CS 116: Introduction to Digital Imaging **Spring 2001**
File Format Assignment

This assignment is intended to get you familiar with scanning and with file formats.

First, go find two images. One of them should be a photograph (a real photograph – borrow one if you have to), and the other should be from a magazine or book.

1) Scan both of your images into a spatial resolution of approximately 500x500. Go no larger than 800 pixels and no smaller than 300 pixels in any dimension. Scan them at 8 bits/pixel, grayscale (might be called "256 shades of gray" on the scanner). If you are scanning a typical 4x6 photo, this would mean scanning at about 100 dpi. **REMEMBER**: you can only set the **type** and **resolution** with the scanner software. The way to see your image's spatial resolution is to check the width and height readouts. In other words, **you can't set the spatial resolution explicitly** – you are only able to control the dpi.

The most common mistake in this assignment is scanning your image at TOO HIGH a spatial resolution! Be sure to check the width and height readouts in the scanner Settings window BEFORE scanning!

2) Save your photograph image 5 times using 5 different *file formats.* In Photoshop, this can be done with **File->Save As**, where you will be given a choice of different formats to use. The formats you need to save as are TIFF (with compression, Macintosh format), GIF (normal), JPEG (with maximum quality), JPEG (with minimum quality), and the native file format of your image editing system ("Photoshop" if you're using Photoshop).

Save the files onto your ZIP disk with the same *base name*, i.e., "assignment1photo" but use different *extensions*. Typical extensions for the formats given above are:

format	**extension**	**example**
TIFF:	.tif	assignment1photo.tif
GIF:	.gif	assignment1photo.gif
JPEG:	.jpg	assignment1photo.jpg
Photoshop:	.psd	assignment1photo.psd

Since you're saving two versions of JPEG images, you will want to do something to differentiate them on disk (for example, "assignment1.min.jpg" and "assignment1.max.jpg").

3) On a sheet of paper, write down the spatial resolution of the photograph image. Calculate the total number of pixels that make it up and write that down too. Then, look at the sizes of the 5 different versions that you have on disk. With a calculator, compute the **effective bit depth** of each version. This is the average number of bytes per pixel based on the image's size on disk. You simply divide the number of bytes the image takes on disk by the total number of pixels. List the 5 formats in descending order with their effective bit depth.

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4) Load each of the 5 versions of the photograph image separately into Photoshop and see if you can identify any visual differences between them. Can you? Which formats look different, and in what ways do they look different? Note these differences on the sheet.

5) Finally, hand in the TIFF version of your photograph image. Here's how:

- In the classroom, go to the **Recent Servers** menu under the Apple menu on any of the iMacs or iBooks. Select the server named **e-work**. This will mount the shared disk onto your desktop.
- (If you want to hand in the image from a remote Mac on campus, you will find the e-work disk under hampnet2, ASH e-scanner. Log in as guest.)
- Inside the **Spring 2001** folder, find the **Digital Imaging** subfolder. Inside that there should be a **File Format Pictures Go Here** folder.
- Option-drag the TIFF file from your zip disk to the assignment folder (meaning, press the option key, and while holding it, click and drag the file and release the mouse button over the assignment folder).
- RENAME your file so I know it's yours. If I were handing in the assignment I would name my file **ChrisPerryFFA.tif**.
- When you're done, drag the e-work disk into the trash on your local machine. This frees up the server for others to use.