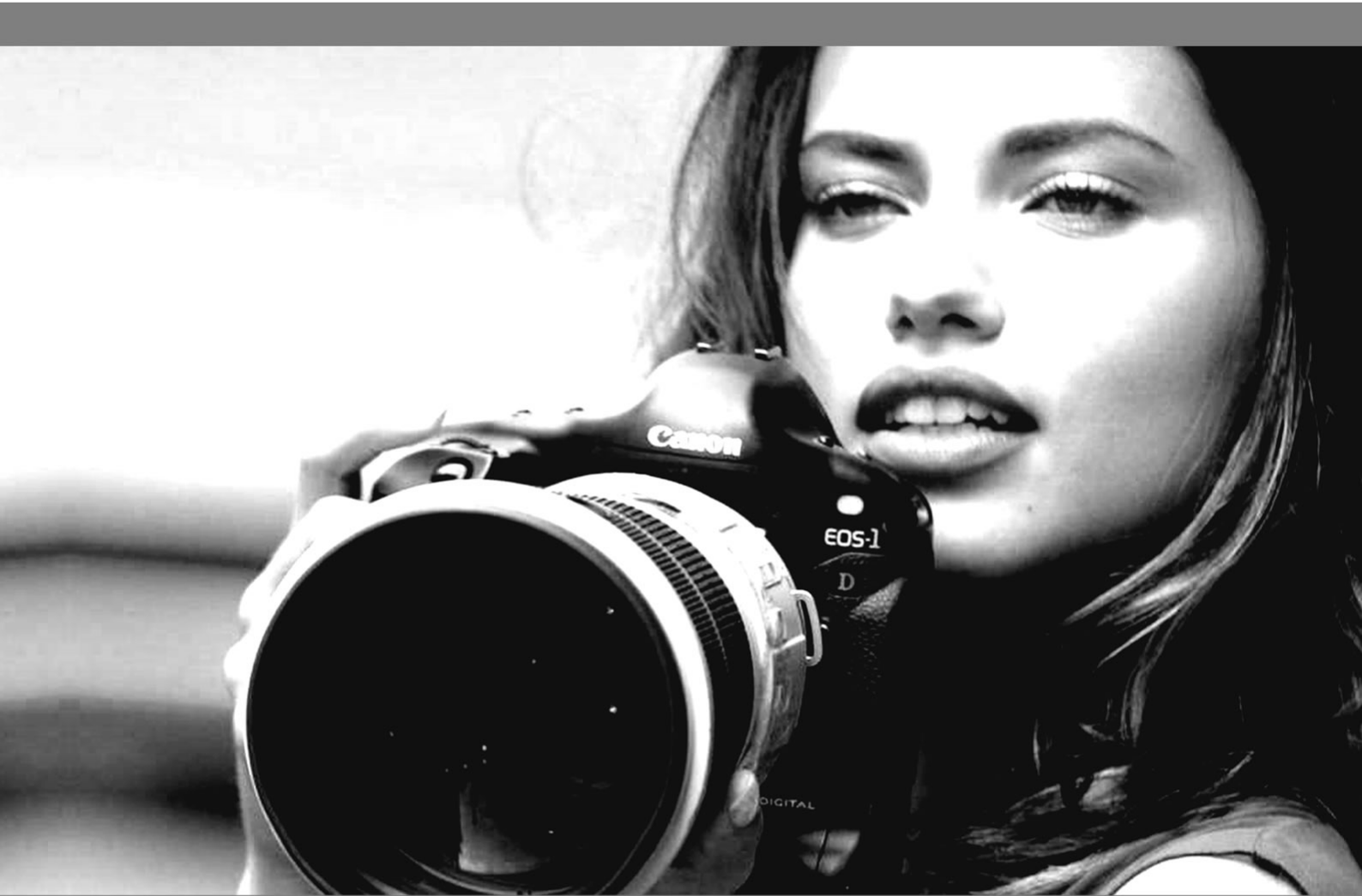# *Digicam*Cash

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Types of image files - All you need to know about the different types of image files.

File formats	File size	Viewed by	Other
BMP	big; no compression	MS Paint or other	accepts clipboard copied image
JPG	for internet and archiving	web browser or other	makes small files of photos
GIF	good for internet, tables, etc.	web browser or other	for images with few shades
WMF	good for clip art CDs	choose a viewer	previewing clip art is a challenge

Functions often provided by a typical image viewer/converter

Allows the user to alter the format used for an image. Most viewers will provide for modifying images.

Modifications can include

Cropping – enclosing the image within a smaller rectangular size by removing margin content.Re-scaling – altering the scale factor of the image (i.e., stretching or shrinking)

Modifying the quality – brightness, contrast, gamma factor, color balance, altering image content.

In addition, it may provide features for convenient printing.

Some image application programs that can do image modification and/or format conversion

MS Paint, Visua, Irfan View, Adobe Photo Deluxe and Paint Shop Pro will be mentioned here. This group has been cited because they are often found among the software available to users.

MS Paint is installed with Windows. It can be used for cropping and re-sizing, among others. Irfan View is a free download. Visua can be obtained from private archives and is mainly an easy-to-operate viewer and format converter, which can be used to crop and re-size.

Irfan View is full-featured viewer/modifier/converter. Adobe Photo Deluxe is often bundled with purchased peripherals like printer, scanner, or camera. It is a full-featured

viewer/modifier/converter. More complete image application programs like Adobe PhotoShop LE have occasionally been sent as free software with the purchase of a peripheral. JASC's Paint Shop Pro has many uses, and is suitable for colorizing and some types of retouching. It also is an image format converter, with the standard supported file types. It has a collection of tools that allow a user to make many types of midifications to an image. In the Colors|Adjust tool, there are six menu choices that provide dialog screens for making modifications. Among them are a gamma tool adjustment where the gamma values selected for red, green , and blue may be selected independently or together.

Altering the image content (in addition to the modifying steps shown above) can include:
Smoothing edges, reducing granularity, reducing moiré patterns, adding special effects, balancing brightness from one region of the image to another, retouching, rotating the image by multiples of 90 degrees, rotating the image by a selected amount, and flipping an image horzontally or vertically.

Printing features may include:
Print preview, an image scaling and positioning feature, rotating the image by 90 degrees, presence or absence of header, footer, pre-set margins, etc.

Viewing features may include:
Manual or automatic stepping through a collection of files, viewing a cluster of files as thumbnails, reproducing sound files along with images

Applications to add displayability to images include:
Adding captions and/or legends, adding automatic presentation features to an image collection

Displaying animated images:
Animated GIFs are a stepped sequence of GIF images which simulate motion. Animated GIFs won't work in all viewing software. They are commonly used on web pages, as they will display properly in web browsing viewers.

Images that are produced in scanner formats or in image converter formats:
When working with images in scanner software or in image converter software, it is useful to remember that these are temporary image files with formats which:

- Can modify the appearance of the image file that was imported.

- Can be used to make a print of the modified image.

- Usually won't be useful in this current format to share – but will allow you to see what you have.

- Must be saved or exported to a folder elsewhere on a drive which has a folder assigned to accept it, if you wish to share it or archive it.

- Don't alter the source image – that is, not unless you save or export the file and assign the same file name and place it in the folder from which it came

Although such scanned temporary files may be retained by some scanner software, they will only serve as your own archived images for later retrieval, and then generally for short retention periods

A discussion of image resolution

Resolution is a term that expresses how well the graphic presentation shows the spatial details in a picture. It is a measure of the fineness of the picture elements.

Digital images consist of a large number of picture elements (pixels) in rows and columns, each with a defined color. A pixel is one of many cells that form a picture. An image may extend X pixels from left to right and Y pixels from top to bottom, and contain X times Y pixels. A user has some latitude in how many pixels are used to display a certain picture. For example, the monitor has a few settings for selecting the full screen presentation. The most commonly used resolution setting is 800 X 600 pixels. If every pixel is actually seen (including the corners of the image), there will be 480,000 of them.

Modern digital cameras have frame sizes of 2 megapixels or 4 megapixels, so the need to re-size and crop these images becomes important. If a full-frame image is received as an attachment, the recipient may see only the upper-left corner of the image unless they do some scrolling. Then they may like to make the picture small enough so that it is more readily viewable without scrolling. Re-sizing and cropping are topics discussed later.

Most viewing software applications (and printers) display the typical image formats BMP, JPG, and GIF at 96 pixels per lineal inch. If a user wishes to stretch a given image file for presentation or for printing, they will get no better resolution by zooming in to make the image bigger.

If an image file is modified by stretching or shrinking the overall dimensions, the software must find a means for making the picture information accommodate a newly formed matrix of pixel sizes or pixel count. If the pixel count changes, the picture must retain its basic character, yet the color assignments of the new set of pixels is not the same as the original picture. The software must have algorithms that account for these requirements. The ability of software to accommodate these zoom requirements varies from one software package to another.

A test of the quality of image-modifying software is to note if there is significant degradation of an image if it undergoes a series of changes.

One of the more noticeable degradations due to zooming will appear in the quality of the text. A particular font type and size will have specific pixel cells blackened. If you depart from the resolution in which the text was acquired, some software will have a tough time keeping the boundaries between black and white organized so the stroke width and precise shape of the text characters are maintained or simulated..

A zoom-type feature may be used in the MS Paint application by commanding Image|Stretch/Skew. When the Stretch and Skew dialog box appears, you will note that there are small highlighted windows opposite the words Horizontal and Vertical in the upper (Stretch) panel which each say 100%. To shrink the picture to half of the original image dimensions, you do so in two steps. First, click (dropping a cursor) in the "Horizontal" (small) window, and replace the 100% with 50 %, and click on Okay. Then do the same for the 100% value in the "Vertical (small) window, and click on Okay.

Scanner software generally has choices of scan resolution, as well as black and white vs. color, and a further determination of gray scale or simply black OR white coding when choosing black and white. The latter distinction is important when choosing whether you need two levels (one bit) of gray (either black OR white) or many levels (gray scale), which affords a more accurate rendition of the source material.

Most often, you will find that the scanner software offers about five default settings for making these selections, and the means for making custom settings which depart from the default values.

A large picture will produce a large image file, and settings that provide more picture details will make that file even bigger. The temporary image format used in scanner software and in image conversion software has no compression (i.e., all picture information is defined within each presented pixel). Thus, the user should note that it takes time for a slow computer to compile all the necessary data to form and to reformat this image if an unusually large, detailed image is being used. In fact, users should be aware that limitations of computer processing speed may not be apparent until you use large media files like a large color photos with high resolution.

A user should be judicious in the choice of the scanner settings to make an image file having suitable spatial resolution and color resolution (the fineness of allowed step changes in the color palette) so that the selected resources are appropriate for the end result.

Another image format is available that provides for more than 96 dpi resolution. Although the scanner software can accommodate resolutions that exceed 300 dpi, the user may wish to transfer that file to another computer which doesn't have the same scanner software. The format most often used for this purpose is TIF or TIFF. The TIF format provides for resolutions of 300 dpi, or other values which may be set when encoding the file. Also, it will encode either as uncompressed or compressed (JPG and LZW are compression options).

The software application needed for creating a TIF file is (Kodak) Imaging, which is automatically installed with modern versions of Windows. Like MS Paint, Imaging will accept images from a clipboard, but you must define the spatial resolution and the color depth unless you are willing to accept the default settings. Imaging can be used for pictures of higher resolution than MS Paint, as it supports spatial resolutions greater than 96 dpi.

A user can copy or export scanned high-resolution images to JPG , GIF, or BMP formats, but the picture dimensions will increase to match the defined 96 dpi for these formats. If images are exported into TIFF format in Imaging with a resolution that matches that of the image exported from the scanner software, the dimensions won't change.

The JPG and GIF formats have become standards for use on the internet, as they are able to reduce file sizes while preserving picture details. This is accomplished with the use of sophisticated algorithms that make choices about the picture elements (pixels) whose color definition don't change from the one which precedes it in the defined sequence of forming the pixels into the file. In this sense, the algorithm "votes out" the data associated with certain pixels if there is no change from its preceding neighbor. In the viewer software, its algorithm has the ability to reformulate the original image in the absence of the data for those pixels whose color data was voted out. Also, web

browsers will present files in JPG and GIF formats, while many web browsers may not present some of the other formats.

JPG file creation depends on a "quality" selection, often made by the user, in which the user makes a trade-off between the requirements for retaining image quality, and the resultant file size. Thus, a user can make a file with less than 100% quality retention if a smaller file size is desired. A JPG file is most often selected if the picture contains subtle shadings of color, and a small file size is desired. A JPG quality factor of 70% is often acceptable, as it represents a good trade-off between picture quality and file size. A GIF file is often chosen for tables, figures, cartoons, clip art, etc., where few shades of color are present. Choosing the GIF format for this kind of picture often results in a smaller file than a JPG file would provide.

GIF is often used for the collection of small image insets which are placed on a web page. If a GIF file of appreciable dimension is shown in the top half of a web home page (so a visitor will see the image form on their screen), the visitor may notice that this image forms in a way which may seem distracting, since the picture elements form in cells much bigger than a single pixel, and these cells become progressively smaller as the fully resolved image takes form. This effect usually is not noted in GIF files of small dimension.

Screen image capture

You may find it convenient to capture the image content that is presented on your monitor screen. It is an easy matter to "Copy" this image data on the virtual "clipboard" which is provided by Windows. To copy this data to the clipboard, simply press Alt + Pnrt Scrn (both keys at the same time). This will place data on the clipboard just as the Copy feature does with highlighted data in text transfer applications. The next step is to find a place to "Paste" this image data. This is often done by opening MS Paint and commanding Edit|Paste, at which point the image appears in the Paint application screen. Then you can perform some steps on the image like cropping and saving the image. Note that a few other image programs like Irfan View will also accept importing the image by the use of the "Paste" command.

One of the unique features about MS Paint is it's ability to accept a word file that is on the clipboard. Thus, a user can "Copy" all or part of a page from MS Word (which may contain images) and "Paste" it directly into MS Paint. This information may be helpful for those who would find it difficult to capture as much height from the document page as would otherwise be available by doing a screen capture. This will be described in more detail below.

A user should be advised that if they want to preserve image quality, they should prefer using screen capture over Copying from the Word application. In order to screen capture of the entire height of the layout on a given page in the "Portrait" orientation, they may have to use a "zoom" feature of their screen presentation. The "zoom" feature mentioned here is that of using the "Desktop"|"Properties" to reset the screen resolution up to 1280 X1024 pixels. This will usually provide enough height for the screen to show all the text (about 10 inches), when "View"|"Full Screen" presentation is used. This is desribed in more detail below. Full Screen is a feature that remove the display of most of the toolbars at top and/bottom that wouold otherwise limit sowing the entire layout height on the screen. Also note that the zoom feature of Word should be set for

100% if you want the image to be normal size. When you obtain image data by means of a screen capture it can be pasted into Irfan View as well as MS Word. Generally, a user will want to crop away extraneous border elements obtained from a screen view capture.

Note also that MS Word has an exceptionally good Zoom capability that tends NOT to compromise the presentation of text or images as you depart from the original size.

When using the "Copy" feature in MS Word, there will be no need to crop away margins, as the "Copy" feature does that automatically. The user whould also be aware that the "Normal.dot" template in MS Word must be set at least as large as demanded by the page layout – if not, some of the layout will be truncated.

Also, note the following: a greater amount of effective screen area for doing a screen capture is provided by re-setting the screen display for a larger number of pixels. This is done by going to the desktop, right-clicking on the background, clicking on the Properties on the drop-down menu, clicking on Settings tab on the pop-up screen, and moving the slider in the Screen area panel to the right. When the desired pixel setting is obtained, click on Okay on the Settings screen, then on Okay in the Display Properties dialog box, then click on Yes in the Monitor setting dialog box. By doing this, the screen displays more copy, and more data is contained on the clipboard after doing a screen capture, with little loss of image detail. And you should be aware of the zoom setting of the file displayed on the screen prior to the screen capture. In some cases, the zoom value will default to a value less than 100%, as Word has some features for ensuring that the width of displayed text will fit within the width of the displayable area of the screen.

Some observations on the rectangular boundary around an image in MS Paint. The size of the active screen prior to pasting image data is defined by a white rectangle. It is preferable that this be smaller than the area of the image to be pasted, as this area will expand to accommodate the size required when you say it's okay to paste it into Paint even if the area is too small. Next, it is best to remove the defaulted dashed line that initially surrounds the pasted image. This can be done by commanding SaveAs, and you can defer naming the file if you choose. If the dashed lines aren't removed, your image dimensions will become proportioanlly smaller when you pull in the picture edges while cropping the picture. Also, if you want to move out the image boundary, allowing a non-cropped white margin, you can do that by dragging the little black dot outward.

A simpler method for placing a page of formatted text from an MS Word application is available. The layout content will be placed on the clipboard by highlighting the material, then Copying it to place it on the clipboard. Note that up to one page of MS Word layout can be captured, but it must fall within the boundary of the "template" defined in Normal.dot, a template file which resides in C:\Windows\Application Data\Microsoft\Templates. This is the file that retains information on the margin settings each time MS Word is opened and is ready to accept the creation of a new document. The default margins can most easily be reset in the Page Setup|Margins dialog box in Word by clicking on the Default button and then clicking on Yes when the new margin settings have been established.

To crop the image, you must first remove the dashed lines along the edge of the image. This can be done by commanding a Save As, at which point you can pick a folder and a file name for the image to

be saved in. To crop, you must find the small black dots along middle of the lower and right sides of the image. By placing the mouse pointer on top of one of these dots until you see a double-headed arrow, then you can drag in the edge of the picture until the desired margin is established. To crop the other two sides, command an Image|Flip/Rotate|Rotate by angle|180 degrees, which will invert the image. Then you do the same steps to pull in the edges of the image which are now the lower and right edges. When satisfied, invert the image again by doing Image|Flip/Rotate|Rotate by angle|180 degrees, and command a Save on the modified image.

You may note that when the mouse pointer is within the boundary of the image, two coordinate numbers appear near the lower right corner of the image boundary. These numbers correspond to the X and Y coordinates at that point, measured in pixels from the upper left corner of the image. The upper left pixel has the coordinates 0,0. If you are bringing in the right or the lower boundary by dragging on the tiny black dot at the mid-point of these boundaries, the coordinate of that boundary will represent the number of lineal pixels retained in that temporary image. Thus if you want to crop an image to a precise size, MS Paint provides the tools to do so.

Notes on cropping

Means for cropping will be described for MS Paint, and later, for Irfan View, and for Adobe image applications. To import a JPG file into MSPaint, click on "Edit" in the menu bar, then on "Paste from" in the drop-down menu. In the "Paste From" dialog box, select JPG for the data in the slot beside "Files of type." Then browse for the desired file by placing the folder containing the file in the "Look in" slot. Find the file name, highlight it and it will appear in the "File name" slot. Then click on the OK button.

You will be able to crop only the right and bottom edges of thte image in MS Paint, but you can invert the image to crop the other two edges. Scroll the image in MS Paint so that the lower right corner of the imag is in the lower fight corner of the Paint screen. The look for the small black dots at the mid-point of either edge and drag it inward to perform a temporary cropping step. If it has brought in a proper amount, drag in the other black dot to perform another temporary cropping step.

Then invert the image by clicking on "Image" in the menu bar, then on "Flip/Rotate" in the drop-down menu. In the "Flip and Rotate" dialog box, select "Rotate by angle" in the radio box, and on 180o in the nest radio button , and click the OK button. With the image inverted, do the cropping steps as shown above. Note that while you are dragging in the black dots, you will find some numbers in the lower right corner of the Paint screen that will show you the image dimensions in pixels. You may have a target size in mind like 800 X 600, and MS Paint will let you achieve that size.

After cropping along these two sides, invert the image by doing the lfip and rotate process described above. Then make sure you do a "Save As" on the upright and cropped image. Fhis means you must give the file a name and a choose a folder in which to place it. The file will have a BMP file extension

Then you may want to convert the cropped image to a JPG format. When doing this, you may find that the image will appear dark and "washed out." One way to correct for this is to increase the brightness and the contrast of the image before converting it back to the JPG image format. In Adobe

programs and in Irfan View, increase the brightness by about 12 points and the contrast by about 15 points.

To crop in Irfan View, take the mouse pointer and drag a rectangle around the desired portion of the image and when satisfied that is a suitable crop, click on "Edit," then on "Crop." Remember that the image you are seeing is a temporary one and if you want to save it, you must take the steps to do so.

Cropping in Adobe programs follows a pattern of commands which are similar to one another, but the specifics may depend on the program and the version. You must file a selection called "Trim & Size." In recent versions, you may start with "Get & Fix photo," then to "Rotate & Size," which should show "Trim & Size" in a drop-down menu. Click on Trim & size, and you will see a display with a heading of "Trim" and a set of three tabs, with the left tab highlighted which says "Start here." Click on the next tab which says "Trim." This will drop down a set of three icons which have captions saying "Trim," "OK," and "Cancel." In the Trim icon, note that there is a dashed line that represents a cropping operation. Click within that dashed line. Then go to the image that appears in the Adobe screen an place the mouse cursor on the image. You will notice that the cursor is now a double crosshair pattern. This can be used to drag a rectangular frame around the image that you want to keep. You can make adjustments to the position of this frame by dragging on the black squares at any corner or any edge of the frame. When you are satisfied with the frame size and position, click on OK, and the temporary image will be cropped. The image must them be saved.

Comments on performing a screen capture of a PDF file

These comments will address a special case of a file viewer that treats "zoom" values in a different manner than most viewers. If you "Copy" a screen view of a PDF file presented by Adobe's Acrobat Reader, it is not likely to show up in another viewer with an image size that you expect. Some background on this comment follows.

The Acrobat Reader has an indicator of "zoom" value which affects the image size presented on the screen. A user should also be aware that image file data may not be extractable from a PDF file by any simple means other than by a screen capture. Text data can be extracted by using the Text tool to enable the pointer to highlight the (entire span of horizontal) text lines of interest.

Regarding the zoom value selected in Acrobat Reader, note that most users have already underatken a 75% zoom of presentation on their screen by the choice of 800 X 600 pixels on their monitor, rather than 640 X 480, the default value. The implication of this is that most users will have to make a zoom setting of 133% in their Acrobat Reader for the material to show at full size, and to Copy at full size when doing a screen capture.

So, you ask, isn't this a simple matter – and the answer is no. The normal way of setting a zoom value is to click on the View tool of the application and click on a menu value of zoom or to enter a custom number for a zoom value if the menu doesn't offer the value you want. Well, that's not the way it works in Acrobat Reader.

However, there are other features that can be used to obtain the desired custom zoom number. To achieve a zoom value of 133% takes a few steps that seem prohibitively difficult, but it can be done. A user may be better served by realizing that if their objective is to capture the detail of an

image available in a PDF file, they may wish to do a screen capture at an Acrobat Reader zoom value near 133%, and then perform a re-sizing step in an image modifying program.

If the desired image nearly fills an 8 ½ X 11 sheet of paper, you may find it advantageous to temporarily re-set your monitor zoom to a value as high as 1280 X 1024, so you acquire as many pixels as needed to give a good rendition of the picture.

Further details on how to proceed with the requisite steps to Copy an image from a screen capture of a PDF in Acrobat Reader when the page is displayed at 133% zoom are beyond the scope of this discussion. Let us just say that it imvolves temporary re-sizing of the monitor pixel setting, selecting the Navigation Pane in Acrobat Reader, selecting the Fit Width display of the page, and dragging the partition between the Navigation Pane and the displayed page to the right until a selected zoom size of 150% becomes 133%

Previewing a collection of images in a folder by using temporary thumbnail images

You may wish to look at a collection of image files in a given folder to find what you are looking for. This can be a slow process if you open each file at full size and do the required point and click steps to display each image. Examples of large groups of image files may be archived photos from personal sources, or a collection of clip art images (often there are hundreds to thousands of images in a single folder).

There are some application programs that make this burden lighter by providing a group of temporary thumbnail images, some of which may be viewed on the screen as an array of displayed pictures. The process of moving forward or backward to the adjoining group is done by scrolling. The images are sequenced in alphanumeric order by image name.

Three applications known to have this capability are JASC Media Center Plus, ACDSee, and Irfan View. Media Center displays most of 24 thumbnail images at one time and Irfan View most of five thumbnail images at one time.

Here is a review found at CNET by Ken Feinstein:

A messy photo collection can cripple a fledgling photographer more quickly than bad lighting. Overwhelmed by more digital photos than you can handle? Consider whipping your collection into shape with ACDSee 4.0, a digital photo management tool that lets you view, organize, print, and share those amazing shots over the Internet. ACDSee is a great buy for digicam enthusiasts who don't plan to upgrade to Windows XP. However, if you spring for XP, don't spend $49.95 on this tool; you'll find most of ACDSee's features already tucked within Microsoft's new OS. Like PhotoPrint, ACDSee offers extensive tools for sharing photos on the Internet, but it really shines at helping prolific shooters organize their images.

Irfan View has a feature that lets you step quickly from one image file to the next at full image size by clicking on either of two arrows on the toolbar. Simply clicking on either mouse button will advance or retard the view to the next frame in alphabetic order within that folder, depending on whether you click on the left or the right button. When you do this, you will see the file name presented on

the screen along with the image. This feature makes Irfan View a photo album viewer that can flip photos manually..

In addition, it serves as a multimedia player that can be operated in a few different modes, each of which are easy to set up. Irfan View automatically step through all the slides in a folder. To return to normal frame viewing, strike the ESC key.

It also has a slideshow feature that allows you to select the images to be shown from files on your hard drive. It creates a text file of the full path and file name, which can be played from the slideshow player.

A caveat on thumbnail presentations

A user should be aware that when using either of these applications for previewing a very large group of files in one folder, Windows, together with the the application program, will have the shortcoming of not having enough memory to accommodate the formation of each of the temporary image files as thumbnails. Thus, you may have gaps in the collection that will be displayed as thumbnails. If a user does much work with the selection of image files from folders containing large numbers of clip art images, it may behoove them to use file management techniques to organize files into folders of about 400 or fewer.

Another thing a user can anticipate is that if you place a large number of image files in temporary image form, like when previewing as thumbnail images, the application program may retain so much data in shared memory that the reserve capacity of system resources drop to a very low level. If this occurs, you may note unusual and sluggish behavior of your computer, like being unable to connect to your ISP. This situation can be corrected by re-booting your computer.

Visua and imagoWeb features

Visua and imagoWeb are speedy programs for viewing and converting your graphics files. The program supports a multitude of file formats, including JPEG, GIF, BMP, DIB, RLE, AVI, and WMF. Features include a TWAIN interface for linking to the scanning software, a thumbnail image viewer for previewing all the images in a given directory, print-preview capabilities, and more. New features include a wizard slide show, wizard batch-conversion, and HTML file creation capabilities that let you display images as thumbnails with links to the full size images. This software is in Italian and English.

Viewing images at full size in web browser

A feature is available in web browsers to resize the image that it presents to you in the screen. You can view the 2 megapixel digital camera images at a convenient size on the screen if this feature is enabled. This feature can be enabled or disabled. The default setting is for it to be enabled.

A user should be aware of this feature and should know if it is enabled or disabled. If a user plans to view and print images in an application other than the web browser, they may want to make sure that this feature is disabled, so they will see the image at full size and realize that this is the size it will appear in other viewers and the size that will be sent to the printer. Then they can determine the extent of re-sizing and cropping that is necessary for their purposes.

The setting for making this change is in the Internet Options dialog box on the page that opens with the Advanced tab, and in the Multimedia group, which is far down on this page. The small box beside "Enable Automatic Image Resizing" will have a check mark in it if this feature is enabled.

The Internet Options page can be found in Control Panel. It can also be found while in the internet browser by clicking on Tools in the toolbar. A drop-down menu will show Internet Options.

A user should also be aware that when you print from a web browser, you will print header and footer data and your margins will be determined by the margin settings of your browser. It can be cumbersome to alter these settings. They features are convenient for capturing information about where web data was gathered. They also affect how email messages are printed.

Viewers with a "Zoom " capability

You may find that there are benefits when using a viewer that has a zoom viewing ability. These viewers include Irfan View, ACDSee, and PhotoImpact by Ulead. This feature may be used to zoom out by a value that will provide a display of a large photo on your screen such that you don't have to scroll to see major parts of the photo.

Shutter speeds - Learn what shutter speeds are and how you can improve your photos using different speeds.

Shutter speed is perhaps the most creative adjustment available to the digital photographer. It allows us to freeze action or use motion blur to create a variety of effects, and is expressed in seconds or fractions of seconds depending on the length of exposure.

A *high shutter speed* (1/1000 of a second or higher) can freeze even very fast moving objects dead in their tracks. However, you will need to keep a couple of things in mind:

1.) You are going to need a brightly lit subject as shutter speeds this high don't allow your camera much time to gather light for exposure. You can get around this to a degree by using a higher ISO setting, but don't go to high, or noise will creep into your shot.

2.) If possible, set up your shot by having your camera focused on the spot where your subject is going to pass by. This will allow you to concentrate on timing your subject's approach, giving you a better chance to trip the shutter at just the right moment.

Medium shutter speeds (1/20 of a second to 1/80 of a second) can be used to create motion blur when photographing moving objects. This gives the photo a sense of life and motion. Here are several ways you can approach this type of motion blur:

1.) With your camera stationary, trip the shutter as a moving subject passes by. This will make the subject look blurred, while keeping the rest of the shot clear—giving your subject a look of speed and a sense that it is moving out of the shot.

2.) Follow your subject through the viewfinder in a smooth sweeping motion as it approaches, and trip the shutter as your subject goes by—this is called "panning." This method will keep your subject relatively clear, but will blur the background, giving an overall sense of speed and movement. The timing for this type of shot takes a little practice, but the results make it well worthwhile.

3.) When shooting a stationary subject, purposely move your camera in a sweeping or circular motion to create a blur of colours and lines. This one is a lot of fun and can provide some interesting abstract results.

Low shutter speeds (1/8 of a second up to 30 seconds and beyond) can be used to create a variety of effects—here are just a few:

Note: For most of these long exposures a tripod or some other means of keeping the camera perfectly still is necessary to avoid creating unintended blur.

1.) Moving water will look smooth and silky when shot at shutter speeds of 1/8 of a second or more—the longer the exposure the more pronounced the effect.

2.) When photographed at shutter speeds of 2 seconds or greater, car lights will turn into long colourful trails—the longer the exposure, the longer the trails.

3.) When very long exposures are used (15 seconds plus) city lights will often take on a stretched, star-like appearance.

4.) Photographing city lights at shutter speeds of 1/15 of a second, or so, either from a moving vehicle, or while walking, can produce interesting and colourful abstracts (no tripod needed.)

Most digital cameras have a shutter speed priority setting, which allows you to control the shutter speed—try it—it can open up a whole new world, and its loads of fun to boot.

DigicamCash™

Silhouettes - Don't be afraid of shooting into the light.
Learn how to take unique photos with silhouettes.

"Never shoot towards the light." We've probably all heard this old photography "rule," but, for now, let's treat it more as a general guideline. If you want to shoot some photos that really pop, that really jump out and grab you—shoot towards the light.

Silhouettes are photos where your subject is dark against a bright background. We have probably all taken shots like this by mistake—when taking a picture of a friend or relative who was standing in front of a window, or standing with the sun behind them, etc. But photos like this give us a dark subject with a bright, washed out background—not exactly what we were hoping for. This happens because the digital sensor in our camera cannot accurately capture scenes with such high contrast. However, this "weakness" can be turned to our advantage.
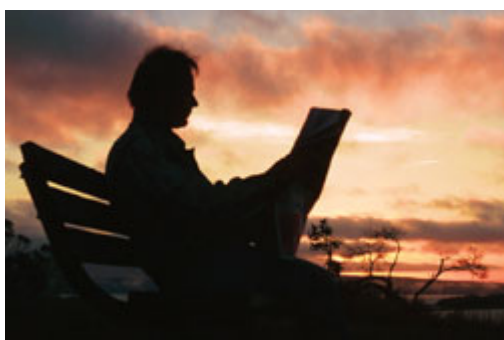
When silhouettes are created on purpose, they can be among the most striking and engaging of shots:

1.) Using a sunrise or sunset as the backdrop for your subject can give stunning results—your subject becomes a bold black figure against a canvas of bright and vivid colour.

2.) When you use a bright and cloud filled sky as your background, your subject often doesn't come out pure black, but comes across as dark and moody against a brooding sky. So lets take a look at how you can use your digital camera to create silhouette shots with impact.

Here a few tips for making better silhouette shots:
You will need to get familiar with your camera's exposure compensation feature to get the most out of your silhouette shots—your camera manual should contain simple instructions on how to use this feature.

Most digital cameras have an exposure compensation range of −2 to +2 that is adjustable by increments of 1/3—don't be afraid to try them all.

Use "+" exposure compensation to make your shots brighter and "-" exposure compensation to make them darker.

When shooting these high contrast shots, your camera's default exposure settings may not give the results that your are looking for—so, shoot, then review, shoot, then review.

Don't completely rely on your camera's view screen either. Taking several shots at different exposure settings will give you the best chance of getting the shot you really want—photos often look very different when viewed at home on your computer screen.

Happy shooting, and remember, don't be afraid to shoot towards the light.

Depth of field - Learn how to alter how much of your pictures are in focus.

Depth of field (DOF) is probably a term you have heard used in photography often enough, but what does it really mean, and how can you use it to make your digital pictures better?

The term depth of field refers to how much of your picture is in sharp focus. For example, in portrait shots you will notice that the background is often blurred and soft looking, while the subject is clear and sharp. Pictures like this have a shallow depth of field.

You have probably also noticed that in landscape shots everything in the picture is often sharp and clear, all the way from the dead tree in the foreground to the mountains off in the distance. Pictures like this have a deep depth of field.

There are two main factors that affect depth of field:

1.) The aperture (or F stop) setting—this refers to how wide the shutter opens.

2.) The focal length of the lens—this refers to how much the lens "zooms in" your subject.

First we'll take a look at the aperture settings. Most digital cameras have an aperture range of about F2.8 to F8, and this range usually compresses to about F4.5 to F8 when using full zoom. These aperture ranges vary somewhat from camera to camera, but we will use F2.8 to F8, with a full zoom aperture range of F4.5 to F8, as our example.

At the lowest setting (F2.8), the object you focus on will be sharp, but objects in the background will appear softer and out of focus. At the highest setting (F8), everything from the foreground of your picture to the objects off in the distance will appear sharp and in focus.

Now the focal length—we'll use a digital camera with a 4 times zoom (35mm to 140mm focal length) as our example. At the 35mm end of your zoom range (no zoom), pretty much everything in your pictures will appear in focus. However, at the 140mm end of your zoom range (full zoom), only the object you focus on will appear sharp.

So how does all this translate into making better pictures with your digital camera? Well, it's like this:

Set your camera to "aperture priority". Your camera's manual will have simple directions on how to do this (it's quite often just a matter of turning the dial on top). Once you have your camera on "aperture priority", you will be able to select the aperture setting that you want, and the camera automatically chooses the correct shutter speed.

If you want to take a picture where only your subject is in focus (like a portrait for example), first, zoom in rather than get close, and second, choose an aperture setting with the lowest number possible, in this case F4.5.

If you want to take a picture where the whole scene is in focus (like a landscape for example), first, zoom in very little or not at all, and second, choose an aperture setting at or near the highest number possible, in this case F8.

So, don't be shy, take your camera off of "auto" and try the "aperture priority" setting—you'll be glad you did.

Exposure bracketing - Use the exposure bracketing method to improve your pictures.

A great way to practice getting perfect exposure is to try a method called exposure bracketing. I was taught this by Sally Brown, a photojournalist. It's a good technique for ensuring correct exposure.

Exposure bracketing or "bracketing" can be explained as the photographer taking numerous photos of the same thing using a variety of different camera settings. Bracketing is great when you are struggling to get a shot with exposure you like and that suits the image generally and helps ensure correct exposure of a photo when lighting in a scene is difficult.

So how do you do this Exposure Bracketing method? It is simply done by taking at least three extra photos of the same scene. One will be under-exposed, the second will be almost right and the third

will be over-exposed of the same scene. By taking three slightly different exposed shots of the same scene this will enable you to choose the "best" exposed scene out of the three.

This can be done in two ways.

1) The first way would be to take the photo, and then manually take photos of the same scene after adjusting the EV settings up and down by the same EV amount.

2) The other way is to use the setting on your camera "AEB", which simply means Auto Exposure Bracketing. This means the camera will automatically take three photos of the same scene with one under-exposed and another over–exposed. The camera will generally default to + 1/3 EV exposure setting for the extra photos.

Let's take for example this picture of this young woman.

Of course by using the manual method will take longer to take the scene but this also allows you to take more than one of the extra under or over-exposed shots. So you could take more shots "either" side of the exposed scene till you get the "perfect exposed" shot you desire.

If you only have an EV adjustment on your camera, rather than individual shutter speed and F stop adjustment then you need to compensate for light. The tricky thing with manually adjusting your EV is that you may know that you need more or less light, but you may not be sure how much to make the adjustment by. In this case you can still apply the exposure bracketing method. Take a few shots of the same scene, each with a slightly different EV.

Some digital cameras let you set the bracketing step and number of shots. The camera will take pictures of the number of shots that you specify. It will compensate the exposure by the specified EV steps.

Many digital cameras have an auto exposure bracketing function. You might see this on your camera as AEB. This means that if you select this before you take the shot, the camera automatically sets to

taking three photos. It will take one that is "perfectly exposed" a second which is over exposed and a third which is underexposed. The level of exposure is at about -1/3EV and +1/3EV. You might also find you can change the exposure that it automatically does this on. Try going to your cameras setup mode and see if you can change it.

You can use exposure bracketing whenever you like. I recommend to use it often if you haven't done it before to get the full handle of this great technique. A good place to start is a sunset.

I.S.O - Using high and low I.S.O settings.

What does ISO stand for, you ask? ISO stands for International Standards Organization, which refers to the group that set the standards for film speed. Luckily, this doesn't have anything to do with what you need to know about ISO.
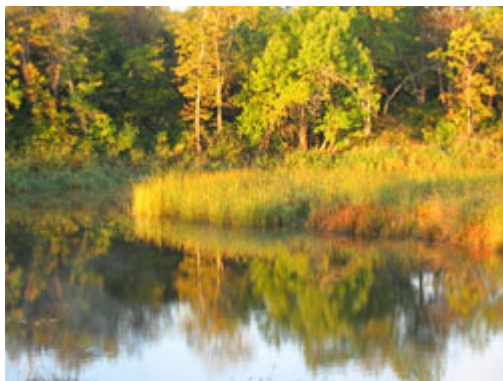
ISO, as it relates to digital photography, is an indicator of how sensitive to light your camera's sensor is, and most digital cameras allow you to adjust this sensitivity. The majority of low to mid-range digital cameras have an ISO range that goes from somewhere in the neighborhood of 50 or 100 up to around 400 to 800. The lower the ISO number, the more light that is necessary to get proper exposure on a given shot.

So why not crank the ISO setting all the way up to the max and be done with it? Although this would allow you to get good exposure even in low light situations, there is a catch. The higher you set the ISO, the more "noise" there will be, causing your pictures to come out grainy looking. FYI, the camera's "auto" setting doesn't always choose the lowest ISO possible.

These days a good number of digital cameras employ some form of noise reduction at higher ISO settings. Unfortunately digital noise reduction is accomplished by applying a slight amount of blur to the image, which not only blurs out some of the noise, but also blurs out some of the fine detail.

All things considered, the best way to approach ISO is to use the lowest possible setting, but don't over do it—using too low an ISO setting can result in blurry images caused by "camera shake".

Assuming that you are using a camera with an ISO range of 50 to 400, here are some rule of thumb examples:

When shooting outside on a sunny day, use the lowest setting (ISO 50.)

On a heavily overcast day, or when shooting in heavy shade, use the next higher setting (ISO 100.)

When shooting in the early morning or late evening, use the next higher setting (ISO 200.)

If shooting at dusk or dawn, you would need to use your highest setting (ISO 400.)

However, there is a way to avoid using your higher ISO settings, even in low light—its called a tripod. This three-legged wonder allows you to keep your camera perfectly steady, which eliminates the blurry images caused by camera shake.

Another option to keep your camera steady during low light shots is to set your camera on a stationary object (like a rock or the hood of your car) and use the self-timer. This feature allows a few seconds lag between the time you press the shutter button and when the camera takes the picture.

Remember, keeping those ISO settings as low as you can, will give you clearer, cleaner photos.

Scanning - Scanning techniques, tips and tricks.

A scanner provides a user with the means for making a digital image from a variety of viewable sources. Generally those sources are on paper and contain printed images or text or both. In most applications the viewed source will depend on reflected light providing an optical image for the scanning sensors to see. With the advent of very high-resolution scanning, some scanners can see the image as an optical view through a film (negative or positive film). Thus, a user can make digital images of their photo slides.

A few different end uses of the scanned images should be reviewed so a user may consider the scanner as a kind of "tool" that can assist them in doing a variety of things.

A typical use is for making digital images of pictures – whether these pictures are of photos printed on photo paper or those taken from magazines, newspapers or other print media sources. In a similar vein, the source "picture" may be a line drawing, cartoon, table, graph, fabric, etc. Generally, the end use of the digital image is to be archived, displayed, or shared as a viewable file, although it may get embedded into other software for purposes of making a more suitable presentation.

Another use for making digital images is to prepare a suitable file to send to your computer's printer.

Yet another use is to make a file of primarily printed text that can be converted into a file in which the text appears as a formatted text file. This process requires the use of Optical Character Recognition sofware. Varying degrees of detail in the layout of the scanned text file may be represented in the formatted text file, and some degree of maintaining the layout of a page of text and images, as well as the elements of a page consisting of a printed form is also a possibility with the right software and its judicious use. In most cases, some editing will be necessary, as the compiled image is not likely to be letter perfect, with everything properly positioned.

Many reasons are cited for making a word-compiled file from a printed page. The resultant file is likely to be much smaller, the file is often more "crisp" in its viewing qualities, it may be integrated with other compiled text prepared by the user, etc.

Before a scanned image is produced, the user should account for the type of useage being planned, so that proper settings can be made for the scanner to acquire the kind of image desired. There are about four major determinations to be made:

• Is the image to contain color or black-and-white?

• How much spatial resolution (dot per inch (dpi), or fineness of the scanning grid) is needed?

• How much color (or black-and-white) resolution is needed?

• Is the source a photo image obtained from print media which used a half-tone screen?

More advanced users may find that some other settings may enhance the scanned image.

Choices of scanner settings

In most cases, a scanning resolution of 100 dpi will be okay for scanning photos, unless you expect to use the digital image as an enlargement of the source photo.

For black-and-white images, a few settings of "color" resolution may be made, and the manner of specifying these settings vary among the companion scanner software. In some cases, descriptive terms of end-use of the image file will guide you, such as for filing, faxing, or copying, in which case this choice selects one bit per pixel (no shades of gray, only black and white). For getting photo-quality reproduction capability, you select photo, which provides for 8-bit grayscale resolution (this is the equivalent of 24-bit in color, which requires 8-bits of resolution for each of three colors). For converting to text, select OCR, which usually provides a default setting of one bit per pixel (i.e., black-and-white only), as well as a spatial resolution of 300 dpi. These parameters meet the requirements for OCR software. Most software will provide for custom settings which vary from the defaulted settings.

For color images, you get 24-bit color resolution, and you usually can select between "Normal" and "Best", or some similar choice. The default values here are often 100 dpi and 300 dpi, respectively. Recognize that the 300 dpi setting in color will require a lot of bites of data per square inch, and that the resulting image may be about three times larger in linear dimension than the source image. Also note that there will be nine times as many bites in a file of the same source photo when scanned with 300 dpi rather than 100 dpi. Again, custom values of dpi which vary from these default values may be chosen to obtain a result which meets your objective.

We can show that a color image that fills an 800 x 600 pixel screen often contains about 1.4 million bites. This assumes that the image file is not shrunk by a file-reduction process called compression, and that the image is presented at the normal size of 96 dpi. The temporary image developed in the scanner software meets these criteria, and the presented image will be 8.3 x 6.3 inches. If scanned from a source that would produce a color image of that size, the scanned file when using a setting of 300 dpi would be about 12.6 million bites.

Thus, one should use discretion in making high-resolution settings for their scanned images, as they may make a very large file that prints a picture that won't fit on a piece of printer paper or on a monitor screen unless it is modified by image modifying software. Further, more resources of file size and compiling time will be used that won't be beneficial to the end result.

Software associated with scanner image creation

Besides the scanner driver software required to be installed for the scanner to operate, some comments will be made about the software used when operating the scanner.

The "Twain" software provides the ablity to make the settings mentioned above, and (typically) to call for a low-resolution Preview of the scanned object. Then the user can select out ("crop", if you will) the areas outside of the area of interest (a custom setting of the positional and size requirements for the area chosen from the previewed image). In the case of Hewlett-Packard scanners, they may by-pass the preview, proceed directly to a high-resolution image, and then allow you to crop out the non-useful areas before exporting the image within the selected boundary.

Scanners also provide some additonal "Advanced" features such as "De-screen", which should be used when copying from a half-tone printed media image. And, it provides the Scan button for starting the scanning process.

A companion image viewer, image modifier, image exporter/converter software is used to acquire the image file from the Twain source, to present the scanned image for review, to make modifications to it, and to "Save As", or "Export" it to a folder as a file having a name and a file format extension of your choosing. In most cases, a scanned photo would be exported or saved in the JPG format. Initially, this software allows you to gain access to the Twain software to make the needed settings and the Preview of what's on the flat-bed glass screen prior to scanning the desired area seen in the Preview. Many of the image-modifying programs (e.g., Irfan View, Photo Deluxe, Paint shopm Pro, Visua, and Ulead Photo Express) as well as Optical Character Recognition programs provide the means to access the Twain software for purposes of acquiring the image and then refining it to obtain the desired result.

To get the most from the use of their Twain devices (scanner and camera), a user should take care to review the acquired images with a critical eye and determine if they want to make improvements to that image. If a scanned image could benefit by re-selecting settings on the scanner software and performing another scan, the user may choose to do so.

Suppliers of Twain devices bundle image modification software with their products. The user should be aware of the various kinds of improvements that can be made, and have familiarity with the image modifying software and the processing steps that they have at their disposal to achieve their objectives. In the case of a Visioneer scanner, a user does not need a separate image modifying program, as they have an integrated software package (PaperPort) to acquire the image from the Twain software. However, the image-modifying capabilty is limited, and a user should consider having a separate image modifier to improve upon the quality of a picture, and to crop and re-size the picture, if that is needed. The PaperPort software makes provision for exporting the image in a number of standard image formats. A user will ofter choose JPG and a quality setting around 70 for most scanned photos.

After having done this with an indivudual scanned image, the image file is redy to sent as an attachment, or may be archived on a hard drive or CD.

Many of the comments made about acquiring and modifying an image obtained from a scanner will apply to an image obtained from a digital camera.

The software functions described above may be separate items or may be combined into one, as has been done by the PaperPort software offered by Scansoft (often bundled with Visioneer scanners). The image modifier software acquires a (temporary) file of the scanned image from the Twain software. In the case of PaperPort software, individual images are retained unless the user deletes them, and a "thumbnail" of that image is a reminder of those images that it retains. A user should purge these files after the data from these images is exported to a file which can be used elsewhere. In a typical stand-alone image modifier, the acquired image is truly a temporary file which is not retained when the user closes that application. Because the image conversion/modification capabilities are integrated with the "Twain" software, PaperPort (bundled with Visioneer scanners) may be one of the easier software packages to use when scanning. There are some custom settings that determine whether a page of scanned text will appear as a single column after the Optical Character Recognition process, or whether it will place the text in the separate columns as they were on the original.

An Optical Character Recognition software package may be needed or chosen as an option. This may also be part of an integrated package, as in the PaperPort software.

Various separate OCR programs are available, including Text Bridge and Recognita, for example. Another type of specialty OCR program which also retains page layout details and captures a mix of text and images exists. A popular program of this type is ReadIRIS. Most OCR programs require that scanner text be 300 or 400 dots per inch, and be one-bit color (that is, balck-and-white). The process of commanding optical character recognition from within the OCR software is often referred to as "recognition." The result of this process is often a compiled text character file with an RTF (Rich Text File) file extension. Usually, there will be a few typos, and the text may need to be re-formatted to suit the user's desires.

In some cases, an OCR program will only function well if the image is taken directly from the scanner. In other cases, a 300 X 300 black-and-white image file may be opened in the OCR application, and be processed for OCR text compilation. The user must make sure that the image file is strictly black-and-white for the OCR application to accept it. One exception is ReadIRIS, which will accept an image file with 24-bit colors.

A few words on scanning from a newspaper
A few things should be noted about newprint that makes it a unique challenge for scanning. The paper is thin and some of the ink from the reverse side will be visible on the front side. To suppress this factor, a user should have a black sheet of paper available to place over the sheet that is laying on the glass bed of the scanner. This sets a more uniform black background over the entire area being scanned, and the ink pattern on the reverse side will be less noticeable in the scanned image. A good paper to use for this purpose can be found in some of the 3-ring transparent plastic

protectors which are made to hold punched paper sheets. A black paper of that weight from any source is convenient for this purpose.

Although text and cartoons are printed with no grey content, the scanner should be set for grey scale to get a good image.

Because the newsprint paper is far from being white, the image will often show prominent amounts of grey background that should be white. A user can compensate for much of this by increasing the brightness, prior to scanning and/or after the image has been moved to an image processor. Along with the increased brightness, the user should also increase the contrast, and perhaps the gamma – the amout of each to be determined by observing the image quality. If the newsprint is on a portion of the paper that has wrinkles or creases, it is very difficult to do much about seeing these effects in the image. You may get a far better result of you do the copying on a commercial copy machine. The media which is they use to capture the image is more capable of providing an image that doesn't show as many effects of the wrinkles and creases.

If a photo is present in the scanned area, you should select "de-screen" or its equivalent prior to scanning to suppress moiré effects.

Comments on the Moiré effect

When a color or grayscale image is printed in a newspaper or magazine, they make use of a "half-tone" screen technique. This permits the offset press to hold a block having the ability to transfer ink to the paper in a manner that permits light to heavy deposits of ink of the desired color. The surface of this block has a regular grid of dots that vary in size and in closeness that they can provide most of the desired variation in ink deposition. Thus, if you were to take a microscope and view the printed image, you would see the grid of dots.

When you do scanning, the scanner samples the "color" (saturation, intensity, and hue – including shades of gray) in a regular grid also. In many cases, the half-tone screen and the scanner will have a similar spacing of these grids. In this case, there is a real likelihood that you will see an interference (or Moiré) pattern in a resultant scanned image. The visual appearance is similar to that which is seen with sheer curtains that are gathered and have two or more overlapping layers through which to look.

It is important to learn the means for overcoming the Moiré effect so it will not have an adverse affect on the scanned file. Two primary means are available at the time of scanning, (1) setting the scanner's dots per inch to a value of 200 or higher, so the scanner grid is much finer that the half-tone grid, and (2) selecting de-screen in the scanner software, a feature that suppresses the Moiré effect. Other secondary means are available after an image is scanned, and they consist of using the various image software modifiers that can reduce the Moiré effect. Some users will have access to an Adobe software package that can make some slight improvement to reduce the Moiré effect, but the net improvement in the picture is usually not great, nor is the end result.

Additional scanner/scanning topics

At this point, the reader may want to have some concluding comments about scanning, or a few simple statements about what to do next. The fact is that working with images is too broad a topic to

sum up in a brief conclusion. The detailed manner in which you obtain a suitable Twain image, and what you do with it, will depend on the steps that are specific to the software item available to the user, and the comfort they have with being able to operate the individual software items.

Some of the steps required for saving the image files will depend on the user's ability to perform file management. Some of the choices of file formats to select for saving a given temporary image may be poor choices if the user does not have a fair working knowledge of the benefits of the more common image file formats.

Each of the topics which address what to do with a file obtained from a Twain device can be treated as separate elemental pieces of expertise, and a user should develop a working knowledge of enough of the steps used to perform these additional tasks as will be needed for their purposes.

If a user is interested in retaining the layout of a multi-column article, they may individual scan and OCR operations of each of the columns or other segments of the original (e.g, images, captions, etc.). Then the individually-constructed text files may be re-assembled in the chosen layout software.

If the user wants to make a digital replica of a form (or of an article layout) they may use Readiris to their advantage. In it's normal operational usage, Readiris will scan an entire 8 ½ by 11 inch area and retain the positional and size details of the text and images, but may not do an accurate job of performing the OCR function, or of obtaining a good collection of the images that are present on the original. Thus, a user can take whatever steps at their disposal are best suited to re-construct the layout. This may include doing a batch of smaller scans of segments of the original for performing OCR (perhaps on a more accurate OCR software than Readiris), or for collecting appropriate image files, to gather the elements best suited for the re-construction.

Put images on fabric - Learn different ways of printing images onto fabric.

Various means of transferring images onto fabrics are available for the do-it-yourselfer. A method which has been around for a long time is to buy artwork (in mirror-image form) on a sheet of transfer paper, which can be affixed to the fabric with heat and pressure. The image will transfer from the backing sheet onto the fabric. This method of placing the artwork on fabric is independent of having any resource other than an iron. It does not depend on acquiring materials or images which are unique to the user.

For commercial purposes, or for those ready to make professional-quality transfers by this method, a press may be used which applies controlled heat and pressure for the desired time.

Of interest to computer users are the methods by which a digital image from their computer may get transferred onto fabric. Two methods will be outlined.

Printing a (mirror-image) copy of an image onto a sheet of blank transfer paper, and then transferring the deposited ink image (and whatever additional materials transfer from the surface of the transfer sheet) onto the fabric by the heat-and-pressure method.

Printing directly onto a piece of fabric which is temporarily bonded to a backing sheet of paper. Prepared sheets having fabric attached to an 8 ½ by 11 inch sheet of backing paper are available for this purpose, or a user can prepare their own.

Observations about the merits of these two methods, as well as more specific items of interest will be provided below.

Discussion of the two methods of placing digital images on fabric

With method 1, you need to be aware of the variability of materials used in providing the transfer medium for allowing the ink to be deposited, and later transferred to the fabric. Before committing to a source vendor, you may wish to ask others who have tried certain materials before you pick one you would try. Various shortcomings may be noted. The transferred film from the transfer sheet may leave an obtrusive deposit which could be judged to be too thick, or to show as a non-neutral color. Also, it would be well to recognize that some sources may discontinue to provide the same product for your future use. When printing the image, you must have a means for printing as a mirrored image anything that is critical for left-right orientation when on the fabric. A user has at least one image-modifying application in MS Paint for this purpose. Use Image|Flip/Rotate|Flip horizontal.

With method 2, you have similar considerations regarding the source vendor, although the amount of film material that can attach to the fabric is usually negligible. If you use the resultant fabric-printed image as a quilt block, you have a few criteria that dictate the kind of paper-backed fabric sheet to use. Presumably, you want a fabric color that is white or a given shade of off-white to suit your artistic needs. You need a woven fabric, presumably all cotton or nearly all cotton. For best image quality, the number of threads per lineal inch are important – the finer the better. In some respects, the fineness of the threads per inch is comparable to the dpi used in the imaging process, and the viewed fabric image will have an equivalent pixel count determined by the fineness of the weave.

Steps in processing the fabric

A resourceful user can make their own paper-backed fabric, and therefore control these choices, while saving money. The backing sheet often used is taken from a large roll of freezer paper, which has a number of features that make it handy for certain arts purposes. The paper has a theromoplastic film coating on one side which helps reduce the porosity of the paper, which makes it suitable as a freezer paper. That film coating also has the property that it fuses with heat and can serve as a bonding surface for attaching fabric by the heat-and-pressure method. Generally, this bond is adequate to hold the fabric securely to the backing paper when it passes through a computer printer. After the ink has dried on the fabric, it should be easy to separate the fabric from the paper simply by peeling them apart. Little evidence of bonding material is found on the separated piece of fabric.

It is not a trivial matter to work with the fabric to make it suitable as a colorfast printed object, either before printing on it (for those who make their own fabric on backing sheets), or after the fabric is separated from the backing sheet.

In the latter case (after the fabric is separated from the backing sheet), which applies to method 2 in general, the user has to be concerned about the wearability and appearance of the resulting fabric. Checking to see if some of the deposited ink will bleed out of the fabric is one issue, "setting" the remaining ink so it will be color fast is another issue. So there are additional steps that involved soaks, rinses, adding salt or other fixatives, ironing to make the sample flat, etc. are considerations. An important element in this printing process is the formulation of the printer ink, which may be crucial in consideration of color fastness.

When preparing the fabric so it will provide a suitable product to pass through your printer, additional considerations apply. It may require some experimentation to achieve materials and processes that work well. There are pre-treatment solutions that condition the fabric to accept the ink in a way that the fabric can be further processed to make it reasonably color fast. One popular product is Bubble-Jet-Set, which is often bought in quart-sized plastic bottles. One source for obtaining this product is the Dharma Trading Company, a mail-order supplier of specialty fabric art supplies.

When fabric pieces are suitably pre-treated, they may be attched to pieces of freezer paper, the cut size of the fabric and freezer paper at this point will probably be slightly greater than 8 ½ by 11 inches, to allow for trimming with a paper cutter to the standard size. In this way, the fabric and the paper can be considered reasonably uniform out to an edge which is common for the fabric as well as the paper. A servicable paper cutter for most uses in the home is one made by X-Acto. It features a compact, sturdy base and components that provide a rotary cutter which slides along the cutting edge. Wal-Mart has offered this product for about $20.

Comments on printing techniques

With both of these methods, the user should take some cautions when placing the prepared sheets into the printer tray. The biggest caution is to take steps to ensure that fabric threads do not unravel and get entangled in the printer. Another caution is to shape the leading edge of the paper so it has little curl, and is likely to feed into the printer properly.

For best printing quality, the user should take into account the printer settings that determine how the image will appear on this type of "paper". An experienced user will note that the quality of a printed image will depend on the surface (generally paper) onto which the image is printed. Thus, when "Print" is commanded, you may want to check on the printer settings by clicking on Properties on the Print screen. Depending on your printer, these settings may account for the type of paper you choose and make print quality adjustments without your knowledge.

The printing quality settings provided within the Properties screens usually have default and custom settings. Generally speaking, a coated paper will require less ink to be deposited on the paper, as the ink remains on the surface without soaking into fibers. In the case of fabric, you may need to deposit more ink than on bond paper, as the fabric fibers will absorb more ink, and the surface is not flat.

A user may find that there is an evolution in ink-jet printing which affects the papers recommended for photo imaging. Also, newer printers use inks of a different formulation that allow for faster drying on coated papers. In addition, non-new printers may have a supply of replacement ink cartidges or tanks which contain ink formulations that may vary over time to accommodate the shift toward coated photo papers.

References:
- Digicamcash.com – Jarrod Hardcastle
- jeffgalbraithphotography.ca - Jeff Galbraith
- DigitalPhotographySuccess.com - Amy Renfrey