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Using Lightroom Classic

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This document describes how I use Adobe Lightroom Classic. My personal experience is with using Lightroom on Windows, but there are only a few minor differences between Lightroom on Windows and Lightroom on Apple, so most of the information in this document should apply regardless of which type of system you are using.

In addition, I use a program called the "Bash Shell" and shell scripts to perform some tasks. In general, I do this because that is the way I performed the tasks before I started using Lightroom and I have not yet decided on a method I would rather use. Since this document is for my own use more than anyone else's, I need to include this information until I come up with another way to perform these tasks. I identify the tasks I perform using the Bash shell in this document, but I do not always describe an alternative method for performing them.

Organization of Image Files

When working with lots of images, it is necessary to have a consistent procedure for organizing the image files. This not only makes it easier to locate images, but it also facilitates developing an efficient workflow for editing and managing the images.

This section describes the file organization and naming conventions that I use for storing my image files. This organization is date based or chronological. Many people prefer a category, subject, or project based organization. You will have to decide what works best for yourself, but this document assumes that you are using the organization and naming conventions described here.

Image files are stored on an external USB disk that is *always* mounted with the same drive letter, which in my case is "**S**" (see the section "Assign a Drive Letter to a Removable Disk" later in this document). The particular drive letter does not matter, but using the same drive letter each time the disk is mounted is important because the full path names of the image files are stored in the Lightroom catalog. Thus, if the drive letter changes, Lightroom will not be able to find the image files.

Using an external disk makes it easier to move the images from one computer to another. In addition, external disks frequently have much more space than the local hard drive and it also frees up space on the local hard drive for other uses. However, if you do not have a lot of images and do not expect to in the near future, it should also be considered that storing your image files on the local hard drive may be more efficient (for example, faster access) than using an external disk.

I create the folder **S:/Photographs** for the image files and anything outside of this folder is not related to the image files. By having the images in their own folder, the disk can be used for other purposes as well.

Within the folder **S:/Photographs**, I create the following subfolders. These subfolders are described in the following sections.

```
Lightroom
Originals
Albums
Prints
```

Lightroom Folder

The Lightroom folder is where the Lightroom catalog, catalog backup, and presets are stored. While Lightroom may run faster if these files are stored on the local hard drive,

putting them on the same external disk as the image files makes it easier to move the image files from one system to another.

The section “Setting up Lightroom” describes how to change the location of the Lightroom files.

Originals Folder

The **Originals** folder is where the image files themselves are located. It contains the original, unmodified files and any copies of those files (for example, if you edit an image in Photoshop, you will probably make a copy of the file and save it in the PSD or TIFF format file).

Since there will be a lot of image files, the **Originals** folder is further subdivided into two more levels. The top level is the typically named for the year the images were taken (for example, 2020, 2019, 2018 and so on, but there may be other folders for special projects at this level as well).

Within the folder for each year, there is a separate folder for each photo shoot during that year. These folders are named using the date and subject of the photo shoot. The date is represented as 2-digits for the year, month, and day. For example, pictures taken in Yosemite on March 1, 2020 would be in a folder named **200301-Yosemite**, and the full path name would be:

```
S:/Photographs/Originals/2020/200301-Yosemite
```

Naming the folders in this way causes the folders to be automatically sorted chronologically.

Substructure

Within the folder for each photo shoot, I may create one or more of the following subfolders, but I only create these folders if they are needed. I may also create additional subfolders for special projects like photo sequences, panoramas, or HDRs.

```
ORIG
ORIG-JPEG
EDIT
JPEG
UNUSED
```

The **ORIG** folder contains the original, unmodified files copied from the camera. These files can be either JPEG or raw files. This is the only subfolder that will always exist for each photo shoot.

Raw files cannot be modified, so any changes that are made to the image in Lightroom are stored in the Lightroom catalog. However, if you want to use an external editing tool, such as Photoshop, the information about the changes made in Lightroom will be copied to an external file called an XMP file. The XMP file, often called a sidecar file, will be saved in the same folder as the raw file, and it will have the same name as the raw file, but it will have the suffix **xmp**. (Normally, I either edit an image in Lightroom or Photoshop, but not both. The XMP file is only needed when the image is first edited in Lightroom, and then in Photoshop.)

Since an XMP file contains information about the changes that have been made to an image, you can also create XMP files as a crude form of backup for the information in

the Lightroom catalog. To read more about this, see the section “Backup Changes Using XMP Files”.

The **ORIG-JPEG** folder may or may not exist. If the camera was set to save the images as both a raw file and a JPEG file, the **ORIG-JPEG** folder will be created and the JPEG files will be moved there. When these files are no longer needed, this folder and the JPEG files in it can be removed.

The **EDIT** folder only exists if another photo editor is used to edit the images. For example, I sometimes use Photoshop to edit an image, in which case, the original file is converted to a Photoshop file (PSD) and stored in the **EDIT** folder.

The **JPEG** folder contains low resolution JPEG files made from the edited images. These files are used with the **make_gallery** shell script and the **gallery.html** file.

The **UNUSED** folder is where I put files that I plan to delete, but I have not yet committed to deleting. This folder is created by the **delete_files** and **sync_files** shell scripts.

In additions to the subfolders described above, there may be two text files in each photo shoot folder. These files are created and used by Bash Shell scripts.

```
filelist
gallery.html
```

The file **filelist** is a text file that contains a list of the images in the folder. This file is created by the **init_pics** shell script. Each line in the file represents one image and contains the following four fields:

- Base name of the image
- Flags (orientation, family album, web gallery)
- Date of the photo shoot
- Description of the image

The file **gallery.html** is an HTML file that displays all the images in the **JPEG** subfolder on one page. This file is created by the **make_gallery** shell script.

Importing Files

Importing is Lightroom’s terminology for making Lightroom aware of an image. The image file is not moved, copied, or modified when it is imported. Lightroom just collects information about the image and stores that information in its catalog.

Normally, only the files in the **ORIG** folder should be imported into Lightroom. However, if the **EDIT** folder exists (for example, because Photoshop was used to edit the images), the files in that folder should also be imported. The any image files in the **ORIG-JPEG**, **JPEG**, **JPEG-HIRES**, and **UNUSED** folders do not need to be in Lightroom.

Even though all the image files in the folder for a photo shoot do not need to be imported into Lightroom, I find it easier to import the entire folder and just ignore the unnecessary files in Lightroom. If you follow the workflow I describe in this document, the folder for a photo shoot will contain the **ORIG** subfolder and it may also contain the **ORIG-JPEG** subfolder when you import the image files.

It is also easier to import all image files the first time you import files into Lightroom. For example, when I first began to use Lightroom, I had thousands of images in hundreds of folders. Rather than selectively importing the image files I wanted in Lightroom, I imported all the image files in **S:/Photographs/Originals**.

Albums Folder

After I process my images in Lightroom, I still have to do something with them so that others can see them. For me, there are three ways I display my images:

- I display images on my web page (**BruceBlinn.com**) using photo galleries (HTML web pages).
- I have photo albums that contain small printed images.
- I enlarge and print images for mounting, framing, and displaying on the wall.

I use the term "album" to refer to the various groups of photos that I display together, and I use Lightroom's collections to create the albums. Thus, my albums are collections of images centered on a subject. For example, I have yearly photo albums and I have albums for each of my favorite photography subjects, such as Yosemite National Park.

Images in albums are exported as JPEG files (*exported* is Lightroom's terminology for copying an image, applying any edits made to the image, and optionally performing a variety of other transformations such as changing the file format). Depending upon whether the images will be displayed on the web or printed, the JPEG files will either be exported as low resolution or high resolution JPEG files.

Since computer screens do not require high resolution images and small images are quicker to load and transmit, the low resolution JPEG images that I create will have the following characteristics:

- Maximum dimensions of 1200 pixels wide and 800 pixels high
- Medium compression, 50% quality JPEG
- Standard sharpening for display on computer screen

For images that will be printed, I generally want to preserve as much detail as possible; therefore, they will have the following characteristics:

- Maximum resolution
- Minimum compression, 100% quality JPEG
- Standard sharpening for printing

Substructure

I separate my photo albums into two groups. Family photo albums, which contain images from activities with family and friends, and web photo albums (a poor name), which contain images that I want to share with others. Therefore, within the **Albums** folder, there are two subfolders: **FamilyPhotoAlbums** and **WebPhotoAlbums**.

Within each of these folders, there is one subfolder for each album. Within the folder for each album, there are one or two subfolders, one for the high resolution JPEG files named **JPEG-HIRES**, and one for the low resolution JPEG files named **JPEG-LORES**.

Family photo albums are displayed both on web pages and in printed photo albums; therefore, there are both high resolution and low resolution JPEG files of these images. But the web photo albums are only displayed online so they only have low resolution JPEG files. Therefore, the JPEG files for albums will be stored in one of the following folders.

```
S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-LORES
S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-HIRES
S:/Photographs/Albums/WebPhotoAlbums/<albumName>/JPEG-LORES
```


The folder for each album may also contain a text file named as follows.

```
<albumName>-photofile
```

This file is created by the **make_album** shell script. It contains information used by the **WebPhotoGallery** Perl script that tells it how to create a web photo gallery for the album (that is, HTML files for displaying the images).

The files in the **Albums** folder are easily recreated; therefore, I do not backup the files in this folder. Additionally, these files are only needed for a short time after which they can be removed if space is needed. For example, once the high resolution family album photos are printed, it is not likely those files will be needed again. Similarly, the low resolution images are used in web pages, so once they are copied to the web server, they are no longer needed.

Since albums usually have images from multiple photo shoots, it is important that each image file has a unique name. If all your images come from a single camera and your camera is setup to generate a unique name, it is probably not a problem. However, if images come from, for example, a scanner, then the images from each scanning session may have the same name.

Prints Folder

This folder contains the high resolution JPEG images that are used to print enlarged images to mount and frame for displaying.

While not necessary, this folder contains separate subfolders for different sized images. I have the following subfolders:

```
8x10
11x14
12x18
```

Although 8x10 and 11x14 are essentially the same aspect ratio and all printed images are preserved at their maximum resolution, I have some images that were originally captured with insufficient resolution to print larger than 8x10, so I have a separate folder for the JPEG files used to print these images.

I find that most images do not look the same when comparing the printed image with the same image on a computer screen. There are many causes for this, but my solution is to adjust the image in Lightroom so that it looks the way I want on the computer screen, then I make a virtual copy of that image in Lightroom. I only make adjustments to the virtual copy that are necessary to make the printed version of the image look correct. Usually, the only change I need to make is to brighten the shadows. If the original image is modified, the changes will not be carried forward to the virtual copy, so, in that case, I must make a new virtual copy.

Setting up Lightroom

Preferences

The default setup for Lightroom works well, but I like to make the following changes.

- Select **Edit->Preferences->General**.
    - Under **Default Catalog**, change **When starting up use this catalog** to the name of your catalog. For example:

```
S:/Photographs/Lightroom/Lightroom Catalog.lrcat
```

Do not use **Use most recent catalog**. This option makes it too easy to inadvertently use the wrong catalog (such as a backup copy). You will hardly ever need another catalog, so it is better to explicitly request it when you do.

- Under **Import Options**, uncheck **Show import dialog when a memory card is detected**. If you use Windows tools to move images files from the memory card before importing them into Lightroom, this option is not useful. Also, if you use removable disks, for example, an external USB disk to store your photos, Lightroom will open every time the disk is mounted.
- Under **Import Options**, leave unchecked **Treat JPEG files next to raw files as separate photos**. When this option is checked, Lightroom will ignore JPEG files when there is a raw file with the same base name. When this option is not checked, Lightroom will import and show both photos. I leave this unchecked because I want to decide for myself which files to ignore.
- Under **Import Options**, check **Replace embedded previews with standard previews during idle time**. If you choose smaller previews during import to make it faster, this will replace them with larger, more accurate previews in the background.

- Select **Edit->Preferences->External Editing**.
  - I set the following preferences for using Photoshop as my external image editor.

File Format	PSD
Color Space	ProPhoto RGB
Bit Depth	8-bits
Resolution	300
Compression	None

The PSD file format is used because it is usually a smaller file than the same image in a TIFF format file. The 16-bit bit depth preserves maximum quality, but will cause Photoshop will disable some of its filters and it also doubles the size of the file. The default resolution is 240, which is fine, but I change it to 300 for a little cushion.

- Select **Edit->Catalog Settings->General**.
  - Under **Backup**, change **Back up catalog** to **Every time Lightroom exits**.
  - To change the location of the catalog backup, you need to exit Lightroom. When you exit Lightroom, Lightroom will prompt you to backup the catalog. In this dialog, you can also change the location of the backup.
- Select **Edit->Catalog Settings->Metadata**.
  - I change **Automatically write changes into XMP** to on. I like to have XMP files as a backup file of the changes made in Lightroom. Since XMP files are text files, they can be read (although, they are rather cryptic) outside of Lightroom. Others complain that this slows Lightroom, but I have not noticed any difference.

However, as long as you are only using Lightroom and Photoshop for image editing an XMP file is not needed. Some other programs cannot read Lightroom's embedded metadata and need an external XMP file. To write an XMP file for an individual image, select the image and select **Metadata->Save Metadata to File** (or enter **control-S**).

- To prevent the top, bottom, left, and right panels from automatically popping up when the mouse is over them and hiding when the mouse moves away, right click on the arrow for each panel (do this for all four of them) and select **Manual** in the popup menu. In manual mode, you can click on the arrow to show or hide the panel or you can use one of the following shortcuts.

F5	Show/hide top panel (module picker)
F6	Show/hide bottom panel (filmstrip)
F7	Show/hide left panel
F8	Show/hide right panel
Tab	Show/hide side panels (left and right)
Shift-Tab	Show/hide all panels (top, bottom, left, and right)

- To reduce the number of tool panels within the left or right side panels, you can enable Solo Mode in the left panel, right panel, or both. In Solo Mode, only one tool panel at one time will be expanded in the side panel. When you click on the arrow to expand a tool panel, the current tool panel will close and the new tool panel will open.

  To enable Solo Mode, right click on the panel header and select **Solo Mode**. Solo Mode is controlled separately in the left and right side panels so you must repeat this operation to enable Solo Mode in each side panel. Similarly, you need to enable Solo Mode in the left and right side panels of each module separately.

  The Histogram panel in the right side panel of the Library module and the Develop module is not affected by Solo Mode. That is, it is always expanded or collapsed manually so it can be open at the same time as another tool panel.

- To set the Loupe view size, go to the Library module. In the left panel, change the Navigator panel setting to **Fit**. Whatever size you choose here will be used when you enter Loupe view.

Initially Importing Files

This section describes how to import your image files into Lightroom when you are first starting to use Lightroom. It assumes that you already have some image files, and they are organized as described in the section "Organization of Image Files", but they are not yet managed by Lightroom.

Before importing any files, decide where you want to store the Lightroom catalog. By default it will be stored in:

`C:/Users/`*`UserName`*`/Pictures/Lightroom/Lightroom Catalog.lrcat`

If you are not going to be moving the external disk with your images to another computer, you may want to keep the Lightroom catalog in the default location on the local hard drive since that will give you the best performance. However, storing the Lightroom catalog on the same external disk as your images will allow you to move the

external disk from one computer to another and continue to use Lightroom with your images.

Moving the Lightroom Catalog

To change the location of the Lightroom catalog, perform the following steps. (Actually, this process will create a new catalog. The current catalog will remain where it is.)

- Select **Edit->Preferences** from the main menu.
- Select the **General** tab in the preferences dialog.
- Under **Default Catalog**, change **When starting up use this catalog** to the full name of your new catalog in the location where you want it stored. For example:

  ```
  S:/Photographs/Lightroom/Lightroom Catalog.lrcat
  ```

- Select the **Presets** tab in the preferences dialog.
- Under **Location**, select **Store presets with this catalog**.
- Select **OK** to exit the preferences dialog.
- Exit Lightroom.
  - When the **Back Up Catalog** dialog appears, under **Backup folder** press the **Choose** button.
  - In the file dialog that appears, select the folder where you want to store the Lightroom catalog backup files. For example:

    ```
    S:/Photographs/Lightroom/Backups
    ```

  - When the **Back Up Catalog** dialog returns, press the **Backup** button.

In Windows:

- Rename or remove the original Lightroom folder to make sure it is not used accidentally.

Which Files to Import

For each photograph, there may be several image files. For example:

- Original image file
- Edited image file from Photoshop
- Exported image file for display on the web
- Exported image file for printing

Of these files, only the original images (and the edited images, if you use Photoshop) need to be in Lightroom. The output files (exported) are better left out of Lightroom. However, if you have a lot of images, Lightroom does not provide an easy way to specify which files to import and which to ignore. Therefore, it may be easier to import them all and just ignore the unnecessary files in Lightroom, which is what I did. After initially importing the image files, I only import the original files from then on.

Another thing to consider is that the Folders panel in Lightroom only shows the folders that have been imported into Lightroom. Therefore, if you import just the folders that contain the images you want to manage in Lightroom, that is all you will see in the Folders panel. If you want the Folders panel to mirror the hierarchy you see in your file

browser, you need to import from the folder at the top of your images. If you do not import from the top, you can still import the parent folder of a folder later by right-clicking on the folder and selecting **Show Parent Folder**.

- Import the entire **Originals** folder.

  Follow the instructions in "Importing Images". When selecting the source folder, select the folder **S:/Photographs/Originals**. This will import all of your image files into Lightroom whether they are needed or not.

  One of the main advantages of importing all image files is you can repeat the process of importing your entire image folder and Lightroom will tell you if there are any new files that have not been imported.

Workflow

This document describes the workflow that I use for processing digital photographs. It starts after the photograph has been taken but is still on the camera. It consists of the following steps.

1. Copy the images from the camera
2. Import the images into Lightroom
3. Delete unwanted images
4. Edit the images
5. Add images to collections
6. Create web galleries
7. Print images

The following shortcut keys will facilitate moving through the images in a folder

D	Go to Develop module
G	Go to Grid view in the Library module (thumbnails of all images)
E	Go to Loupe view in the Library module (large view of selected image)
Shift-Tab	Show/hide the panels so there is more area for the images
Right-Arrow	Go to next image
Left-Arrow	Go to previous image

Step 1 – Copy the Images from the Camera

In Windows:

- Remove the SD card from the camera and mount it on the computer.
- Open a window to the location where you want to store the images.

  ```
  S:/Photographs/Originals/2020
  ```

- Create a new folder for the images. The name should be in the date-subject format, where the date should be in **YYMMDD** format.

  ```
  200301-Yosemite
  ```

- Drag the files from the SD card to the folder.
- Drag a second copy of the files to the temporary folder on the **C** drive (for example, **C:/tmp**). Keep this copy of the files until the new files have been backed up.
- Erase the SD card and return it to the camera.

In Bash:

- Run the **init_pics** shell script. This script is run from a folder for a photo shoot to create any needed subfolders such as **ORIG** and **ORIG-JPEG** and move the images to the correct subfolder. In addition, it creates a text file named **filelist**, which contains a list of the images and basic information about each image. This file is used by other shell scripts to create web based photo galleries.

  The **init_pics** shell script can be run from anywhere within the folder that you want to initialize.

  ```
  $ cd S:/Photographs/Originals/2020/200301-Yosemite
  $ init_pics
  ```

  You can also run the **init_pics** shell script more than once on the same folder without causing any problem. Thus, you can run the **init_pics** shell script on all the folders for a particular year without causing a problem. This can be useful if you move the images from the camera, but do not process them right away.

  ```
  $ cd S:/Photographs/Originals/2020
  $ do_all -a init_pics
  ```

- Edit the filelist.
  - Go to the folder with JPEG files (**ORIG** or **ORIG-JPEG**) and double click on the first image. Using the arrow keys go to each image:
  - Add a description.
  - If the image is vertically oriented, change the orientation field to **V** (the default is horizontal (**H**)).

Step 2 – Import the Images into Lightroom

To import the images into Lightroom, follow the instructions in “Importing Images”. When selecting the source folder to import, you can select the **ORIG** folder within the folder for the photo shoot, the folder for the photo shoot, or any folder above it. For example:

```
S:/Photographs/Originals/2020/200301-Yosemite/ORIG
```

Or,

```
S:/Photographs/Originals/2020/200301-Yosemite
```

Or,

```
S:/Photographs/Originals/2020
```

I generally use the name of the folder for the photo shoot, but sometimes I may use the name of the folder above it to make sure all the files in that folder have been imported.

If you did not add a copyright to the images in the camera, this would be a good time to add one.

Step 3 – Delete Unwanted Images

Many photographers take several images of the same scene. Each image can be examined immediately to see how it could be improved. We have all taken images that did not turn out the way we expected. Or, for example, when I take pictures of birds, I never know when the bird will fly away so I take many images where each one is from a

better location. The point is, after you have imported your images into Lightroom, you may have many images that you do not want.

Deleting the images you do not want should be done after the images have been imported, but before you have invested any significant time editing them. You may need to perform some editing in order to determine if an image is worth keeping. I find that I typically perform this step once and then delete a few more images over time. If I and undecided about an image, I generally keep it since once it is deleted, it is gone forever unless you have backed it up somewhere else.

Check Orientation

As you look through the images, make sure the vertical images are displaying vertically. It is probably easiest to check all images at the same time by scrolling through them in Grid view in the Library module. For each image, if the image is on its side, rotate it so it is vertical.

- If you are in Grid view in the Library module, right-click the image and select

  Rotate Left
  Rotate Right

  If you are in Loupe view in the Library module or the Develop module, right-click the image and select

  Transform->Rotate Left
  Transform->Rotate Right
  Transform->Flip Horizontal
  Transform->Flip Vertical

Clear the Rejected Flag

To delete unwanted images you will use the rejected flag associated with each image. The first thing you need to do is make sure this flag are not already check for any image. You can do this using the library filter to see if any images already have the flag set.

- In the Folders panel, select the folder at the top of the folder hierarchy so that all folders will be searched.

  `S:/Photographs/Originals`

  Note: You need to make sure the rejected flag is not used anywhere, not just in the images you are evaluating. This is important because the **Photo->Delete Rejected Photos** command used to delete the rejected images in the next section searches the entire Lightroom catalog.

- Go to Grid view in the Library module (press the **G** key).
- Use the library filter to show only the images with the rejected flag set. The library filter should be above the center preview pane. If it is not visible, press the **** key (backslash).
  - Select **Attribute** in the library filter. The Attribute filters will appear below the library filter.

    If the far right of the library filter says **Custom Filter**, click on it to see the drop down menu and select **Filters Off**; then select **Attribute** again. This should clear any previous filter settings.

    - In the **Flag** section (the first section on the left), there are three flags. Select the last flag; this is the rejected flag. If the flags are set correctly, you should briefly see the message "Rejected Photos" appear near the bottom of the center preview pane.
    - Now, the center preview pane should only show images that have this flag set. If there are any images in the center preview pane, resolve why the flag is set and then clear it by pressing **U**.
- In the library filter, press **None** to turn off the filter. All the images will appear again.

Evaluating Images

- Go to Grid view in the Library module (press the **G** key).
- In the Folders panel, find the folder for your photo shoot (where you copied the images earlier) and select the **ORIG** subfolder. The Preview pane should show all the images in that folder.

```
S:/Photographs/Originals/2020/200301-Yosemite/ORIG
```

- Select any image you do not want to keep and press **X**.

X	Set the *rejected* flag on the selected image(s)
U	Unset the rejected flag on selected image(s)

- Select **Photo->Delete Rejected Photos** from the menu bar or press **control-backspace**. A dialog will appear asking you to choose either to **Delete from Disk** or **Remove**. Choose **Delete from Disk** or press **D**. You can do this after each image or when you have finished reviewing all the images.

In Bash:

- Change directories to the folder for the current photo shoot.

```
$ cd S:/Photographs/Originals/2020/200301-Yosemite
```

- Run the **sync_pics** shell script. This will update the **filelist** and remove any orphaned files when the rejected originals were deleted in Lightroom.

```
$ sync_pics
$ rm -rf UNUSED
```

  You can also run the **sync_pics** shell script more than once on the same folder without causing any problem. Thus, you can run the **sync_pics** shell script on all the folders for a particular year without causing a problem. This can be useful if you have gone back over several folders and deleted a few more images or you just want to make sure all the folders are synced.

```
$ cd S:/Photographs/Originals/2020
$ do_all sync_pics
```

Step 4 – Edit the Images

You can make the adjustments described in this step in any order, but the order the adjustments are presented is a reasonable starting point. However, for some of the changes, it may be easier to make the change to all images before moving to the next change.

All of the changes made in this step will be made in the Development module. Anytime you make an adjustment and do not like the result, you can use the History panel to undo the adjustment.

- Go to the Develop module (press the **D** key).

Lens Correction

Lens correction is a setting you can set as a default so it is automatically applied when the metadata indicates a particular lens was used.

In the Lens Correction panel:

- Expand the Lens Correction panel.
- Select **Profile**.
- Check **Remove Chromatic Aberration**.
- Check **Enable Profile Corrections**.

The lens correction will now be applied automatically to images when the lens profile and the EXIF data for the lens match.

To see what the image looks like without the lens correction applied, turn off the switch on the left of the Lens Correction title bar, then turn it back on (or erase the history of turning the switch off).

Straighten

While you can use the Crop Overlay tool to both straighten the image and change the composition, I prefer to use the adjustments in the Transform panel to straighten the image and then use the Crop Overlay tool to change the composition.

In the Transform panel:

- Expand the Transform panel.
- In the Upright section, select **Auto**. If you do not like the result, try **Level**. If you do not like that result use the **Rotate** slider in the transform section.
- When an adjustment is made in the transform panel, it will usually result in white edges being created on the image. These edges will need to be removed by cropping the image. You can check the **Constrain Crop** checkbox below the transform sliders to automatically to perform the minimum cropping needed to maintain the aspect ratio and remove the white edges. You can check this checkbox either before or after you make the transform adjustments.

Crop

Enter the Crop Overlay tool by clicking on the dotted rectangle in the toolbar (under the histogram), or press **R**. A new panel will open under the tool bar with the crop controls.

- Click to the right of **Aspect** and select the desired aspect ratio.
- You can use the **Angle** adjustment to straighten the horizon. Or, you can straighten the image using the Transform panel as described above.
- Crop the image by dragging in the edges of the image to remove any distracting or unnecessary areas.

Adjust Tone

The order you perform the adjustments does not matter although some adjustments may affect others. For example, adjusting the white point or black point may affect the exposure. Therefore, correcting the most significant issues first may also simplify subsequent changes.

In the Basic panel:

- Expand the Basic panel.
- Set **Treatment** to **Color**.
- Set **Profile** to **Adobe Color** (or **Adobe Landscape** or **Adobe Vivid**).
- Adjust White Balance.

  Select **Auto** from the white balance (**WB**) drop down menu. This provides a good starting point. Use the **Temp** and **Tint** adjustments to refine the adjustment. Adjust temperature in 200 degree increments.

- Adjust Tone

  You can click on **Auto** in the Tone section to set all of the tone sliders to a default value for the image, or you can set the default value for any individual slider by shift-double-clicking on any individual slider.

  Click on **Auto** in the Tone section, or:

  - Shift-double-click on **Whites**.
  - Shift-double-click on **Blacks**.
  - Shift-double-click on **Exposure**. Adjust in ¼ stop increments.
  - Shift-double-click on **Contrast**.
  - Shift-double-click on **Highlights**.
  - Shift-double-click on **Shadows**.
  - Adjust **Clarity**. Adjust in 10 point increments.
  - Adjust **Dehaze**. Adjust in 10 point increments.
  - Shift-double-click on **Vibrance**.
  - Ignore **Saturation**.

  If you chose to use **Auto**, it does not change the setting for **Clarity** ort **Dehaze**. These settings usually increase the clarity of an image, and as a side effect, they also increase the contrast and darken the image. An initial adjustment might be:

  - Increase **Dehaze +20**
  - Increase **Exposure +.25** to compensate for Dehaze.

  Vibrance is the same as saturation, except it does not affect skin tones.

Make Local Adjustments

- Remove vignette
- Remove spots
- Remove red-eye

Step 5 – Add Images to Collections

At this point, you need to decide what you are going to do with the images. For me, the choices are:

- Add pictures to my family photo albums.
- Add pictures to photo albums for displaying images on the web.
- Identify images to enlarge and print for wall decorations.

I use *collections* in Lightroom to group the images for each of these albums.

Add to Family Photo Album

Many of the photos that I take during the year end up in my family photo album. Since many more images end up in my family photo albums than not, I tag the images that I do not want in a family photo album with the red color label.

Then, it is simple to automatically create my family photo albums using a smart collection in Lightroom. The smart collection finds all images with the following attributes:

- In the folder for the year.
- In a folder named ORIG.
- Does not have the red color label.

Tag the images you do not want in the family album with the red color label.

- Go to Grid view in the Library module (press the **G** key).
- In the Folders panel, find the folder for your photo shoot (where you copied the images earlier) and select the **ORIG** subfolder. The Preview pane should show all the images in that folder.

  ```
  S:/Photographs/Originals/2020/200301-Yosemite/ORIG
  ```

- Move through the images and set the red label on any images that you do not want in the family photo album. To assign the red label to an image, select the image and press **6**.

  For many of my photos, there are several versions of the same image. Only one is needed for the family photo album. Also, given a choice between the same image in horizontal and vertical orientation, the horizontal orientation is preferred in the family photo albums.

Create the smart collection for the current year. If the smart collection already exists, then it should update automatically as new images match the attributes for the collection.

- If it does not already exist, create a collection set to contain the family photo albums. Create as many collection sets as you want to organize your albums. I use the following hierarchy.

  My Collections > Albums > Family Photo Albums

- Click on the plus sign (**+**) at the top of the Collections panel and select **Create Collection Set**.
- Right-click on the collection set where you want the family photo album for the current year, and select **Create Smart Collection** form the drop down menu.

- Enter a name for the collection (for example, **2020**).
- Check **Inside a Collection Set**, and make sure the drop down panel shows the correct collection set.
- Set the type of match for the rules to **all**.
- By default there is a rule to match the rating attribute. Click on **Rating** and select **Source -> Folder** from the drop down menu.
- Leave the second box to say **contains word**.
- In the third box enter **2020**, **ORIG**. Where **2020** is the year of the album and **ORIG** is the name of the folder in the photos hoot where the images are saved.
- Click the plus sign (+) at the end of the line to add another rule.
- Click on the first box of the new rule, and select **Label Color** from the drop down menu.
- Click on the second box and select **is not** from the drop down menu.
- Click on the third box and select **red** from the drop down menu.
- Select the **Create** button at the bottom of the Create Smart Collection popup window.

Add to Web Photo Album

I display quite a few of my images on the web in photo galleries created using HTML web pages. Since there are quite a few of these images, I separate the images into multiple photo albums based on various subjects, such as birds, boats, Yosemite, and so on. For each album, I use a collection in Lightroom to organize the images. Because there can be some overlap in the subjects, some images may be in more than one album (or collection).

As described above, I create a collection set to hold the collections for the web photo albums. In my case, the collections are in the following collection set.

```
My Collections > Albums > Web Photo Albums
```

While I display a lot of images in the web photo albums, not very many of the images I take each year are good enough to be displayed on the web. Therefore, I pick these images one at a time. Selecting images for the web photo albums is a continual process, where I am constantly adding new images and removing old ones.

- To add new images to a collection, I simply click on the image, drag it over the collection, and drop it.
- To remove an image, I right-click on the image in the collection and select **Remove from Collection**.

Print Enlargement

As described in the section “Prints Folder”, I have separate folders for images I enlarge and print based on the size I intend to print them. Therefore, in Lightroom, I keep these images in similarly named collections.

```
8x10
11x14
```


12x18

I typically like to print images in 11x14 or 16x20 formats. These are almost the same aspect ratio, so I use one collection, 11x14, for these images. Images in the 8x10 collection are also the same aspect ratio, but the images in this collection do not have enough resolution to be printed larger than 8x10. These images may have been taken with a low resolution camera, or they may have been cropped from a larger image. Since the images in the 8x10 and 11x14 collections need to be cropped and I do not want to crop my original images, I make a virtual copy of these images and crop that image, which I then add to the collection.

If an image contains detail that I do not want to lose by cropping it to 11x14, I will leave the image as is and add it to the 12x18 collection.

I find that most images do not look the same when comparing the printed image with the same image on a computer screen. There are many causes for this, but my solution is to adjust the original image so that it looks the way I want on the computer screen. Then, I make adjustments to the virtual copy that are necessary to make the printed version of the image look correct. Usually, the only change I need to make is to brighten the shadows.

If the original image is modified after a virtual copy is made, the changes will not be carried forward to the virtual copy, so, in that case, I must make a new virtual copy. When this is done, it also needs to be added to the collection for enlargements again.

- Go to Grid view in the Library module (press the **G** key).
- Right-click on the image you want to enlarge and print, and select **Create Virtual Copy**. The copy will have an upturned corner in the lower left of the image when viewed in Grid view or in the filmstrip of images.
- Select the virtual image.
- Go to the Develop module (press the **D** key).
- Enter the Crop Overlay tool by clicking on the dotted rectangle in the toolbar (under the histogram), or press **R**. A new panel will open under the tool bar with the crop controls.
- Click to the right of **Aspect** and select the desired aspect ratio, for example 11x14. If the value you want is not showing, you can enter by selecting **Enter Custom**.
- Use the left and right or up and down arrow keys to adjust the area that will be cropped. When you are satisfied, press **Done** below the main window.

Step 6 – Create Web Photo Galleries

A web photo gallery is a collection of images in JPEG files and HTLM files specifically created to display them in a web browser. To create a web photo gallery from the collections created or updated in the previous step, you need to:

- Create JPEG files for the images.
- Create HTML pages to display the images.
- Update the web server with the new files for the web photo gallery.

Create JPEG Files

To create a web gallery, the first step is to get the finished images and convert them to JPEG files. This is done using the *export* feature of Lightroom. Exporting takes an image, applies any modifications that have been made to the image, and creates a new image file.

In the previous workflow step, all the images for a particular web photo gallery were added to a collection. As described in the section "Albums Folder", when the images for a web photo gallery are converted to JPEG files, they will be stored in one of the following folders.

```
S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-LORES
S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-HIRES
S:/Photographs/Albums/WebPhotoAlbums/<albumName>/JPEG-LORES
```

JPEG images for displaying in a web browser do not need high resolution. In addition, low resolution images are smaller and, therefore, can be transferred and loaded more quickly.

In Lightroom:

- Go to Grid view in the Library module (press the **G** key).
- Select a collection.

  In the **Collections** panel on the left, expand the collections as necessary and click on the collection for the photo album you want to export. For example:

  ```
  My Collections > Albums > Family Photo Albums > <year>
  ```

- Select **Sort** order.

  Select the **Sort** order in the toolbar below the main window so the images appear in the correct order. I usually start with Capture Time, and then drag images in the film strip to different location as necessary. Lightroom will remember the order you put the images and that is the order they will be exported. The order they are exported is significant if you add a sequence number to the file names when they are exported.

- Select All.

  Now that the images you want to export are being displayed, press **control-A** to select all the images.

- Press the **Export** button at the bottom of the left panel. This will open the Export dialog.
  - Select the **JPEG-LORES** preset from the left panel.

    This will set all the export settings to the correct setting (if you prefer to set the settings individually or you do not have the **JPEG-LORES** preset, see the section "Export Low Resolution Images").
  - Press the **Export** button.
  - When the Choose Folder dialog opens, enter the destination folder. For example:

    ```
    S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-LORES
    ```


When finished, this produces a folder with a low resolution JPEG file for each image in the collection. The image files will have the same name as the original image file except they will have the suffix "**jpg**" and they will be prefixed with a 3-digit sequence number to preserve their order within the collection.

Create HTML Files

In Bash:

- Update the photo gallery files in the web page staging area.

```
$ make_album albumName
```

Update the Web Server with DreamWeaver

In DreamWeaver, make sure you are editing the web site named "**BruceBlinn (web)**". You can change this by selecting **Site->Manage Sites** from the menu at the top of the page. Make sure the files that make up the web page are displayed on the right. If not, select **Window->Files** from the menu at the top of the page (or press F8).

Traverse the file hierarchy and select the files or directories that you want to update on the web site. Click on the up-arrow (put files) above the list of files to start copying the selected files from the staging area to the web site.

In a browser, go to the web page, refresh the page, and make sure the files you copied have been updated.

Step 7 – Print Images

There are two reasons that I print images.

- I print 4x6 images for my physical photo albums.
- I print enlarged images for framing and hanging.

The previous workflow step described making low resolution images for displaying on the web, but printed images require high resolution JPEG images.

Print 4x6 Images

I print 4x6 images of my family photo albums for inclusion in physical photo albums.

- Create high resolution JPEG image files. This is basically the same process as creating the low resolution images in the previous workflow step except put the images in the following folder and use the **JPEG-HIRES** preset in the export panel (see the section "Export High Resolution Images").

```
S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-LORES
```

If you are printing a new album and you need to create a new the instructions in "Create Image Series Panorama

A standard panorama takes a series of overlapping images taken of a wide scene and stitches them together to form a single, wide image (or it can be a vertical image). However, sometimes placing a series of three or four images side-by-side, without stitching them together, makes an interesting variation on a panorama. For example, the images could be the same outdoor image captured during different seasons, or a series of three images of a bird in flight captured a few seconds apart.

This section describes how to use Photoshop to create a single, wide, sequence of images by merging three or four separate images into one.

Before you start, you need to do a little computation to determine size of the panorama, the size of the individual images, and the amount of space between and around them. For example, assume you want:

- Total width of the panorama to be 14 inches (so it can be printed on 11x14 paper).
- Leave 1/4 inch on each side of the final image for mount board to overlap.
- The panorama will consist of four images.
- Leave 1/8 inch of whitespace on each side of the individual images.

With this information, you can compute the size of each individual image as follows, which comes out to 3.22 inches for each image.

```
14 = 1/4 + 1/8 + image + 1/8 image + 1/8 + image + 1/8 + image + 1/8 + 1/4
```

Now you can determine the height of the panorama as follows, which comes out to 3.97 inches for each image.

```
1/4 + 1/8 + image + 1/8 + 1/4
```

In Lightroom:

- Find the folder with the images you want to put in the panorama.

  ```
  S:/Photographs/Originals/2019/191103-Yosemite/ORIG
  ```

- Make sure the images have been edited to look the way you want.
- Select the images, then right-click on one of the images. Select **Edit In**, then **Edit in Adobe Photoshop** from the drop down menu.

In Photoshop:

- Create a new empty canvas by selecting **File->New** (or press **Control-N**). In the New Document popup enter the desired information. For example:

Title	KingSwingPano
Width	14 inches
Height	3.97 inches
Resolution	300 ppi
Color Mode	RBG Color
Background	White

- For each image, crop it to make it square.
  - Select the crop tool (press **C**).
  - In the options bar at the top, click on the **Ratio** drop down menu and select **1:1 (Square)**.
  - Use the left and right arrow keys to move the crop area around or drag the corners as necessary to change the size of the cropped area. Press enter when done.
- Exit the crop tool (for example, select the move tool by pressing **V**).
- For each image, change the size of each image to be the size computed above. Select **Image->Image Size** (or press **Alt-Control-I**). In the Image Size popup:

Width	3.22 inches
Height	3.22 inches
Resolution	300
Resample	Checked

    - Press **OK**.
- For each image, copy it to the new canvas.
    - Select an image.
    - Select all the image by pressing **Control-A**.
    - Copy the image by pressing **Control-C**.
    - Select the new canvas.
    - Paste the image by pressing **Control-V**. This will create a new layer with the image on it.
    - Move the image to the correct position using the arrow keys.
- Save the panorama.
    - Select **File->Save As**. Create a new folder for the panorama and save the image there.

        `S:/Photographs/Originals/2019/191103-Yosemite/KingSwingPano`
    - Exit Photoshop. When prompted to save the individual images, select **Yes**. The images will be saved next to the original image files.

In Windows:

- Move the edited original files to the panorama folder. The will have the same name as the original files, except the names will be appended with "**-Edit**" and they will have a "**psd**" suffix.

    `S:/Photographs/Originals/2019/191103-Yosemite/KingSwingPano`

In Lightroom:

- Right-click on the folder for the photo shoot in the Folders panel and select **Synchronize Folder**.

    `S:/Photographs/Originals/2019/191103-Yosemite`
- Click on the panorama image and drag it to the **Panoramas** collection in Web Photo Albums.
- Create Title Picture for Photo Album".
- Except for the most expensive online print shops, most of the popular print shops have very similar equipment and produce remarkably similar images. Therefore, I usually print my images at the Costco Photo Center, which I find to be very inexpensive. To print images at the Costco Photo Center, follow the instructions in the section "Print Pictures at Costco".

Enlarged and Print Images

For images that I decide to enlarge, mount, and frame for hanging on a wall, I prefer the 4x5 format, which includes 8x10, 11x14, and 16x20. I do not care for 8x10 images

because they tend to look like images from a college photography class. The 11x14 images are a nice size for hanging and you can readily get precut mount board and picture frames at any art supply store. I print most images at this size.

If I really like an image, I will first print and mount it at 11x14 because this only costs about $4 to print and $10 for the mount board. If I still like it, then I will print it as 16x20. It is still cheap to print at $7 but the dimensions for the mount board that I like need to be custom ordered. Similarly, the frame needs to be custom ordered. I print it first as 11x14 for a couple reasons.

- I like to see an image enlarged and mounted to decide it I like it. I find I get a different impression of the image than I do from seeing at it on my computer screen.
- I will keep the print in a portfolio box as a reference.

As described in the previous workflow step, I put the images that I plan to enlarge and print in separate collections in Lightroom. This may entail changing the aspect ratio and making some slight image adjustments.

- Then, you need to create a high resolution JPEG image file for the image. This is basically the same process as creating the low resolution images in the previous workflow step except put the images in the following folder and use the **JPEG-HIRES** preset in the export panel (see the section "Export High Resolution Images").

  `S:/Photographs/Prints/<`*aspectRatio*`>`

- Except for the most expensive online print shops, most of the popular print shops have very similar equipment and produce remarkably similar images. Therefore, I usually print my images at the Costco Photo Center, which I find to be very inexpensive. To print images at the Costco Photo Center, follow the instructions in the section "Print Pictures at Costco".

Quick Reference

Step 1 – Copy the Images from the Camera

- Copy the images from the SD card to the S Drive, then run the **init_pics** script.

```
$ cd S:/Photographs/Originals/2020/<year-photoshootName>
$ init_pics
```

Step 2 – Import the Images into Lightroom

Step 3 – Delete Unwanted Images

- For each image:

X	Set the rejected flag on the selected image(s)
U	Unset the rejected flag on selected image(s)
Control-Backspace	Delete rejected photos, then press **D**

Step 4 – Edit the Images

- In the Transform panel.
  - Check the **Constrain Crop** checkbox.
  - Select **Auto** in the buttons at the top of the Transform panel.

- In the Basic panel.
  - Select **Auto** from the white balance (**WB**) drop down menu.
  - Press the **Auto** button in the Tone section.

Step 5 – Add Images to Collections

- For family photo albums, simply add or delete the red label to images and the smart collection will automatically update the correct family photo album.
- For exceptional images, drag image to a web photo album collections.
- For images to print
  - Make virtual copy of image.
  - Crop to 11x14 aspect ratio.
  - Brighten shadows.
  - Drag and drop to 11x14 collection.

Step 6 – Create Web Photo Galleries

- Export images as JPEG.

```
S:/Photographs/Albums/FamilyPhotoAlbums/<albumName>/JPEG-LORES
S:/Photographs/Albums/WebPhotoAlbums/<albumName>/JPEG-LORES
```

- Make web photo gallery (HTML pages) by running the **make_album** script.

```
$ make_album <albumName>
```

- Update the web server using DreamWeaver

Step 7 – Print Images

- Export high resolution images to JPEG files.

```
S:/Photographs/Prints/<aspectRatio>
```

- Upload to Costco print center.

Image Adjustment Tools

This section describes the tools for making adjustments that apply to the whole image. See the section “Local Adjustment Tools” for making adjustments to an area within the image.

Basic Panel

Treatment

The treatment section provides a choice of **Color** or **Black & While**. One or the other will be highlighted to indicate the current choice.

Profile

The profile selects the overall appearance of the image for raw images.

When you shoot in JPEG mode, the camera performs many adjustments to make the image look its best. This is also what you see when you see the image on the camera’s display. However, when you shoot in raw mode, the camera does not make any

adjustments to the image, so they may not look like what you saw when you too the image.

You should choose a profile that makes the initial appearance of raw images look the way they did when they were displayed by your camera. The default for raw images is **Adobe Color**, which is a good choice, but if you are doing landscape photography, you may want to use **Adobe Landscape**.

If the image is a JPEG image (that is, not a raw image) you do not need a profile because the camera has already applied the simple adjustments for you. However, there are still several artistic profiles available that you can choose if you like the effect. The default for JPEG images is **Color**, which is a good choice because it is close to the way images are shown in the camera.

WB

The WB section contains the white balance adjustments. By default the white balance value is set to **As Shot**, which means it uses the setting your camera was set to. If you shoot in raw mode, pressing the drop down arrow to the right lets you select any of the preset white balance values. If you shoot in JPEG mode, only **As Shot** and **Auto** are available because the white balance setting has already been applied to the image.

Selecting **As Shot** or **Auto** from the drop down list usually a good starting point.

Alternatively, you can use the White Balance Selector tool, (the large eyedropper in the top-left of the white balance section). To use the tool either click on the eyedropper or press **W** and the cursor will turn into an eyedropper. Now, click on an area that is light to medium gray. You can repeat this process over and over until you find an area that works.

Once you are satisfied that the white balance is close, use the **Temp** and **Tint** sliders to refine the adjustment

Note: When you use the White Balance Selector tool, there is a grid of pixels that follows the eyedropper. This shows you the pixels under the eyedropper. If you do not find this helpful and want to remove it, uncheck the **Show Loupe** checkbox in the toolbar (under the center panel).

Note: When you use the White Balance Selector tool, the Navigator panel changes dynamically to preview what the white balance would look like if you were to click where the cursor currently is.

Temp

Move the **Temp** slider left if the image is too blue or to the right if it is too yellow.

Tint

Move the **Tint** slider left if the image is too red or to the right if it is too green.

Tone

At the top-right of the Tone section is the **Auto** button. Pressing this button automatically sets the values for all of the adjustments in the Tone and Presence sections, which is basically everything except the white balance. This can provide a good starting point

since, if you do not like the results, you can simply enter **control-Z** to undo it. (Perhaps you will need to reduce shadows and increase contrast slightly after using Auto Tone.)

The automatic adjustments may also be useful when you are initially scanning the images to determine which images to keep and which to throw away. Sometimes it is difficult to judge the value of an image without making at least some adjustments.

Exposure

The exposure sets the overall brightness of the image by adjusting the brightness of the midtones. The numeric value of this slider is equivalent to the number of exposure stops in the camera.

You should set the white point and black point using the **Whites** and **Blacks** sliders first, and then adjust the exposure if the image is too light or too dark.

Contrast

Increasing contrast will brighten the brightest areas and darken the darkest areas to increase the contrast. This can improve a flat image and make the colors more vivid. It may make it unnecessary to use the Tone Curve, which provides another way of increasing contrast.

You should only find it necessary to increase contrast, never decrease it.

Highlights

Use this adjustment when the brightest areas in the image are too bright. If you drag the **Highlights** slider left you will reduce the brightness of the highlights, see more detail in the highlights, and increases the contrast in the highlights.

Shadows

Use this adjustment when the darkest areas in the image are too dark. If you drag the **Shadows** slider right you will reduce the darkness of the shadows, see more detail in the shadows, and increases the contrast in the shadows.

Whites

Use the **Whites** slider to make the whites whiter by adjusting the right side of the histogram.

To automatically set the white point, press the **Shift** key and double-click on the **Whites** slider (or its label). Lightroom will determine how much it can make the whites whiter without losing detail and it will set the white point to that point.

To find the white point manually, press and hold the **Alt** key then drag the Whites slider to the right. As you click on the slider, the image will turn black. Drag the slider to the right until you begin to see white, then back off just a little and release the slider. If you see red, blue, or yellow, only those colors are being clipped, which may be acceptable. White implies all colors are being clipped.

Blacks

Use the **Blacks** slider to make the blacks blacker by adjusting the left side of the histogram.

To automatically set the black point, press the **Shift** key and double-click on the **Blacks** slider (or its label). Lightroom will determine how much it can make the blacks blacker without losing detail and it will set the black point to that point.

To find the black point manually, press and hold the **Alt** key then drag the Blacks slider to the left. As you click on the slider, the image will turn white. Drag the slider to the left until you begin to see black, then back off just a little and release the slider. If you see red, blue, or yellow, only those colors are being clipped, which may be acceptable. Black implies all colors are being clipped.

Presence

Clarity

Increasing the clarity increases the contrast in the mid-tones so you see more detail. This may also cause the image to appear a little darker requiring an adjustment to the exposure.

Clarity brings out the texture and detail, so it can be used just about anywhere except where you want a soft look (such as a portrait or baby picture). You can reduce clarity to increase softness.

If you apply too much clarity, you may begin to see halos around object (like a glow or shadow begins to appear).

Dehaze

This adjustment and be used to decrease or increase the haze. It cuts through the haze by increasing contrast.

The side effects of using the dehaze adjustment is that it may darken the image slightly, cause a blue tint, and exaggerate vignetting.

Vibrance

Increasing the vibrance makes colors brighter. It increases the saturation of colors that are not very saturated and leaves the saturated colors alone. The **Vibrance** slider also seems to be able to ignore people so skin tones are not saturated.

Saturation

Use the **Vibrance** slider to increase vividness of colors and only use the **Saturation** slider to reduce the saturation of colors. Increasing the color saturation with the **Saturation** slider increase the saturation of all colors, which does not look good.

Tone Curve Panel

The Tone Curve panel lets you make adjustment similar to the Curves panel in Photoshop; however, with the adjustments available in the Basic panel, this adjustment is not needed very often.

HSL/Color Panel

This panel has two layouts for presenting color adjustments. You can click on the names **HSL** or **Color** in the title of the panel to select whichever view you want.

If you click on **HSL**, you will get sliders that let you adjust the hue, saturation, and luminance of each color. Hue adjusts the amount of the color, saturation adjusts the vibrancy of the color, and luminance adjusts the brightness of the color.

Rather than using the sliders, you can click on the circle with a dot in the upper left of each category to use the Target Adjustment tool. This tool lets you click-and-drag on a spot in the image. The point where you click will select the color, and the amount you drag up will increase the value, and down will decrease it.

If you click on **Color**, you will see a layout similar to the one in Photoshop's Hue/Saturation Adjustment. Here you select the color and then you have three sliders for hue, saturation, and luminance.

Split Toning Panel

Detail Panel

When reducing noise or sharpening an image, zoom in so that you are viewing the image at least at full size. In the Navigator panel on the left, click on **1:1** to see the image in full size.

Changing the sharpening or noise reduction may take a few seconds to take effect depending upon the speed of your computer. You can make a significant change (that is easy to see a change) and wait until you see the change to get an idea of how responsive your computer is when making these adjustments.

Sharpening

Noise Reduction

Noise is common in an image shot with a high ISO or in low light. There are two types of noise: luminance noise, which looks grainy, and color noise, which looks like speckled color pixels.

To reduce luminance noise:

- Drag the **Luminance** slider to 0 to start without any reduction.
- Zoom in to at least full view and move the image around to find a grainy area.
- Drag the **Luminance** slider right until the grain is reduced.
- The **Detail** and **Contrast** sliders can restore some of the sharpness to the image if the noise reduction made the image a little too smooth or clean.

To reduce color noise:

- Lightroom automatically applies some color noise reduction to an image, so drag the **Color** slider to 0 to remove it.
- Zoom in to at least full view and move the image around to find a dark area that shows color noise.
- Drag the **Color** slider right until the color in the speckles goes away.
- If some detail was lost (most likely in the edges), drag the **Detail** slider to the right.

- The **Smoothness** slider may counter some of the side effects of the **Detail** slider, but it will also reduce the sharpness.

Lens Corrections Panel

These settings can be applied to all images; therefore, you can set their values as defaults or apply them using a preset.

- Select **Profile** (that is, not **Manual**).
- Check **Remove Chromatic Aberration**. This will reduce color distortion near high contrast edges. If you see color distortion around high contrast edges, you can try using the **Defringe** controls with the **Manual** setting.
- Check **Enable Profile Corrections**. This will apply corrections specifically designed to correct distortions (such as pin cushioning and barrel distortion) for the lens that was used when the image was taken.

Transform Panel

The Transform panel provides sliders that allow you to straighten an image or to adjust it to correct any distortion caused by perspective (for example, objects such as buildings or trees leaning toward the center of the image). For straightening, you can also use the Crop Overlay tool.

Effects Panel

The Effects panel has two sections: one for introducing a vignette effect around the image, and one for adding grain to the texture to the image.

Calibration Panel

The Calibration panel is used to add color correction to counter a bias introduced in the camera. You use this if images consistently appear different in Lightroom that they did in the camera.

Local Adjustment Tools

This section describes the tools for making adjustments to an area within the image. See the section “Image Adjustment Tools” for making adjustments that apply to the whole image.

Common Settings

This section describes some of the settings that are the same in some or all of the tools.

Edit Pin

You can make more than one adjustment using the Spot Removal tool, the Graduated Filter tool, the Radial Filter tool, and the Adjustment Brush tool, and you can return to the adjustment to make changes to it at a later time.

A light gray dot, called an *edit pin*, will appear on the image where the adjustment was made on the image. You can click on the edit pin to make it active again. If an adjustment is active, its edit pin will be black.

Hovering the cursor over an edit pin will cause the area affected by the adjustment to be tinted with a mask overlay so you can see the area it covers. You can also turn on **Show Selected Mask Overlay** (or press **O**) in the toolbar below the image. This will cause the mask overlay to be shown for the currently active adjustment.

Effects

Pressing on the **Effect** drop down menu lets you choose from a list of preset adjustments. If you select one, you will see that all the sliders are reset except one or a few that provide the adjustments you would expect given the name of the preset.

If you do not see all the adjustment sliders, click the (barely visible) arrow to the right of the **Effect**.

You can reset all the sliders by double-clicking on the **Effect** label. You can reset an individual slider by double-clicking on it.

Erasing

If you painted over too much area, you can switch to erase mode by pressing the **Erase** label in the brush settings at the bottom of the Adjustment Brush tool panel. Or, you can press the **Alt** key while painting will temporarily switch to erase mode.

Brush Settings

Set the brush characteristics using the sliders at the bottom of the Adjustment Brush tool panel. The brush size can also be changed using the left and right bracket keys to make the brush small or larger respectively.

Auto mask senses edges and keeps you from painting into other areas. This may make the brush sluggish so you can toggle it on and off by pressing **A**.

View Before and After

As with most of the panels on the right side of Lightroom, you can turn the changes made with the Adjustment Brush tool on and off with the switch at the bottom left of the panel. This allows you to compare the image with and without the changes.

Crop Overlay Tool

You can press the **R** key from anywhere in Lightroom to enter the Crop Overlay tool. If you are in the Develop module, you can select the Crop Overlay tool by selecting the dotted rectangle in the toolbar (under the histogram).

You can use the Crop Overlay tool to tighten the composition (crop), change the aspect ratio, or straighten the image.

When the Crop Overlay tool is active, the controls for the tool are in the right panel under the toolbar, which is under the histogram.

- **Crop**: When the crop tool is active a selection box surrounds the image. This shows the part of the image that will remain after the crop. Initially, it surrounds the entire image. Drag any edge or corner to adjust its size. Click on the image and drag it to move the image around under the selection box.

- **Change Aspect Ratio**: If you want to preserve the current aspect ratio (that is, the ratio between the width and height of the image), select **Original** from the drop down menu to the right of **Aspect**. If you want to change the aspect ratio, select your desired ratio from the drop down menu. For example, if your image is 4x6 (standard 35mm format and used by most DSLRs) and you want to print it as an 8x10, select **4x5 / 8x10** from the drop down menu.
- **Straighten**: If the image is not level, move the **Angle** slider until it is level. If you press the **Auto** button, Lightroom will attempt to straighten the image for you. You can also hover the cursor just outside any corner of the selection box. When it turns to a curved arrow, you can drag the corner to rotate the image. When you straighten the image, the tool automatically adjusts the selection box to maintain the existing aspect ratio.

When you are done, press the **Close** button in the lower right of the Crop Overlay tool's controls to perform the crop.

Spot Removal Tool

- **Select the Spot Removal tool** (**Q** key)
- **Set Brush Characteristics**: Set the brush characteristics. The brush size should be slightly larger than the spot you want to remove. In addition to the **Size** slider in the Spot Removal tool panel, the brush size can also be changed using the left and right bracket keys to make the brush small or larger respectively.
- **Paint on Image**: Either click on the spot you want to remove or click-and-drag over the area where you want the modified. When you click on an area, a second circle will appear showing you where the corrective sample is being taken from. If you do not like the result, click on the second circle and drag it to a better location.

Red Eye Correction Tool

- **Select the Red Eye Correction tool**

Graduated Filter Tool

Using the Graduated Filter tool you can make the same adjustments that are available in the Basic panel except these adjustments are applied in a gradient.

- **Select the Graduated Filter tool** (**M** key)
- **Start New Graduated Filter:** If this is not the first graduated filter applied to this image, select the **New** label at the top of the tool, and double-click on the **Effect** label to reset all the sliders.
- **Set Adjustment Sliders**: Set the adjustment sliders to what you estimate will be needed, or select a preset value from the **Effect** drop down menu. If you do not see all the adjustment sliders, click the (barely visible) arrow to the right of the **Effect** label. You can reset all the sliders by double-clicking on the **Effect** label. You can reset an individual slider by double-clicking on it.
- **Set Brush Characteristics**: Set the brush characteristics using the sliders at the bottom of the panel.

- **Drag across the Image**: Click and drag the cursor across the image in the area where you want to apply the gradient. You can press the **Shift** key while you drag to keep the gradient vertical or horizontal.
- **Refine Adjustment**: Change the slider values if necessary or drag the filter's edit pin to reposition the gradient.

Once the gradient filter is created, the gradient is converted to a mask overlay and the mask overlay can be edited with a brush. This is useful, for example, when the graduated filter covers part of the image you don't want affected. By editing the mask overlay you can erase that part of the gradient.

- At the top of the Graduated Filter panel in the **Mask** section click on **Brush** to show the brush characteristics.
- You can add to the gradient by painting with the brush, and you can remove part of the gradient by clicking on **Erase** in the brush settings and painting over that part of the gradient. You can press **O** while you are painting to temporarily show the mask overlay, or you can turn on **Show Selected Mask Overlay** in the toolbar below the image.

Rather than erasing part of the gradient, you can use the range mask to automatically apply the graduated filter to selective areas covered by the filter. The **Range Mask** drop down menu is at the bottom of the Graduated Filter panel. You can select **Off**, **Color**, or **Luminance**. If you selecting **Color**, the graduated filter will only apply to a certain range of color. If you select **Luminance**, the graduated filter will only apply to a specified range of brightness.

- At the bottom of the Graduated Filter panel press the **Range Mask** drop down menu and select **Color** or **Luminance**.
- If you selected **Color**, the Color Range Selector (eye dropper) appears. Click on the color you want the filter to apply to. You can more colors by pressing the **Shift** key and clicking on the other colors, or you can click and drag to include a range of colors The **Amount** slider controls how many colors are included in the range. Press the **Alt** key and click on the slider (you may need to move it slightly) to see the color range mask.
- If you selected **Luminance**, a **Range** slider appears with sliders at each end. Move the left slider to the right to ignore dark areas and move the right slider to the left to ignore light areas. Press the **Alt** key and click on the slider (you may need to move it slightly) to see the luminance range mask.

Radial Filter Tool

Using the Radial Filter tool you can draw an ellipse and perform the same adjustments that are available in the Basic panel except these adjustments are applied either inside or outside the ellipse.

- **Select the Radial Filter tool** (**Shift-M**)
- **Start New Radial Filter:** If this is not the first radial filter applied to this image, select the **New** label at the top of the tool, and double-click on the **Effect** label to reset all the sliders.

- **Set Adjustment Sliders**: Set the adjustment sliders to what you estimate will be needed, or select a preset value from the **Effect** drop down menu. If you do not see all the adjustment sliders, click the (barely visible) arrow to the right of the **Effect** label. You can reset all the sliders by double-clicking on the **Effect** label. You can reset an individual slider by double-clicking on it.
- **Draw Ellipse**: Click where you want the center of the ellipse and drag the cursor to create the ellipse. If you press the **Shift** key while you drag, the ellipse will be a perfect circle. If you press **control** and double-click anywhere in the image, it will create the largest ellipse that will fit in the image.

The apostrophe key (') turns the **Invert Mask** checkbox on and off, which, in turn, toggles the application of the adjustments to inside or outside the ellipse.

Adjustment Brush Tool

Using the Adjustment Brush tool you can make the same adjustments that are available in the Basic panel except these adjustments are only applied where you paint a mask overlay.

- **Select the Adjustment Brush tool** (**K** key)
- **Start New Adjustment:** If this is not the first adjustment to this image, select the **New** label at the top of the tool, and double-click on the **Effect** label to reset all the sliders.
- **Set Adjustment Sliders**: Set the adjustment sliders to what you estimate will be needed, or select a preset value from the **Effect** drop down menu. If you do not see all the adjustment sliders, click the arrow to the right of the **Effect** label (barely visible). You can reset all the sliders by double-clicking on the **Effect** label. You can reset an individual slider by double-clicking on it.
- **Set Brush Characteristics**: Set the brush characteristics using the sliders at the bottom of the panel.
- **Paint on Image**: Click and drag over the area (paint) to create the mask overlay. This is the area where the adjustment will be applied. You can press **O** while you are painting to temporarily show the mask overlay, or you can turn on **Show Selected Mask Overlay** in the toolbar below the image. To erase part of the mask overlay, click on **Erase** in the brush settings and paint over the area you want to erase.
- **Refine Adjustment**: Change slider values or paint or erase the mask overlay.

Rather than erasing part of the mask overlay, you can use the range mask to automatically apply the adjustment to selective areas covered by the mask overlay. The **Range Mask** drop down menu is at the bottom of the Adjustment Brush panel. You can select **Off**, **Color**, or **Luminance**. If you selecting **Color**, the adjustment will only apply to a certain range of color. If you select **Luminance**, the adjustment will only apply to a specified range of brightness.

- At the bottom of the Adjustment Brush panel press the **Range Mask** drop down menu and select **Color** or **Luminance**.
- If you selected **Color**, the Color Range Selector (eye dropper) appears. Click on the color you want the filter to apply to. You can more colors by pressing the

Shift key and clicking on the other colors, or you can click and drag to include a range of colors The **Amount** slider controls how many colors are included in the range. Press the **Alt** key and click on the slider (you may need to move it slightly) to see the color range mask.

- If you selected **Luminance**, a **Range** slider appears with sliders at each end. Move the left slider to the right to ignore dark areas and move the right slider to the left to ignore light areas. Press the **Alt** key and click on the slider (you may need to move it slightly) to see the luminance range mask.

Correcting Problems

Recover Clipped Highlights

After you adjust the **Whites** and **Exposure**, there may be some clipped highlights. To find out, look at the triangle in the top-right corner of the histogram. If the triangle is gray, there is no clipping. If it is red, yellow, or blue, there is clipping of that color. If it turns white (light gray), there is clipping in all colors.

To find out where the highlights have been clipped, hover the cursor over the triangle in the top-right corner of the histogram. Any clipped highlights will turn red in the image. If you click on the triangle, the red clipping indicator will stay on until you click it again. You can also press the **J** key to toggle it on and off.

If some of the highlights are clipped, you have three choices:

- You could leave them alone and they will be pure white in the image.
- You could reduce the **Exposure** or **Whites** sliders, or
- You can use the **Highlights** slider to try to recover some of the detail in the highlights.

To recover the clipped highlights, drag the **Highlights** slider left. Watch the red clipping indicator to see how effective it is.

Recover Clipped Shadows

After you adjust the **Blacks** and **Exposure**, there may be some clipped shadows. To find out, look at the triangle in the top-left corner of the histogram. If the triangle is gray, there is no clipping. If it is red, yellow, or blue, there is clipping of that color. If it turns white (light gray), there is clipping in all colors.

To find out where the shadows have been clipped, hover the cursor over the triangle in the top-left corner of the histogram. Any clipped highlights will turn blue in the image. If you click on the triangle, the blue clipping indicator will stay on until you click it again. You can also press the **J** key to toggle it on and off.

If some of the shadows are clipped, you have three choices:

- You could leave them alone and they will be pure black in the image.
- You could reduce the **Exposure** or **Blacks** sliders, or
- You can use the **Shadows** slider to try to recover some of the detail in the shadows.

To recover the clipped shadows, drag the **Shadows** slider right. Watch the blue clipping indicator to see how effective it is.

Richer Sky

The Graduated Filter tool can be used to simulate the effects of using a neutral density filter. For example to darken the sky:

- Create a graduated filter from the top of the image to just above the horizon. The sky should be a little lighter near the horizon.
- Darken the sky by moving the **Exposure** slider left.
- Add blue to the sky by moving the **Temp** slider left.
- Move the **Contrast** slider right to bring out the clouds.

More about Lightroom

Collections

Collections are like photo albums. Lightroom lets you create *collections* and *collection sets*. A collection set is like a folder; it has a name that describes the collections it contains and it contains collections or other collection sets. A collection is similar; it has a name that describes the collection but it contains images. So a collection set contains collections and collections contain images.

The images in a collection are only references to images, not the actual images. That is, the images are not copied to the collection; there is only one copy of the image in Lightroom regardless of how many collections it is in. So an image can be in more than one collection too.

There are several ways to add images to a collection:

- When you create a collection, the collection dialog gives you the option of adding the currently selected images to the new collection.
- You can drag an image and drop it on the name of the collection.
- You can make a collection the *target collection* (see below) and use any of the ways of adding images to the target collection.

Smart Collections

A smart collection is a collection that is automatically populated with images that match a list of criteria. Lightroom keeps the collection up to date by searching its data base for any image that matches the criteria. Once the smart collection is created as described below that number to the right of the collection name is the number of images that are in the collection. If you click on the name of the collection, the images in the collection will be displayed in the center panel and the filmstrip.

To create a smart collection:

- In the Collections panel, click on the plus sign (**+**) and select **Create Smart Collection** from the popup menu. This will bring up the Create Smart Collection dialog.
    - Enter a name for the smart collection in the **Name** field.
    - In the **Location** section, enter the information where you want to save the collection.

- Enter the rules to use for selecting images for the collection. Each line specifies separate rule. The plus and minus buttons (**+**, **-**) on the right side of the line add a new rule following the current rule or delete the current rule. If you press the Alt key, the plus sign (**+**) turns to a hash mark (**#**). You can press the hash mark to add a sub-rule, in which case, both the condition of the rule and subrule must match.
- Press **Create** when you are finished.

The operators for matching strings are **contains**, **contains all**, and **contains words**. The meanings of these phrases are:

- **Contains** matches if the string is a substring of the target. If more than one string is specified (separated by commas), only one needs to match the target.
- **Contains all** is the same as **contains** unless more than one string is specified. Then, the target must contain all the strings.
- **Contains words** is the same as **contains all** except each string must match a whole word in the target.

Quick Collection

If you press the **B** key, the currently selected image(s) will be added to the Quick Collection. The **B** key is a toggle, so as long as the same image is selected if you press it again, it will remove the image from the Quick Collection.

You can also click in the circle in the upper right corner of the image to add or delete the image from the Quick Collection.

To see the images in the Quick Collection, expand the Catalog panel and click on Quick Collection.

Once you are done with the Quick Collection, you can either save it or clear it. Both of these options are available when you right-click on the Quick Collection in the Catalog panel. When you save the Quick Collection it will be save in the Collections panel and the Quick Collection will be cleared.

Target Collections

Right-click on the name of any collection (other than a smart collection) and choose **Set as Target Collection**. The Target Collection will have a plus sigh (**+**) to the right of its name.

When a collection is selected as the Target Collection, you can press the **B** key to add the currently selected image(s) to the Target Collection, not the Quick Collection (see Quick Collection above). Similarly, if you click on the circle in the upper right corner of the image, the image will be added or deleted to the Target Collection. Basically, when a collection is the Target Collection, it takes the place of the Quick Collection.

To unmark a collection as the Target Collection, right-click on the collection's name and choose **Set as Target Collection**. This menu item is a toggle, so it will have a checkmark next to it when it selected and nothing when it is not selected. You can only have one Target Collection at a time.

Resequence a Collection

The order of images in a non-smart collection can be changed. You can select a variety or predefined orders by changing the **Sort** order in toolbar under the main window. Or, you put the images in any order you want by dragging them around. Doing this will

automatically change the sort order to **Custom Order**. However, the number of changes you can make to the order of the images seem to be limited. If this is a problem, one solution is to create a new collection by adding the images in the order that you want them to be.

In Lightroom,

- Go to Grid view in the Library module (press the **G** key).
- Select the collection you want to copy the images from.
    - Make sure the sort order is set to **Custom Order**.
    - Right-click the collection and select **Create Collection**.
        - Specify the name as the same as the old collection and add the suffix **.new**.
        - This will create a new collection next to the old collection.
- Right-click the new collection and select **Set as Target Collection**.
- Select the old collection.
- For each image in the old collection and in the order you want the images to appear in the new collection, do the following steps:
    - Select the image.
    - Press **B** to add the image to the new (target) collection
    - Press backspace to delete the image from the current collection.
- Right-click the old collection and select **Delete**.
- Right-click the old collection and rename it to remove the **.new** suffix.

Backup Changes Using XMP Files

When you make a change to an image file in Lightroom, the change is recorded in the Lightroom catalog, but the image file is not actually changed. Thus, it is important to backup the Lightroom catalog to make sure this information is preserved. If the catalog is lost or destroyed, all the changes you have made to your images are also lost or destroyed. In the section “Setting up Lightroom”, I described how to changes the settings in Lightroom to automatically backup the Lightroom catalog. In this section, I describe how to save this information to XMP files. You should still backup the Lightroom catalog; this is an additional safeguard you may want to consider.

Raw image files are read-only; therefore, when additional information needs to be saved about the image, it is stored in a separate text file. These files are called XMP files (or sidecar files) because they are saved in the same folder as the corresponding raw file and they have the same name as the raw file, but they have the suffix “xmp”.

Other types of image files (that is, not raw file such as JPEG, TIF, or DNG) to not need XMP files since they are not read-only and their file format allows the information to be stored directly in the file.

When Lightroom imports a raw file, if it sees a corresponding XMP file, it will import the information from the XMP file as well as the information from the raw file. If the XMP file is up to date, it serves as a backup of the information in the Lightroom catalog for an

individual file. It also is the mechanism used to transfer information about the changes you have made to an image when you share that image with another application.

Automatically Create XMP Files

Lightroom has an option to always write any changes you make to an image to an XMP file in addition to saving the information in the Lightroom catalog. Some people complain that this hurts the performance of Lightroom because every time you make an adjustment, such as move a slider, it has to write that value to the XMP file. Unless you have a very great number of edits to a single image, this should not be a significant problem.

To turn on this feature:

- Select **Edit->Catalog Settings->Metadata**.
- Select the checkbox **Automatically write changes into XMP**.

Selectively Create XMP Files

Alternatively, you can manually select the images you want to create XMP files for and create the XMP file at a time of your choosing. For example, many people keep all the images for a single photo shoot in a single folder and edit these images together. When you are finished editing the images, you can select them all and create XMP files for them.

To manually create XMP files:

- Select the images you want to create XMP files for.
- Select the **Metadata->Save Metadata to Files**. You can select this option either from the menu bar at the top of Lightroom or you can right-click on one of the selected images and select it from the popup menu.

You can also create a smart collection that contains every image in Lightroom that has been edited. You do this by selecting the **Has Edits** and **is true** rule values. Then you can update the XMP files for every image that you have edited in Lightroom.

- Select the smart collection with the images that have been edited.
- Press **control-A** to select all the images.
- Select the **Metadata->Save Metadata to Files**. You can select this option either from the menu bar at the top of Lightroom or you can right-click on one of the selected images and select it from the popup menu.

History

Resetting an Image

The first entry in the History panel is the importing of the image. If you click on this entry, the image will be reset to the state it was just after it was imported. This may not be the same as the state it was in the camera if a preset or any adjustments were applied during import. To get back to the state the image was in before it was imported, you can open it in the Develop module and press the **Reset** button below the right panel.

Importing Images

There are times when new files need to be imported into Lightroom.

- When Lightroom is initially setup.
- When new images need to be added to Lightroom.
- When PSD files are created for editing in Photoshop.
- When you want to verify that all images in a folder and its subfolders are in Lightroom.

If you organize your image files as described earlier in this document, the files in the **ORIG** folder should be imported into Lightroom. If Photoshop is used to edit the images, the files in the **EDIT** folder should be imported too. The images in the **ORIG-JPEG**, **JPEG**, and **UNUSED** folders do not need to be in Lightroom, but you may find it easier to just import all image files whether they need to be or not.

The steps below describe how to import images into Lightroom. These steps can be performed whether there are any new files or not. That is, you can perform these steps even if there are no new files just to make sure all the image files in a folder are in the Lightroom catalog.

In Lightroom:

- Go to the Library module.
- Press the **Import** button at the bottom of the left panel. To cancel the import, press the escape key or the **Cancel** button at the bottom of the right panel.
    - At the very top of the **Source** panel, above the names of the folders, there is a checkbox to **Include Subfolders**. Make sure this box is checked so that Lightroom will find all the image files in and under the folder you import.
    - In the **Source** panel on the left, select the folder with the images you want to import. All images in all folders under the folder you select will be imported. For example:

      ```
      S:/Photographs/Originals/2020/200301-Yosemite
      ```

      All the files in that folder will be displayed in the center panel. Any image that is already in Lightroom will be grayed out. Only the new images will be shown in full brightness and they will have a checkbox in the upper left corner with a checkmark. You can click the checkbox to remove the checkmark and that image will not be imported
    - Select **Add** as the import mode (top center). Since the images are already where you want them, they only need to be added to the Lightroom catalog.
    - In the File Handling panel in the right panel, set **Build Previews** to **1:1** (full resolution) so there won't be any delay when viewing the images later.
    - In the **Apply During Import** panel, make sure **Develop Settings** is set to **None**. When you edit the files in a folder, you can always select all the images and apply any development settings at that time. You do not want to apply any adjustments during import because they may have already been edited, such as the files in the **JPEG** and **EDIT** folders.

Also, adding a develop setting during import will cause an icon to appear on the images in the Library module Grid view that indicates the images have been modified in the Develop module. Since all your images would be modified when imported, this icon is no longer useful for finding the images that still need to be edited.

- Press the **Import** button at the bottom of the right panel. If there are no images to import, this button will be grayed out. If there are a lot of images, you can watch the progress bar at the top left of Lightroom.

- Exit from Lightroom and select **Back up** in the **Back Up Catalog** dialog. Since you may have just added a lot of images to the Lightroom catalog, this is a good time to backup the Lightroom catalog, and the only way to back up the Lightroom catalog is to exit Lightroom.

Keywords

Keywords are basically search terms that allow you to find images based on the keywords you have applied. Typically, the way you organize your images makes it easy to find the images you want without using keywords. Keywords become useful when you want to search across folders or collections to find images in a different way than the organization lends itself to. The difficulty with keywords is that you have to apply them to all your images. Additionally, when you add, delete, or rename keywords, you have to update the existing keywords in all your images.

In the **Keywording** panel in the right side panel, I do not use the **Keywording Suggestions** and **Keyword Set**. Their functionality is too limited to be of any value to me as far as I can tell.

The **Keyword List** panel, on the other hand, is a list of all the keywords that you have entered into Lightroom, whether they are being used or not. (You can enter keywords through the **Keywording** panel, the **Keywording List** panel, by importing an image with keywords, or by importing keywords directly (see **Metadata->Import Keywords**).)

Create Keywords

The **Keyword List** panel contains a list of all the keywords that you have entered into Lightroom. New keywords can be created by assigning them to an image as described below or by importing an image with keywords. These new keyword will be added to the keyword list automatically.

You can also create a new keyword without assigning it to an image via the **Keyword List** panel. Simply click on the keyword you want the new keyword under, and then click the plus sign (+) at the top of the Keyword List. Or, right click on any existing keyword and select **Create Keyword Tag** or **Create Keyword Tag inside** from the popup menu.

If you want to create a lot of keywords, it is probably easier to export the existing keyword list and edit it with a text editor. Then import the list back into Lightroom.

- Select **Metadata->Export Keywords**. This will create a text file with the existing keywords. The keywords will be indented with tabs to show the hierarchy of the keywords.

- Select **Metadata->Import Keywords**. Once you have added the new keywords import the file and the new keywords will be added to the keyword list. Note that

duplicate keywords will be ignored and you cannot delete keywords by deleting them from the import file.

Seeing Which Keywords Are Assigned to an Image

- Go to Grid view in the Library module (press the **G** key).
- Select the image(s) you want to examine.
- In the right side panel, expand the **Keywording** panel. This panel shows all the keywords assigned to the selected image. If more than one image is selected, it shows all the keywords assigned to any of the images. Keywords that are not assigned to all the selected images are marked with an asterisk (*).

Assigning Keywords to Images

- Go to Grid view in the Library module (press the **G** key).
- Select the image(s) you want to assign a keyword to.
- In the right side panel, expand the **Keywording** panel.
- To assign a keyword to the currently selected image(s):
    - You can type directly in the list of keywords to add or modify them.
    - Or, you can click where it says **Click here to add keywords**. Then, type the new keyword and press return. You can add multiple keywords by separating them with a comma.
    - Or, you can click on any of the keyword under **Keyword Suggestions**.
    - Or, you can expand the **Keyword List** panel and click on the checkbox to the left of any entry in that list.

Filter Images by Keyword

There are a few ways to show all the images that contain a particular keyword.

Search metadata using the library filter:

- Go to Grid view in the Library module (press the **G** key).
- Select the folder or collection that you want to search.
- The library filter is located at the top of the preview pane. If it is not visible, press the **** key (backslash).
- In the filter bar, select **Metadata**. Four columns will appear under the filter bar. These allow you to select the criteria for the filter.
- The first column will list all the keywords assigned to the images currently being displayed in the Library module. Select one or more of the keywords. You probably want to select **All** in the other columns so they will not affect the search.
- Now the Library module will only display the images that have the selected keywords assigned to them.

Search text using the library filter:

- Go to Grid view in the Library module (press the **G** key).

- Select the folder or collection that you want to search.
- The library filter is located at the top of the preview pane. If it is not visible, press the \ key (backslash).
- In the filter bar, select **Text**. This will bring up the library filter for searching for text strings. You can go directly to the text filter when you are in the Library module by pressing **control-F**.
- The text filter has three fields. In the first field, select **Keywords** from the drop down menu. In the second field select how you want to match the keywords. In the third field, enter the string you want to match the keyword.

From the **Keyword List**:

- When in the Library module, regardless of which image is selected, expand the **Keyword List** panel in the right side panel. This will list all the keywords used in all your images.
- The number to the right of each keyword is the number of images that are assigned that keyword.
- If you hover the cursor over a keyword, a white arrow appears to the right of the number. If you click on the white arrow, a library filter will automatically be created and all the images with that keyword will be displayed in the Library module.

Make the Same Adjustment to Multiple Images

Sometime you will want to make the same change to several images. You can do this by importing the images using a preset, but after the images have been imported, you can use **Auto Sync**. For example, you can change the profile from **Adobe Color** to **Adobe Landscape** on multiple images at the same time using **Auto Sync**.

- Go to the Develop module.
- Select the images you want to change in the filmstrip or press **control-A** top select all the images. When multiple images are selected, the **Previous** button will change to become the **Sync** button.
- Press and hold the **control** key. The label on the **Sync** button will change to **Auto Sync**. Press the **Auto Sync** button.
- Now, whatever you do in the Develop module will be performed on all the selected images.
- Click the **Auto Sync** button again to turn off **Auto Sync**.

Note: If you did not see the results you were expecting, look at the completion status bar in the upper left corner of Lightroom. Depending upon how much needs to be done, it may take several seconds before it is complete.

Moving Lightroom's Catalog

While the Lightroom catalog contains the full path name of the image files, which makes it difficult to move the images outside of Lightroom, the catalog itself can be moved fairly easily.

If your image files are already on an external disk and you want to use Lightroom, you should keep the Lightroom catalog, preferences, and presets in the same location so that they are portable from one computer to another.

In Windows:

- If your current catalog is in the default location, go to the **Pictures** subfolder in your home folder. Copy the **Lightroom** folder to the folder where you store your photos.
- Double-click on the catalog file to open Lightroom with the catalog in its new location. The catalog file has the suffix **lrcat**. Make sure everything is still working.

In Lightroom:

- Select **Edit->Preferences->General**. Under **Default Catalog**, change **When starting up use this catalog** to the name of your catalog in the new location.
- Select **Edit->Preferences->Presets**. Under **Location**, select **Store presets with this catalog**.
- Exit Lightroom and update the **Backup folder** field when the **Back Up Catalog** dialog appears. (I think this happens automatically.)

In Windows:

- Rename or remove the original Lightroom folder to make sure it is not used accidentally.

Presets and Defaults

Default Settings

You can change the default settings in the Develop module so that they are applied automatically when an image is opened in the Develop module.

- Ensure all panels on the right are set to their default values. To do this, click the **Reset** button at the bottom of the panel on the right. This resets the photo to the default values.
- Change the settings to the values that you want as the default values.
- Press and hold the **Alt** key. When you do the **Reset** button below the panels on the right will change to the **Set Default** button. Press the **Set Default** button. In the dialog that pops up, press **Update to Current Settings**.

Creating a Preset

- Click the **Reset** Button at the bottom of the right panel pane. This resets the photo to remove any existing adjustments so they will not be part of the preset.
- Make changes to the settings you want as part of the preset.
- Click the plus sign (**+**) in the Presets panel and choose **Create Preset**.
    - Enter a name for the preset.
    - Click on the **Check None** checkbox to turn off all the checkboxes.

- Click on the check boxes for the settings you want included in the preset.
- Click the **Create** button. The preset will be created and put in the Preset panel under **User Presets**.

Update a Preset

- Click the **Reset** Button at the bottom of the right panel pane. This resets the photo to remove any existing adjustments so they will not be part of the preset.
- Apply the preset you want to update.
- Make changes to the adjustments you want as part of the preset.
- Right-click on the preset and choose **Update with Current Settings**.
  - Click on any additional check boxes needed for the settings you want included in the preset.
  - Click the **Update** button.

Applying a Preset

- Select one or more images that you want to apply the preset to.
- Expand the Presets panel on the left.
- Find the preset that you want to apply. If you hover the cursor over the preset name, it will be temporarily applied to the image so you can see what it will look like. Click the preset name to apply the preset to the image.

Rating Images

There are several ways to rate images in Lightroom.

- Star ratings
- Color labels
- Flagged, unflagged, and rejected flags
- Keywords

Star Ratings

Star ratings are what most people think of when rating images. Typically, the more stars an image has the better the image is. Thus, 5-stars is used for the best images and no stars for the worst.

When in the Library module, either Grid view or Loupe view, the star rating is shown below the image. Also, when you right click on the image and select **Set Color Label**, the rating assigned to the image will have a check mark next to it.

You can set the rating for an image by right-clicking on the image in either the Library module or the Develop module and selecting **Set Rating**. Or, you can use the following shortcuts keys to change the rating of the selected images.

0	Reset rating to none
1-5	Set rating
[	Decrease the rating
]	Increase the rating
Shift-1-5	Set rating and move to next photo

Shift-6-9	Set color label and move to next photo

You can use the Library Filter at the top of the preview pane in the Library module to select the images to display based on the rating of the images. If the filter bar is not visible at the top of the preview pane, press the \ key (backslash). Or, you can select **Library->Filter by Rating** from the menu bar.

Color Labels

You can assign a single color label to an image. There are 5 colors to choose from. The meaning of each color is up to you. Color labels are similar to star ratings except there is no implied ranking to the colors.

When in the Library module Grid view, the color label is shown by surrounding the image with a border of the designated color. Also, when you right click on the image and select **Set Color Label**, the color label assigned to the image will have a check mark next to it.

You can set the color label for an image by right-clicking on the image in either the Library module or the Develop module and selecting **Set Color Label**. Or, you can use the following shortcuts keys to change the rating of the selected images. There is no shortcut for setting the color label to purple or to remove the color label.

6	Set color label to red
7	Set color label to yellow
8	Set color label to green
9	Set color label to blue

You can use the library filter at the top of the preview pane in the Library module to select the images to display based on the color label of the images. If the filter bar is not visible at the top of the preview panel, press the \ key (backslash). Or, you can select **Library->Filter by Color Label** from the menu bar.

If you use color labels, you may want to be able to see the color label when in the Library module, Loupe view. By default, the color label is not shown. To enable it, select an image and go to Loupe view (press **E**). On the right side of the toolbar under the main preview window, press the down arrow and select **Color Label**.

Flagged, Unflagged, and Rejected flags

There are two flags, flagged and rejected, that can be assigned to an image. These flags are typically used when making the initial review of the images while trying to decide which images to keep and which to throw away. Only one of the flags can be set at a time.

When in the Library module Grid view, if the flagged or rejected flag is set, a flag icon will be shown above and to the left of the image. A white flag is used for flagged and a black flag with an x on it is used for the rejected. In the Library module Loupe view, both flags are shown below the image, but they are either gray or highlighted to indicate the state of the flags. Also, when you right click on the image and select **Set Flag**, the flag assigned to the image will have a check mark next to it.

You can set the flag for an image by right-clicking on the image in either the Library module or the Develop module and selecting **Set Flag**. Or, you can use the following shortcuts keys to change the flags of the selected images.

P	Set the flagged (picked) flag
X	Set the rejected flag

U	Unset the flagged and rejected flags

You can use the library filter at the top of the preview pane in the Library module to select the images to display based on the flag setting of the images. If the filter bar is not visible at the top of the preview pane, press the **** key (backslash). Or, you can select **Library->Filter by Flag** from the menu bar.

Since the flags are intended to be used to select and reject images, there is also a command **Photo->Delete Rejected** on the menu bar, which can be used to delete any image with the rejected flag set.

Keywords

If the rating stars, color labels, and flags do not provide a useful way of rating your images, you can devise your own rating system by defining keywords and values and assigning them to your images

Finding Images by Rating

To find images with one of the ratings described in this section, follow these steps.

- In the Folders or Collections panel, select the images you want to search.
- Go to Grid view in the Library module (press the **G** key).
- Use the library filter to show only the images with the rating you are searching for. The library filter should be above the center preview pane. If it is not visible, press the \ key (backslash).
    - Select **Attribute** in the library filter unless you are searching on a keyword, in which case, select Metadata. The attribute (or metadata) filter bar will appear below the library filter. Click on the rating you want to search.
    - Now, the center preview pane should only show images that match the rating.

      You can change the rating on all the images by pressing **control-A** to select all the images in the center pane and then setting the new rating.
- In the library filter, press **None** to turn off the filter. All the images in the folder or collection will appear again.

Selecting Images

You select an image by clicking on it. You can do this whenever there are multiple images displayed such as in Grid view in the Library module or the filmstrip (bottom panel). When an image is selected, it will be highlighted by lightening the border around the image.

You can select a range of images by first selecting the first (or last) image in the range and then pressing the Shift key and selecting the last image in the range (Shift-click).

You can select multiple images that are not consecutive by selecting one image and then pressing the control key and selecting the rest of the images (control-click).

Most Selected Image

When multiple images are selected, Lightroom has the concept of the *most selected* image. The border of the most selected image will be lighter than the border of the other selected images (and their borders will be lighter than the borders of the non-selected images). Only the most selected image will be affected by adjustments you make, such as using Quick Develop panel or making the adjustments in the Develop module.

Initially, the most selected image will be the first image selected. To make another image the most selected image, click on the image, not the border around it.

Synchronizing Lightroom Catalog

If Lightroom is not used for all changes to your image files, it is possible for the Lightroom catalog to become out of sync with your actual image files.

- There may be new files that have not been imported to Lightroom.
- There may be missing files that were deleted from outside Lightroom.
- Files may have been edited in another tool so the metadata has changed.

When a missing file is displayed in the Library module in Grid view and in the filmstrip, it will have an exclamation mark in the upper right corner. If an entire folder is missing, its name in the Folder panel will be preceded with a question mark.

The **Synchronize Folder** command in the Library module will correct these problems. You can also use this command to get status information since will show the number of new files and missing files that it found.

Note: In general, the **Synchronize Folder** command will do the right thing; however, if an image file was moved outside of Lightroom, this command will remove the old entry for the image and import it as a new file. This will cause you to lose any previous changes you have made to the image. Similarly, if you move a folder outside of Lightroom, this command will remove the entries from the old folder, but it will not import the new folder. It will only import new images that are in a folder that it has imported before.

- Go to Grid view in the Library module (press the **G** key).
- In the Folder panel, select the folder that you want to synchronize. The images in the folder will be shown in the Grid view and the filmstrip.
- Select **Library->Synchronize Folder** or right-click on the folder in the Folder panel and select **Synchronize Folder**. The Synchronize Folder dialog will appear.
    - If you press **Show Missing Photos**, the other checkboxes are ignored and the images in the Grid view and the filmstrip will be filtered to only show images that are missing on disk.
    - If you press **Synchronize**, only the checked functions will be performed. Note: the **Synchronize** button will be gray until Lightroom has finished checking the folder so you may have to wait a few seconds before you can press this button.
        - If you check **Import new photos**, the image files in the folder that are not yet imported to into Lightroom will be imported when you press **Synchronize**. The number of images that will be imported is in parentheses. This option will only find new images in folders that

are already in Lightroom. It will not import a new folder full of images.

- If you check **Remove missing photos from catalog**, the images in the Lightroom catalog that cannot be found on the disk will be removed from the catalog. The number of images that will be removed is in parentheses.
- If you check Scan for metadata updates, it will update the catalog with any changes to the metadata found in the image.

If you want to see if there are any images in the Lightroom catalog that are missing, you can use the **Library->Find All Missing Photos** command. This will search the entire catalog for image files that are no longer where they are supposed to be on disk.

- From the Library module, select **Library->Find All Missing Photos**. This will fill the display with all the files that are in the catalog, but are missing from disk.
- To find where a file as located, right-click the image and select **Show in Explorer** then press **Locate**. When the Locate Missing File dialog pops up there will be a field named **Previous Location**, which has the complete path to where that file as located.

Because the **Synchronize Folder** command will not import a new folder of image files, you may periodically want to import images from the top folder that holds all your images. If no new images are found, no changes will be made.

How To

This section contains topics that may be relevant to Lightroom users, but not necessarily about Lightroom.

Assign a Drive Letter to a Removable Disk

When a removable disk is mounted, it will be assigned the next available drive letter. Since you want the path to your images to be consistent and not dependent upon whatever disks happen to be mounted, you should assign a permanent drive letter to the disk containing your images. The following stems describe how to do this.

- Mount the disk. Or, if it is already mounted, make sure it is not in use and that no files on the disk are open.
- Right-click on the **Windows** button (used to be the **Start** button) and select **Disk Management**.
- Right-click on the volume name for the disk you want to assign a drive letter to, and select **Change Drive Letter and Paths**.
- In the **Change Drive Letter and Paths** popup, select **Change**.
- In the **Change Drive Letter or Path** popup, select **Assign the following drive letter** and select the drive letter you want in the drop-down menu to the right.
- Click **OK** to each popup and exit the Disk Management tool.

Choose the Bit Depth

The bit depth is either 8 bits or 16 bits. The more bits, the more precision can be recorded in the intensity value of each pixel. Each pixel records the intensity of light of a particular color: red, green, or blue. A bit depth of 8 allows you to record 256 levels (2 to the power of 8) and 16 bits allows you to record 65,536 levels (2 to the power of 16). (In actuality, when 16-bit is used only 12-bits of precision are recorded by the camera (4096 levels), but it is still significantly more than 8 bits.)

The main disadvantage of a larger bit depth is the image file is much larger because each pixel requires twice as much space to store. The larger file requires more disk space to store it, more memory space to process it, more processor cycles to perform computations on it, more bandwidth to move it, and so on.

In general, you should set your camera to use 16-bit bit depth and keep that precision throughout the editing workflow. When you process the image for output, you can decide how much precision is needed to provide the desired result.

Choose the Color Space

The most common color spaces to choose between are Adobe RGB and sRGB. Adobe RGB is a wider color space (has more colors) so is a good choice until you know you no longer need the extra colors. In general, you will no longer need the extra colors when you output the image to a device that does not support them. Thus, you want to keep your color space set to Adobe RGB in your camera and throughout the editing workflow. Convert the color space to sRGB when you export the file to a JPEG file that will only be displayed, for example, on the web or sent to a print service that requires sRGB format.

If you are a photographer that will only display your images on the web or send them to an online print service that only supports sRGB, then sRGB may provide sufficient tonal range for you. However, you can always convert from Adobe RGB to sRGB, but once the image is in sRGB, you cannot get back the extra tonal range available in AdobeRGB.

Color Calibrate Your Display

It is a good idea to re-calibrate your display every month or so. As you will see, it is very simple and quick to calibrate your display using Spyder 5 Pro so it is not inconvenient. Colors drift, especially in less expensive displays.

In Windows, color profiles are stored in the following folder and use the suffix "**icm**".

```
C:/Windows/System32/spool/drivers/color
```

This section describes the steps to calibrate your display color using the Spyder 5 Pro software and sensor. The software displays colors on your display and the sensor (aka, hockey puck) reads the colors to determine what is actually displayed.

- Turn on the display and let it warm up for 30 minutes.
- Set the brightness the same as you would while editing. The goal is to always have the same brightness when editing.
    - Move the display to the location where you do your editing.
    - Set the lighting conditions as you would for editing.
    - Set the brightness to about 50% on the display.

- Turn off the auto brightness feature if it has one (look in power saving options).

- Download the Spyder 5 Pro software from the URL below. Scroll down to the **Spyder5 Software Download** area and click on the Windows logo under **Spyder5Pro** to start the download.

  `datacolor.com/pages/photography-design/spyder5family-en`

- Install the Spyder 5 Pro software by running the **Spyder5Pro_5.2_Setup.exe** file that was downloaded and accept the default values.

- Run the software. The installation should have put an icon on the desktop, which you can double-click to run the software.

  - The first time you run the software you will have to activate it. This requires an Internet connection.
  - The software opens with a checklist of four items. Read each item and select each checkbox to confirm it. The last item is to verify you have plugged the Spyder5Pro sensor into a USB port. Press **Next** when you are ready.
  - The next screen asks whether you have a display built into a laptop or an external display. Make your selection and press **Next**.
  - Next, enter the manufacturer and model of the display, and press **Next**.
  - Next is a list of control features on your display. Check all that apply and press **Next**.
  - If you have calibrated this display before, you will have three options: recalibrate, check calibration, and full calibration. To see the setting, press **Change Settings**. Otherwise, you will only have one option: full calibration and the default settings will be displayed. Accept the default values and press **Next**.

    - Gamma 2.2 (contrast ratio of display)
    - White Point 6500K (color tint of white)
    - Brightness Adjust
    - Room Light On

  - Place the Spyder 5 Pro sensor flat on the desk in front of the display, and press **Next**.
  - Take the cover off the sensor and slide it down the wire so you can hang the sensor over the top of the display and it will exactly cover the sensor outline in the software. Make sure the sensor if flat against the display (you can tilt the display back to help). Then press **Next**.
  - Calibration will take several minutes. When it's finished, unplug the Spyder5Pro sensor put cover over sensor and put it away. Then press **Finish**.
  - You will then be asked to save the profile. Make sure the name is descriptive or change it. Append the name with the date. For example:

    `Lenovo ThinkVision-181001`

Export Low Resolution Images

Exporting an image is Lightroom's way of making a new image file from an image in the Lightroom catalog. Exported images have all the edits applied, and additional modifications can be made during the export process, such as converting the image to another file format (for example, JPEG or TIF).

With today's cameras, most images have more resolution than can be used when the images are displayed on a computer screen. Therefore, when an image is intended for display on a computer screen, its resolution can be reduced to match the display device. This, in turn, will make the image file smaller, which will make the image quicker to transmit over the network and quicker to load into a browser.

In Lightroom:

- Go to Grid view in the Library module (press the **G** key).

  Display the images you want to export in the center panel. You can do this, for example, by selecting any folder or collection from the left panel. Since there may be more than one file associated with an image, make sure you select the folder that has correct version of the image(s). For example, in the Folders panel you could select:

  ```
  S:/Photographs/Originals/2020/200301-Yosemite/EDIT
  ```

- Now that the images you want to export are being displayed, press **control-A** to select all the images. If you do not want to export all of the images being displayed, select the ones you want to export and deselect the others.
- Select the **Sort** order in the toolbar below the main window so the images appear in the correct order.
- Press the **Export** button at the bottom of the left panel. This will open the Export dialog. You can either select the **JPEG-LORES** preset or perform the following steps.
  - In the **Export To** drop down menu (at the top; not the one in the Export Location section), choose **Hard Drive**.
  - Click on the **Export Location** section if necessary to expand it.
    - In **Export To**, choose **Choose folder later**.
    - Uncheck **Add to This Catalog**.
    - In **Existing Files**, choose **Ask what to do**.
  - Click on the **File Naming** section if necessary to expand it.
    - Check **Rename To**, and choose **Sequenced Filename**.

      This will prefix the existing filename with a 3-digit sequence number to preserve the display order of the files.
  - Click on the **File Settings** section if necessary to expand it.
    - In **Image Format**, choose **JPEG**.
    - In **Color Space**, choose **sRGB**.
    - In **Quality**, enter **50**.
  - Click on the **Image Sizing** section if necessary to expand it.

        - Check **Resize to Fit**, and choose **Width & Height**.
        - Check **Don't Enlarge**.
        - In **W**, enter **1200**.
        - In **H**, enter **800**.
        - In **Resolution**, enter **240**.
    - Click on the **Output Sharpening** section if necessary to expand it.
        - Check **Sharpen For**.
        - In **Sharpen For**, choose **Screen**.
        - In **Amount**, choose **Standard**.
    - Click on the **Metadata** section if necessary to expand it.
        - In **Include**, choose **Copyright & Contact Info Only**.
    - Click on the **Watermarking** section if necessary to expand it.
        - Uncheck **Watermark**.
    - Click on the **Post-Processing** section if necessary to expand it.
        - In **After Export**, choose **Do nothing**.
- Press the **Export** button.
- When the Choose Folder dialog opens, choose the folder where you want to export the images. For example:

    `$PICS/Albums/FamilyPhotoAlbums/<albumName>/JPEG-LORES`

Export High Resolution Images

Exporting an image is Lightroom's way of making a new image file from an image in the Lightroom catalog. Exported images have all the edits applied, and additional modifications can be made during the export process, such as converting the image to another file format (for example, JPEG or TIF).

When you want to print an image on photographic paper, you typically want to preserve as much resolution as possible. The more resolution in the image, the larger the image can be printed without introducing distortion.

In Lightroom:

- Go to Grid view in the Library module (press the **G** key).

    Display the images you want to export in the center panel. You can do this, for example, by selecting any folder or collection from the left panel. Since there may be more than one file associated with an image, make sure you select the folder that has correct version of the image(s). For example, in the Folders panel you could select:

    `S:/Photographs/Originals/2020/200301-Yosemite/EDIT`

- Now that the images you want to export are being displayed, press **control-A** to select all the images. If you do not want to export all of the images being displayed, select the ones you want to export and deselect the others.
- Select the **Sort** order in the toolbar below the main window so the images appear in the correct order.

- Press the **Export** button at the bottom of the left panel. This will open the Export dialog. You can either select the **JPEG-HIRES** preset or perform the following steps.
    - In the **Export To** drop down menu (at the top; not the one in the Export Location section), choose **Hard Drive**.
    - Click on the **Export Location** section if necessary to expand it.
        - In **Export To**, choose **Choose folder later**.
        - Uncheck **Add to This Catalog**.
        - In **Existing Files**, choose **Ask what to do**.
    - Click on the **File Naming** section if necessary to expand it. For high resolution prints, they usually do not have a sequence that you need to preserve, so do not add a sequence number.
        - Uncheck **Rename To**
    - Click on the **File Settings** section if necessary to expand it.
        - In **Image Format**, choose **JPEG**.
        - In **Color Space**, choose **sRGB**.
        - In **Quality**, enter **100**.
    - Click on the **Image Sizing** section if necessary to expand it.
        - Uncheck **Resize to Fit**.
        - In **Resolution**, enter **300**.
    - Click on the **Output Sharpening** section if necessary to expand it.
        - Check **Sharpen For**.
        - In **Sharpen For**, choose **Matte Paper**.
        - In **Amount**, choose **Standard**.
    - Click on the **Metadata** section if necessary to expand it.
        - In **Include**, choose **Copyright & Contact Info Only**.
    - Click on the **Watermarking** section if necessary to expand it.
        - Uncheck **Watermark**.
    - Click on the **Post-Processing** section if necessary to expand it.
        - In **After Export**, choose **Do nothing**.
- Press the **Export** button.
- When the Choose Folder dialog opens, choose the folder where you want to export the images. For example:

    `$PICS/Albums/FamilyPhotoAlbums/<albumName>/JPEG-HIRES`

File Formats

CRW, CR2, CR3 These are the extensions used for Cannon camera raw files.

DNG DNG files were developed by Adobe to be a common file format for raw image files (digital negatives); however, Cannon and Nikon did

	not adopt the format and continue to use their own proprietary formats. One of the benefits of DNG files is edits and metadata can be stored in the file, whereas this information needs to be stored in a separate XMP file when a proprietary raw file format is used.
JPG	JPEG or JPG is a non-proprietary format for image files. However, unlike most other file formats, these files are compressed, which causes the image to be degraded each time the image is saved. Therefore, this format is good for the initial image and the final image, but not for the editing stages in between. It also does not support Photoshop's layers, so they must be flattened before saving in a JPEG file. All image processors support this format, so this is the typical format used for web pages and online printing sites.
NEF, NRW	These are the extensions used for Nikon camera raw files.
PSD	This is Photoshop's native format, so it supports all of Photoshop's features. This is a good format to use while you are working on an image in Photoshop.
TIFF	This is a non-proprietary format, but it supports most of Photoshop's features including layers, which makes it a good alternative to PSD files.
XMP	XMP files are files associated with raw files with the same base name. They contain the edit and metadata information for the image since raw files are read-only. Lightroom normally keeps that information in its catalog until it is explicitly saved to an XMP file or the information is needed outside of Lightroom such as when sending an image to Photoshop.

Image Resolution

Aspect Ratio

The image sensor in a DSLR has the same aspect ratio as 35mm film, which is 2:3. This means that the long side of the image is 1.5 times as long as the short side.

For printed images, most people prefer an image that is a little more square; therefore, printed images are usually 4:5. For example, 8"x10", 11"x14", and 16"x20" are common sizes for printed images using the 4:5 aspect ratio.

For example, an image from a 24MP DLSR would have 24 million pixels arranged in a grid of 4,000 by 6,000 pixels (2:3 aspect ratio).

In order to print the image in 4:5 format, you would need to crop the image to 4,000 by 5,000 pixels. If you need 250 pixels per inch when printed, you could print this image as large as 16"x20" (see discussion below).

Resolution

Image resolution is what determines how large and image can be printed before it becomes grainy and you start to be able to see the individual pixels in the printed image. Different mediums need different resolutions to prevent the individual pixels from being discernable. If an image has fewer pixels than a medium is capable of displaying, then the image cannot take full advantage of the capability of the medium. If an image has

more pixels per inch than a medium is capable of displaying, the extra pixels are discarded (not precisely, but close enough). At some point, packing more pixels into that same space is unnecessary because the eye can no longer distinguish between individual pixels when viewed from a particular distance.

The following table lists the typical resolution needed by different mediums:

250 ppi[1]	High quality printed images
72 ppi	Computer monitor

The following table shows various image dimensions needed to print an image at 250 pixels per inch (ppi).

Display Size	Aspect Ratio	Pixels @ 250 PPI
4x6	2:3	1000 x 1500
5x7	5:7	1250 x 1750
8x10	4:5	2000 x 2500
11x14	4:5	2750 x 3500
16x20	4:5	4000 x 5000

To determine how large you can print a particular image, divide the length and width in pixels by the minimum number of pixels per inch that you need. For example, for a 4000 x 5000 image printed at 250 ppi:

4000 pixels / 250 ppi = 16 inches
5000 pixels / 250 ppi = 20 inches

However, you are usually faced with the reverse problem. Given an image, will it have enough resolution if I print it at a particular size. To determine that, divide the length or height by size you want to print it.

4000 pixels / 16 inches = 250 ppi
5000 pixels / 20 inches = 250 ppi

If an image has more resolution that necessary, then the image file is bigger than necessary, which requires more storage space and takes longer to load and transfer on computers but otherwise causes no problems. If an image has more pixels than are needed by a printer, the printer simply discards the extra pixels.

In the other hand, if an image has less resolution than recommended, you may need to choose a smaller size to print the image or accept a lower quality image.

Make PSD Files from JPEG Files

This section describes the steps to convert JPEG files to PSD files. This is typically done when the original file is a JPEG file rather than a raw file and you want to do the editing in Photoshop rather than Lightroom.

In Photoshop:

- Execute **File->Scripts->Image Processor**.

[1] Some printing services suggest 300 ppi, but that is generally not necessary except in cases where very high quality image is needed and the printer being used is capable of printing that quality of an image.

- For **Select images to process**, select **Select Folder** and choose the folder where the PSD files are located. For example:

  ```
  S:/Photographs/Originals/2020/200301-Yosemite/ORIG
  ```

- For **Select location to save processed images**, select **Save in Same Location**. This will cause a subfolder named **PSD** to be created and the new files will be put there.
- For **File Type** check **Save as PSD**. Make sure **Save as JPEG** is not checked.
- Check **Run Actions** and choose **Create Default Layer**s from **My Actions**. This will create the following adjustment layers. Initially, some of the layers will have a small adjustment preprogrammed, but all of the layers will be initially disabled.
  - Exposure
  - Levels
  - Curves
  - Color Balance
  - Hue and Saturation
- Check **Include ICC Profile**.
- Select **Run**. This will create a subfolder named **PSD** and it will put the new files in that folder.

In Windows:

- Drag the files from the **PSD** subfolder to the folder where you want to store the PSD files.
- Remove the (now empty) **PSD** subfolder.

In Lightroom:

- Update the Lightroom Catalog to include the new PSD files. Follow the instructions in “Importing Images”.

Making a Web Gallery

The Web module in Lightroom takes a set of image files and creates the files necessary to display them as a gallery in a browser. However, the web pages generated by Lightroom are rather slow when there is more than a dozen or so images.

In the left panel, expand the Collections panel and select the collection you want to display in a gallery. If the images you want to display are not in a collection, select the images you want to display in the gallery before you select the Web module.

The images are displayed in a working version of the default web gallery. All the galleries that come with Lightroom display thumbnails of the images in a grid. You can click on a thumbnail to display a larger version of that image.

The images appear in the order they are in the filmstrip at the bottom of the Lightroom window. You can drag-and-drop the images in the filmstrip to change the order they appear in the gallery.

The panels on the right allow you to make many customizations to the gallery. The customizations that are available depend upon which style you have chosen. You select the gallery style in the **Layout Style** panel. When you select the style, you will get the

default gallery for that style. There are several defaults choices for each style, which you can browse in the **Template Browser** on the left panel.

- Go to the Web module.
- In the **Collections** panel, select the collection to display in the gallery.
- In the **Layout Style** panel, select **Grid Gallery**.
- In the **Template Browser** panel, expand the **Grid Gallery Templates** and select **Grid Gallery (default)**.
- In the **Site Info** panel:
    - Enter **Gallery Title**.
    - Enter **Gallery Author**.
- In the **Color Palette** panel, leave defaults.
- In the **Appearance** panel:
    - Check **Show Header**.
- In the **Image Info** panel:
    - Uncheck **Title**.
    - Check **Caption** and select **Caption** from drop down menu.
- In the **Output Settings** panel:
    - Set **Quality** to **75**.
    - Set **Metadata** to **Copyright Only**.
    - Check **Watermarking** and select **Simple Copyright Watermark** from drop down menu.
    - Check **Sharpening** and select **Standard** from drop down menu.
- In the **Upload Settings** panel, leave defaults.
- Press **Export** to export the files to a folder. When the Save Web Gallery dialog pops up, navigate to the staging folder for the photo gallery web page and enter the folder name for the gallery.

    `C:/Users/Documents/WebPages/BruceBlinn/www/photography/PhotoGalleries`

Print Pictures at Costco

Costco prices for printed pictures (as of 6/1/2019):

Picture Size	Price
4x6	$0.17
5x7	$0.59
8x10	$1.79
11x14	$3.99
12x18	$3.99
16x20	$6.99
20x30	$9.99

In Lightroom:

- Select the images that you want to print.
- Export the images as high resolution JPEG files into a single folder. See Export High Resolution Images.

In a Browser:

- Turn off auto-correction.
    - Go to CostcoPhotoCenter.com/prints and sign in.
    - Click on **Hi, YourName** in the title banner, and select **Edit Account**.
    - Click on **Print Preferences** and then the **Edit** button.
        - Default Print Size 4x6 print (glossy, lustre)
        - Default Finish Lustre
        - Auto-correct Off

    You will also be able to change the auto-correction setting on the **Review and Place Order** page when ordering prints.
- Upload files.
    - Go to CostcoPhotoCenter.com/prints and sign in.
    - Click on **Upload** in the menu bar under the title banner.
    - Select the **New Album** radio button and enter the name of the album in the adjacent text box.
    - Click where it says **CLICK OR TAP HERE TO SELECT YOUR PHOTOS**.
    - A file selection dialog box will open. Navigate to the JPEG files you want to print. When you get to the JPEG folder, enter control-A to select all the JPEGs or just select the ones you want to upload. For example, navigate to the folder:

      S:/Photographs/Albums/WebPhotoAlbums/Yosemite/JPEG-HIRES
    - Click the **START UPLOAD** button.
- Print files.
    - Go to CostcoPhotoCenter.com/prints and sign in.
    - Click on **MyPhotos** in the menu bar under the title banner.
    - Click on the album you want to print from (whether it is some or all the images).
    - Click on the images you want to print or click **Select All** above the images.
    - Press the **Order Selected Prints** button.
    - In Step 1, Photo Finish
        - Select **Lustre**
        - Select **As Is** (which does not add a white border around the image)
    - In Step 2, Quantity

If you are going to print one of each image, enter **1** for the size of the print and press the **Apply** button. Otherwise, enter the quantity for each image below.

- Press the **Checkout** button at the top of bottom of the page.

Printing Images

Sharpening

Sharpening is usually saved as the last step before printing the image. Use either the Unsharp Mask or Smart Sharpening tool to sharpen images.

- View the image at roughly the same size as you plan to print it (e.g., 25-50% of full size).
- Set the radius to a small value (e.g., 0.3-0.7).
- Increase the **Amount** until you just start to see a halo around the edges, then back off slightly.

Image Size

When resizing a 35mm (2x3 or 4x6 aspect ratio) image for printing, cropping for 11x14 or 8x10 makes the image more square, and 5x7 and 3x5 make the image less square (longer and thinner).

11x14	Crops the image by shortening the long side.
8x10	Crops the image by shortening the long side.
5x7	Crops the image by shortening the short side (a small amount).
3x5	Crops the image by shortening the short side.

Picture Size	Frame Size	Aspect Ratio	Pixels@250ppi
4x6	8x10	4x6	1000x1500
5x7	8x10	5x7	1250x1750
8x10	11x14	4x5	2000x2500
11x14	16x20	4x5	2750x3500
16x20	22x28	4x5	4000x5000

Paper Type

Glossy paper has a smooth, shiny surface. They usually reproduce colors better than matte paper, particularly in the darker areas. Because glossy paper is shiny, it produces more reflections than matte paper, which, when mounted under glass, can be undesirable. Since most photographs are mounted under glass, a non-reflective paper is usually preferred.

Where to Shop

Prints

Try the Costco Photo Center. See the section “Print Pictures at Costco” for information on how to use this service.

Mat Board

Look at Golden State Art. I use a plain white double mat with a backing board. I typically use the same style and color mat board for all my prints. Golden State Art is also a good source for other supplies, such as archival tape.

Frames

Look at Frame Destination. I typically use the same style and color frame for all my prints.

Steps

- In Lightroom Develop module, make changes to the image.
- In Lightroom Library module, export the image.
- Open browser to Costco printing site.
- Log in.
- Delete the previous copy of the image.
- Upload the new image.
- Print the image.

Reduce the Size of Images

Images that are intended to be displayed on a computer screen should be reduced in size. This makes them smaller and quicker to display, and also makes them a manageable size on the screen when they are display by applications that do not control how big they are.

Warning: When reducing the size of an image, be careful not to save the file over your existing PDS. This would cause you to permanently reduce the resolution of the image in case you ever wanted to print it later.

The image will be displayed in pixels in the browser, which means it will be displayed as the lesser of the number of pixels in the image or the constraint imposed by the browser. When displayed in the photo gallery, the thumbnail will be a maximum of 100 pixels in either dimension, and in the display panel, the image will be a maximum of 500 pixels in either dimension. If the image in the display panel is clicked, it will be enlarged to fill the browser window. If it is not at its full size, you can click it again and the browser will display the full size and use scroll bars so the whole image can be seen.

Since the computer display is also measured in pixels, there is no sense in having an image that is larger than the computer screen since it would require scroll bars to see the whole image, which is not desirable for viewing photographs. For example, if you expect to view your images on a display that is 1680x1050, there is no sense having

more pixels in the image than will fit on the screen without requiring a scrollbar. For a 6x4 image, a good size is 1200x800 (the height is the limiting dimension because of the borders in the browser). For a 4x6 image, a good size is 534x800 (the height is the limiting dimension again).

You could also reduce an image to 1800x1200 which is the size in pixels for a 6x4 inch image at 300 pixels per inch. This is slightly larger than needed for a large image on a computer screen, but sufficient resolution to print a 6x4 inch picture.

Steps

- To adjust the size of an image in Photoshop, open the edited file (PSD) in Photoshop. Select the **Image->Image Size** menu item. Make sure **ResampleImage** is selected. Change the "Pixel Dimensions" so that the width of the image is less than the width of the display and the height of the image is less than the height of the display.

Landscape images:	1200x800
Portrait images:	534x800
Panoramas:	Height=800

  For example, an image that is 3872x2592 (6x4) should be reduced to 1200x803.

- Save the file using the **File->Save As** option so you can save it as a JPEG format file.

My Section

This section contains information about my personal use of Lightroom that is not likely to apply to anyone else.

Create Image Series Panorama

A standard panorama takes a series of overlapping images taken of a wide scene and stitches them together to form a single, wide image (or it can be a vertical image). However, sometimes placing a series of three or four images side-by-side, without stitching them together, makes an interesting variation on a panorama. For example, the images could be the same outdoor image captured during different seasons, or a series of three images of a bird in flight captured a few seconds apart.

This section describes how to use Photoshop to create a single, wide, sequence of images by merging three or four separate images into one.

Before you start, you need to do a little computation to determine size of the panorama, the size of the individual images, and the amount of space between and around them. For example, assume you want:

- Total width of the panorama to be 14 inches (so it can be printed on 11x14 paper).
- Leave 1/4 inch on each side of the final image for mount board to overlap.
- The panorama will consist of four images.
- Leave 1/8 inch of whitespace on each side of the individual images.

With this information, you can compute the size of each individual image as follows, which comes out to 3.22 inches for each image.

```
14 = 1/4 + 1/8 + image + 1/8 image + 1/8 + image + 1/8 + image + 1/8 + 1/4
```

Now you can determine the height of the panorama as follows, which comes out to 3.97 inches for each image.

```
1/4 + 1/8 + image + 1/8 + 1/4
```

In Lightroom:

- Find the folder with the images you want to put in the panorama.

  ```
  S:/Photographs/Originals/2019/191103-Yosemite/ORIG
  ```

- Make sure the images have been edited to look the way you want.
- Select the images, then right-click on one of the images. Select **Edit In**, then **Edit in Adobe Photoshop** from the drop down menu.

In Photoshop:

- Create a new empty canvas by selecting **File->New** (or press **Control-N**). In the New Document popup enter the desired information. For example:

Title	KingSwingPano
Width	14 inches
Height	3.97 inches
Resolution	300 ppi
Color Mode	RBG Color
Background	White

- For each image, crop it to make it square.
  - Select the crop tool (press **C**).
  - In the options bar at the top, click on the **Ratio** drop down menu and select **1:1 (Square)**.
  - Use the left and right arrow keys to move the crop area around or drag the corners as necessary to change the size of the cropped area. Press enter when done.
- Exit the crop tool (for example, select the move tool by pressing **V**).
- For each image, change the size of each image to be the size computed above. Select **Image->Image Size** (or press **Alt-Control-I**). In the Image Size popup:

Width	3.22 inches
Height	3.22 inches
Resolution	300
Resample	Checked

  - Press **OK**.
- For each image, copy it to the new canvas.
  - Select an image.
  - Select all the image by pressing **Control-A**.
  - Copy the image by pressing **Control-C**.
  - Select the new canvas.

    - Paste the image by pressing **Control-V**. This will create a new layer with the image on it.
    - Move the image to the correct position using the arrow keys.
- Save the panorama.
    - Select **File->Save As**. Create a new folder for the panorama and save the image there.

      `S:/Photographs/Originals/2019/191103-Yosemite/KingSwingPano`
    - Exit Photoshop. When prompted to save the individual images, select **Yes**. The images will be saved next to the original image files.

In Windows:

- Move the edited original files to the panorama folder. The will have the same name as the original files, except the names will be appended with "**-Edit**" and they will have a "**psd**" suffix.

  `S:/Photographs/Originals/2019/191103-Yosemite/KingSwingPano`

In Lightroom:

- Right-click on the folder for the photo shoot in the Folders panel and select **Synchronize Folder**.

  `S:/Photographs/Originals/2019/191103-Yosemite`
- Click on the panorama image and drag it to the **Panoramas** collection in Web Photo Albums.

Create Title Picture for Photo Album

Select an image that represents the pictures in the album.

- Convert it to PSD format if necessary and copy to:

  `S:/Photographs/Originals/AlbumTitlePics/EDIT`
- Rename it to reflect the subject of the album.

In Photoshop:

- Flatten layers if necessary: **Layer->Flatten Image**.
- Duplicate background layer. Right-click the layer named **Background** in the Layers panel and select **Duplicate Layer**.
- Crop the image to 4"x4".
    - Press the **C** key to select the Crop tool. Crop to make square.
    - Select **Image->Image Size**.

      Width 4 Inches
      Height 4 Inches
      Resolution 300 Pixels/Inch
      Check **Resample** and choose **Automatic** from the drop down menu.
- Change canvas size to 5"x5".
    - Select **Image->Canvas Size**.

Width 7 Inches
Height 5 Inches
Canvas extension color White

- Select the background copy, and execute a filter on it to obscure the image.
    - Select **Filter->Filter Gallery**.
    - In the Filter Gallery popup, select **Artistic->Cutout** (or **Water Color**)
    - Optionally, repeat the filter to increase distortion.
    - Optionally, reduce opacity of background copy to 75% to decrease distortion.
    - Optionally, create a new adjustment layer and reduce saturation -35.
- Create a new layer for the text.
- Select **Layer->New->Layer**.
- Select the Text tool ("T" icon in toolbar or press the **T** key).
    - Select the font style **Cooper Black**
    - Select the font size **36**
    - To select the color, click on the color box in the tools settings (in the option bar at the top under the menu bar). The Color Picker dialog will open. Either click on a color for the text or move the cursor over the image and use the eye dropper to select a color from the image.
    - Drag with the mouse to create the text box and enter the text.
    - Select the Arrow tool to move the text by selecting it and dragging it to the new location.
- Double-click on the right of the text layer name in the Layers panel to bring up the Layer Style popup.
    - In the Styles panel, select **Outer Glow**
      Change color to white
      Spread 40%
      Size 20 px
      Range 100%
    - In the Styles panel, select **Bevel and Emboss**
- To modify the text in the text layer, double-click on the "T" icon in the text layer.
- Save image using **File->Save**.
- Save as a medium quality JPEG using **File-Save As**.
    - Move the JPEG image to the **JPEG** folder next to the current (**EDIT**) folder.

Print the image as a 5x7 print. Then, cut the print to 4 ½ inch square and insert it in the album cover.

My Collections

Frequently, a collection and a smart collection are both easy to create, in which case, I prefer to create a smart collection since it is easier to see at a glance if it is up to date (that is, by looking at the rules rather than examining the contents).

Family Photo Albums

Family photo album collections are created in a couple ways.

- For annual family photo albums from 2007 and before and the albums for Dad, Grandma, Mira's calendars, and "Other", all the images in the photo shoot folders are included in the album. Also, all of these images were edited using Photoshop so the finished images are PSD files in the EDIT subfolders. Therefore, a simple smart collection with the following rules can be used to create the collection.
    - Select the folder for the year. Since all the images taken during this year will be included in the album, it is not necessary to be more specific that selecting the year.
    - Select files in the EDIT subfolder (or PSD files). There may be several copies of each image in the folder for each photo shoot, so it is necessary to specify which images to use.
- For annual family photo albums for 2008 and 2010-2017, the images were also were edited using Photoshop. However, in these photo shoots, not all of the images should be included in the family photo albums. Therefore, a similar smart collection with the following rules can be used to create these collections, but also include one rule for each image to exclude.
    - Select the folder for the year (same as reason above).
    - Select either files in the EDIT subfolder (or PSD files) (same as reason above).
    - Add one or more rules to exclude the images by name that should not be in the album. Since there are only a few images excluded from these albums, it is easy to make a separate rule for each image.
- The rest of the family photo albums (2009, 2018-current year) will need to be custom built collections because not all of the images from the photo shoots will be included in the photo albums, a combination of Photoshop and Lightroom were used to edit the images, and a combination of raw and JPEG file formats were used for the original images.

Web Photo Albums

Web photo album collections are made up of individually selected images. There are organized by subject and they typically only contain a dozen or two images. Therefore, these collections are created by individually dragging images to the appropriate collection.

Star Ratings

To handle the problem of selectively including some images from a photo shoot in my family photo albums and not others, I decided to use the star ratings for that purpose. However, since most images taken during the year are included in my family photo albums, I reverse the meaning of the normal star ratings and use fewer stars to indicate better images. Therefore, an image without any stars is an image that should be included in the family photo album. Then, as I review the images, I add a star rating of one star to the images that I do not want in the family photo album (no other star values are used).

In general, if an image is worth keeping, I will include it in the family album. However, sometimes there are multiple, similar images and I only want one of them in the album. Some of the reasons why this might happen are:

- I do not display images with friends or family in places where others can see them; therefore, when taking a photo of an interesting scene, I make take the photo both with and without friends and family.
- When taking vertically oriented photos, I will often take a horizontal image as well because I prefer to have horizontally oriented images in physical photo albums. It can be very annoying to constantly have to turn the album to look at the images. In this case, if the image looks better when vertically oriented, I save that image as well in case I want to make an enlargement.
- When I take images of an interesting scene, there may be several images that are good enough and different enough that I want to keep them all. However, similar images when viewed in an album may seem redundant; therefore, I keep them all and select one of them for inclusion in the family photo album.
- There are some photo shoots that are not intended for inclusion in my family photo albums. I create web pages for birds, trees, hiking trails, and RV parks. The images I take for these web pages would be out of place in a family photo album.

Refresh Web Photo Gallery

In Bash:

- Remove old JPEGs.

```
$ clean_albums -l AlbumName
```

In Lightroom:

- Left-click on album in Collections panel.
- Change order of images by dragging images.
- Select all the images in the collection (press control-A).
- Select **Export**.
  - Select **JPEG-LORES** in **Preset** panel.
  - Press **Export**.
  - Select folder for images.

```
S:/Photographs/Albums/WebPhotoAlbums/AlbumName/JPEG-LORES
```

In Bash:

- Rebuild photo gallery

```
$ make_album AlbumName
```

In DreamWeaver:

- Update photo gallery

Remove UNUSED Folders

To remove all the **UNUSED** folders, use the **rmjunkfiles** script. It will unconditionally remove temporary files and for folders named **UNUSED**, it will ask if you want to remove it.

In Bash:

```
$ cd S:/Photographs/Originals
$ rmjunkfiles
```

Update the Web with DreamWeaver

In DreamWeaver, make sure you are editing the web site named "BruceBlinn (web)". You can change this by selecting Site->Manage Sites from the menu at the top of the page. Make sure the files that make up the web page are displayed on the right. If not, select Window->Files from the menu at the top of the page (or press F8).

Traverse the file hierarchy and select the files or directories that you want to update on the web site. Click on the up-arrow (put files) above the list of files to start copying the selected files from the staging area to the web site.

In a browser, go to the web page, refresh the page, and make sure the files you copied have been updated.

Keyboard Shortcuts

For whichever module you are in, you can select **Help->*ModuleName* Module Shortcuts** or press **control-/** to see a list of the shortcuts available for that module.

The control keys on a Windows keyboard are different on an Apple keyboard, which affects how you enter a keyboard shortcut.

Windows		**Apple**
Control Key	⇔	Apple Key[2]
Alt Key	⇔	Option Key
Shift Key	⇔	Shift Key
Right-click	⇔	Control-click

PC Versus Mac Keys

Windows		**Apple**
Control Key	⇔	Apple Key[3]
Alt Key	⇔	Option Key
Shift Key	⇔	Shift Key
Right-click	⇔	Control-click

Common Shortcuts

The following keyboard shortcuts are available regardless of which module you are working in.

[2] The Apple key is also called the Command key.

[3] The Apple key is also called the Command key.

B	Add to quick collection
C	Enter Compare view in Library module
D	Open selected photo in the Develop module
E	Enter Loupe view in Library module
F	Toggle full screen mode
G	Enter Grid view in the Library module
L	Cycle through lights out modes
M	Enter graduated filter in Develop module
N	Enter Survey view in Library module
O	Enter People view in Library module
P	Set flagged (picked) flag
Q	Enter Spot Removal tool in Develop module
R	Enter Crop tool in Develop module
T	Show/hide toolbar (bottom of preview pane)
T (press and hold)	Temporarily show/hide toolbar (bottom of preview pane)
U	Unset pick flag
W	Enter white balance eye dropper in Develop module
X	Set rejected flag
Z	Zoom to 100%
0	Reset rating to none
1-5	Set rating
6-9	Set color label
F1	Open help on the web
F5	Show/hide top panel (module picker)
F6	Show/hide bottom panel (filmstrip)
F7	Show/hide left panel
F8	Show/hide right panel
Tab	Show/hide side panels (left and right)
[	Decrease the rating
\	Show/hide header bar (except in Develop module) (top of preview pane)
]	Increase the rating
` (grave quote)	Toggle flag status
Shift-F	Cycle through screen modes
Shift-Tab	Show/hide all panels (top, bottom, left, and right)
Control-A	Select all
Control-B	Toggle between quick collection and previous selection
Control-D	Deselect all
Control-L	Enable/disable library filters
Control-O	Open catalog
Control-P	Go to the Print module
Control-Q	Exit
Control-Y	Redo last action
Control-Z	Undo last action
Control-, (comma)	Preferences
Control-/	Display current module shortcuts
Control-Shift-B	Clear quick collection
Control-Shift-E	Export
Control-Shift-F	Full screen and hide panels
Control-Shift-I	Import
Control-Shift-P	Page setup
Control-Alt-B	Save quick collection
Control-Alt-1	Go to the Library module
Control-Alt-2	Go to the Develop module
Control-Alt-3	Go to the Map module
Control-Alt-4	Go to the Book module
Control-Alt-5	Go to the Slideshow module
Control-Alt-6	Go to the Print module

Control-Alt-7	Go to the Web module
Control-Alt-,	Catalog settings (comma)
Control-Alt-/	Go to Help for the current module
Control-Alt-Up	Go to the previous module
Control-Alt-Shift-B	Set quick collection as target collection
Control-Alt-Shift-, (comma)	Plug-in manager

Second Display Shortcuts

F11	Show/hide second display
Shift-C	Show Compare view in Library module in second display
Shift-E	Show Loupe view in Library module in second display
Shift-G	Show Grid view in the Library module in second display
Shift-L	Cycle through lights out modes in second display
Shift-N	Show Survey view in Library module in second display
Shift-F11	Show second display full screen
Shift-\	Show filter view in second display
Control-Shift-F11	Show second display preview
Control-Shift-+	Zoom in in second display
Control-Shift--	Zoom out in second display
Control-Shift-Enter	Show Loupe view locked in second display
Control-Alt-Shift-Enter	Show slideshow in second display

Tethered Capture Mode Shortcuts

Enter tethered capture mode by selecting **File->Tethered Capture->Start Tethered Capture** from the menu bar.

F12	Press shutter on camera
Control-T	Show/hide tethered capture toolbar
Control-Shift-N	New subfolder

Common Shortcuts

- Double-click on the label at the top of a panel to reset all the sliders in the panel. Some panels have multiple labels, in which case, the label only applies to that section of the panel.
- Double-click a slider to reset it to its default value.
- Shift-double-click a slider to set it to its suggested value.
- Pressing the **Alt** key changes some labels in a panel to a reset buttons. Pressing the reset button will reset all the sliders under the label.
- Most panels have an On/Off switch left of the title. You can use this switch to toggle the adjustments made in this panel on and off.
- Click on an item to select it. Shift-click on two items to select a range of items. Control-click on items to select multiple items individually.

Library Module Shortcuts

The following keyboard shortcuts are available when you are in the Library module.

I	Cycle through Loupe view information in Loupe view
J	Cycle through cell views in Grid view
K	Enter adjustment brush in Develop module
S	Collapse stack
V	Toggle showing image in color and black and white

F2	Rename file
-	Decrease size of thumbnails
/	Deselect active photo
+	Increase size of thumbnails
Backspace	Remove from library
Enter	Enter Loupe view
Esc	Return to previous view
Spacebar	Go to Loupe view; then zoom in/zoom out
Shift-K	Toggle shortcut keyword
Shift-M	Enter radial filter in Develop module
Shift-R	Open in reference view
Shift-S	Shift to top of stack
Shift-T	Enter guided upright in Develop module
Shift-1-5	Set rating and move to next photo
Shift-6-9	Set color label and move to next photo
Shift-[	Shift up in stack
Shift-]	Shift down in stack
Control-E	Edit in Photoshop
Control-F	Find
Control-G	Stack photos
Control-H	Photo merge HDR
Control-I	Show info overlay in Loupe view
Control-J	Grid view options
Control-K	Add keyword
Control-M	Photo merge panorama
Control-N	New collection
Control-R	Show in Explorer
Control-S	Save metadata to file
Control-0	Show/hide Histogram panel
Control-1	Show/hide Quick Develop panel
Control-2	Show/hide Keywording panel
Control-3	Show/hide Keyword List panel
Control-4	Show/hide Metadata panel
Control-5	Show/hide Comments panel
Control--	Zoom out
Control-[	Rotate left
Control-]	Rotate right
Control-‘ (apostrophe)	Create virtual copy
Control-+	Zoom in
Control-Backspace	Delete rejected photos
Control-Down	Decrease flag status
Control-Enter	Enter Impromptu Slideshow
Control-Left	Previous selected photo
Control-Right	Next selected photo
Control-Up	Increase flag status
Control-Shift-C	Copy develop settings
Control-Shift-D	Select active photo
Control-Shift-G	Unstack photos
Control-Shift-L	Toggle dim lights
Control-Shift-N	New folder
Control-Shift-X	Show extras in Grid view
Control-Shift-0	Show/hide Navigator panel
Control-Shift-1	Show/hide Catalog panel
Control-Shift-2	Show/hide Folders panel
Control-Shift-3	Show/hide Collections panel
Control-Shift-4	Show/hide Publish Services panel
Control-Alt-A	Select flagged photos
Control-Alt-E	Open in alternate photo editor

Control-Alt-F	Return to normal screen mode
Control-Alt-J	View options
Control-Alt-K	Enable painting
Control-Alt-O	Show/hide guide lines in Loupe view
Control-Alt-R	Refine photos
Control-Alt-Left	Go back
Control-Alt-Right	Go forward
Control-Alt-Shift-A	Enable metadata autosync
Control-Alt-Shift-C	Copy metadata
Control-Alt-Shift-D	Deselect unflagged photos
Control-Alt-Shift-E	Export with previous
Control-Alt-Shift-H	Show badges in Grid view
Control-Alt-Shift-K	Set keyword shortcut
Control-Alt-Shift-O	Choose loupe overlay layout image
Control-Alt-Shift-V	Paste metadata
Alt-0	Next keyword set

Develop Module Shortcuts

The following keyboard shortcuts are available when you are in the Develop module.

H	Show/hide adjustment pin
I	Cycle info overlay
J	Toggle turning clipped highlights red and clipped shadows blue
K	Select the Adjustment Brush tool
M	Select the Graduated Filter tool
O	Show/hide mask overlay
Q	Enter the Spot Removal tool
R	Enter the Crop tool
S	Show/hide soft proofing preview
V	Toggle showing image in color and black and white
W	Enter white balance eye dropper
X	Switch Crop tool between portrait and landscape orientation
Y	Toggle showing image before and after editing in left and right pane
/	Deselect active photo
\	Toggle showing image before and after editing
Double-click-*Tone*	Set selected tone setting to default (0)
Double-click-*WB*	Set selected white balance to default
Shift-M	Select the Radial Filter tool
Shift-R	Reference view
Shift-T	Cycle spot type
Shift-1-5	Set rating and move to next photo
Shift-6-9	Set color label and move to next photo
Shift-Double-click-*Tone*	Automatically adjust selected tone setting
Shift-Double-click-*WB*	Automatically adjust selected white balance setting
Control-E	Edit in Photoshop
Control-H	Photo merge HDR
Control-I	Show/hide info overlay
Control-J	Develop view options
Control-M	Photo merge panorama
Control-N	New snapshot
Control-R	Show in Explorer
Control-U	Auto settings
Control-[	Rotate left
Control-]	Rotate right
Control-‘ (apostrophe)	Create virtual copy
Control-Backspace	Delete rejected photos

Control-Enter	Enter impromptu slideshow mode
Control-Left	Previous photo
Control-Right	Next photo
Control-Tab	Cycle upright mode
Control-Shift-D	Select active photo
Control-Shift-L	Go to lights dim mode
Control-Shift-N	New preset
Control-Shift-U	Auto white balance
Control-Alt-A	Select flagged photos
Control-Alt-E	Open in alternative to Photoshop
Control-Alt-F	Go to normal screen mode
Control-Alt-N	New preset folder
Control-Alt-Double-click	In Radial Filter tool, center and fill image with radial filter
Control-Alt-Shift-D	Deselect unflagged photos
Control-Alt-Shift-E	Export with previous
Alt-Y	View before and after top and bottom
Alt-Black	Show shadow clipping in histogram
Alt-White	Show highlight clipping in histogram

My Keywords

I generally use keywords to search for images that are in multiple photo shoots. This is when the chronological organization of image files does not work well for finding images. For example, I have been to Yosemite many times, so I use keywords to search across multiple photo shoots to find all the images of particular sights, such as Half Dome or Yosemite Falls.

Keywords must be unique even if they are in different keyword sets. For example, keywords for people should be their full names since first names alone could easily result duplicate entries.

Comma's are used by Lightroom to separate keywords so they cannot be used in a keyword. The only time this is a problem for me is when entering people's names since I use the last-name-first format. I use a semicolon in place of a comma in this case.

In the case of the keywords for San Francisco, Death Valley National Park, and Yosemite National Park, I flag the image with both the keyword set and the keyword in the set. For example, an image of Half Dome in Yosemite will have both the keyword "Yosemite National Park" and "Half Dome". I do this for subjects that I am likely to want to search for images using either the general or the specific keyword.

Animals

Bear
Buffalo
Coyote
Deer
Elk
Moose
Rabbit
Raccoon
Whale

Bird

Bald Eagle
Pelican

Cat

Mimi
Putter
Winky

Places

Alviso
Bryce Canyon National Park
Butchart Gardens
Cancun Mexico
Eureka
Grand Canyon National Park
Grand Tetons National Park
Grenada
Lassen National Park
Monterey
Newport Beach
Point Lobos
San Jose
Santa Cruz
Trinidad
Villages
Yellowstone National Park
Zion National Park

Death Valley National Park

Aguerberry Point
Badwater Basin
Dante's View
Devil's Golf Course
Devils Cornfield
Furnace Creek
Golden Canyon
Harmony Borax Works
Hell's Gate
Mesquite Flat
Mosaic Canyon
Rhyolite
Salt Creek
Zabriskie Point

Half Moon Bay

Ana Nuevo
Davenport
Pigeon Point Lighthouse

Pillar Point Harbor

San Francisco

Alcatraz
China Town
Golden Gate Bridge
Twin Peaks

Yosemite National Park

Ahwahnee Hotel
Ahwahnee Meadow
Bridalveil Fall
Cathedral Rocks
Cloud's Rest
Cook's Meadow
El Capitan
El Capitan Meadow
Glacier Point
Half Dome
Horsetail Fall
Leidig Meadow
Merced Grove
Merced River
Mirror Lake
Olmstead Point
Ribbon Fall
Stoneman Meadow
Tunnel View
Valley View
Vernal Fall
Yosemite Chapel
Yosemite Falls

People

Things

Artistic
Fall
Golden Gate Bridge
Lighthouse
Night
Snow
Sunset

Boat

Dasher
El Vago
Felicity
Pleadies

Seadrift
Southwind

