Windows (3.0.5 and later): Every time I launch Photoshop I get a message saying the scratch disk is full, and it doesn't start. I have tons of free space on another drive, but before I can designate which scratch disk to use, Photoshop shuts down. Is there any way around this?
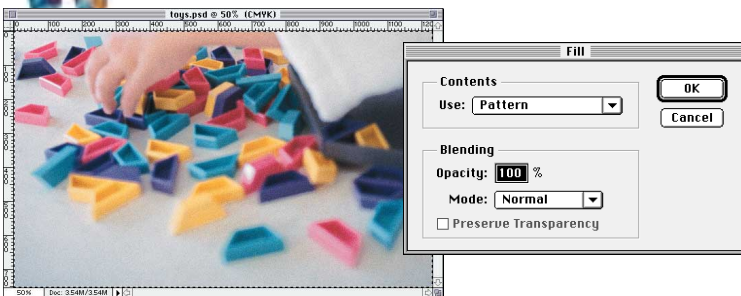
Yes. First of all, you can, and probably should, free up some space on the boot drive (even if you're not having trouble with your Photoshop scratch disk, lack of disk space may also make other programs behave erratically). By default, Photoshop will use your boot drive (usually C:) for the scratch disk, until you tell it to use something else. If your boot drive is crammed full, it can prevent Photoshop from launching, and of course if you can't launch Photoshop, you can't tell it to use a different scratch disk. But there is an easy way out of this catch-22. To force Photoshop to use a different scratch disk as it starts up, just hold down Ctrl and Alt immediately after you launch Photoshop from the Start menu; after a moment you should see the Memory Preferences dialog box, in which you can designate your scratch disk. Timing is very important as you press these keys; doing so too early cancels the launch (in Windows 95) or brings up the program file's properties (in Windows 3.1), and too late is, well, too late.

After you change the settings in your Memory Preferences dialog box, you should be able to launch successfully. The settings you specify will "stick" until you make a further change. (See the last question in the next column for more information about scratch disks.)

Windows/Mac: Why can't I define a pattern in Photoshop?

Probably a simple matter of settings. By definition, a pattern shape must be rectangular, so make sure you're using the rectangular marquee tool—and make sure its Feather setting is 0 (zero). If you have any doubts about your settings, you can choose Reset Tool from the Marquee Options palette. This should restore all the marquee tool's settings to the factory defaults.

To use the Pattern feature, select the rectangular marquee tool, select the area that you want to use as your base pattern, choose Define Pattern from the Edit menu, choose Fill from the same menu, and then choose Pattern from the Use pop-up menu.

Windows: Photoshop has started doing something really weird—when I switch tools, the cursor displays the previous tool's icon. The newly selected tool works correctly, but seeing the previous icon is driving me nuts—help me, please!

Help is on the way. This problem is almost certainly caused by your video driver; we hear about it most often from users who have STB Velocity or Number Nine Revolution 3D video cards

(though it could occur with others as well). You need an updated video driver from the manufacturer of your video card or your PC. If your STB video card came with your Dell or Gateway PC, call the vendor's customer support line (Dell at 888-560-8324 or Gateway at 800-846-2000). If you purchased your video card separately from your computer, contact STB Customer Support at (972) 669-0989 or check STB's Web site *(www.stb.com/drivers/velocity/vl128. html)*. If you have a Number Nine Revolution 3D video card, contact Number Nine Technical Support at (781) 869-7214.

Windows/Mac (4.0 only): I know that Photoshop can embed an invisible watermark into any image I create, one that's detectable even after the image has been printed and scanned. But I've heard that traceable, "unrequested" information (such as my name, serial number, registration info, and so forth) is also embedded into all my images. Is this true, or is it another urban, I mean cyber, myth?

Don't worry—there aren't any alien implants in your Photoshop documents. This is, as you have suspected, nothing more than an unfounded rumor.

As the author of Photoshop images, you have the option of adding a digital watermark to your files using Digimarc's Picture-Marc technology (you can then register your watermark, for a fee, in an online database). This digital watermark, which you can make visible or invisible, can contain copyright information as well as provide viewers with a way to contact you—if you choose to include it. For more information about this process, you can contact Digimarc at (800) DIGIMARC or (503) 626-8811, or on the Web at *www.digimarc.com.*

We stress that these options are used only if you specifically set them up: no private (or even public) information gets embedded in your Photoshop files unless you take specific steps to include it; Photoshop does not add any information about you or your computer to any files without your explicit request.

Windows/Mac: Are there any limits to the size of images I can work on in Photoshop?

In many respects the only limits on Photoshop are your imagination and your time. However, if you're inclined to work on very large images, you may eventually run up against a few practical hurdles. Here are some of the limits you could potentially encounter in Photoshop if you tend to push things to the extreme.

- Images cannot exceed 30,000 pixels along either axis (check this number by choosing Image Size from the Image menu).
- Files cannot exceed 2 GB. This is true for any file that Photoshop uses: the image itself as well as any related scratch-disk files. Remember that whenever you're working on an image, one or more scratch-disk files (which are, essentially, temporary files that Photoshop uses to perform a variety of operations) are written to a designated hard disk. (See the related question on scratch disks, above left.) The scratch-disk space that's required will vary according to several factors, but depends primarily on how large your Photoshop image file is. As a rule of thumb, you can anticipate that Photoshop will require scratch-disk space that's roughly three to five times the size of your opened (that is, uncompressed) image; for bitmap mode images, it can require up to ten times the file size.
- Files can contain a maximum of 99 layers (including adjustment layers), plus one Background layer.

• Files can contain a maximum of 24 channels.

It's unlikely that any of your Photoshop files will even come close to, let alone exceed, these limits. Realistically speaking, given these numbers, you'll probably find that your hard-disk space, RAM, or perhaps the time you have to spend on the project will give out well before you reach any of Photoshop's built-in limits.

Windows/Mac: Is there an easy way in Photoshop to remove that hideous red-eye phenomenon that seems to afflict all photos of my boyfriend?

When you take flash photos of your boyfriend at too-close range, the flash will sometimes reflect back from his eyes, which results in an unattractive—some would say demonic—"red-eye" effect. Fortunately it's usually not hard to correct in Photoshop. Here's one way.

1. Open the Color Range dialog box (choose Color Range from the Select menu) and position it so that you can see the subject's eyes as well as the dialog box. (You may want to do a rough selection around the eye area using the lasso tool before you start.)
2. Select Sampled Colors from the Select pop-up menu and None from the Selection Preview pop-up menu. Set the preview type to Image (not Selection).
3. Click on the target eyedropper (the leftmost of the three eyedropper tools in the Color Range dialog box) and click in the

red area of the subject's eyes (either in the image itself or in the image preview within the Color Range dialog box). Change the Selection Preview option to Grayscale and check to see how you did. Your selection should appear white, and should correspond to the red areas in the eyes.

To capture exactly the area you want, switch back and forth between the image and the selection by changing between Grayscale and None in the Selection Preview menu. (In Photoshop 4.x, press Ctrl (Windows) or Command (Macintosh) to toggle between preview modes.) Adjust the selection with the Fuzziness slider; lower Fuzziness values restrict the selection to the specific pixel values you chose with the eyedropper, while higher fuzziness values extend the selection to pixels similar in value to the ones you chose.

If necessary, you can also use the plus or minus eyedroppers in the Color Range dialog box to increase or decrease the selection of sampled pixels. By then adjusting the Fuzziness, you should be able to isolate the red pixels in the eye without selecting non-red pixels.

4. When you're satisfied that you've got a good selection, click OK to exit the Color Range dialog box. You should now have a selection of the red-eye pixels based on their color values.
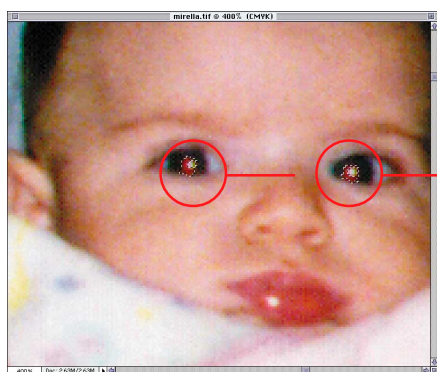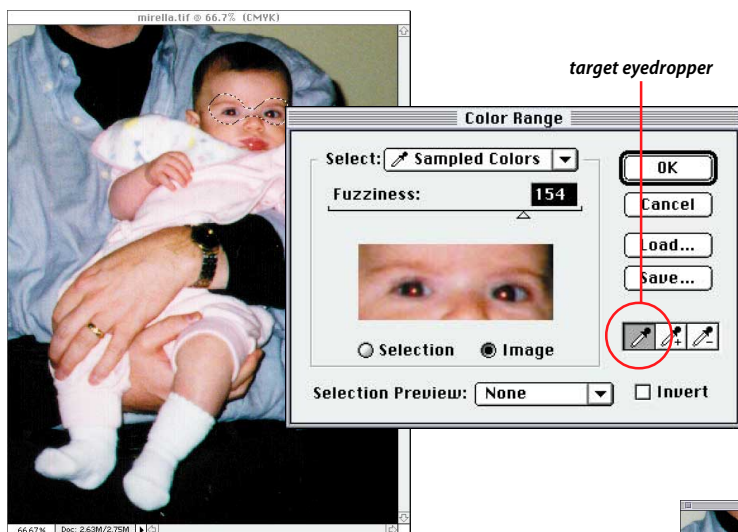
You might want to save your selection in case you need to come back to it later; to do so, choose Save Selection from the Select menu and click OK to create a new channel containing your selection.

5. Paint, clone, or fill your selection with colors more appropriate for a human eye.

If you have multiple photos with the same red-eye problem and you want to be able to reuse the same Color Range settings, you can save your settings (click the Save button in the Color Range dialog box and type an appropriate name for your settings file) and reload them later.

Windows/Mac: I'm interested in writing plug-ins for Photoshop. Where can I find more information?

Great—we all love plug-ins. There are two ways you can create your own plug-in modules for Photoshop. For simple plug-ins, you can use the Filter Factory, a filter for creating—you guessed it—stand-alone Photoshop plug-ins. (In this case, by "simple" we

target eyedropper

resulting selections

As you can see, photographic red eyes aren't for boyfriends only. To restore desired eye color (or to "preview" colored contact lenses) select the red pixels using the tools of the Color Range dialog box, and then use your favorite "fill" method to repaint the eyes.

mean a plug-in (or filter) that allows you to make "exterior" or cosmetic changes to all or any of an image's channels to alter its appearance.) You can find the Filter Factory on your Photoshop CD, though it's not installed automatically. (In Windows, look in the Goodies folder for Photoshop 3.x or the Plug_ins subfolder of the Goodies folder for Photoshop 4.x; on the Macintosh, look in the Other Goodies folder for Photoshop 3.x or the Optional Plugins subfolder of the Other Goodies folder for Photoshop 4.x.) There are many Filter Factory enthusiasts on the Web with whom you can find and share information—and, of course, filters. To create plug-ins for more involved functions (that is, something more complex than changing the look of your image), you'll need a knowledge of programming and the Photoshop Software Development Kit (SDK). The SDK is available on the Photoshop CD. In Windows, look in the Ps30Xsdk subfolder (where X is the dot-release version number) of the Devinfo subfolder of the Techlib folder for Photoshop 3.x or the Ps4_sdk subfolder of the Devinfo subfolder of the Techinfo folder for Photoshop 4.x; on the Macintosh, look in the Technical Library folder for Photoshop 3.x or in the Developer Support subfolder of the Adobe Technical Info folder for Photoshop 4.x.

To see a good example of a shareware plug-in made with the SDK, you can take a look at Blade Pro 2.0.8, from Flaming Pear, which helps you create (and illuminate) realistic 3D objects, text, and buttons. (You can find Blade Pro on the Web at *ccn.cs.dal.ca/ ~aa731/blade.html*.)

If you're going to get into writing plug-ins for Photoshop (or any Adobe application, for that matter), be sure to check out the Adobe Developers Association (ADA) online at *www.adobe. com/supportservice/devrelations/main.html*. The ADA can provide you with additional technical information, support, and a variety of resources for developing plug-ins, including, of course, the latest version of the SDK.

Windows/Mac: I'm having trouble outputting duotones. The separations I get look like they're identical. What's wrong?

Possibly nothing. Duotone plates often don't look noticeably different from each other—especially on proofs printed from your desktop laser printer. Examine them closely to make sure you really are getting two identical plates. If you're not sure that your plates contain different data, try this test: make some drastic changes to one of the duotone curves, and then print the seps to see if the plates differ. (Save your image file first, though, with the "real" curve, so that you can return to your original settings after you've tinkered with your image.)

To change the duotone curve, choose Duotone from the Mode submenu of the Image menu (in Photoshop 3.x, choose Duotone directly from the Mode menu) and click one of the small curve squares in the left column in the Duotone Options dialog box. Click directly on the curve to add some points, and drag them up or down to create some drastic peaks and valleys. Click OK twice to get back to your image; you should see some radical (and likely ugly) changes. Try printing the document again, and it should be obvious if you are getting different data on the two plates.

By default, no matter how you create your duotone, the plates will always print with different screen angles, to prevent moiré patterns and other visual disharmony. But there may be times when you'd want to customize the screen-angle settings for separations. The Duotone Presets that come with Photoshop (which

Windows of opportunity

When a dialog box is open, you usually have to close it before you can use other features in a program. But in Photoshop, you can take advantage of many menu choices even while you're in dialog boxes.

For example, when the New dialog box is open and you select an existing, open file from the lower part of the Window menu, you automatically populate the New dialog box's fields with the settings from that existing file (with the exception of the background color). This can come in handy when you want to create new files whose dimensions and resolution match your existing file.

You can use the View and Window menus to turn on and off various features while many dialog boxes are open. For instance, most of Photoshop's floating palettes can be toggled on or off via the Window menu. While in most of the image adjustment dialog boxes (those opened from the Adjust submenu of the Image menu), you can control items from the View menu, allowing you to show CMYK previews and gamut warnings, as well as turning rulers, grids, guides, and other features on and off. Finally, you can access View menu items from within the Color Range and some (but not all) of the filter dialog boxes.

you can load through the Duotone Options dialog box discussed above) include their own appropriate settings. If you're using these presets, you usually won't have to make changes to those settings. (The Duotones folder is located in your Photoshop folder in Windows; the Duotone Presets folder is located in the Goodies subfolder of your Photoshop folder on the Macintosh.)

If you've consulted with your commercial printer and you know you want to make a change, you can type in your own custom angle values: Choose Page Setup from the File menu, and then click Screens (Windows) or Screen (Mac) to get into the Halftone Screens dialog box. Deselect Use Printer's Default Screens and type in appropriate values. Be aware, however, that the angles you type into the Halftone Screens dialog box will "stick"; even if you subsequently load a duotone preset for that image, your manually entered screen-angle values will stay loaded until you type in new ones, which may cause a bit of havoc with the presets. If you need more detailed information on using custom halftone screen angles, consult with your commercial printer.

One final note: If you're saving the duotone file for use in a page-layout program—that is, if you're not printing directly from Photoshop—remember that you'll need to save the duotone file in EPS format (which, of course, will require a PostScript printer for proper output). To ensure that your EPS will print as expected from within a layout program, include custom halftone screens in your image as described above, and be sure to check Include Halftone Screens in the EPS Format dialog box; otherwise, the screens will all separate at the same angle. (In PageMaker, the imported values may not appear accurately in the Print Color dialog box, but the colors will print correctly.) ◆

Micro Tip
Use the polygon lasso tool to make straight-edged selections: Click in your image and play "connect the dots." You can back up one point at a time by pressing Delete. (In Photoshop 3.x, hold down Alt or Option while clicking and dragging the lasso.)