

In this project you'll be shooting and merging a sequence of photos to form a long 360° panorama—and then bending that panorama into a mini planet.

Panorama Tips:

1. Use a tripod to help with alignment. Rotate the camera using the tripod's head. Shooting handheld will work, but each shot will be misaligned.
2. Switch your camera's white balance to DAYLIGHT ☀. If you leave it set to AUTO, your white balance may change during segments (not good).
3. Press your shutter button halfway down to check your exposure—then make a note of the f-stop and shutter speed. Now switch your camera to MANUAL mode and dial in that f-stop and shutter speed (to lock down the exposure).
4. Remember to overlap your photos at least 25% at the edges of the frame.
5. Shoot your images quickly, gathering a full 360° view all the way around.
6. Sequence your photos by shooting clockwise (turning to your Right)—this will make the photos appear in the same sequence when you scroll through them while reviewing. On the camera, pushing the review button or wheel to the *right* will rotate your images to the *right*. If you sequence your photos by turning counter-clockwise, pushing *right* to review spins your image views *left*—which can be rather dis-orienting.
7. Shooting the frames horizontally (landscape orientation) usually works fine. Sometimes you need to shoot with the camera turned vertically—to capture tall buildings, for example. Shooting the frames vertically (portrait orientation) means less distortion of the photo edges (which makes it more likely you'll get a good panorama stitch), but it also means having to shoot almost twice as many photos to get the 360° coverage.
8. When you've captured all your images, you will have about 12-20 photos.

Photoshop Steps:

- 1 Resize all your original numbered image files to approximately 900 pixels in height. This will make for a panorama that's a manageable size, while still providing plenty of detail. Remember to resize with the "Constrain Proportions" box checked.
 - 2 Place all your resized (reduced) image copies in one folder.
 - 3 See the DEMO handout for step-by-step instructions for creating a sample panorama in Photoshop, and how to bend the panorama into a mini-planet.
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PRODUCTION SCHEDULE:

One week from now —

Bring your folder of panorama images to class, and we will work on stitching them together in Photoshop, plus any digital clean up that's necessary.

Two weeks from now —

Bring your finished panorama (JPEG) to class, and we will work on *Polarizing* it—bending the panorama into a mini planet, and doing any touch-up that's necessary.

Three weeks from now —

Bring your final Polar Panorama (JPEG) to class for presentation, as well as the final Panorama (JPEG) that you used to create it.

Panorama Demo:

DAY 8 folder > Panorama Demo samples > City Hall Panorama Images > Pano 22 images small. This folder contains 22 sequential photos, which comprise a 360° view in front of San Francisco's City Hall. Also in this view are: the Main Library, the Asian Art Museum, and the State of California Building. We'll start by using Photoshop to stitch together all 22 photos into one long panoramic scene.

In Photoshop, choose File > Automate > Photomerge...

Navigate to the folder called Pano 22 images small, select all the images at once, and Photomerge with the AUTO button chosen (top-most choice). Hit OK.

Photomerge will automatically align, stitch, color match, blend, and add Layer Masks to every photo—creating a multi-layered .PSD file.



Notice that each layer has a Layer Mask applied. You can try turning each layer's visibility on & off—to see the border of the Layer Masks.

Save a JPEG copy of the Untitled_Panorama1 to work with, and close the layered .PSD file.

Using the JPEG copy of your panorama, use the Crop Tool to trim the L. and R. edges of the image—trimming any areas where there are missing pixels. Do not crop the top and bottom edges yet.



Turn on the Rulers (View > Rulers), and drag a horizontal guide to check for alignment of the L. and R. edges of your panorama. You can use the Ruler Tool in the toolbar to drag a straight line from point-to-point across the panorama—and then find this angle by choosing Image > Image Rotation > Arbitrary. Rotate the entire panorama to align 'landmarks' on the L. and R. edges, until they align exactly. This is necessary so that there will be no misaligned image areas when the panorama is curved into a circle, and the L. and R. edges will touch.



Add one vertical guide on either the L. or R. edge on your panorama where you would like to crop the image. Look for easily aligned 'landmarks', and perhaps place the guide along an obvious edge, or on the midline of an object in the photo.

Choose: View > Snap To > Guides (and Snap To > Layers), and then using the Crop Tool, crop the panorama so that the L. and R. edges have no repeating pixels. Tip: you can zoom in on your image during cropping by using the keyboard zoom method of Command + or - .



Use the Clone Stamp Tool to paint out any items that extend beyond the top of the frame (things like poles, clouds, wires, flags, etc.). Clone in areas of missing pixels—on both the top and bottom edges of your panorama. You can also simply CROP the image top 'n' bottom, but you may want extra image area to work with. Cloning can be beneficial to create extra image area along the edges.



Choose: Image > Image Size, and enter pixel measurements to stretch the panorama into an exact square; the number of pixels in height must match the width of the panorama exactly. In the image dialog box, make sure that "Constrain Proportions" is not checked, and that "Resample" is checked.

IMPORTANT: Rotate your image 180° (Image > Image Rotation > 180°). This will place your panorama's bottom edge in the center of the Polar version.



In the Filter Menu, choose:
Distort > Polar Coordinates,
and click OK. It may take
the computer awhile to dis-
play the filter dialog box, or
to render the effect.

Be patient.

Voila! Your panorama will
be bent into a mini-planet!



Clean up stray pixels as
needed in Photoshop.

Rotate image to find the
best composition/angle.