of all actions that have happened to the file in reverse chronological order, along with who made the changes.

   a. For example, it shows that the most recent action was that we moved it to the Library Photos folder.

   b. As we will see soon, if we were to share our file with someone else, their edits would appear here as well.

Note:
If you don't have a profile picture assigned to your Google Account, Drive will show the first letter of your first name instead. J

7. *Close* the Details/Activity Pane by:

   ● *Clicking* the button in the Options Bar ⓘ **or**

   ● *Clicking* the "X" in the upper-right corner of the pane.

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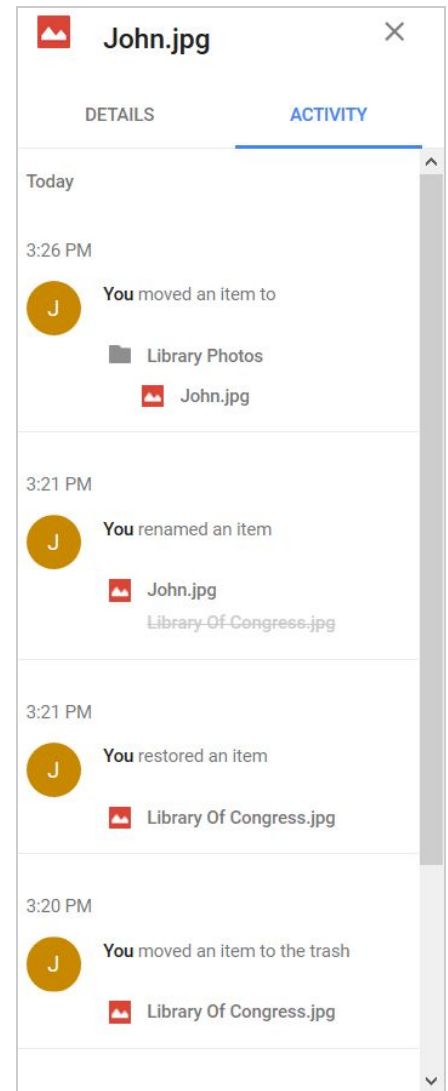
The Preview Window

In Google Drive, it is possible to view a file without opening it for editing. This is called **previewing** a file. Previewing a file is faster than opening it for editing, which is why it is a useful tool.

Opening a file in the Preview Window

Preview button method

1. *Click* on the image file to select it.

2. *Click* on the "eyeball" icon in the **Options Bar**.

3. *Notice* how a larger version of the image appears. We are now looking at the **Preview Window**.

4. *Notice* the toolbar at the top of the screen. This may **disappear** when you stop moving your mouse. To keep it visible on the screen, *point* somewhere on the toolbar.

5. *Close* the Preview Window by *clicking* the back arrow in the top-left corner of the screen, to the left of the file name. Do not confuse this with the *browser's* back button!
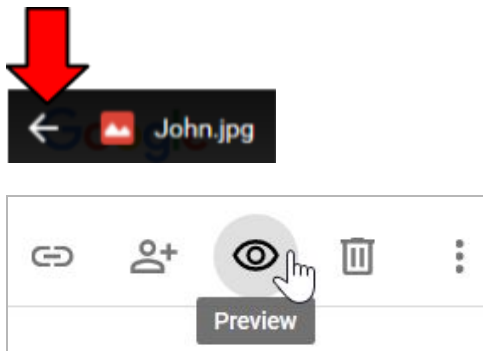
Double-click method

With most kinds of files in Google Drive, double-clicking a file causes it to open in edit mode. However, when an **image file** is double-clicked, the image is opened in the Preview Window.

1. *Double-click* the image file.

2. *Notice* how the **Preview Window** appears.

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Examining the Preview Window
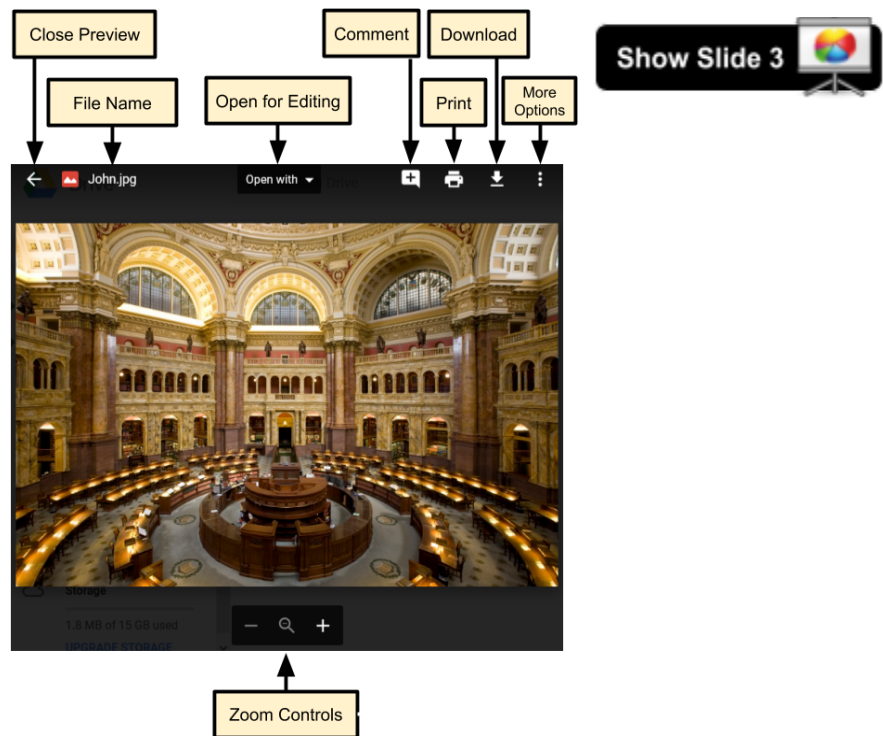
Close Preview	Takes you "back" to your Google Drive home screen (closes the preview window).
File Name	The name of the file that's being viewed.
Open with	Allows you to choose an app to open the file with in order to edit it. Also, shows suggestions of third-party apps that are not yet connected to your Drive that can open the file.
Comment	Allows you to annotate a specific part of the image.
Print	Prints the file. We recommend you <mark>avoid this button</mark> for two reasons. (1) Depending on your web browser, it may not give you a print preview and (2) it does not work well with certain file types, such as Microsoft Word documents. If you want to print a file, it's usually better to **download** the file, open the downloaded file with an app on your computer, and print it from there.
Download	Saves a copy of the file to the computer you are currently sitting at. If you make any changes to this copy while it is on your computer, then you will have to **re-upload** the file to your Drive if you want your Drive to have the changes.
More Options	Displays a menu with additional options.
Zoom Controls	Lets you zoom in and out of the image. You can also use the scroll wheel on your mouse to zoom in and out.

Segway: By default, your Drive account does not include an app that lets you edit images. So, in order to edit our image, we'll need to use a **third-party app**. But before we do that, let's quickly talk about what an app is.

Apps

To open and edit our image file, we'll need an **app**. Google Drive apps aren't "downloaded" and "installed" like you might do on a smartphone or a computer. Instead you **connect** an app to your Google Drive account, and it runs right inside of your web browser. Connecting an app gives the app permission to access your Google Drive files.

Pre-connected Apps

Your Google Drive account comes already connected to a suite of office productivity apps that were created by Google. Unlike third-party apps, which we'll talk about shortly, these apps cannot be disconnected from your Drive. Let's see what these apps are.

1. *Close* the preview window by clicking the back button in the upper-left corner of the window. **Do NOT click the *browser's* back button!** That will do something different.

2. *Click* on the "**New**" button. Three of these apps are immediately shown.

3. To see the rest of the apps that are connected to your Drive account, *point* to "More".
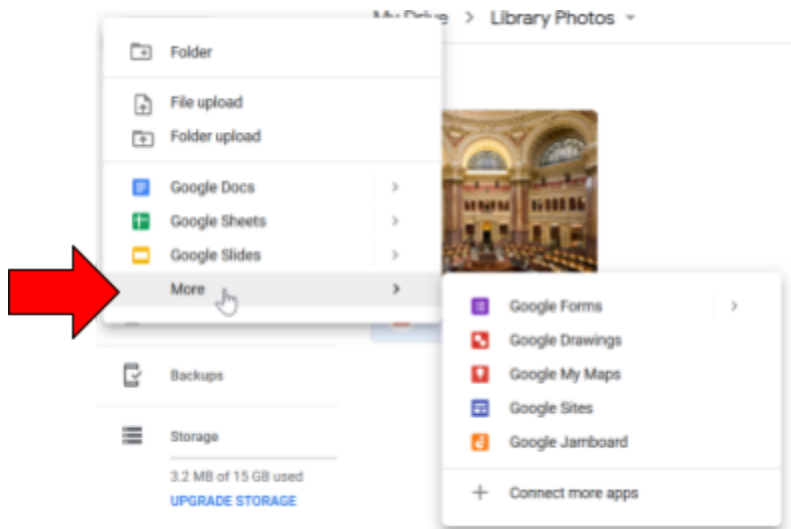
Pre-Connected Google Drive Apps

Google Docs	A word processing app, like Microsoft Word.
Google Sheets	A spreadsheet app, like Microsoft Excel.
Google Slides	A slideshow presentation app, like Microsoft PowerPoint.
Google Forms	Creates online surveys for people to fill out.
Google Drawings	Creates drawings and diagrams.
Google My Maps	Creates custom maps using Google's mapping service, Google Maps.
Google Sites	Creates simple websites, like Wordpress but less powerful

4. *Note* that this isn't necessarily a complete list of all the apps that are connected to your Drive. The New button only displays apps that are capable of **creating new files** (not all apps can do this).

Connecting to a Third-Party App

Teacher's Note:
If Photo Editor isn't working, the Appendix has alternative versions of this section that use different apps.

1. *Double-click* on our image again to open it in **preview mode**.

2. *Click* on "**Open with**" at the top of the screen. We are presented with some suggestions for apps that can open this type of file.

3. However, instead of accepting one of the suggestions, we will search for an app ourselves. *Click* **Connect more apps**.

Open with ▼

Suggested third-party apps

D   DocHub – PDF Sign and Edit

🌐   CloudConvert

🅿   Photo Editor

+   Connect more apps
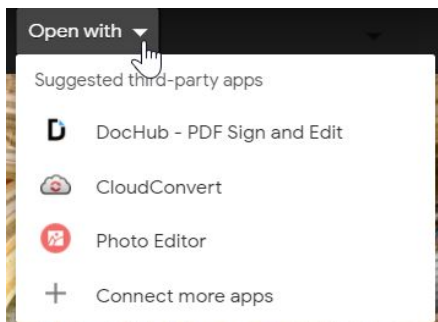
4. In the Search Box, *type* **photo editor** and *press* Enter.
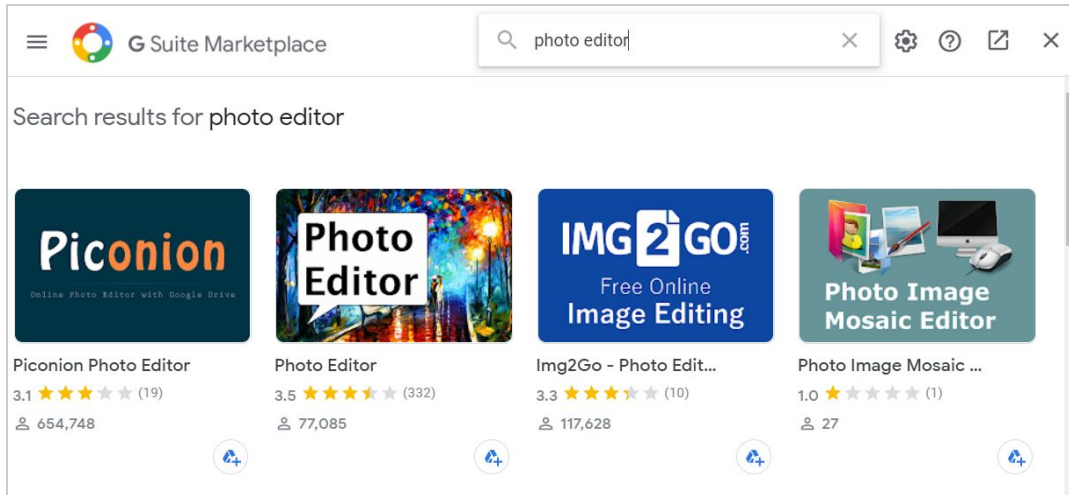
5. *Click* on the app called "Photo Editor".

6. *Notice* the blue "Install" button. The wording for this button is a bit misleading. Nothing gets installed onto your computer's hard drive, as would happen if we installed a more traditional software application. Because it's a Google Drive app, nothing gets put on your hard drive. The app only lives in the cloud. "Installing" the app just means that you are giving the app permission to access your Google Drive files.

7. *Click* the blue **Install** button. This will connect this app to our Drive account.

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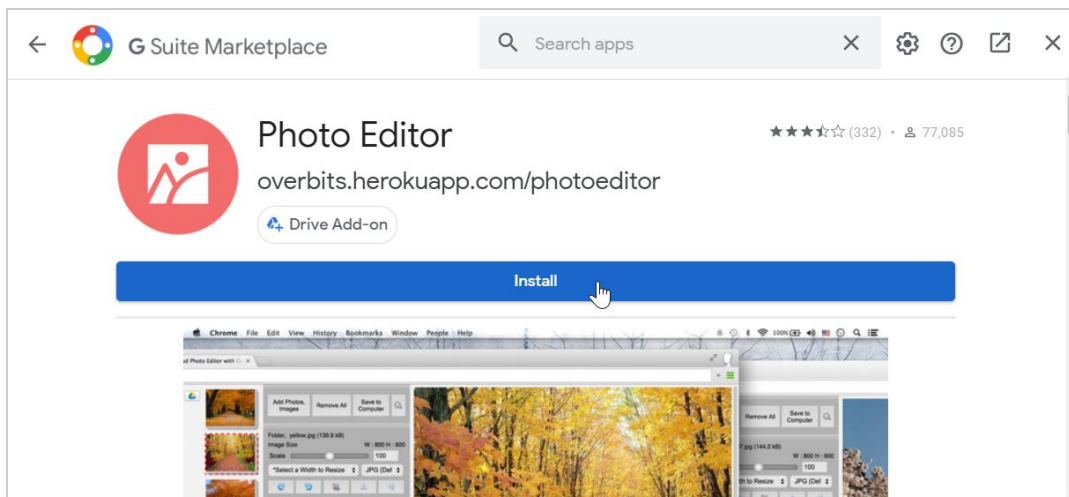
8. In order to install it, we must first give the app permission to access our Google Drive files. ***Click*** Continue.

   > **Get ready to install**
   >
   > **Photo Editor** needs your permission in order to start installing.
   >
   > By clicking Continue, you acknowledge that your information will be used in accordance with the terms of service and privacy policy of this application.
   >
   > CANCEL   CONTINUE
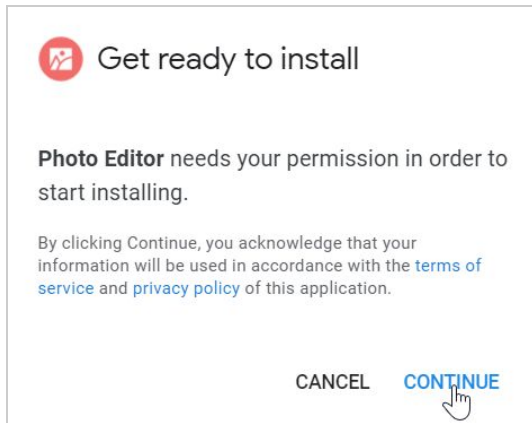
9. ***Notice*** a popup window appears.

10. You may be asked to choose which Google Account you want to use (it is possible to be signed into multiple Google Accounts at once). ***Click*** on your Google Account.

    > G Sign in with Google
    >
    > **Choose an account**
    > to continue to Photo Editor
    >
    > J John Doe
    >   mcnpljohndoe@gmail.com
    >
    > ⊘ Use another account
    >
    > To continue, Google will share your name, email address, language preference, and profile picture with Photo Editor. Before using this app, you can review Photo Editor's **privacy policy** and terms of service.
    >
    > English (United States) ▼   Help   Privacy   Terms
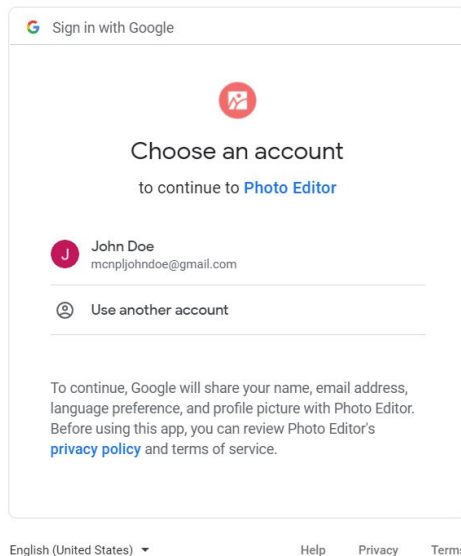
11. It will then step you through each permission the app is requesting.

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a. *Click* the arrow on the right to see more details about the specific permission.
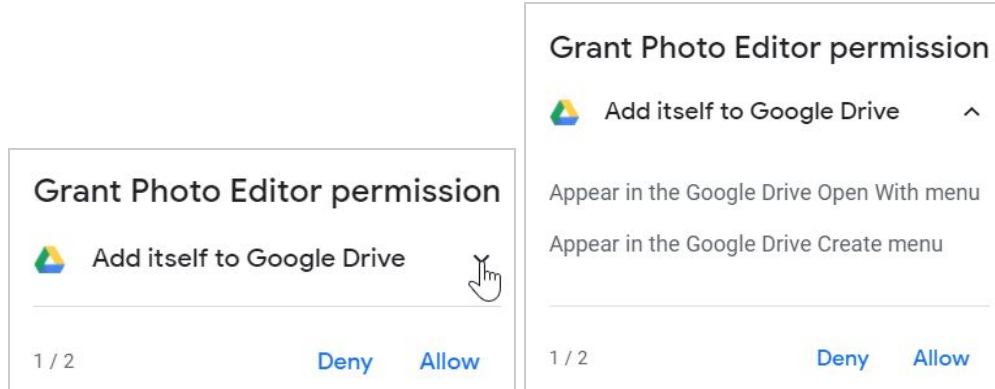
b. *Notice* the "1 / 2" in the bottom left. This means we are currently viewing the first permission, and that there are a total of two permissions we must review.

c. *Click* **Allow** for the first permission.

d. *Click* **Allow** for the second permission.

12. Next, it shows us a complete listing of the permissions the app will be given.

a. It is very important to review these permissions to make sure the app is not requesting too many. Apps can abuse their permissions by using them to steal or otherwise tamper with your data. The permissions that this particular app is requesting is normal, but some apps may request overly intrusive permissions.

b. *Notice* how some of the permissions have gray checkboxes. These are the permissions the app absolutely must have. We have no choice but to accept these if we want to use the app.

c. *Notice* how the other two permissions have blue checkboxes. These are the permissions we click "Allow" for previously. We could change our mind now and choose to deny the app these permissions. Doing so may make the app less usable, however.

d. *Notice* the message at the very bottom. It warns us that we may be sharing sensitive data with the app and to proceed with caution. Remember that this is a third-party app not created by Google. We will talk more about app permissions later.

e. We will leave all of these permissions enabled. *Click* **Allow**.

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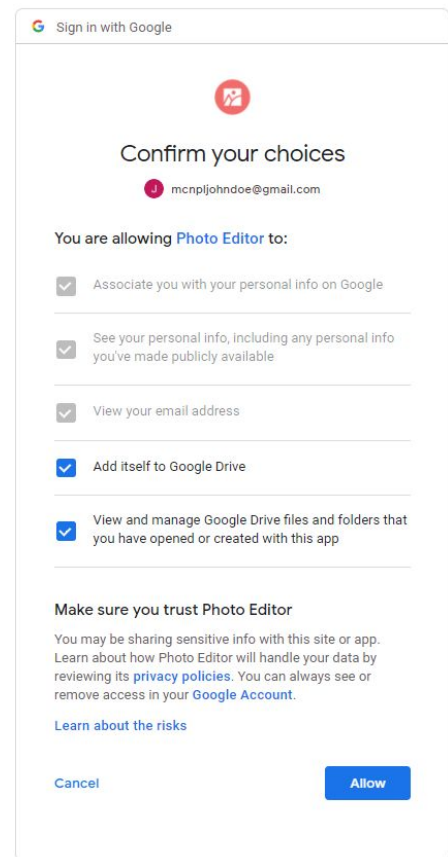
13. A message appears confirming that we connected the app to our account. ***Click*** **Done**.
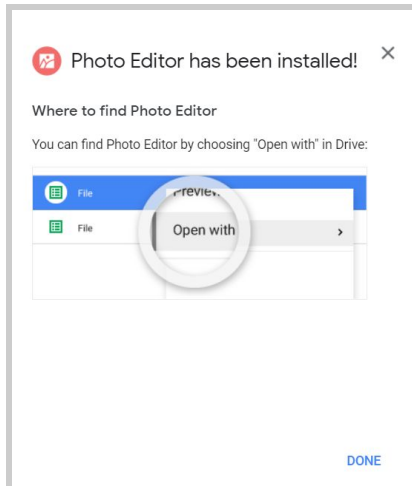
14. We are returned to the G Suite Marketplace tab. ***Close*** the **browser tab**.

15. ***Close*** the G Suite Marketplace dialog box.

16. ***Close*** the preview window.

17. Because we added a new app to our account while we had Google Drive open in this tab in the background, the tab doesn't know that we added a new app. ***Refresh*** the browser tab.

18. ***Right-click*** on the photo and ***point*** to **Open With**. This menu shows a listing of apps we can use to open the file with.
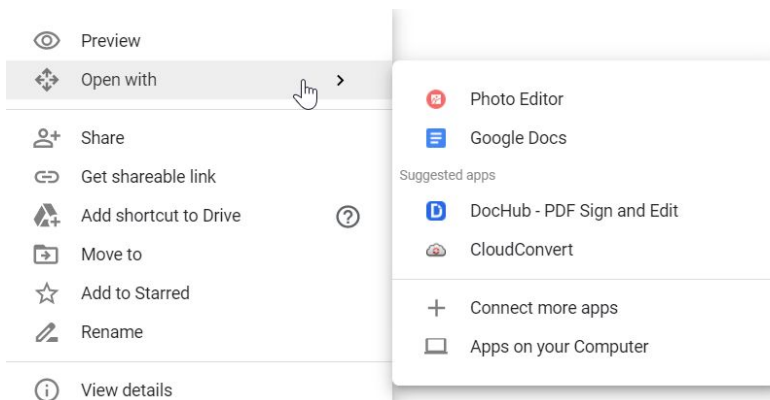
    a. The first two apps, Photo Editor and Google Docs, are already connected to our Drive.

    b. The apps under the "Suggested apps" heading are NOT connected to our Drive. They are suggestions made by Google. <mark>Note that Google does not closely vet the third-party apps that are on its service, so you shouldn't blindly trust the apps that are listed here.</mark> We will talk more about how to vet an app later.

19. ***Click*** in a clear space to dismiss the context menu.

20. ***Note*** that, because we added an app to our Drive that can edit picture files, double-clicking the photo will now **open** the photo for editing in the app. Double-clicking <u>no longer</u> opens the photo in the preview window.

21. ***Double-click*** the photo to open it in the Photo Editor app.

22. ***Notice*** that a **new browser tab** has opened. <mark>When you **open** a file in your Drive with an app, it opens in a **new browser tab**.</mark> The tab will contain an icon for the app you are using. We haven't authorized the app yet, so it's just showing the Google logo.

Teacher's Note:
If you or the student are logged into multiple Google Accounts at once, you may see the message below. Click "Login & Authorize", and then select the Google Account you are using for class.

Login & Authorize   Close
To use this app, Please login to the Google Drive and authorize this app or website.
(Note: If your browser block or disable the third-party cookies, this login does not work correctly.)

23. ***Click*** the photo thumbnail at the top of the screen to start editing it.

Teacher's Note:
This app is a bit buggy. If the thumbnail does not appear, keep refreshing the browser until it does. It may take 5-10 refreshes before it appears.
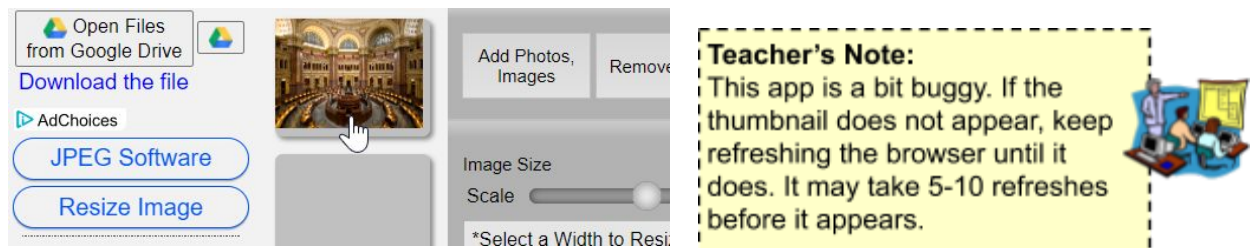
Why is this app free?
They make money from the advertisements they display on the app.

24. Next, we are going to apply an effect to our image. The effects are listed in the middle of the screen. ***Click*** on an effect to select it.
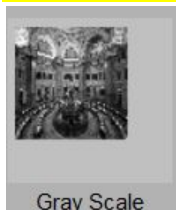
<mark>**LEFT partner picks:**</mark>   <mark>**RIGHT partner picks:**</mark>

Gray Scale   Pink

---
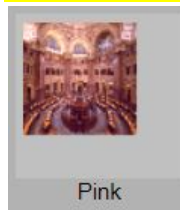
25. **Click** the small button in the upper left corner that has the Google Drive logo in it to save your changes.

26. A yellow dialog box appears. **Click** "**Save**".
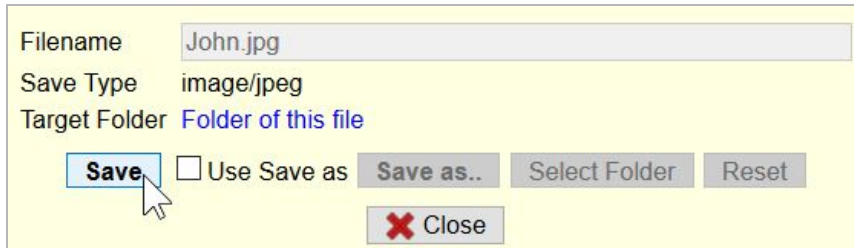
27. Notice the green confirmation message below the save button. Our save was successful.
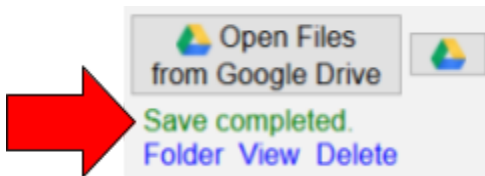
28. Now that we are done editing the image, **close** the **browser tab**. This will return us to the browser tab that has our Google Drive files in it.

29. **Notice** how the image file thumbnail has updated to show the changes we just made to our image. This confirms that our changes were indeed saved.
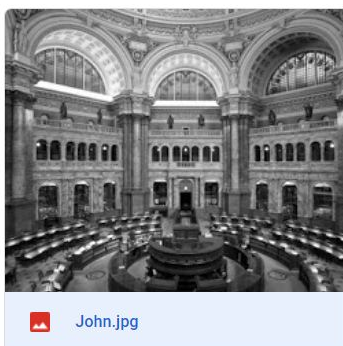
30. **Remember**, it may take a few seconds for the thumbnail to **sync** with the cloud and update. If the thumbnail does not update after thirty seconds, try doing a **browser refresh**.

Sharing

Arguably the most powerful feature of Google Drive is the ability to **share** files with other people. This allows multiple people to view and edit the same file, making it great for collaboration.

To make this possible, Drive saves all of your files to Google's "cloud". The cloud is essentially a collection of thousands of computers located at Google's headquarters. Everybody's Google Drive files get saved here.

Note that every company has its own, __separate__ cloud. For example, you cannot access a file on Apple's cloud service using a Google Account.

The diagram below demonstrates this. It shows Google founders Sergey Brin and Larry Page's (fictional) Google Drive accounts. Larry has two files: a business document and a photo of Larry and Sergey. Sergey also has two files: a financial spreadsheet and the same photo of Larry and Sergey. The photo that they each have is the <u>same exact file</u>. In other words, they <u>share</u> this file. If one person edits it, the other person will instantly see the changes.

But the diagram shows other files too. These belong to the millions of other Google Drive users. Everybody's files are lumped together in the same cloud, but nobody can see each other's files unless they explicitly share them with someone else.

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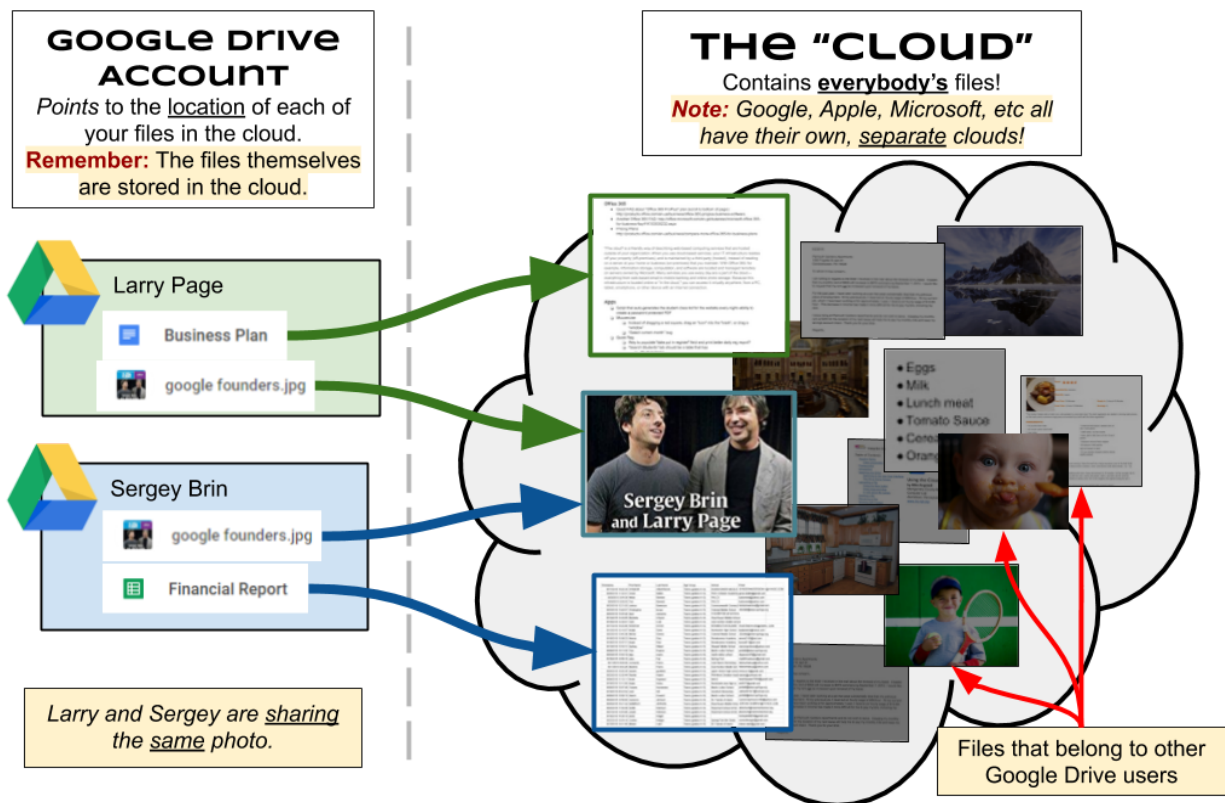
To demonstrate sharing, we're going to share our image file with our partner.

Sending a Sharing Invitation

1. *Click once* on the photo to **select** it (if it's not already selected).

2. *Click* on the "**Share**" button in the **Options Bar** (or use the **right-click context menu**).

3. A **share dialog** will appear. This dialog allows you to control who can view and edit your file.
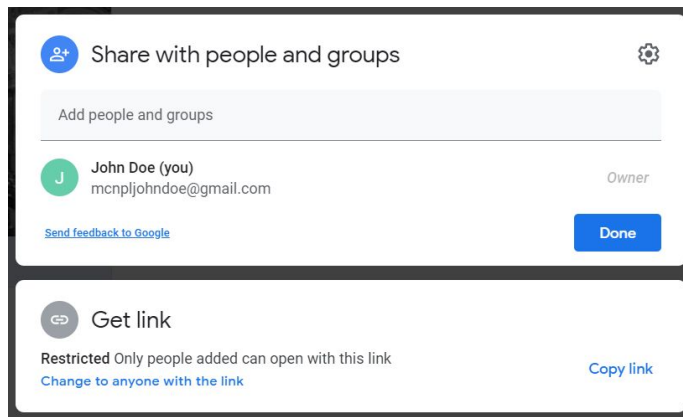
4. *Click* inside of the "Add people and groups" textbox.

5. Type your **partner's email address**. *Note* that your email address is your Google Account username, followed by "@gmail.com".

    a. Suggestions may appear as you are typing. These are email addresses that Google Drive has remembered from previous classes.

    b. If you see your partner's email in this list, click on it to select it.

6. After you've entered a valid email address, some new objects appear on the screen.

7. *Notice* that a **dropdown list** has appeared to the right of the email textbox. This lets you control what kind of access you want to give the person.

8. ***Click*** on the dropdown list to see the available options.

Viewer	User can only view the file.	
Commenter	User can view and add comments to the file. A "comment" is a note that you add to the file without editing the file itself (think of it like a sticky-note).	
Editor	User can view, add comments, and make changes to the file.	

9. We will ***keep*** "**Can edit**" selected because we want our partner to have the ability to edit our photo. See the table below for a description of each access level.

10. ***Notice*** a checkbox labeled "Notify people" has appeared. When this is checked, Google Drive will email the person telling them that you shared a file with them. ***Leave*** this checked.

11. ***Notice*** that a textbox labeled "Message" has appeared. If "Notify people" is checked, this textbox allows you to include a custom message in the notification. ***Type*** a short message.

Note:
The person you are sharing the file with **MUST** have a Google Account. Later on in the course, you will learn how to share a document with someone who does not have a Google Account.
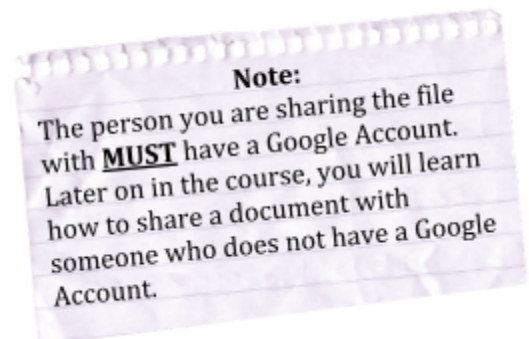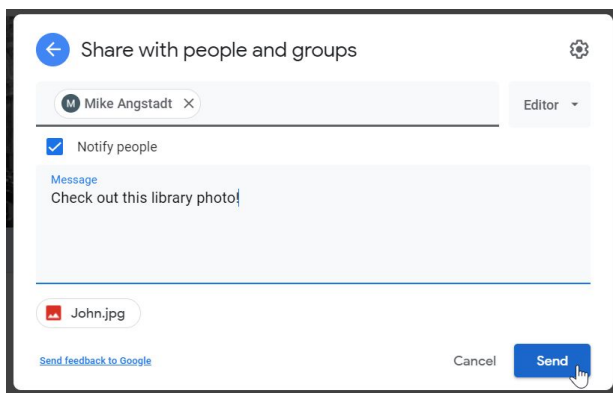
12. ***Click*** "Send" to complete the invitation.

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Opening a Shared File

Now, let's open the photo that our partner shared with us.

1. In the **Side Navigation Pane**, *click* on "**Shared with me**". This is like a "mailbox" where files that people have shared with you will appear.
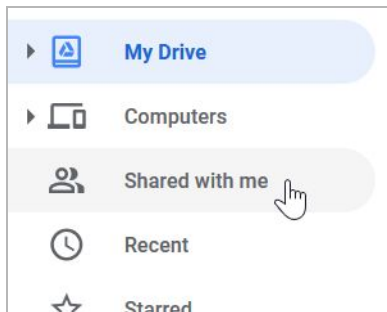
2. *Notice* how "Shared with me" turned **blue** to indicate that we're currently viewing this location.

3. *Notice* how your partner's photo is shown in the Content Pane.

    a. *Note* that it may take up to **one minute** to appear because your computer has to sync itself with the cloud.

    b. If it still isn't there after a minute, **refresh** the web browser (see note below).

A Note About "Syncing":

When working in the cloud, you will sometimes experience issues with your computer not getting the latest information in a timely manner. For example, someone might share a file with you, but you might not actually *see* the file until a couple minutes later.

To resolve these issues, it sometimes helps to do a **browser refresh**. This forces your computer to "**sync**" with the cloud and download the latest information.

If that still doesn't help, do a "super refresh" by pressing **Ctrl+F5**. This tells the browser not to use the browser cache when loading the page.

4. *Note* that the files in "Shared with me" cannot be organized into folders, unless you first move them to "My Drive".

5. *Also note* that the files in "Shared with me" are not actually physically present in your Drive. They are in **someone else's** Drive.

6. Because we've given our partner the ability to edit our file, let's edit our **partner's** photo. *Double-click* on your **partner's** photo to open it for editing.

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7. Let's apply a new effect to our partner's photo.

   a. *Click* on the image thumbnail.

   b. *Select* the **Negative** effect.

   c. *Save* changes.

Teacher's Note:
If you used **Pixlr Express** to edit your image, replace step 8 above with this:

1. *Click* on the **Borders** button.
2. *Click* **Film**.
3. *Select* the **Ball** border.
4. *Click* **Apply**.

Teacher's Note:
If you used **Pixlr Editor** to edit your image, replace step 8 above with this:

1. *Click* on the **Filter** menu.
2. *Select* one of the following effects:
   * Pointinize
   * Polar Coordinates
   * Kaleidoscope
3. *Save* changes.

Teacher's Note:
If you used **PicMonkey** to edit your image, replace step 8 above with this:

1. *Click* on the "magic wand" icon on the left.
2. *Choose* the Dark Edges effect.
3. *Click* "Apply".
4. Save changes by *clicking* "Export", then "Replace".

8. *Close* the browser tab.

9. *Close* the preview window.

10. *Notice* how the thumbnail of your partner's image has changed because you modified the photo. It may take a few seconds to update.

Teacher's Note:
Students may need to refresh their browser window, as the activity sometimes does not update. This is a good teaching moment for explaining how to resolve "syncing" issues in the cloud (refresh the browser window).

11. Let's see the change that our partner made to our file.

    a. *Click* My Drive.

    b. *Open* the Library Photos folder.

    c. *Notice* how it looks different now.

Whatever changes your partner makes to the file, you will see, and whatever changes you make to the file, your partner will see! This is the power of Sharing!

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Viewing the File Activity

1. *Click* on the image to select it.

2. *Open* the **Details/Activity Pane** by clicking the button in the Options Bar.

3. *Click* on the **Activity** tab if it is not already selected.

4. *Note* that the Activity tab contains a record of your partner editing your file.

Teacher's Note:
A browser refresh may be required if the Activity tab does not show the partner's edits. This is a good teaching moment for explaining how to resolve "syncing" issues in the cloud (refresh the browser window).

Note:
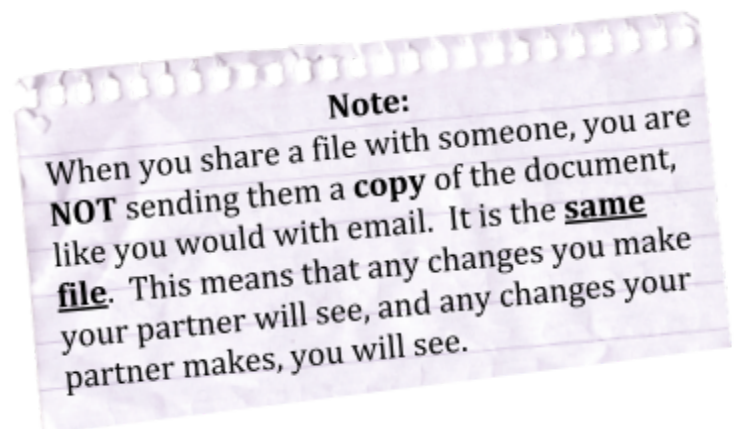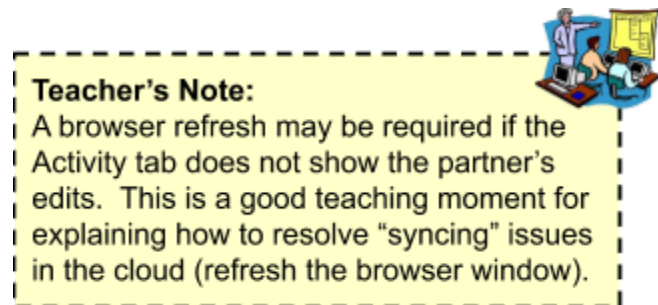When you share a file with someone, you are **NOT** sending them a **copy** of the document, like you would with email. It is the **same** **file**. This means that any changes you make your partner will see, and any changes your partner makes, you will see.

Creating a file shortcut

1. *Navigate* to your "Shared with me" location.

2. It is not possible to create folders in this location, which means that things can start to get disorganized very quickly as people share more and more files with you.

3. However, it is possible to place a **shortcut** to a file that has been shared with you. This shortcut can then be placed amongst the files in your Google Drive.

4. Let's create a shortcut to our partner's photo in our "Library Photos" folder.

5. *Click* on the file to **select** it.

6. *Click* on the "**Add shortcut to Drive**" button in the Options Bar.
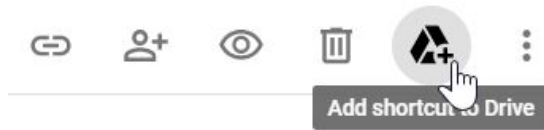
7. A dialog appears prompting us to choose a location. *Click* the **arrow** to the right of My Drive. This will cause the dialog to display a listing of folders that are in our My Drive location.
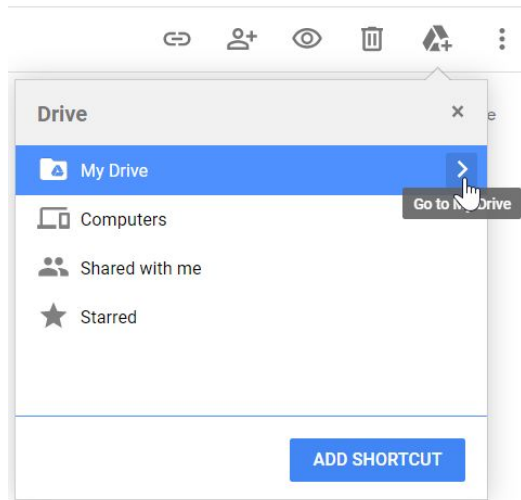
8. *Click* on the words "Library Photos" to select that folder. You do not have to click the arrow on the right because we do not need to see this folder's subfolders.

9. *Click* Add Shortcut.
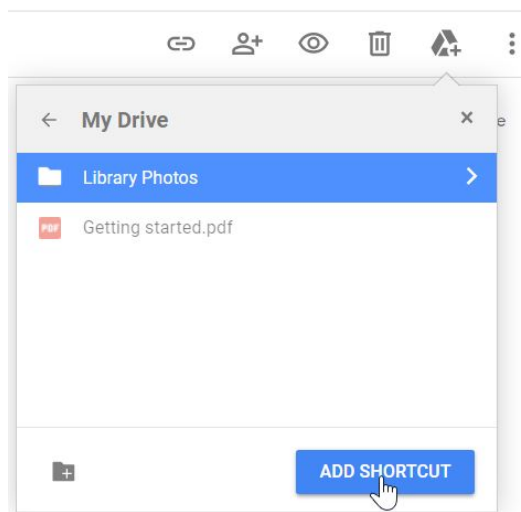
10. *Notice* the black notification bar in the bottom left confirming our action.

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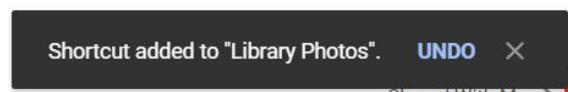
11. **Navigate** to your Library Photos folder.

12. **Notice** how there are now two files in this folder.
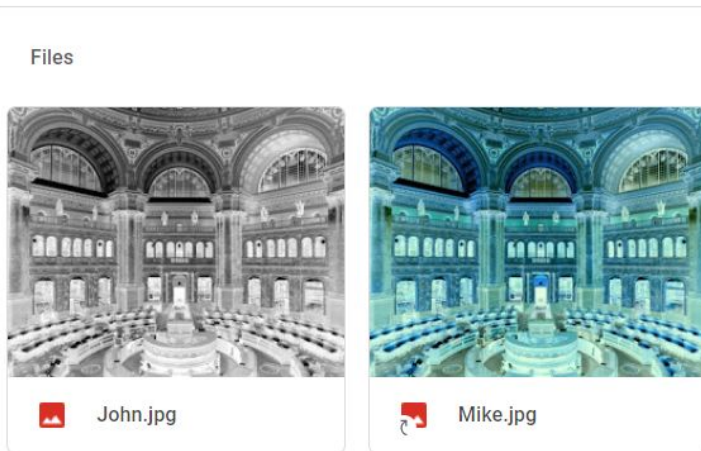
13. **Notice** the red icon to the left of the file name. **Notice** how the icon for your partner's photo has a small, curved arrow next to it. This arrow indicates that the file is a **shortcut**.

File Ownership

What is an "owner"?

Every file on Google Drive has <u>exactly one</u> **owner**. The owner is usually the person that created the file (although it is possible to *transfer* ownership of a file to somebody else). Owners have full control over a file, meaning they can edit it, delete it, and share it.

Only the owner of a file can truly **delete** a file. When the file owner deletes the file, the file gets deleted off the cloud. Anyone that the file is shared with will no longer be able to see the file. However, if a file is just **shared** with you and you delete it from your Drive, you are not deleting the actual file off the cloud. You are just removing it from your personal Drive account.

Owner Settings

Owners have access to special settings which can be used to restrict the kinds of things that other people can do to the file.

1. To access these settings, *open* the **share dialog** of the photo that **you own** (the one with your name on it).

    a. *Click* on it once to **select** it.

    b. *Click* on the "**Share**" button in the **Options Bar** (or use the **right-click context menu**).

2. In the Share dialog that appears, *notice* the "gear" icon in the upper-right. This icon is only visible for files that you are the **owner** of.

3. *Click* the gear icon.

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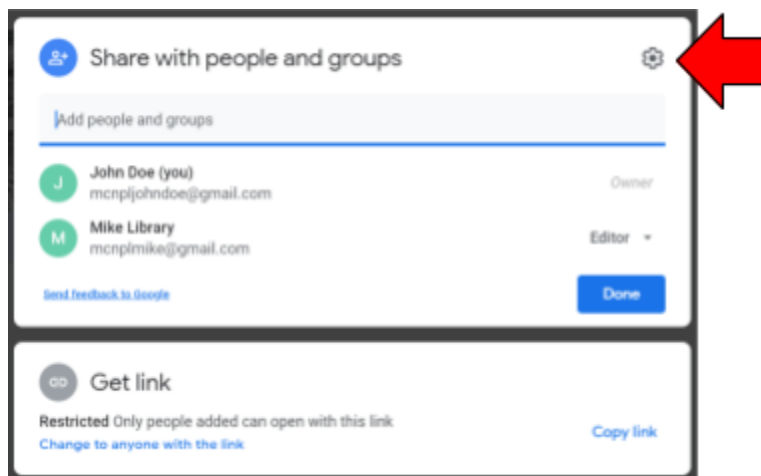
4. Two settings appear:
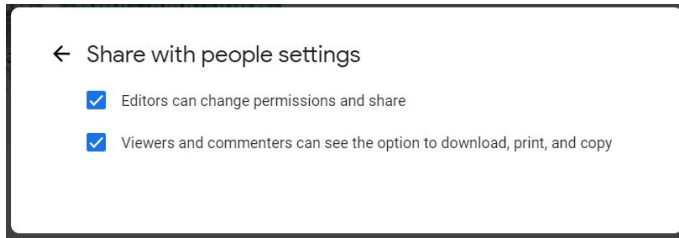
Editors can change permissions and share
Whenever you give someone permission to edit your file, in addition to having the ability to make changes to the file, they can also share the file with whoever they want and even remove other people's access permissions from the file. Disabling this setting will prevent them from doing these things.

Viewers and commenters can see the options to download, print, and copy
In addition to editing and creating files on Google Drive, you can also download Google Drive files to your local computer, print them, and make copies of them. Disabling this setting will prevent anyone who has access to your file from doing any of these things. **<u>Note, however, that there are ways to get around this in some circumstances, so you shouldn't rely on it.</u>** For example, if you mark a photo as not being downloadable, the viewer could still take a screenshot of the photo and then save the screenshot (assuming they have the technical knowledge to do so).

5. We will not be changing these settings.

6. ***Click*** in a dark area off of the dialog to close it.

Creating a Shareable Link

Another way of sharing a document is by creating a **shareable link**. This gives **anyone** with the link access to your document.

Benefits	Drawbacks
● A Google Account is not required in order to access documents with shareable links.	● There's no way of telling who made what changes to your document.
● You don't have to manually invite each person you want to give access to.	● You can't prevent an individual from accessing the file once they have the link.

To demonstrate this, we're going to create a **Google Docs** file that we will use for family members to record what they are bringing to a family holiday party. We have a lot of family members, and many of them do not have Google Accounts, so this would be an ideal time to create a shareable link.

1) Creating our shareable document

First, let's create the document we want to share.

1. _Click_ "**My Drive**" in the Side Navigation Pane to get back to the **root** of your Drive.

2. On the **Side Navigation Pane**, _click_ the "**New**" button, then _click_ **Google Docs**. This will create a **new** Google Docs file within our Drive.

3. _Notice_ how a new **Google Doc** file has opened in a <mark>new browser tab</mark>.
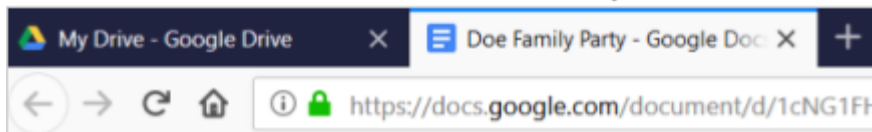
4. _Click_ where it says "**Untitled Document**" in the top-left corner of the screen. This will allow us to **name** our document.

5. _Type_ "**<Your last name> Family Party**" and _press_ Enter .

6. _Type_ the names of a couple **dishes** to get a list started.

7. _Close_ the document by closing the **browser tab**. The Google Docs app **automatically saves your changes** as you type, so there's no "Save" button to click.

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2) Creating a shareable link

1. ***Click once*** on the file to **select** it.

2. ***Click*** on the "**Share**" button in the **Options Bar**.

3. Look at the bottom half of the dialog. ***Notice*** it says "Restricted Only people added can open with this link". This means that we have not created the shareable link yet.
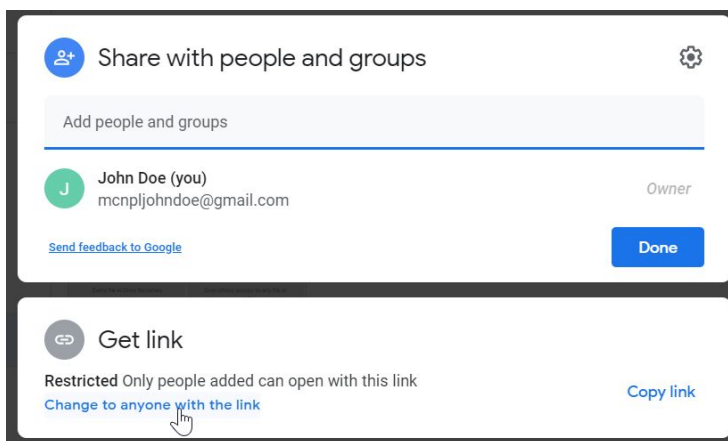
4. ***Click*** "Change to anyone with the link" to enable link sharing.

5. ***Notice*** how it says "Anyone on the internet with this link can view". We want our family members to be able to **edit** this file, so we must change this setting.
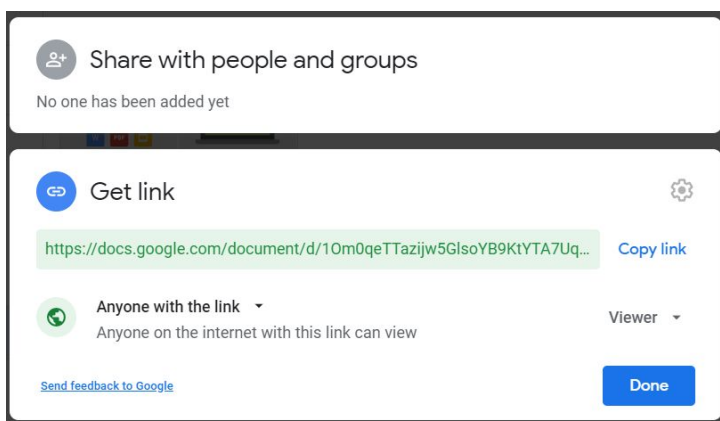
6. ***Click*** "Viewer" on the right and select "Editor". Now, anyone we give the link to will be able to not only view the file, but edit it as well.

> ## Will strangers be able to edit my file?
>
> While it is true that anybody on the internet can open and edit this file, the file's link is filled with so many random letters and numbers that it is nearly impossible for strangers to guess it. For all practical purposes, the only way to gain access to the file is to get the file's link from somebody you know.

3) Emailing the link

Now, let's pretend our partner is a family member and email the link to our partner.

1. Before we close the Sharing dialog, we need to **copy** the link to the **clipboard** so we can **paste** it into the email. Again, this link is what each of our family members will need in order to access our document.

2. *Click* the "Copy link" button.
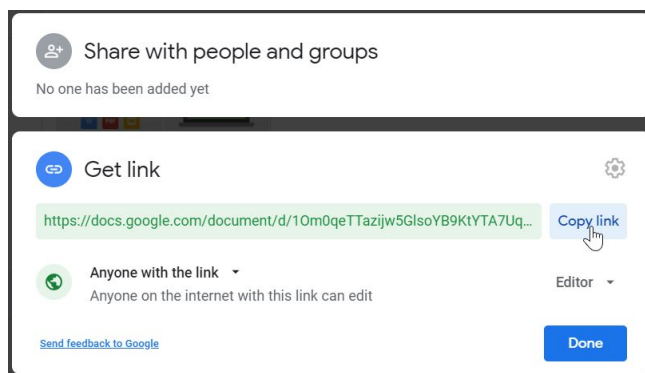
3. *Notice* the small confirmation message that briefly appears at the bottom of the dialog box.
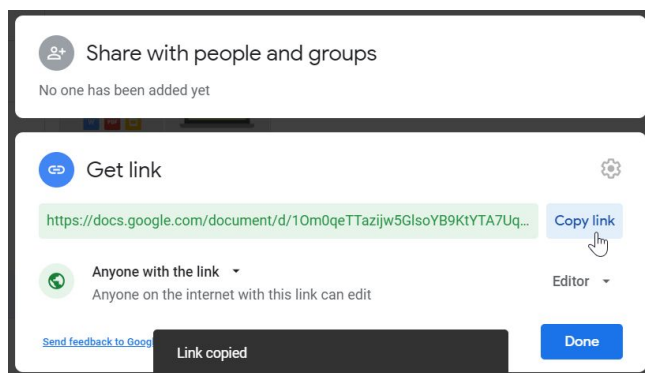
4. *Click* "**Done**" to close the Sharing dialog.

5. Now, let's open our **Gmail account**.

    a. ***Click*** on the "Google Apps" icon in the Google Bar.

    b. ***Click*** on "**Gmail**".

    c. ***Notice*** how Gmail opens in a **new browser tab**.
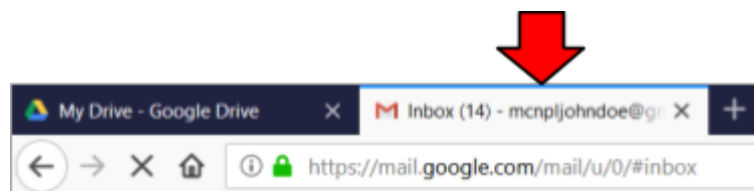
6. Now, let's compose a new email, and send it to our partner

    a. ***Click*** the "Compose" button on the left to start a new email.
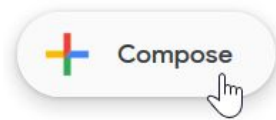
    b. ***Notice*** how the new email window appears on the right side of the screen.

    c. ***Type*** your partner's email address in the "To" field.
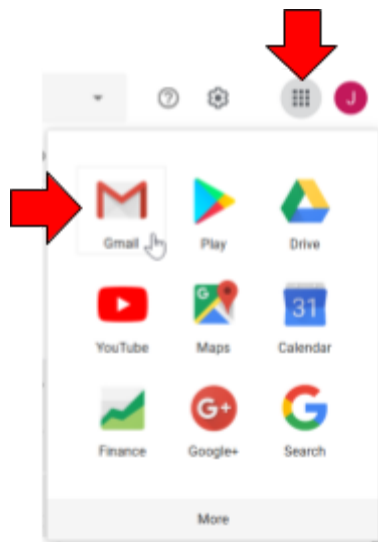
    d. ***Type*** "<Your last name> Party Food List" in the "Subject" field.

    e. ***Click*** in the body of the email and ***press*** Ctrl + V to paste the URL of the document.

    f. ***Click*** "Send".
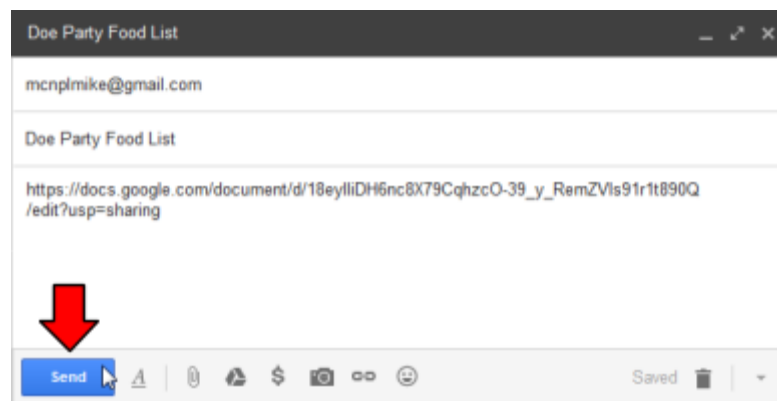
7. Once your partner sends his or her email to you, ***click*** the **Refresh button** at the top of the screen to check for new messages. You may have to ***wait*** up to a minute for your partner's email to appear.

8. ***Locate*** your partner's email. It should be at the top of the list.

9. *Notice* the button below the email's subject line.

   a. Gmail has detected that the email contains a link to a Google Doc. As a convenience, it has added a button below the subject line which, when clicked, will open the Google Doc.

   b. However, if your family members do not use Gmail, they will not see this button.
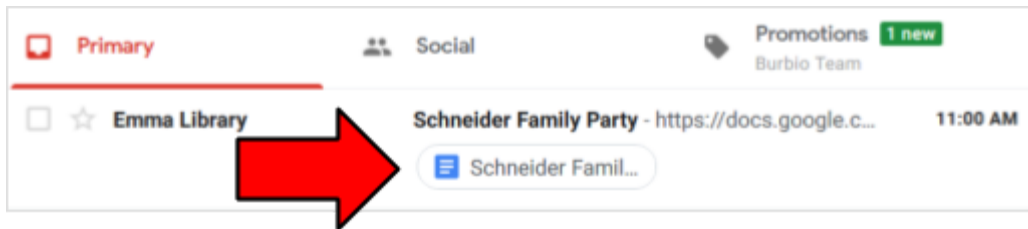
10. *Click* on the **subject line** to open the email.

11. *Click* on the URL in the email to open the document.
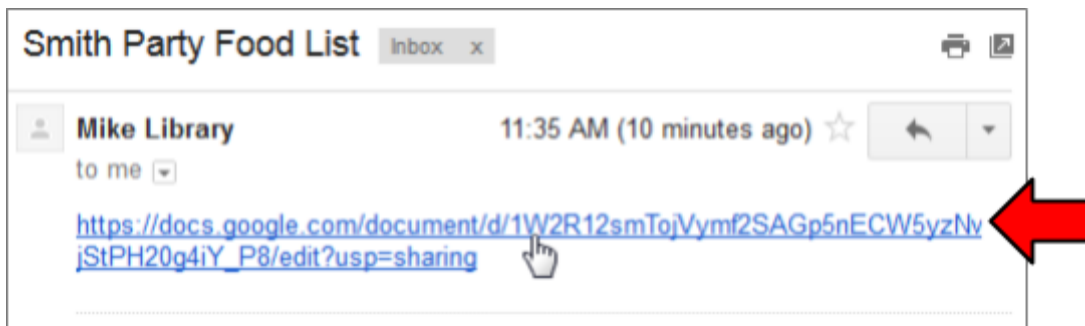
12. *Notice* how the document opened in a new browser tab.

13. *Add* some more dishes to the document.

14. *Close* the document by closing the browser tab.

15. *Close* the email browser tab.

Note:

Note that files that people share with you through shareable links do **not** appear in the "Shared with me" area of your Drive. The only files that appear there are the ones that people shared **directly** with you (by typing your email address on the Share screen).

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URL Shorteners

If we wanted to share the shareable link of our food list with somebody over the phone, or write it down on a napkin at a dinner party, we simply wouldn't be able to because the link is so long.

A **URL shortener** can be used to make long URLs much shorter. "URL" is the technical term for "link". There are many URL shortener services on the Internet, and many of them are free. We will be using one of the more popular ones called **TinyURL**.

First, we need to get the shareable link of our food list and copy it to the clipboard.

1. ***Click*** on the file to select it.

2. ***Click*** the **Share** button in the Options Bar to open the file's sharing settings.

3. Look at the bottom half of the dialog. Notice how it says "Anyone on the internet with this link can edit". In the previous section, we created a shareable link for this file, and assigned edit permissions to the link, so it is already configured to be shareable.

4. ***Click*** the **Copy link** button to copy the link to the clipboard.
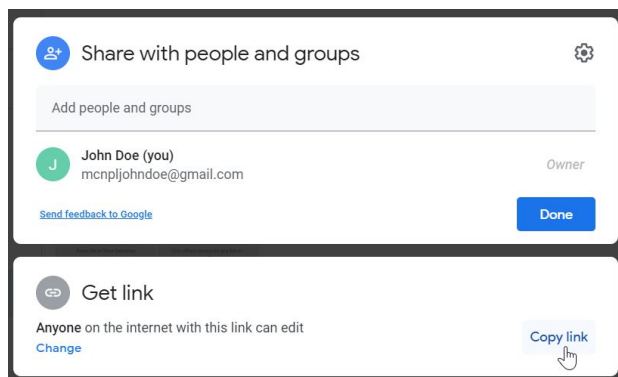
5. ***Click*** **Done** to close the dialog box.

Now we are ready to create the shortened URL.

1. *Open* a **new browser tab**.

2. *Type* "**tinyurl.com**" into the Address Field and *press* [Enter].

3. *Locate* the purple box in the center of the screen.

4. *Click* into the textbox labeled **Enter a long URL to make tiny**.

5. *Paste* the **link** of the holiday party document you previously copied into the textbox on the page.

6. *Click* the **Make TinyURL!** button.

7. *Notice* the shortened URL appear on the screen. *Notice* how much shorter it is.
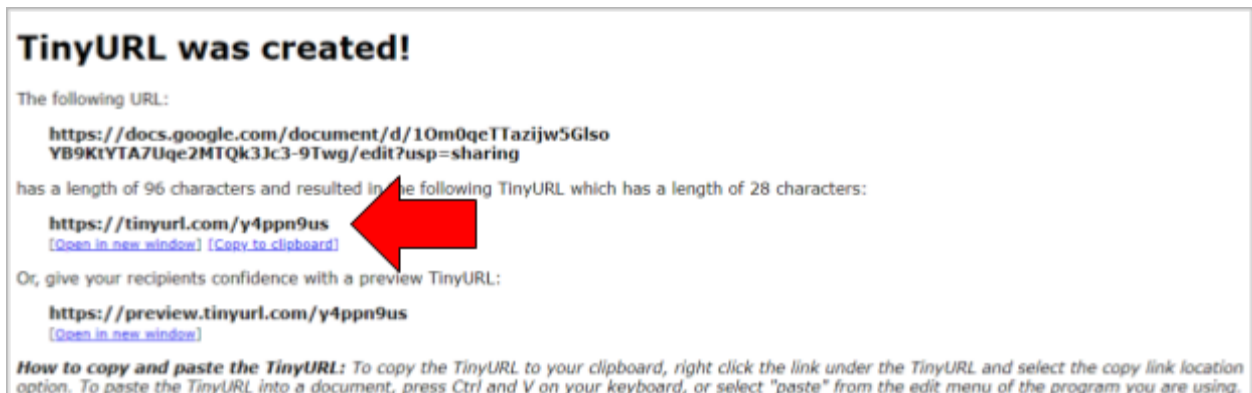
8. *Note* that **shortened URLs are often case-sensitive**. This means if you type a lowercase letter when you should have typed an uppercase letter (or vice versa) the URL **will not work**.

9. *Note* that, when giving this shortened link to somebody, you do not need to include the **https://** part. Web browsers will automatically add this, so it is not necessary to know.

Next, we are going to practice how we would share this URL with somebody by writing it down and giving it to our partner.

1. On the back of your sign-in slip, ***write down*** the URL, keeping the following things in mind:

    a. You do not need to write the "https://" part. Start writing at the first "t".

    b. ***Remember*** to differentiate capital letters from lowercase letters.

    c. ***Remember*** to differentiate between the letter "O" and the number zero.

    d. ***Remember*** to differentiate between a lowercase "L" and the number 1.

2. ***Swap*** slips with your partner.

3. ***Open*** a **new browser tab**.

4. ***Type*** your partner's URL into the Address Bar of the browser.

5. ***Press*** `Enter` to go to the URL.

6. ***Confirm*** that it has taken you to the document.

    a. If you get an error, you may have typed it wrong or your partner may have written it down wrong.

7. ***Notice*** how the shortened URL has **disappeared** from the Address Bar. This is normal behavior. The shortened URL has **redirected** us to the full URL.

Searching for Third-party Apps

Google Drive has a wide selection of third-party apps to choose from. A third-party app is an app that was not made by Google.

The G Suite Marketplace

All Google Drive apps are listed in the **G Suite Marketplace**. This contains apps not just for Google Drive, but for Google's other services such as Gmail and Google Calendar.

1. *Close* all browser tabs except for the one with Google Drive in it.

2. *Click* the "**New**" button, and *select* "**More > Connect more apps**". This opens the G Suite Marketplace in a small dialog box.
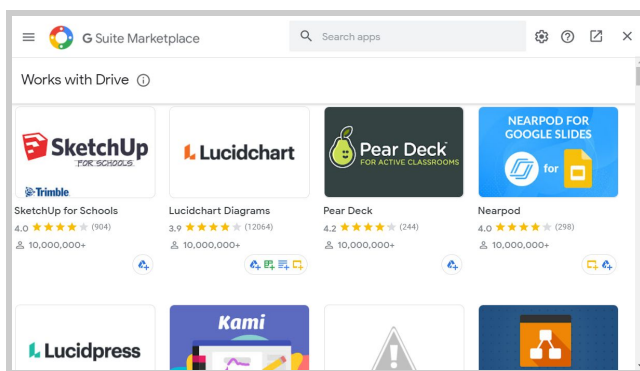
3. While we could browse the marketplace from here, the small size of the dialog box makes this a bit difficult. Instead, we can open the marketplace in its own browser tab using the Launch button.

4. *Click* the **Launch** button in the upper right corner of the dialog.

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6. *Notice* how the marketplace has opened in a **new browser tab**.

    a. Category Listing: You can browse apps by category using the listing in the left hand panel.

    b. Search box: Or, you can search for an app using the search box.

    c. Several pieces of information are displayed for each of the apps you see on the screen:

        i.   Average 5-star rating (ratings are submitted by users)
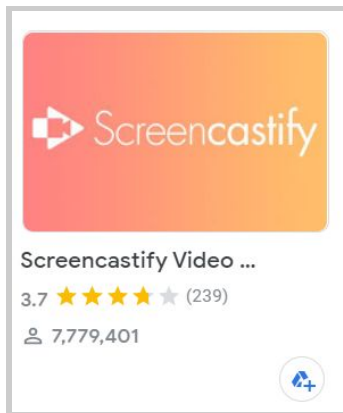
        ii.   How many users submitted ratings (the number that's in parenthesis)

        iii. How many people have installed the app onto their Google accounts.

        iv. The Google services that the app can be used with.
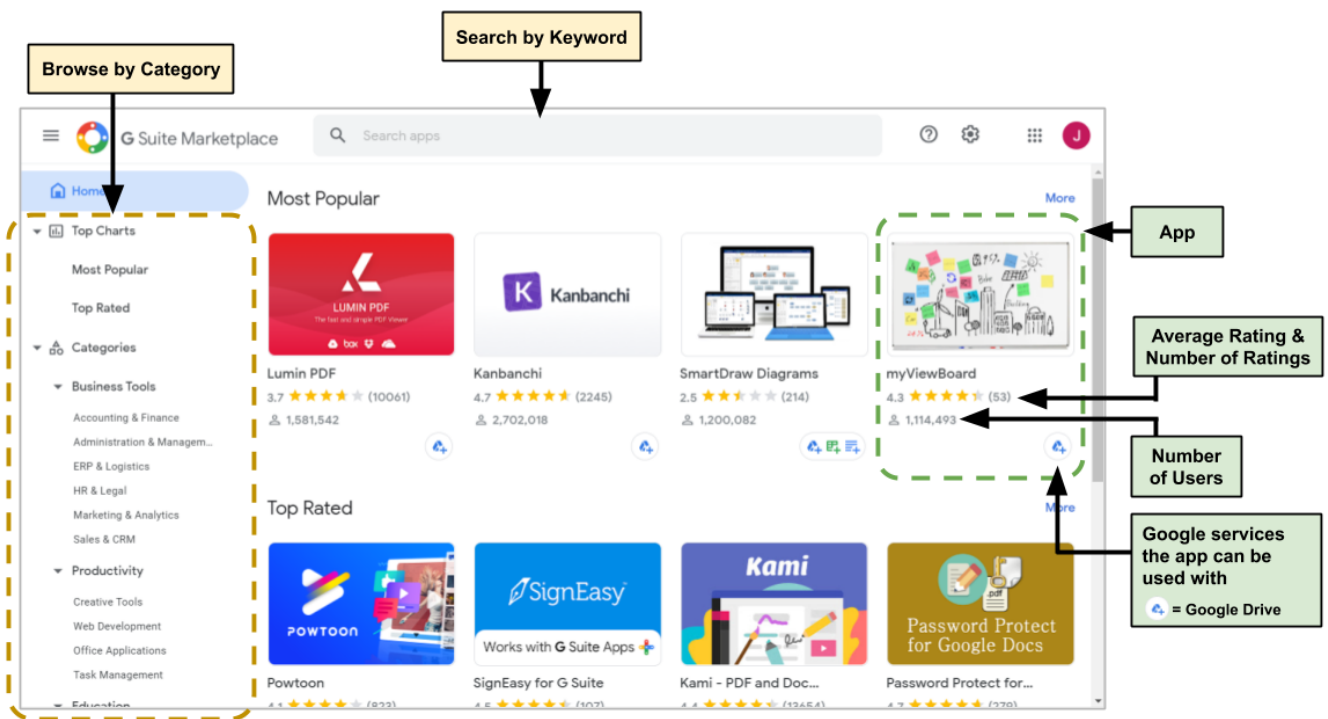

7. *Click* Creative Tools from the list of categories on the left.

8. *Notice* that the apps are sorted based on how many users each app has.

9. *Notice* that not all of the apps support Google Drive.

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Viewing app details

1. *Click* the **Screencastify** app to see more information about it.

2. *Notice* the average rating, number of ratings, and number of users are displayed in the upper right.
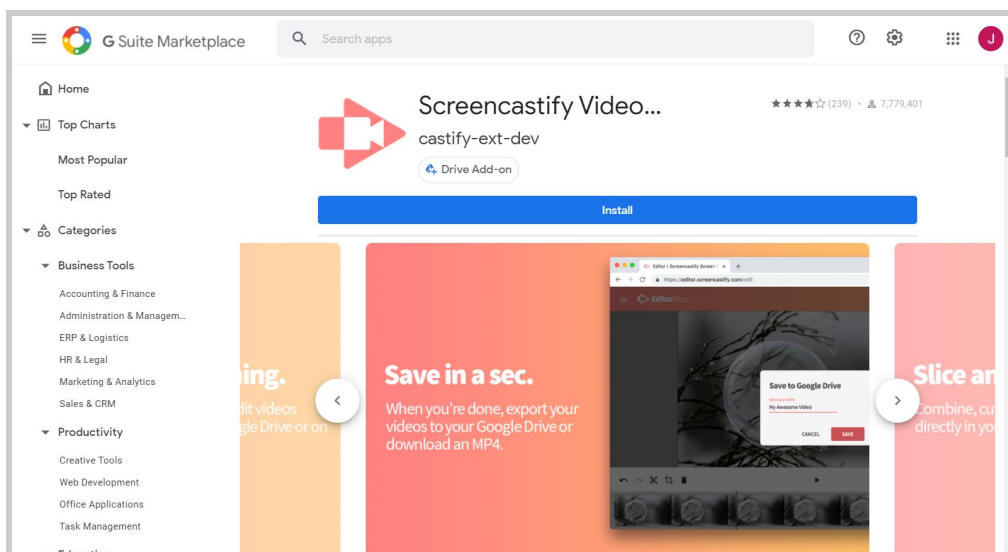
> a. Mike recommends avoiding apps that have less than a 3-star rating.
>
> b. Mike recommends avoiding apps that have less than 100 ratings.
>
> c. Mike recommends avoiding apps that have less than 100,000 users.

3. *Notice* the **three dots** after the app name. This means that the app name is too long to display on the page.

4. *Point* to the app name to see the full name--**Screencast Video Editor**.

5. **Blue "Install" button.** This is what we would click on if we wanted to connect the app to our Google Drive account.

6. **Pictures.** Below the install button are pictures of the app. You can click the arrow buttons to advance through the gallery, or watch as the pictures automatically advance.

7. **Detailed Description.** Below the screenshots is a detailed description of the app, provided by the app's creators. *Click* **Read more** to see the full description.

8. **Reviews.** At the very bottom are the user reviews. They can be sorted by most **Helpful** or most **Recent**. It is useful to read a **combination** of helpful and recent reviews to decide if it is an app you want to use

   a. Reading the most **helpful** reviews will show you reviews that other people have found useful in their decision making process. A "helpful" review does not mean it's a positive or negative review--it means that it helped someone to make a decision.

   b. **How does Google Drive know if a review was "helpful" or not?** Google Drive gets this data from its users. You can flag a review as being helpful or not by clicking the "Yes" or "No" button at the bottom of each review.

   c. Apps are constantly changing, so they can become completely different in a short timespan. Reading the most **recent** reviews gives you an idea for what an app is like NOW, as opposed to several years ago.

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What a Good App looks like

The quality of each app varies greatly. Therefore, it's good to look at the average rating and read some reviews before using it. Let's see what the reviews for a good app look like.

1. Let's analyze the app we are currently viewing, Screencastify Video Editor.

2. **Average rating:** At the time of this writing, Screencastify Video Editor has an average rating of 4 out of 5 stars. This is a good rating. This rating comes from users like you and me who have chosen to provide a rating.
   Mike recommends that you avoid apps with less than 3 stars.
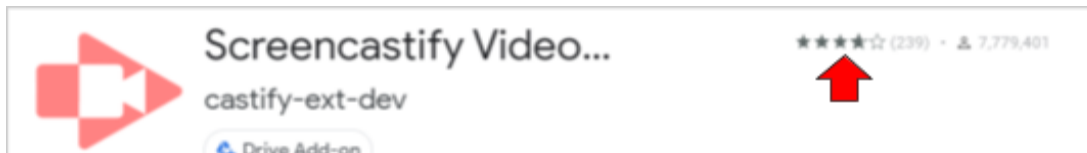
3. **Number of ratings:** The number to the right of the average rating is the number of ratings the app has received. At the time of this writing, Screencastify Video Editor has over 200 ratings, which is a very good amount.
   Mike recommends that you avoid apps with less than 100 ratings.
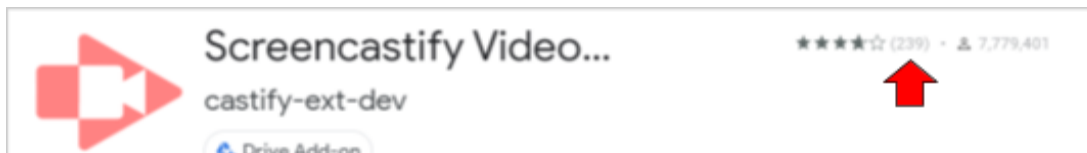
4. **Number of users:** At the time of this writing, PicMonkey has over 7 million users. When an app has a lot of users, it's a sign that it's a good app.
   Mike recommends that you avoid apps with less than 100,000 users.
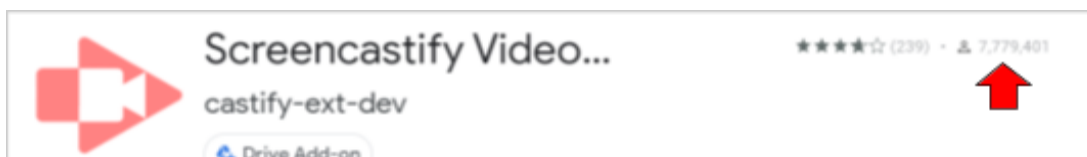
5. **Detailed description:** The app's description is very clear and polished.

6. **Reviews:** Many people have given it favorable reviews.

   a. Don't take an individual review at face value. Many reviews are short, poorly written, and lack detail. Instead, look for repeating themes that multiple people are writing about. For example, if only one person is complaining about being charged money, then it may not be true. However, if many people are complaining about this, then it may hold some truth.

   b. *Use* the **Helpful** AND **Recent** buttons to see reviews that people have found helpful and reviews that reflect the latest version of the app.

7. **Permissions.** This is the most important thing to consider when choosing a Google Drive app. If you install an app that requires excessive permissions, the app makers can abuse these permissions to steal, or otherwise tamper with, your personal data.

   Unfortunately, the only way to see the permissions is to begin the installation process. However, we can back out at the last second if we see permissions we don't like.

   a. *Scroll* back up to the top and click "Install".

   b. *Click* Continue.
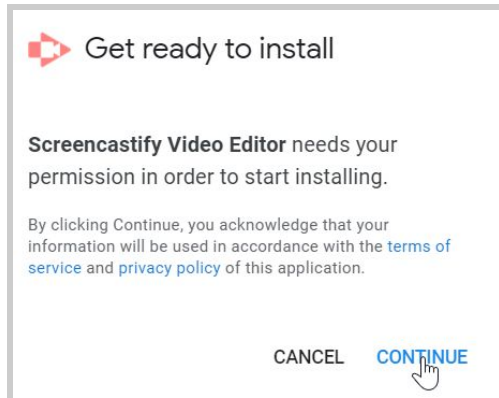
   c. *Click* your Google Account.
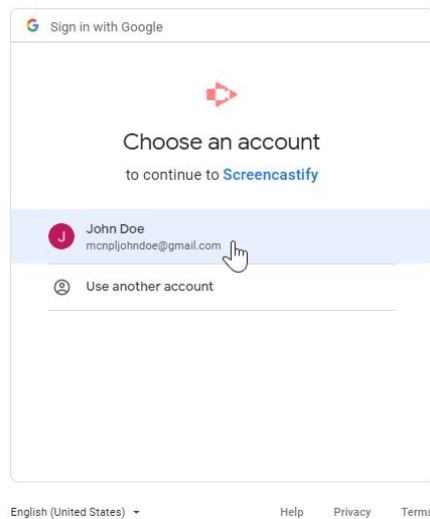
d. ***Notice*** the permissions that are displayed. Let's review these permissions, starting with the last one.

    i.   **View and manage Google Drive files and folders that you have opened or created with this app.** This is a reasonable permission. It gives the app permission to edit the files that you explicitly open with the app. An app can't do much if it doesn't have this permission.

    ii.   **Add itself to Google Drive.** This gives the app permission to add itself to Google Drive's "New" button and "Open with" menu. This is reasonable too.

    iii.   **Manage your YouTube account.** What does this mean exactly? Click the "i" icon to see more information.
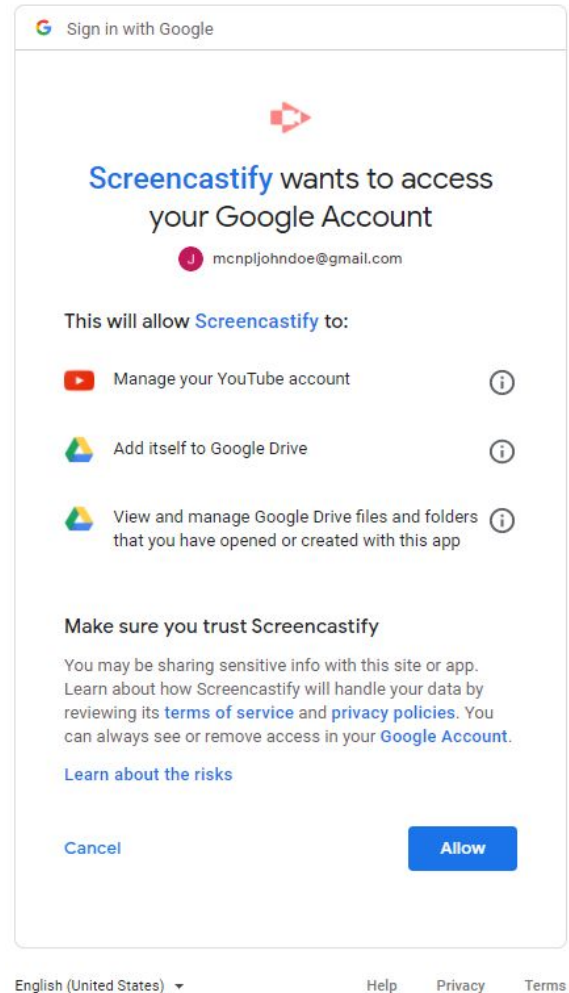
e. ***Notice*** that the app wants permission to post **public YouTube comments** on your behalf, and also view your **YouTube activity**! If I were an avid YouTube user, this would alarm me! Maybe this isn't a good app after all.
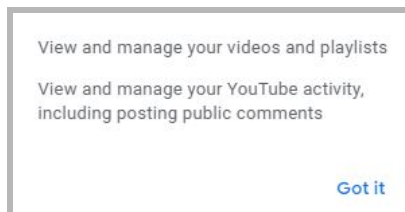
f. Unfortunately, the app is not allowing us to pick and choose which permissions we approve of, so our only choice is to cancel the installation and find another app that suits our needs.

g. ***Click*** the **Cancel** button to cancel the installation.

8. ***Follow*** these same steps to investigate the **Photo Editor** app we used to edit the library photo with.

What a Bad App looks like

Now, let's see what a bad app looks like.

1. *Type* "**pdf filler**" into the search box and press **Enter**.

2. *Click* **Free PDF Editor**.

3. *Notice* how it has a low, 5-star rating.

4. *Notice* how is has very few user reviews (14 at the time of this writing)

5. *Notice* how it has less than 100,000 users.

6. *Scroll down* the page to the user reviews.

7. *Notice* how many of them are **1 star**.

Reviews

A User of Free PDF Editor
★☆☆☆☆   August 11, 2020

Doesn't even come up as an option in drive. Waste of time.

Is this review helpful? ◯ Yes   ◯ No

A User of Free PDF Editor
★☆☆☆☆   August 3, 2020

Does not work at all!!

Is this review helpful? ◯ Yes   ◯ No

A User of Free PDF Editor
★☆☆☆☆   July 18, 2020

It's only a free trial.

Is this review helpful? ◯ Yes   ◯ No

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Excessive Permissions

Show Slides 8-9
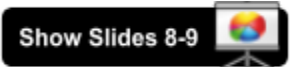
As we have seen, a characteristic of a bad app is when it requires too much access to your account. Note that you can't tell what permissions an app requires until you try to install it for the first time.

Below are two more examples of apps with excessive permissions. Most of the permissions they request are fine, but there are two permissions that are scary:

- **See, edit, create, and delete all of your Google Drive files**
- **View and manage the files in your Google Drive**

These permissions give an app the ability to do **whatever** it wants with your files, **whenever** it wants! Therefore, ==you should never use an app that requires one of these permissions unless you strongly trust the creator of the app.==
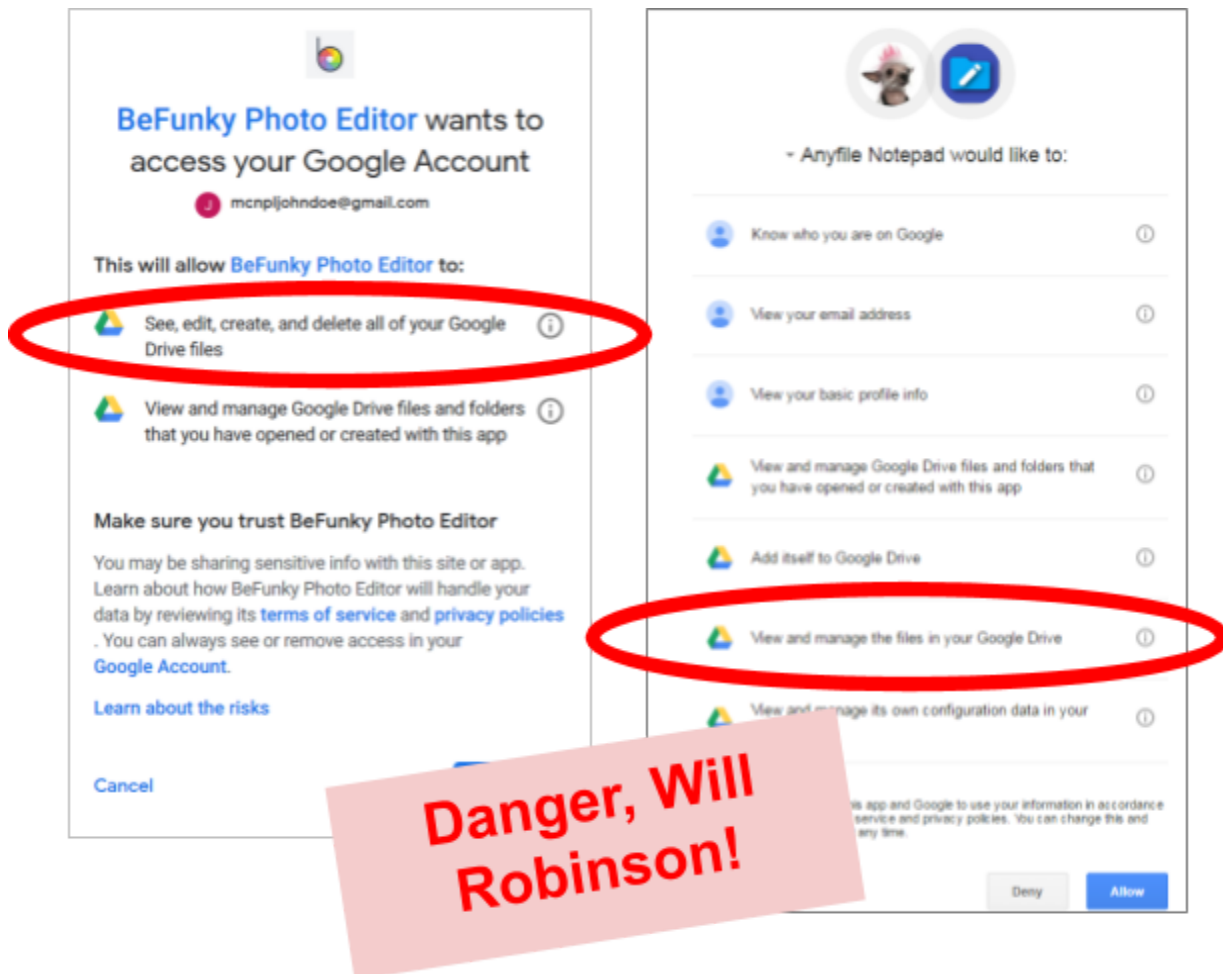
Here are some more recent examples of apps that request these excessive permissions. Have the students start the installation process to see these permissions:

- Img2Go
- Sketchpad
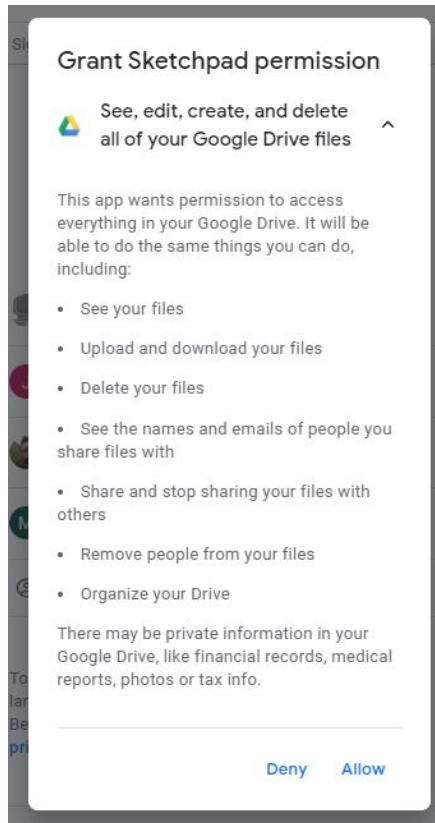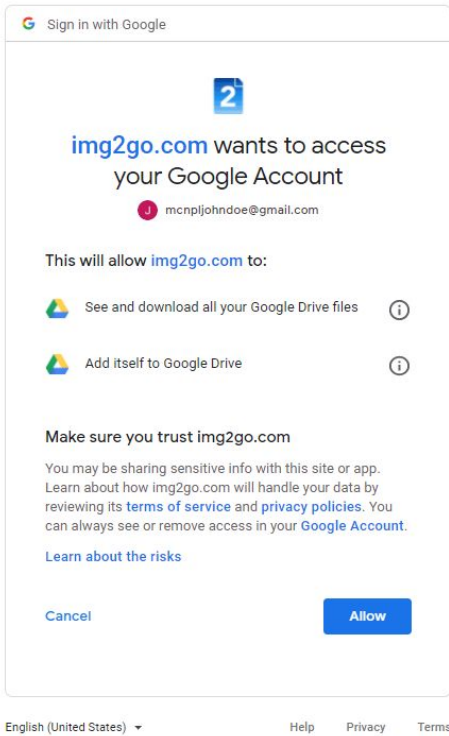
Disconnecting an App

If you no longer want to use an app, you can **disconnect** it from your Drive. This is equivalent to uninstalling/deleting an app from your computer or smartphone. It **severs** the connection between your Google Drive account and the app, preventing the app from being able to access your files.

Disconnecting an app will not delete any of your files.

Why would I need to disconnect an app?

Unlike apps on your desktop computer or smartphone, Drive apps do not take up storage space. So why bother disconnecting an app from your Drive? Here are some reasons:

1. Increased security--the fewer apps your Google Drive is connected to, the more secure your data is.

2. You found another app that's better than the app you're currently using.

3. The app begins to **abuse the access permissions** you gave it when it was initially connected to your Drive. This does not happen often, but it's something to keep in mind.

Demonstration

To demonstrate, we will disconnect the Photo Editor app from our Drives.

1. *Close* the G Suite Marketplace tab to return to your Drive.

2. *Click* on the **Settings** button (to the left of the Google Bar), and then *select* **Settings** from the menu that appears.

3. A "**Settings**" dialog box will open. *Click* on "**Manage Apps**" to view a list of all the apps that are connected to your Drive.

4. *Find* the "**Photo Editor**" app.

Teacher's Note:
If you used a different app to edit the photo, disconnect that app instead.

5. *Click* on the app's "**Options**" button and *select* "**Disconnect from Drive**".
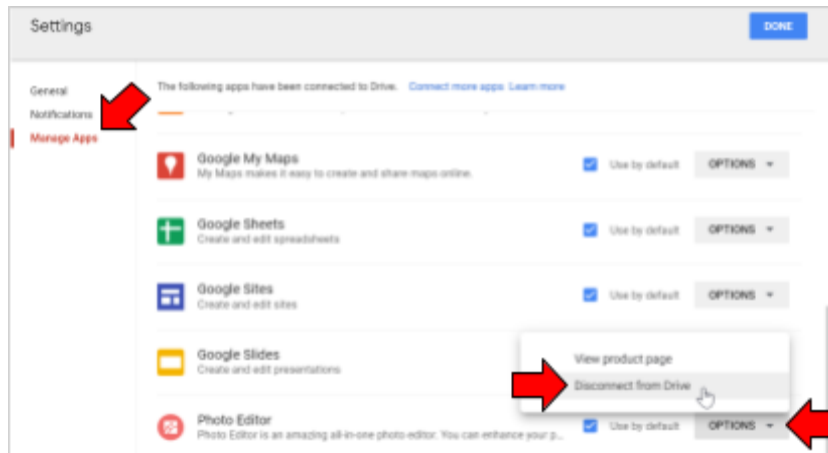
6. A confirmation dialog will appear. *Click* on "**Disconnect**".

7. *Click* "**Done**" to exit the **Settings** dialog.

Conclusion

As shown, Google Drive is great for sharing files and collaborating with people across the Internet. It's like a computer that runs in your web browser--it stores your files a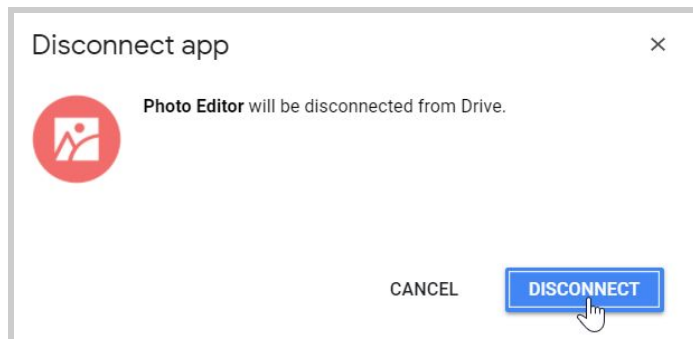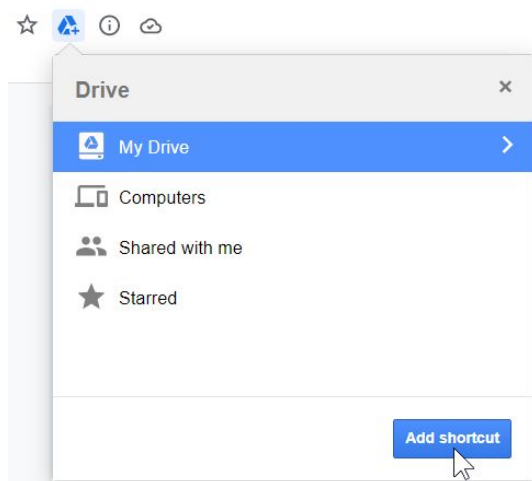nd uses apps to open them. And since all of your files are on the "cloud" (on the Internet), you can access them from any Internet-connected computer.

The lesson plan for this course was written using the "Google Docs" app. Its permissions are configured to allow anybody to view it. This means that you can add the lesson plan for this class to your own Drive account and view it at your leisure. And because the file is in Drive, you'll always have the latest version of the file.

1. ***Open*** a **new browser tab**.

    See Handout 3 for the URL

2. ***Go*** to goo.gl/ufdMa4.

3. The lesson plan document will open up. The document's sharing settings is configured to allow anyone will the link to open (but not edit) the document (a Google Account is not required).

4. Now, let's put the file in our **Drive** so we can refer back to it later. ***Click*** on the **Add shortcut Drive** icon at the top of the screen.

    Google Drive Lesson Plan ☆ 🛆 ⓘ ☁
    File Edit View Tools Help
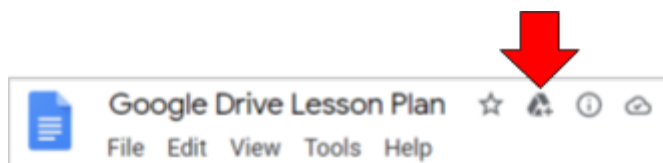
5. ***Make sure*** **My Drive** is selected and ***click*** **Add shortcut**.

    ☆ 🛆 ⓘ ☁

Drive	×
🛆 My Drive	>
🖵 Computers	
👥 Shared with me	
⭐ Starred	

    Add shortcut

6. ***Notice*** the confirmation message.
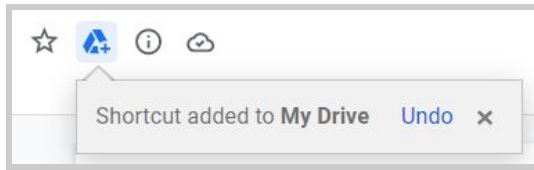
7. ***Close*** the **document** (the browser tab) to return to your Drive.

8. ***Notice*** that the file is now listed in the Content Pane (it may take up to a couple minutes to appear, or may require a browser refresh to see it).

9. ***Notice*** that the file's icon has a curved arrow, indicating that it is a shortcut.

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goo.gl/ufdMa4
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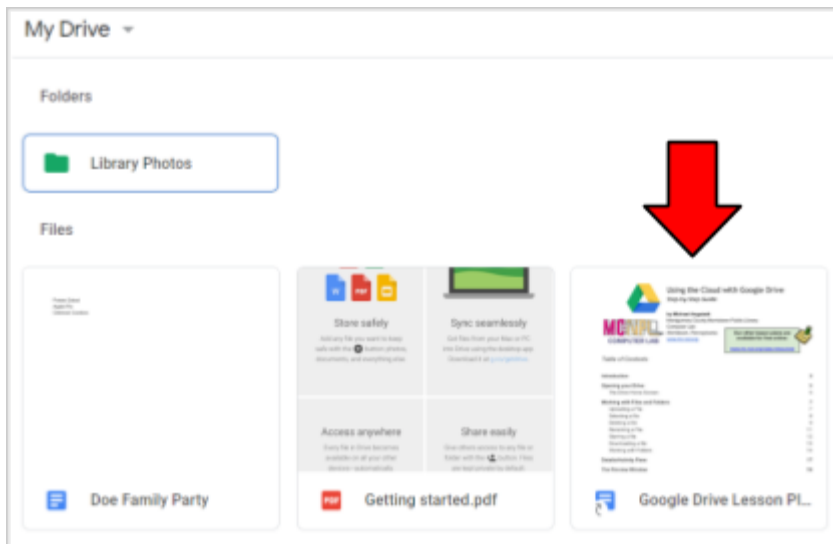
Quick Access list (supplemental)

You can configure Drive to display your most frequently accessed files at the top of the screen. The Google Accounts we use for class have this feature turned off. But if you create a new Google Drive account, the feature is turned on by default.

1. Let's turn the Quick Access feature on.

    a. *Click* on the **Settings** button to the left of the Google Bar, then *select* **Settings**.
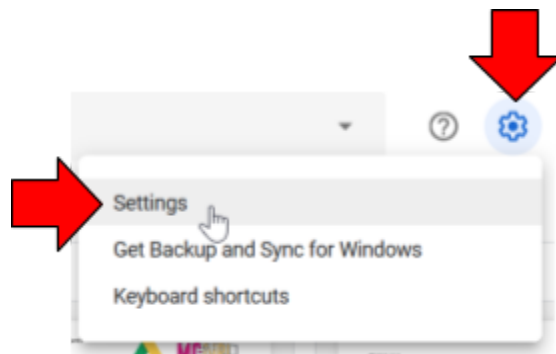
    b. In the **Settings** dialog box that opens, *find* the **Make relevant files handy…** checkbox.

    c. *Click* the **checkbox** to enable the setting.

    d. *Click* **Done**.

2. *Notice* the list of files underneath the heading **Quick Access**. These are the files that you have most recently **opened** or **edited**.
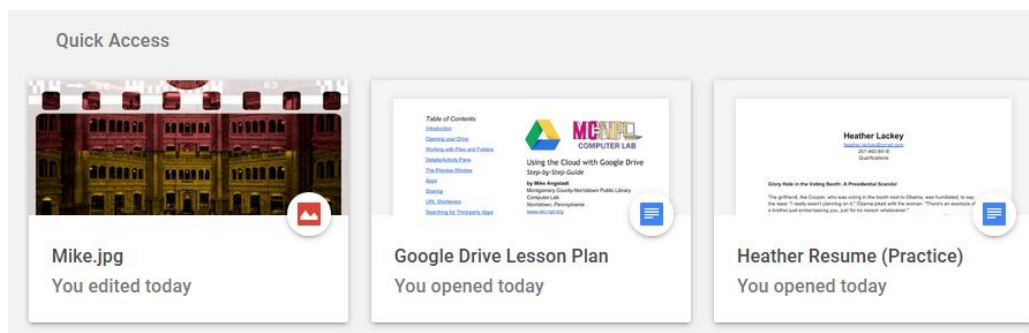
3. *Open* the **Library Photos** folder.

4. *Notice* how the Quick Access list is **gone**. The Quick Access list is only accessible from the **root** of your Drive.

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Introduction to the Google Docs app (supplemental)

Google Docs is one of the apps that comes already connected to your Drive. It is a word processor, which means it can be used to do things such as write letters. What is really special about this app is that it allows more than one person to edit a document at the same time. This is called **real-time collaboration**. We will be working in pairs to demonstrate this feature.

Let's pretend that we are creating a job resume, and we want a friend to help us create it. The person on the <u>left</u> will be the creator of the resume, and the person on the <u>right</u> will be the friend.

Creating a new document

1. First, we need to create a new document.
   <u>To the person on the left (and the instructor):</u>

   a. **Click** the "New" button and **select** "Google Docs".

   b. **Notice** how our new document has opened in a **new browser tab**.

> **Teacher's Note:**
> Do not use the "family party" document. This document will not work well for this section because it was shared using a shareable link.

2. Let's give our document a name.
   <u>To the person on the left (and the instructor):</u>

   a. In the upper-left corner of the screen, **click** where it says "Untitled Document".

   b. **Type** "(Your first name) Resume".

   c. **Press** [Enter] .

3. Before we add some content to this document, **notice** the words "All changes saved in Drive" to the right of the "Help" menu at the top of the screen. As we start typing, this will change to "Saving…". Unlike traditional word processing programs, like Microsoft Word, Google Docs **automatically saves** your changes as you type.
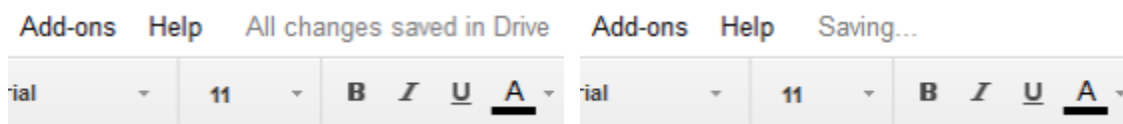
4. Let's add some content to our document.
   <u>To the person on the left (and the instructor):</u> **Type** your name.

Sharing the Document

1. Now, let's share our resume with our friend.
   <u>To the person on the left (and the instructor):</u>

      a. *Click* the blue "**Share**" button in the upper-right corner.

      b. *Type* your partner's email address in the "**People**" field.

      c. *Click* "**Send**".

      d. *Notice* the notification at the top of the screen, confirming that our document was shared with someone else.


2. Now, our friend needs to open the shared document.
   <u>To the person on the right:</u>

      a. *Click* "**Shared with Me**".

      b. *Double-click* on the resume to open it.

Collaborating on the Document

Many of Google's productivity apps, including Google Docs, support **real-time collaboration**. This means that multiple people can have the same document **open** at the same time and also **edit** the document at the same time.

1. *Notice* the brightly-colored box that appears in the upper-right part of the screen . This lets you know that somebody else currently has the document open.
   If the person has a profile picture assigned to their account, then the person's profile picture will display here. Otherwise, it will be the first letter of their first name.
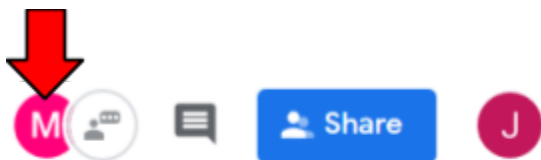
2. ***Notice*** the pink line to the left of the name. This shows you the location of your partner's insertion point.

John Doe

3. Next, the person on the left is going to type some content into the document.
    To the person on the right: ***Watch*** your screen--you will see the content appear on your screen as your partner types it.

4. To the person on the left (and the instructor):

    a. ***Press*** [Enter] to go to a new line.

    b. ***Type*** a phone number.

5. To the person on the right: ***Notice*** how the letters appear as your partner is typing them.
    When you are viewing the document, you are seeing the **LIVE** document. Changes appear on your screen as other people make them. This makes Google Docs, as well as other apps on Google Drive, perfect for **collaboration**.

| Person on the **left** should see:	Person on the **right** should see:
John Doe 1-800-555-1234	John Doe 1-800-555-1234

6. To the person on the right: ***Insert*** the word "Resume" at the top of the document.

| Person on the **left** should see:	Person on the **right** should see:
Resume John Doe 555-555-5555	Resume John Doe 555-555-5555

Group Chat

You can communicate with the people currently viewing the document using **group chat**.

1. ***Click*** on the "Show chat" button at the top of the screen.
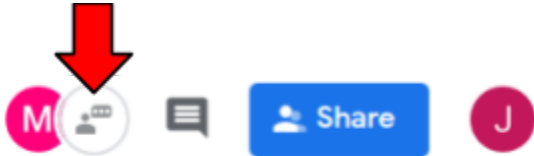
2. A chat window appears on the right side of the screen. ***Type*** "Hello" and then ***press*** Enter to send a message to your partner.

3. ***Notice*** how your message, as well as your partner's message, appeared in the window.
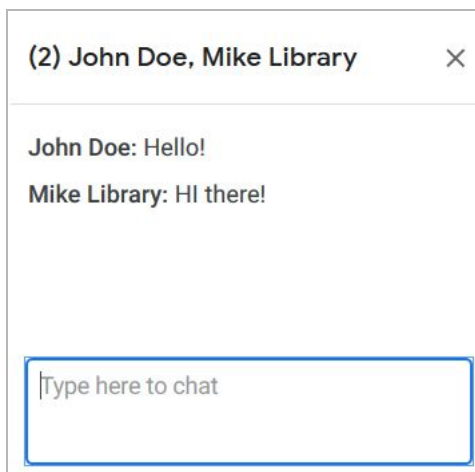
4. ***Click*** on the "x" in the upper-right corner of the chat box to close it.

Version History

The Version History feature keeps track of all the changes that have been made to your document over time. It allows you to view previous versions of your document, as well as see what changes were made to your document, and by whom.

This feature also allows you to **revert back** to previous versions of your document. This is useful if you deleted something days or weeks ago and want to get the content back.

1. *Click* on "**File > Version history > See version history**".

2. *Notice* the panel on the right. It lists the "snapshots" Google Docs has made of our document over time. Our document has two snapshots. The most recent (top) snapshot is currently selected.
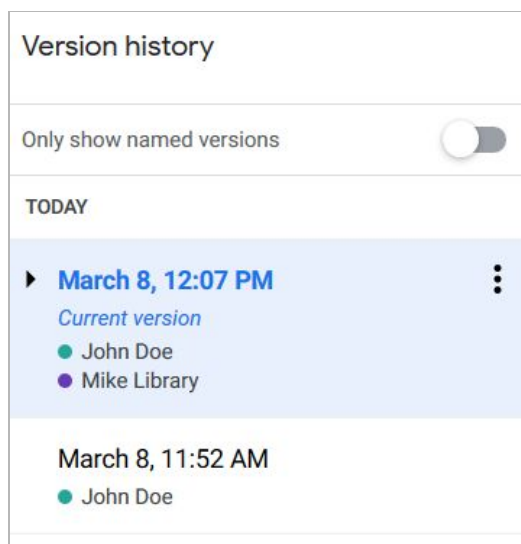

3. The left part of the screen shows the content of our document at the currently selected snapshot. It color-codes the text to show the various additions and deletions that were made in this snapshot. It's showing us that two users have added content to the document, and highlights each user's contributions in different colors.


   a. To turn off the color coding: Uncheck the box next to **Show Changes** in the lower right corner of the screen.

4. *Click* on the **previous snapshot** in the pane on the right (the one underneath the top one). *Notice* how it is showing us a blank document on the left. This snapshot was taken when we first created our Google Doc, so it is empty.

5. ***Notice*** the **Restore this version** button at the top of the screen. Clicking this would restore the content of that revision and delete all changes that were made to the document since that snapshot was created.
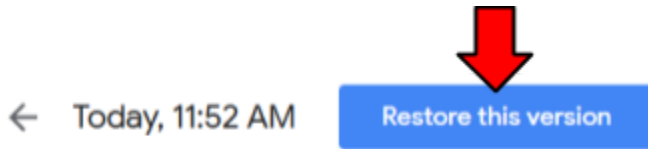
6. ***Click*** on the "back" arrow in the top-left corner of the page to return to the document.
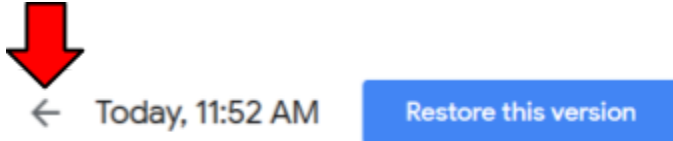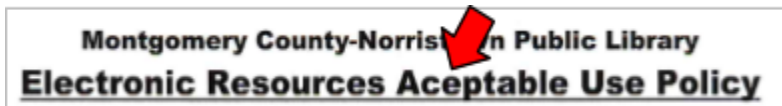
7. This feature is useful for those rare occasions when you delete something that you wish you never deleted. When this happens, you can use the Version History feature to restore the deleted content.

8. ***Close*** the **browser tab** to return to your Drive.

Optical Character Recognition (OCR) (supplemental)

Optical Character Recognition (OCR) is a technology that converts text found in a photograph to editable text on the computer. Google Docs provides rudimentary support for this by converting PDF files to editable Google Doc files. As we will see, it isn't perfect. But it can potentially save you a lot of work because it saves you the hassle of typing an entire document all over again by hand. Let's try this out.

1. First, let's look at the file we are working with. *Open* Internet Policy.pdf, located in the Temporary Patron Drive (P:).

2. *Scroll down* the document to inspect it.

   a. *Notice* how the heading at the top consists of two lines of text.

   b. *Notice* that the heading is bolded, and the second line is underlined.

   c. *Notice* how it's two pages long.

3. **There's a typo**! Can you *find* it? ("Aceptable" should be spelled "Acceptable"). How can we fix this?

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   **Electronic Resources Aceptable Use Policy**

   a. Maybe we can edit it. Try to *click* on the word and *type*. That doesn't work because the program we're using to view this file is Adobe Reader, which does not let us edit PDF files.

   b. Maybe we could copy and paste the text into a word processor like Microsoft Word, make our correction, and then reprint it.

      i. Try to *highlight* some of the text. It lets you draw a **box** around some text, but that's not the same as highlighting it.

      orristown Public Library
      Aceptable Use Policy

      ii. It's doing this because this PDF file is a **photograph** of the original paper document. The scanner we used to scan the original paper copy took a "picture" of the document and saved that picture inside of a PDF file.

   c. When a PDF file is saved in this way, there's not much you can do to edit it. However, we could try using the **Google Docs OCR** feature to convert it to editable text. That way, we wouldn't have to type the whole document all over again just to make one small change.

4. First, you have to *upload* the **PDF file** to your Drive. (Teacher: See if they can do this themselves).

    a. *Click* the blue "New" button and *select* "File Upload".

    b. *Navigate* to the Temporary Patron Drive.

    c. *Select* "Internet Policy.pdf" and *click* "Open".

5. Now that the PDF file is uploaded to our Drive, the next step is to open it in Google Docs. *Right-click* on the file, *point* to "Open with", then *select* "Google Docs"
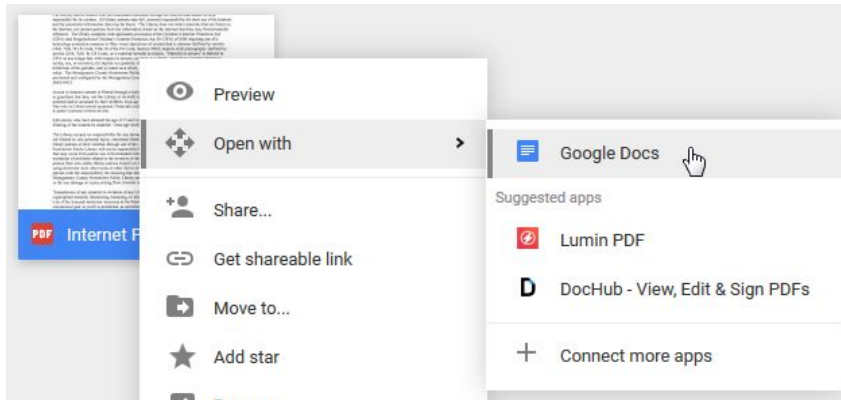
6. *Notice* how a new tab opens. It may take a few seconds for the document to appear because Google Docs has to do some processing in order to convert the scanned image to text.

7. When the document opens, *notice* how we can click inside the document and edit the text. Google Docs used **OCR technology** to extract the text content out of the PDF.

8. *Correct* the misspelled word.

9. *Notice* that much of the formatting was lost. This is one of the downsides to OCR.

    a. The heading is not broken up into two lines like before

    b. The heading's font is different.

    c. The heading is not underlined.

    d. The font size throughout the document is inconsistent.

    e. The document is now **three** pages instead of **two**.

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10. The text content was converted pretty well though. There's only one mistake: The fifth paragraph merges the words "County" and "Norristown" into a single word.

    a. *Note* that the quality of an OCR conversion depends heavily on the quality of the original scan or photograph. Our scan was very good quality, so there are few mistakes. However, if the paper was crumpled or warped in any way, the OCR reader would have more trouble reading it.

11. Now that we've corrected the spelling mistake, let's *re-save* the file as a PDF. To do this, we will use the Google Doc download feature.

    a. *Open* the File menu and select "Download As".

    b. This lists the various file formats that you can convert your Google Doc to.
       Select **PDF Document (.pdf)** from the list.

    c. *Save* the file to the Temporary Patron Drive.

Managing your Storage Space (supplemental)

In the bottom-left corner of the screen is your **storage quota**. All Google Accounts get **15 GB** of free storage space to use across all Google services. This means that the files in your Drive, as well as, for example, the emails in your Gmail account, all count toward that 15 GB limit

> Storage
> 2.9 MB of 15 GB used
> Buy storage
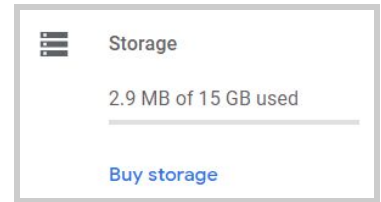
(There is one exception to this: In an effort to get people to use Google's office productivity programs, Google Doc, Google Sheets, and Google Slides files do **not** count toward your quota.)

15 GB is a lot of storage space. Unless you are an avid photographer or an aspiring filmmaker (photos and movies take up a lot of storage space), you shouldn't run out of space any time soon. But if you do start getting low, you'll want to either **delete** unused files or **purchase more space** by clicking on the "**Upgrade Storage**" link.

Clicking on the text that displays the amount of space you are using ("3 MB of 15 GB used") conveniently gives you a list of all of your Drive files **sorted by file size**, allowing you to delete your largest files to free up space.

> Show Slide 11

The difference between KB, MB, and GB

Looking at Fig 4, you might be confused about the numbers that you see. "What does **2 GB** mean? Is it more or less than **304 KB**?" To put these units of measurement in perspective, consider the following real-life scenario. When you buy a gallon of milk at the store, the cashier doesn't tell you, "That will be three hundred and forty cents, please". One dollar equals one hundred cents, so instead, the cashier says, "That will be three dollars and forty cents, please". The same idea is used when measuring computer storage space.

Just like the smallest unit of measurement with money is "cent", the smallest unit of measurement with computers is **byte** (well, technically it's "bit", but for our purposes, we just have to worry about "byte"). So, just like 100 cents equals 1 dollar, 1,024 bytes equals one "kilobyte" (or "KB" for short). Similarly, 1,024 kilobytes equals one "megabyte", and so on.

The table below shows the different types of computer storage units of measurement, from smallest to largest. To put these sizes into perspective, the average song takes up about 3-4 MB (about 1 MB per minute), a high resolution photo might take 2-3 MB, and an email only takes around 10-15 *KB*.
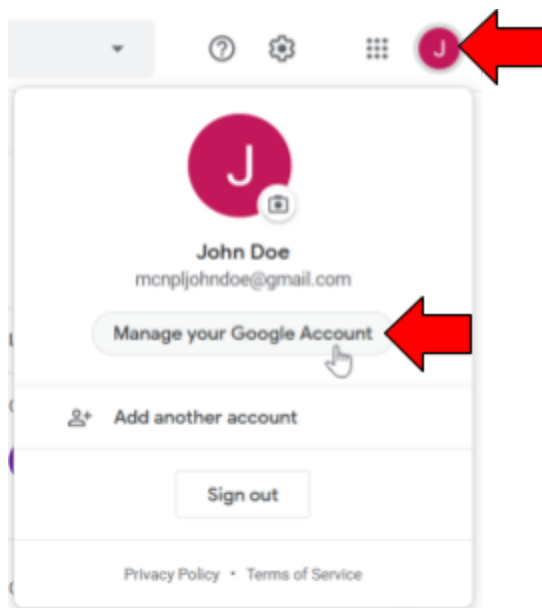
1 byte or 1 B	The smallest amount of measurable space.
1 kilobyte or 1 KB	1,024 bytes (roughly 1,000 bytes)
1 megabyte or 1 MB	1,024 kilobytes (roughly 1,000 kilobytes)
1 gigabyte or 1 GB	1,024 megabytes (roughly 1,000 megabytes) Google Drive gives you **15 GB**
1 terabyte or 1 TB	1,024 gigabytes (roughly 1,000 gigabytes)

Security and Privacy (supplemental)

Google provides a number of "checkups" to help secure the data in your Google Account.

To get to your Google Account page:

1. *Click* the **Google Account** button in the Google Bar.

2. *Click* the **Manage your Google Account** button.

3. *Notice* how your Google Account settings open in a **new browser tab**.

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Security Checkup

1. *Click* **Security** in the menu on the left.

2. The first sub-heading allows you to run a security checkup.
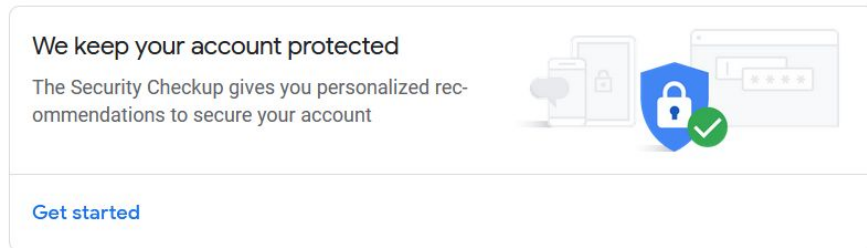
3. If there are any outstanding security issues, this subheading will say "Security issues found".
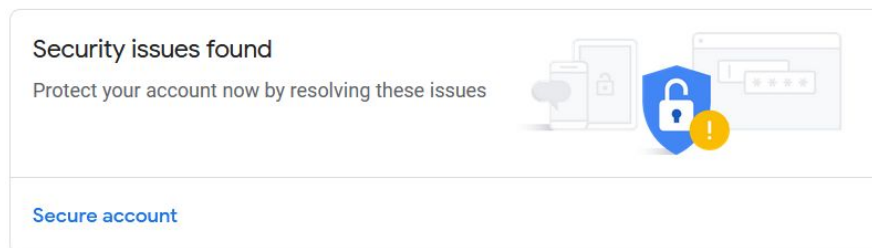
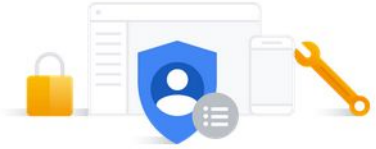Below are the various things this security checkup will look at:

- **Recent security events**
  Any activity Google flags as potentially suspicious will appear here.
- **Your Devices**
  Show you a list of devices and locations where your account was signed into. If you see anything suspicious in this list (for example, a sign-in from Russia), then it could mean someone else has gained access to your account. If something looks wrong, the checkup will guide you through the appropriate steps to secure your account.
- **Sign-in & recovery**
  Asks you to review your recovery phone number and recovery email. **Important:** These will be used to gain access to your Google Account in the event that you forget your password, so make sure you set them!

Privacy Checkup

1. *Click* **Data & personalization** in the menu on the left.

2. Under the "Take the Privacy Checkup" subheading, clicking "Get started" will take you through a number of steps that will allow you to adjust the kind of information Google stores about you. For example, did you know that Google keeps track of your geographical location over time? You can turn this off from this screen.
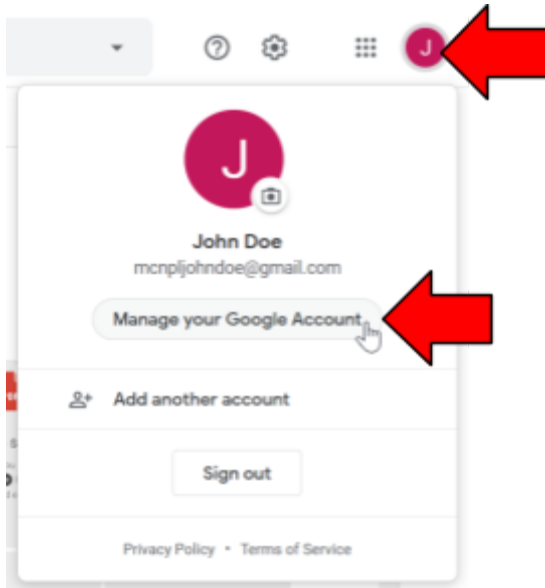
.

Downloading all your Drive files (supplemental)

Google provides the ability to download all of the data in your Google Account, including your Drive files. This is useful if you want to create a backup of your data, or switch to a different cloud service.

1. ***Click*** your profile icon in the Google Bar.

2. ***Click*** "Manage your Google Account".

3. ***Notice*** a new tab opens. From this screen, you can do things like change your password, configure your password recovery options, and adjust your privacy settings.

4. ***Click*** "Data & personalization".
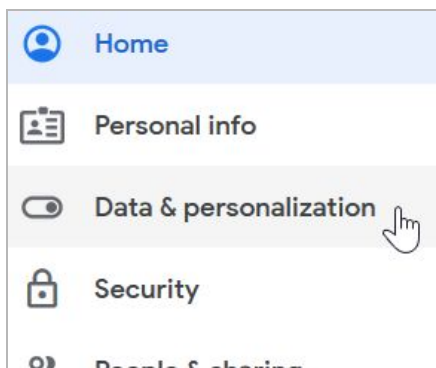
5. *Scroll down* to the "Download, delete, or make a plan for your data" section.

6. *Click* "Download your data".
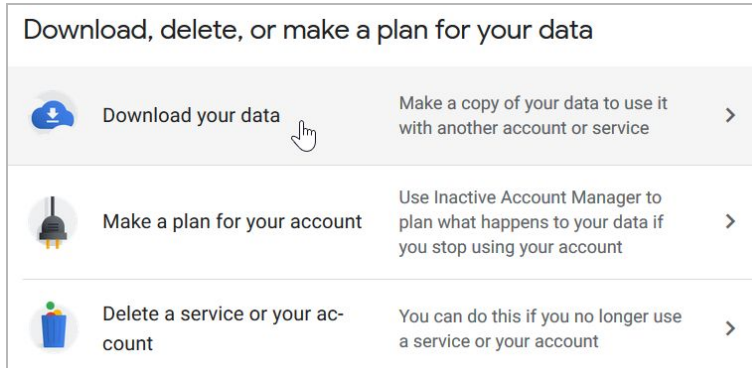
7. The next screen lets you choose which Google services you want to download data from.

   a. By default, all services are selected. We are just going to download our Google Drive data.

   b. *Click* "Deselect all" to deselect everything.

8. *Find* the entry in the list for **Drive** and *click* its checkbox.
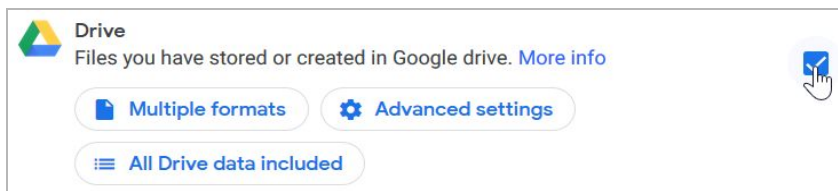
9. The buttons underneath let us customize our export operation. For the sake of time, we will leave buttons alone, but here is what they do:

   a. **Multiple Formats**: Because files created with Google apps, such as Google Docs and Google Sheets, can only be opened in the cloud, the files must be converted to a different format when downloaded. This button lets you choose what file formats to convert these files to. For example, Google Docs files can be converted to Microsoft Word documents and Google Sheets files can be converted to Microsoft Excel spreadsheets.

   b. **All Drive data included**: Lets you select which folders from your My Drive to download if you don't want to download everything.

   c. **Advanced settings:** Google Drive allows you to keep a history of past versions of the file. At the time of this writing, the only thing this button does is let you decide whether or not you also want to download these past versions. By default, it will only download the most recent versions of each file.

10. *Click* "Next step" at the bottom of the page.

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11. The next step allows you to customize the archive file that is generated.

   a. **Delivery method**: Allows you to choose how Google will give you the final archive file. You can have it delivered to your email, or have Google upload it to another cloud service, such as Microsoft OneDrive or Dropbox. We will leave "Send download link via email" selected.

   b. **Frequency:** If downloading all your Google Drive files is something you need to do on a regular basis, you can tell it to automatically create an archive every 2 months for the next year. We will keep "Export once" selected.

   c. **File type & size**: All of our Drive files will be compressed into a single file, called an **archive**. There are many different archive file formats. The most common one is ZIP, which is the currently selected option. You can also specify the maximum size an archive file can be before a second archive file is created. If you have more than 2GB worth of files in your Google Drive account, it will create multiple archive files for you to download. Mike recommends not changing this because, if you set it too high, your computer may not be able to download it due to the file size being too large. We will leave the default setting selected.
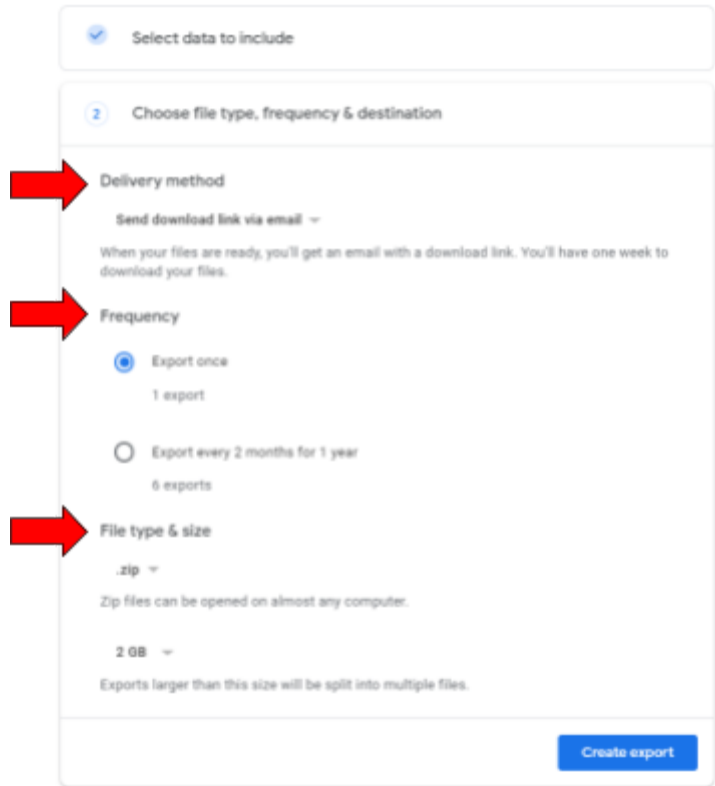
12. *Click* "Create export".

13. The next screen shows you the progress of the archive. Because we only have a few files in our Drive accounts, it will not take long to finish, so we will *wait* for it to finish. If we had a lot of data, then we could close this tab and wait for Google to send us an email notification when it's done.
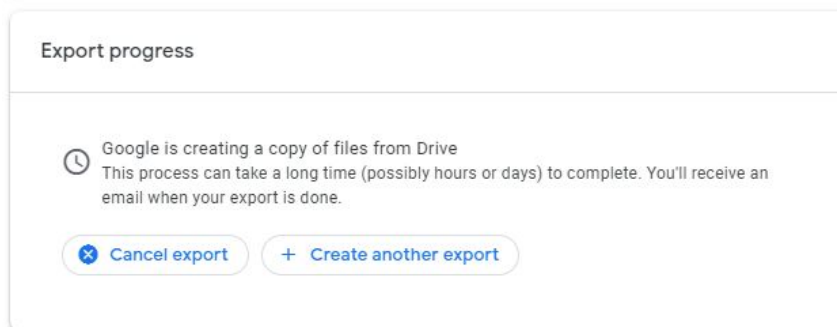
14. When it's finished, it displays a table containing details about the archive file.

   a. **Export**: How large the archive file is.

   b. **Created on**: When the archive was created.

   c. **Available until**: Google will delete this archive file from their servers on this date.

   d. **Download button**: Downloads the archive when clicked.

Export	Created on	Available until	Details	
Drive 2.5 MB	August 21, 2020	August 28, 2020	⬇ Download	⌄

Create new export

15. ***Click*** **Download**.

16. Because this archive contains all of our private files, Google wants to confirm our identity by typing our password. ***Type*** your password.

17. The file will now be downloaded. ***Save*** it to the **Temporary Patron Drive**.

18. ***Navigate*** to the **Temporary Patron Drive**.

   a. ***Open*** **File Explorer** using the button on the taskbar.

   b. ***Click*** **Temporary Patron Drive** in the navigation pane on the left.

19. ***Notice*** the file called **takeout-[numbers]-001.zip**. This is the archive file we just downloaded. It contains all of our Google Drive files. The file name contains the current date and time in the GMT timezone.

What is a ZIP file?

Our archive was saved as a **ZIP file**. A ZIP file is a collection of multiple files and/or folders that is compressed into a single file for easy transportation.

The Windows operating system has built-in software that lets you interact with ZIP files from its file management program, File Explorer.

1. ***Double click*** on the archive file (aka ZIP file) to open it.

2. We are now viewing the contents of the ZIP file. It contains a single folder called "Takeout". ***Open*** the **Takeout** folder by ***double-clicking*** on it.

3. ***Open*** the **Drive** folder. We are now viewing our Google Drive files.

4. ***Open*** the **Library Photos** folder. ***Notice*** how the photo that our partner shared with us is not there. <mark>Files that are **not owned** by you are not included in the archive!</mark>

Note that, even though we appear to be viewing the contents of an ordinary folder on our hard drive, we are actually viewing the contents of a ***file***--the ZIP file. One consequence of this is that, if we were
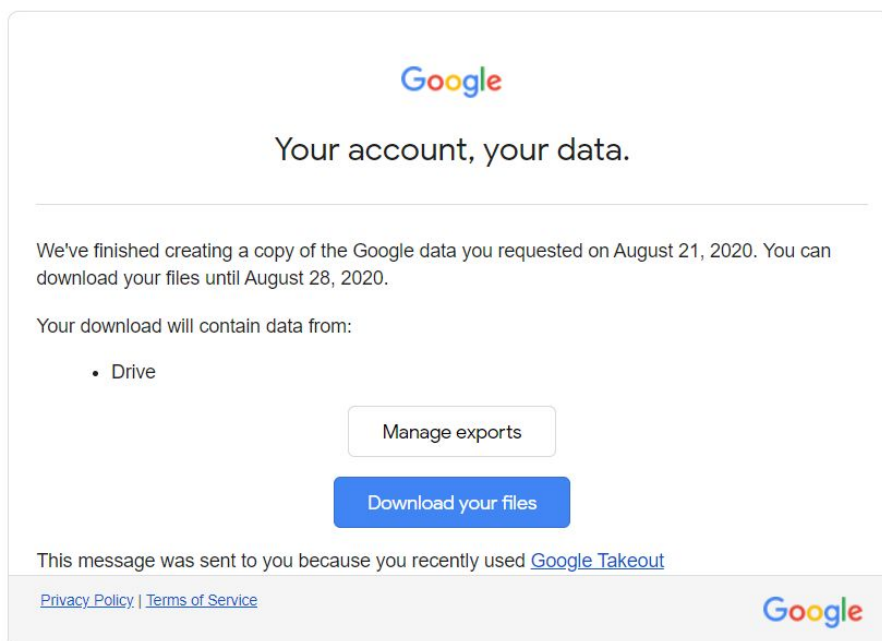
to open a file for editing, the file would open in read-only mode and we would not be able to save the file in place.

1. *Click* the **Back arrow** to navigate back to the root of the "Drive" folder.

2. *Open* the **family party** document by *double-clicking* on it.

3. Microsoft Word has opened the file in a special "protected view" because it was downloaded from the internet.
   Click **Enable Editing**.

4. *Notice* the words **Read-Only** in the title bar. This means that changes cannot be made to file while it is located inside of the ZIP file.

Email notification

When Google finished creating our archive, they also sent us an **email notification**.

1. *Go back* to the web browser.

2. *Notice* how the Google apps icon is not present. The Google apps icon is not displayed on the Google Account page.

3. *Go* to the Google homepage by *typing* **www.google.com** into the address bar and *pressing* **Enter**.

4. *Open* **Gmail** using the Google apps button.

5. The notification email should be at the top of your inbox. *Click* on it to open it.

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Backup And Sync app (supplemental)

If you are accustomed to working with files on your computer hard drive, there is a program you can install on your computer that lets you interact with your Google Drive files in a similar way.

The program downloads all of your Google Drive files to a specific folder on your hard drive. Whenever you edit one of those files on your computer, the changes automatically get uploaded to your Drive. Similarly, whenever one of the files is changed in the cloud, the changes get downloaded to your computer automatically. This process is called **Syncing**.

This program can be downloaded by clicking the Settings button and selecting "Get Drive for desktop".
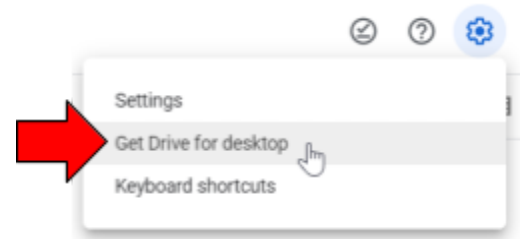
There are also apps available for mobile devices that do that same thing. They let you access your Drive files on your smartphone or tablet.

This is one of the benefits of the "cloud". You can access your files from any device or computer that is connected to the Internet.
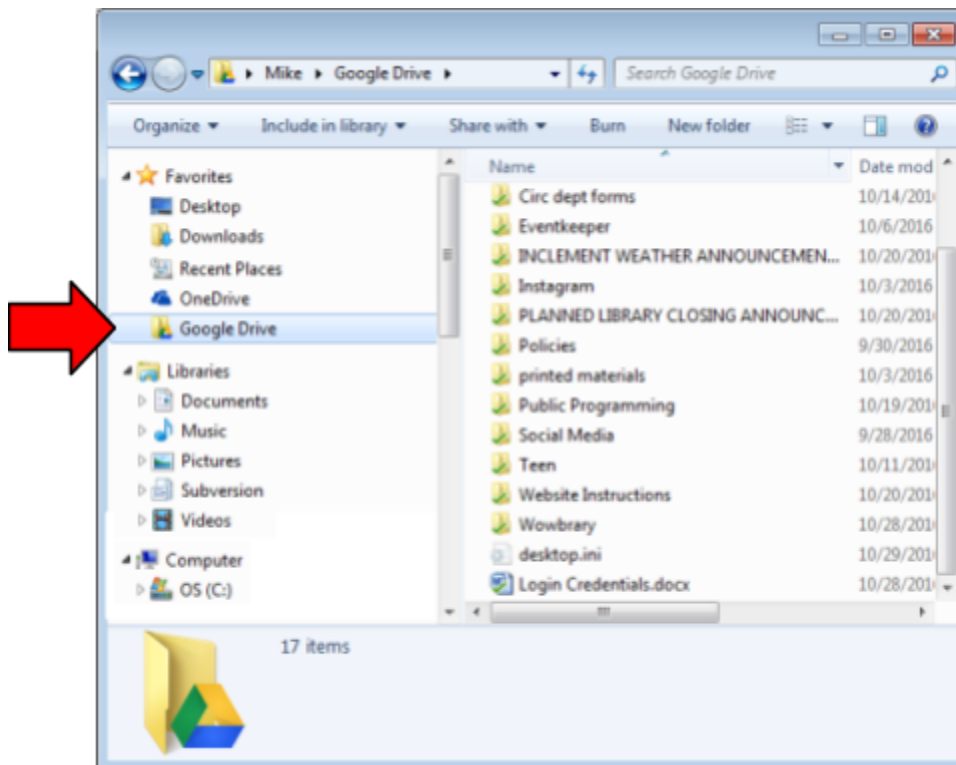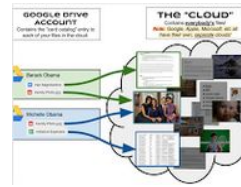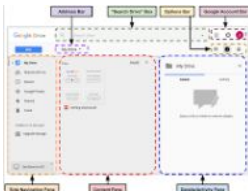
Resources

This lesson plan, as well as several of its diagrams, were made using Google Drive apps. Each file is publicly viewable. The table below contains shortened URLs to each file.
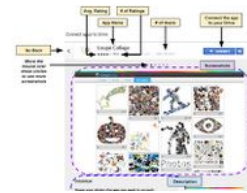
Lesson Plan
goo.gl/ufdMa4

The Cloud: Demystified
goo.gl/JEmrdw

Drive Home Screen
goo.gl/QihSS5

App Dialog
goo.gl/qeQX76

Library of Congress.jpg
goo.gl/TX4eUy

Third Party Apps Dialog
goo.gl/IvcfbZ

Preview Window
goo.gl/VfzHSF

Appendix

The appendix can be found here: https://bit.ly/2sdsj2b