Colorizing Black and White Photographs
Using Photoshop

Many people have an interest in colorizing old photos that were taken in black and white. These may be family portraits or historical images. In this tutorial, we will follow a series of steps to convert black and white photos to color.

Before starting the project, you must determine what you wish to do with the photograph when done. Will you use it on a Web site? Do you intend to print it? If you are printing, how large do you wish the print to be?

Websites require images of low resolution. The current standards are 100 pixels per inch or less. However, printing needs resolutions of much higher values. If you intend to print on a home photo printer, you can probably get away with an image of 180 to 200 pixels per inch. Professional printing is usually done at about 300 pixels per inch.

You need to transfer the photograph into the computer. If you are scanning a photo, you will have to set the scanner to capture the image at an appropriate resolution. Because we often do not know what we will be doing with the finished project, we usually recommend scanning a photo at 300 pixels per inch because it is easier to reduce the file size than it is to increase it as would be necessary if you had a low-resolution photograph that you wished to print.

The image that we are going to use for this session is of the famous movie star, Harold Lloyd. Your instructor will tell you where to find it on your classroom computer.

A photograph similar to this one is a good choice when you are starting out colorizing. The face is always the most important and in this instance, the subject's face is a large proportion of the photo and is well defined. The background is very simple, and the clothing is not overly complicated.

The first thing to do is open the photo in Photoshop and then make a copy. We never work on an original photograph. If you make an error and save the original there is a good chance that you will not be able to recover the photo.

When you open the picture in Photoshop, it will resemble the following illustration.

The quick way to make a copy is to follow these steps:

- Press Control+A on your keyboard. This selects the entire photo. You will see the famous Photoshop marching ants around the edges of the picture. You have selected everything inside the marching ants.
- Press Control+C to copy the image within the selection area.
- Press Control+N to start a new image. The panel illustrated on the right will appear. Give the project any name you wish. Note that the size and resolution of the image is already specified. That information is copied from the original. Make sure the Background Contents are set to White.

- Click OK. You project's blank canvas will appear on the screen.
- Click Control+V to paste the image onto the canvas. Now you have your new project and the original photo open in Photoshop.
- Close the original photograph so you only have the new image available to work on. This prevents unfortunate mistakes to the original.
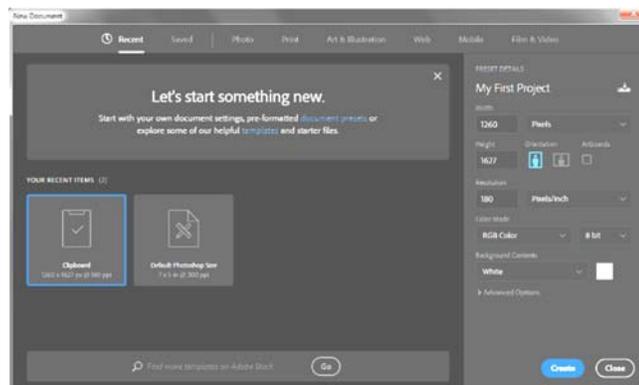
Now you will make sure that your image is in a color format (called "mode" by Photoshop) that you can work on. To do that, follow these steps:

- Click Image on the Menu bar.
- Touch Mode on the drop down menu.
- Make sure that RGB Color is checked.
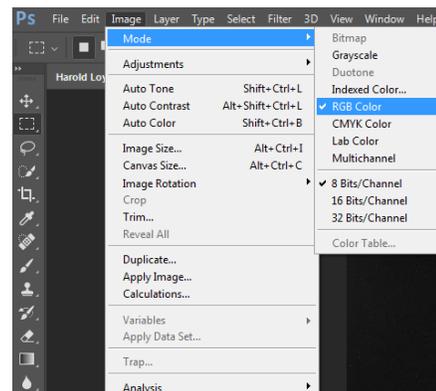
If the image was in Grayscale Photoshop may ask you if you wish to flatten the image. If that occurs, select Don't Flatten. Flattening is reducing multiple layers down to one layer. To see the two layers you created for this photograph look at the Layers panel in the lower right corner of your screen.
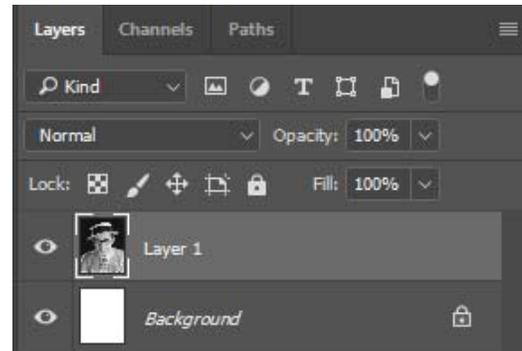
The illustration on the right shows the Layers Panel with Layer 1 and the Background layer. You will be making more layers in the project. You can turn off (but not delete) layers by clicking the eyeball button at the left side of each layer. Click the eyeball again and the layer returns. This can help you understand what you are doing with your project.

There are any number of shortcuts that can be taken with Photoshop. However, with some projects following all the steps can have benefits. In this case, we will make specialized layers and perform specific tasks that will allow you a great deal of control and customization.
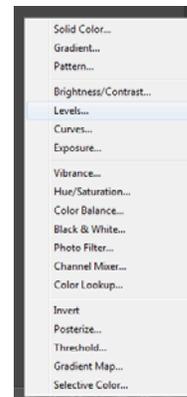
At the bottom of the Layers panel, there is a series of buttons as shown on the right. Click the "Create new fill or adjustment button"; it is circled in the illustration.
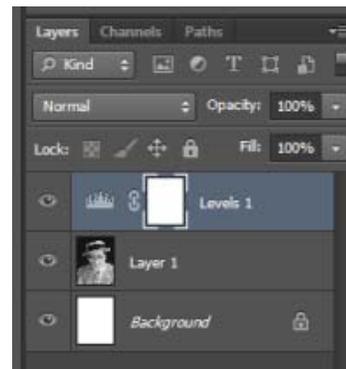
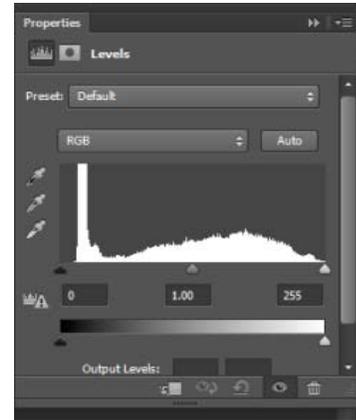A large list of options will appear. The list is shown on the right.
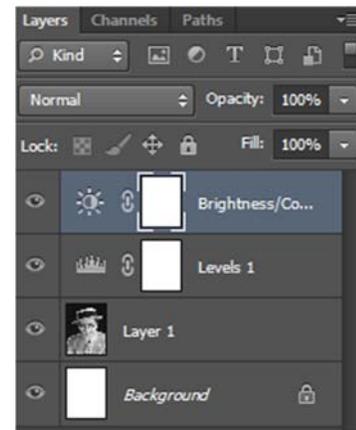
Select Levels from the list.

A new layer will appear on the Layers panel. It will be labeled "Levels" and is shown on the right.
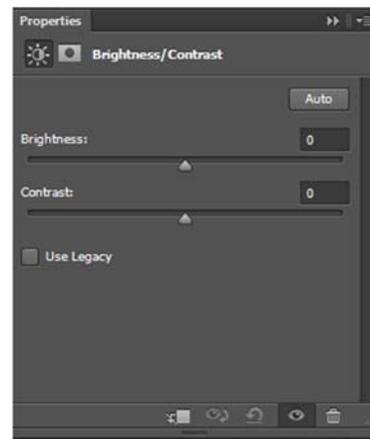
The Levels Properties panel will also be displayed on the screen. It is shown on the right.

Follow the same steps to create a Brightness/Contrast layer. Now your layers panel will resemble the illustration on the right.
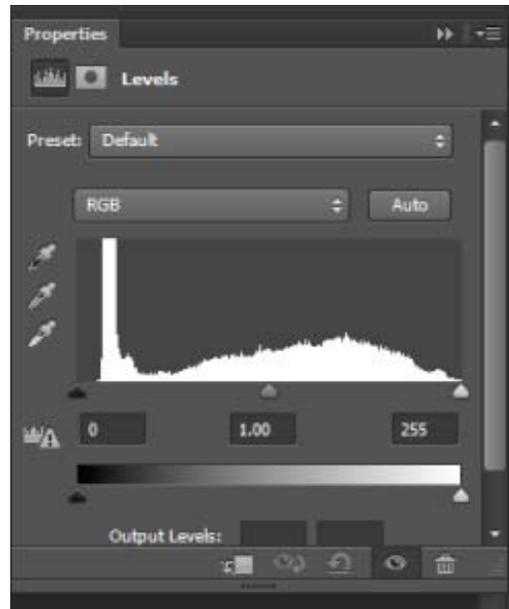
You will also have a Brightness/Contrast Properties panel.

You switch from one properties panel to the other by selecting the appropriate layer. We will start by adjusting the Levels.

Click the Levels layer in the Layers panel to select it. The matching properties panel will appear and be activated.

Notice that the properties panel has a graph in the middle and a slider at the bottom. The left side of the graph and the slider deals with the darkness levels of the photo, the right side refers to the photo's lightness. Starting with from the left side of the graph you will see a flat and blank area then a large spike. This means that in there is almost no ultra-dark portions of the photo, but a very high nearly ultra-dark portion.

You will see that at the right end of the graph the levels taper down to a very low level of pure white.

Immediately under the graph are three pointers. The right side pointer controls the light tones; the left side pointer controls the dark tones. The middle pointer controls the mid-level tones. We generally suggest not changing the mid tones.

You should try to move the light and dark tone pointers so that the photograph is improved. It is hard to explain what "improved" means. Everyone has a different explanation for what this means. Essentially, this is a "know it when you see it" type of thing.

In this instance you need only move the pointers a very little bit. When the left darkness pointer is correctly set, the photo will almost "jump" off the screen. A minor adjustment of the right lightness pointer could help contribute to the improvements.

Try it until you are satisfied with the results.

On the left above is the unadjusted photograph. The version on the right has had the darkness and lightness changed slightly. It is very difficult to see the differences on paper, but on the screen, they are very apparent.

Now select the Brightness/Contrast layer in the Layers panel. The Properties panel will change to the one shown on the right.
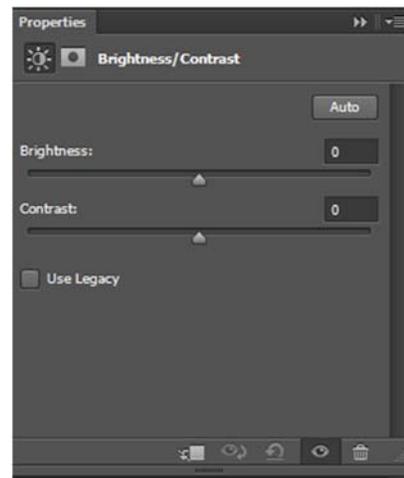

Very carefully adjust the Brightness and Contrast sliders until the photo looks as natural as possible. Again, this is a situation where you will know it when you see it. Usually very little adjustment is required. If you are satisfied with the photograph as is, do nothing. You may wish to try the Auto button to see what Photoshop suggests. If you do not like it, you can switch it back.

You will now start to add color to your photo. The preferred method is to add the color to new layers. It is possible to add color directly to the image layer, but then it is nearly impossible to customize.
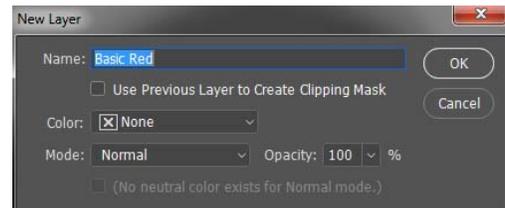
Click layers options button in the top right corner of the Layers panel.

A list will appear.

Select New Layer from the list.

Click here and pick New Layer
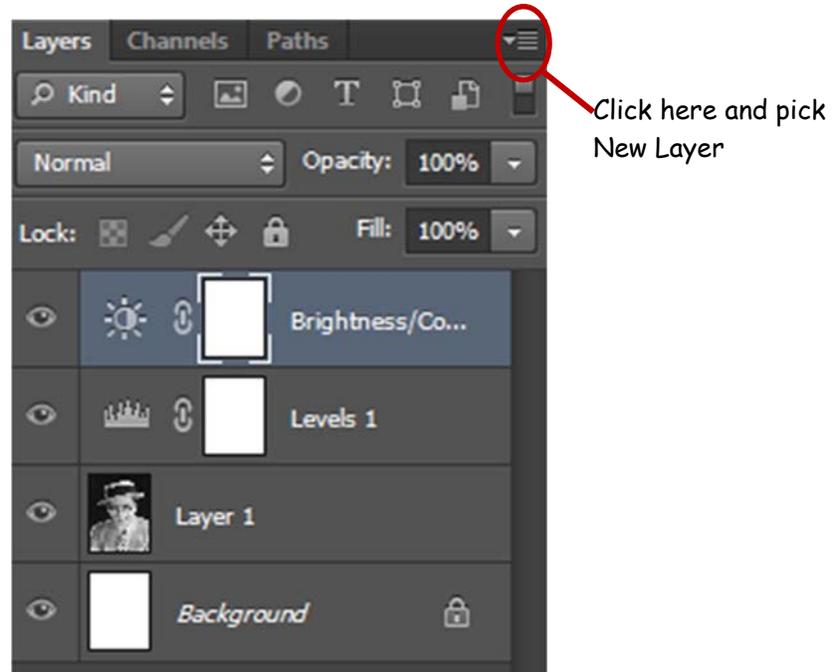
The New Layer control panel will appear. You may name the layer if you wish. This helps prevent confustion and in this case we are calling the layer "Basic Red."

The mode can be anything you wish to try. Leave the Mode at Normal if you are not sure. As you gain experience you may wish to try Soft Light. But for now keep the mode at Normal.

Click OK.

The Basic Red layer now appears in the Layers panel.
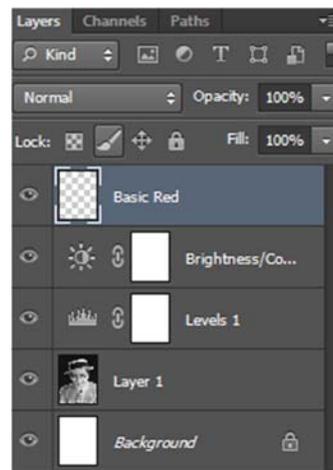
Now you need to select your first color. Click the Color Picker button that is near the bottom of the Tool panel.
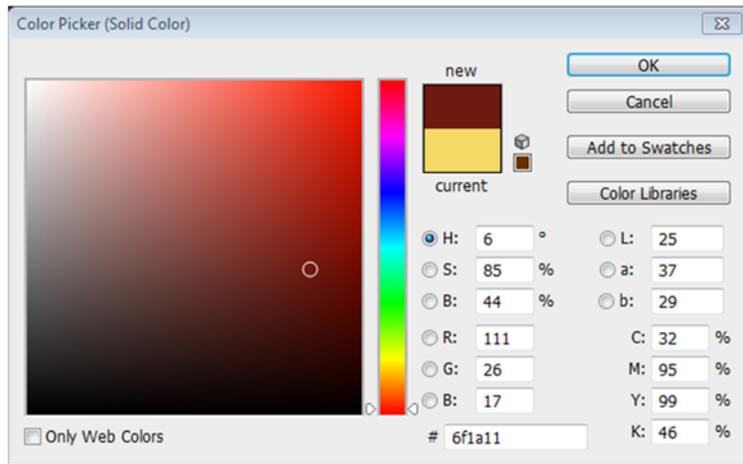
Click this box on the
Color Picker button

The Color Picker panel will appear as shown on the right.

You must now select a starting flesh tone. You might call this a "lipstick" color, but not a bright red. It is hard to specify which color is best because all skin shades are different. In this example we are starting with the color 6f1a11, but that is fairly arbitrary.

Select your color then click OK.

Select the Brush tool on the Tool panel. This will be your primary coloring tool.

You can now customize the brush using the adjustments that are available in the top left corner of the screen. Click the arrow head next to the brush icon and the adjustments panel will open.

The size of the brush area will depend on what you are "painting." Larger areas may require a larger brush, smaller area a smaller brush. Experimenting with the size can be helpful.

The hardness adjustment sets how fuzzy (or soft) the edges of the brush are. You will probably not want a hard edge and an edge that is too soft can be difficult to control. Again, experimenting will reveal the best settings for your task.
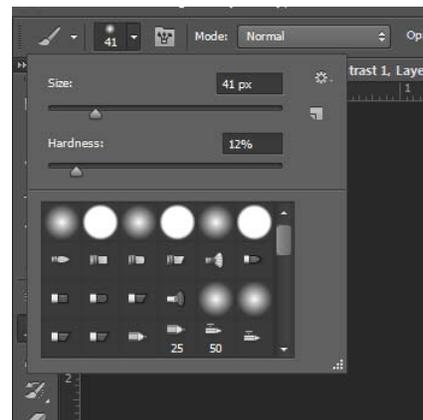
In the example we are working with now, many people find a hardness setting between 10 and 18 to be acceptable.

NOTE: There are other specialize "brush heads" available. These include hard, soft, pointed, fans, caligraphy, and much more. You may find these useful in other projects, so after this class you should experiment to see how they work.

Move your brush onto the image, left click and hold the button down, and then "paint" color onto the image.

The illustration on the right shows a line painted long the chin. Continue to paint and cover all the skin area. Try not to cover areas that are not skin, such as clothing, glasses, eyes, and so on.

You will want to change the brush size depending on the area being colored. For delicate or tight areas you will need a smaller brush. Larger areas can be perfect for larger brushes.

You will have to be careful as the blurred or fuzzy edges of the brush will change depending on the brush size. Use your judgement here. Practice will make it easier as time goes on.

The image on the right shows three different brush sizes in use.

You may find it useful to change the magnifcator factor of the image. The magnification of the image shown below is 100%. Adjusting the value can make working with the brushes much more accurate.

Magnification is set by either using the Magnifying Glass on the Tool panel or by changing the value, shown in percent, in the lower right corner of the work area.

If you over color an area you can correct the error in any of several ways. One way is to undo you last color step by clicking Edit on the Menu bar and selecting Undo, or you can press Control+Z. However, if you have colored a large area in "one go" then that entire area will revert back to its uncolored state.

The best way to make corrections is, in most instances, to use the Eraser tool.   Select the Eraser on the Tool bar.

Set the size and other setting using the controls in the top left corner just like you did with the brush. Then erase the color you don't want.

On the right is an example where there is too much color over the glasses and eye.

The example on the right has had color over the glasses frame erased and the eye cleared up.

The illustration on the right shows what your work will probably look like when all the coloring is done for this first layer.


It is pretty obvious that the color is much too thick. It is opaque when in reality it must be transluscent. Adjust the opacity for this layer using the settings at the top of the Layers panel. Depending on the color you have selected, the best looking settings usually range from 10% to about 18%.

Use your own judgement, but remember that you can always go back and change the settings at any time.

The illustration on the right shows the image with the layer set to about 11% capacity.

We will now add some cheek color. Make a new layer following the steps outlined above and name it Cheek Color, if you wish.
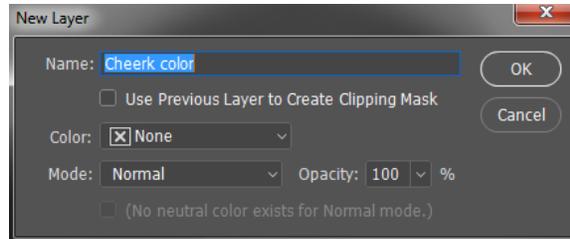
Remember, it is not necessary to name your layers. Photoshop will simply add a number to the layer name if you do not wish to be specific. Naming layers reduces confusion, but automatic numbering is fine if you do not wish to take the time and are willing to "fiddle around" later.

The cheek colors are often the same as the basic undertone, but a bit more saturatred. In some instances cheek color can actually be a slightly different shade. You can now select either a new, slightly darker color, or keep the same you used before.

Apply cheek color so it looks something like the illustration on the right.

Now lower the opacity of the layer so that you can barely discern the additional color. In the illustration on the right you may not be able to see the additional color on the printed page, but it is really there.

The next step is to add some lip color, so create a new
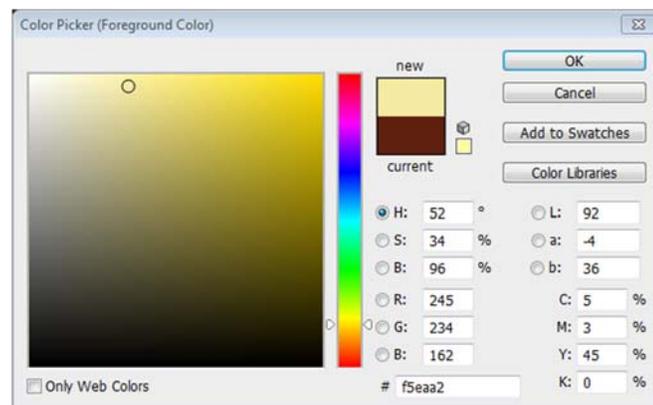layer and label it for lips if you wish.

Select an appropriate lip color and then paint them on the
image.

As before, reduce the opacity until the lips are slightly
more obvious than the regular base skin tone.

So far you have established the base
skin tones and some variations. Now
comes the first of a series of steps to
add depth and liveliness.

Hightligts are important for creating three dimensionality. Highlights generally occur where surfaces "stick out" or protrude so that the light reflects. These protrubances will include the nose, chin, eyebrow area, forehead, and cheek areas.

The trick is to know your subject. You cannot have a highlight in sunken cheeks. Large noses or chins will tend to have more highlights. The more highlights you add to a nose, for instance, the larger or longer it will appear.

Study your subject carefully and add highlights as needed.

The illustration on the right shows the what the photo looks like after the highlight's opacity has been reduced. Again, use your judgement to obtain the most realism possible.

So far we have selected colors by choosing what we think is appropriate for the subject, but without and real-life reference. Sometimes it is helpful to use another photograph as a reference for sourcing true to life colors.

The example on the right is a man who probably has similar skin tones as Harold Loyd in our project photograph. We cannot say for sure how close the colors match in the two pictures. It is not necessary to have a perfect match. Rather, you are looking for samples that are *most likely* to be acceptable for part of your project.

For instance, if the yellow color of the highlight you just made does not look realistic enough, you can sample a new highlight color and try again.

Here is how to do that:
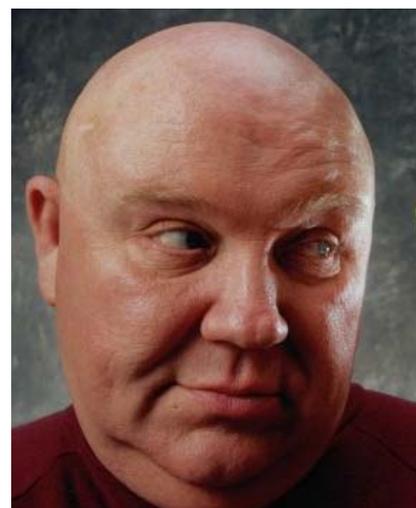
Open your reference photo in Photoshop. In this case you will use the one provided by your instructor. Photoshop will now resemble the screen shot below.
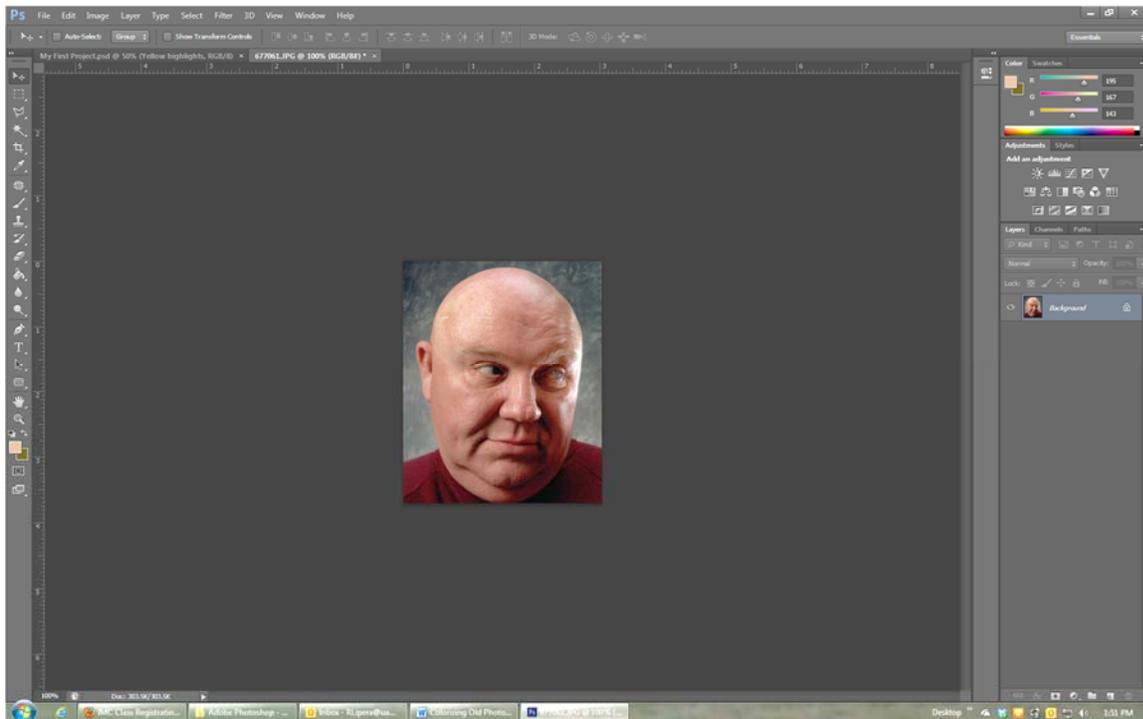
Click the Set Foreground Color button
on the tool bar. The Color Picker will appear.

Use the Color Picker's eye dropper to select a highlight color on the head of the subject in the reference photo.

Click OK in the Color Picker.

Switch back to the project photograph.

Click the eyeball icon in the Yellow highlights layer. This does not delete the layer. It only turns it off so that it is not visible. You can turn it back on any time.
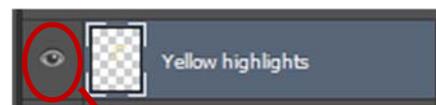
Eyeball icon

Create a new layer. Name it if you wish.

Paint the highlights with the color you just selected.

Adjust the opacity. Now compare the new highlight color to the original color and see if it is better. If you like this new color better, keep it and go on to the next step.

Some subjects will have beard shadows. Most men will. Although in the case of our subject here, the beard shadow is not readily apparent, the addition of a tiny bit of beard can help with the realism by adding depth to the image.

Create a new layer; name it "Beard" if you wish.

Beard shadows are usually a dark blue with a "flat" appearance. Using the color picker, we have specified #374760, but you can try anything you wish. Remember, you can always delete or change anything you do not like.
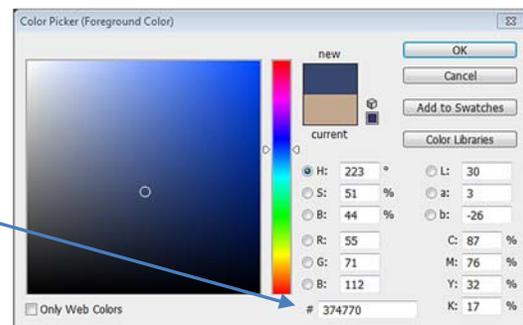
You can see on the right that we have painted on a little bit of beard.

With the opacity of the Beard layer radically reduced, we have only the barest hint of shadow. However, this is enough to add realism to the image.

Now is a good time to adjust the skin shade tone for more accuracy. This is done by adding a Hue /Saturation layer to control the Basic skin tone layer.

Click Window on the Menu bar and select Adjustments if it is not already selected.

Click the Create New Fill or Adjustment Layer button at the bottom of the Layers panel.

Select Hue/Saturation.

A new Hue/Saturation layer will be added to the Layers panel.

If necessary, drag the new Hue/Saturation layer up or down the layers panel so that it is immediately above the Basic Red layer (our first layer) as shown on the right.
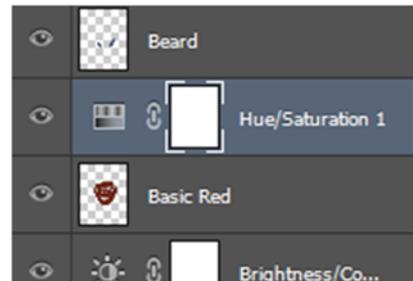
The Properties panel should now be open as shown on the right. If it is not, click Windows on the Menu bar then click Properties. The panel will then appear.

Start by increasing the saturation by moving the Saturation slider. It will probably have to go very high. If you are lucky, this will be the only adjustment you have to make.

If the subject color is wrong, you may try adjusting the hue. If the skin tones are too red, try shifting the hue toward the blue.

Hair color is the next thing to add. In our project photograph it appears the subject has medium colored hair. You may need to do research to confirm hair color. In this instance, we will assume that the subject has a medium brown shade.

Create a new layer for hair color and name it if you wish.

Drag the layer to the top of the layer stack if it is not already there.

Use the Color Picker to select a medium brown shade. We will try #532b08 at first.

Paint the hair areas. Don't forget the eyebrows!

If your subject has a mustache, you will have to do that, too.

Reduce the opacity of the hair layer until it looks as realistic as possible.

Hair is rarely one color. Like skin, it will have highlights and darker areas. Add a highlight that is similar to the original medium color. Do the same for any darker areas.

Each color will have its own layer, as usual. Be sure to adjust the opacity.

Eye color usually, but not always, correlates to hair color. In this day and age, hair dye is common and colored contacts are popular. In the case of gray hair, it is perfectly appropriate to add a little gray if that is apparent in the photo.

Because our subject in this project has dark hair, darker brown eyes are acceptable. Add an eye color layer to the project using the techniques you have used before.

By now, you will have many layers in the layers pallet. The illustration shows the layers we have made so far for this project.

You may need additional layers. For instance, if the subject has a ruddy complexion you may need to add at least one ruddiness layer.

The final steps involve backgrounds and clothing. These are important, but rarely as much of a challenge as skin, eyes, and hair.

You should know something about clothing styles. If you can determine the year when your project photograph was taken, you can estimate clothing colors accurately with a little research.

In the case of this project picture we can assume that it was taken in the late 1920s or very early 1930s when Harold Lloyd was a big movie star and still fairly young.

We know, then, that his suit may have been flannel an either a cream color, light gray, or very pale yellow. It has no discernible pattern.

His straw boater-type hat was almost guaranteed to be a very pale yellow or off-white color. Mr. Lloyd was famous for his black rimmed glasses.

His tie is probably the most colorful thing in this photograph. It seems to be finely woven, so it is likely to be silk. Mr. Lloyd's shirt has a faint stripe, so it could be white with blue stripes. However, as long as the colors do not clash you should be OK with your choices.

It is hard to research some clothing colors, as most photography was black and white "back in the day." However, if you can examine some old fashion magazines from the photo's era you may get clues as to what colors you should use.

Some types of clothing are easier to select. For instance, World War II US Army uniforms were mostly green, specifically a color called "olive drab." However, summer uniforms were khaki. Certain uniform trousers were called "pinks" because they were actually a pale pink shade. Which color do you choose? You must determine if the uniform is for winter or summer, then dress, battle, or fatigue, and then, perhaps which specific branch of the Army. Infantry might be a bit different that Army Air Corps.

The good news is that in the case of military uniforms there are lots of online references and books available.

On your own, you should now proceed to select and apply clothing colors to the photograph.
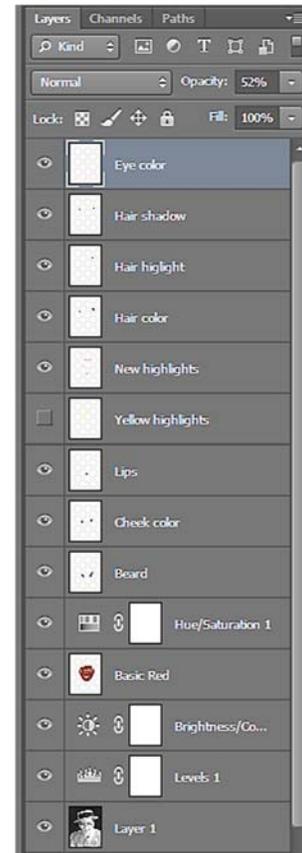
Remember these tips:

- Add new layers as needed
- Feel free to go back and make adjustments to earlier layers
- Add adjustment layers if you think it is necessary
- Turn off layers if you don't think you like them
- You can use reference photos for both skin an clothing if you wish

One of the most important tips is to be sure and SAVE your project periodically.

The backgrounds in a photo make or break a project. In the case of the project photograph here, the background is very dark and was probably black, so we will not do anything to it. Other photo backgrounds, ones with patterns, for instance, will have had some sort of color. Famous photographers may have used the same background many times and the color will be known. A little research will turn up the information.

Modern studios often have custom painted backdrops for backgrounds. You can go through photo supply catalogs for examples. However, many of the old photos were taken in front of curtains. It is a matter of determining the most likely color and going from there.

Roger Lipera 5/13 v1; revised for CC, 6/2018