

aint

and the *Art* of

Computer Graphics



Intro to Computer Graphics

Companion to Class Website / Classroom Management System
Includes access to instructor's video tutorials, free software,
Course notes and lectures,

R. Craig Collins

5th Edition © 2016

As this is an introductory course, we will only touch on many topics. Instead of getting mad, I hope this whets your appetite, and you further research this fast changing field.

As this class is offered online and as a hybrid, I realize many of you will not have access to \$1000 software, so this class uses open source, freely distributed software... but all the concepts apply to programs such as IllustratorTM, PhotoshopTM, etc.

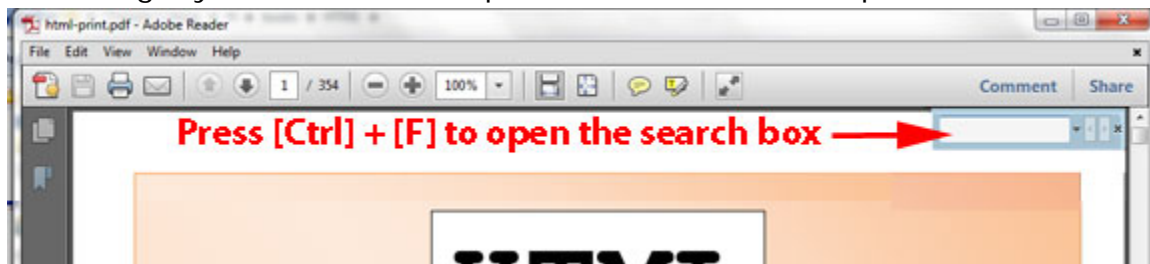
Just be aware that some concepts are very deep, so where possible I have simplified... to paraphrase Jack Nicholson "You can't handle the truth..." well, at least not yet.

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Don't forget you can search the pdf version of the book... press Ctrl + F



Software to be used:



Microsoft Paint, comes with Windows



Inkscape, available at <http://inkscape.org/> or Adobe Illustrator, if available



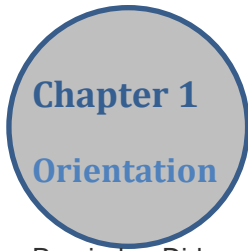
GIMP, available at <http://www.gimp.org> or Adobe Photoshop, if available



unFREEze, available at www.whitsoftdev.com/unfreez/



Windows Live Movie Maker available to Windows users at
<http://explore.live.com/windows-live-movie-maker>



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Chapter 1 Topics

Orientation intro; additional details may be on the class website (D2L)

- Syllabus

- Syllabus Appendix

- College Attendance Policy

- Using our Classroom Management System/Learning Management System

- Using School e Mail

- FAQ

In this book:

- Highlights from the class website (D2L)

- Lab Procedures

- Software to be used

What's due this week page 21

Orientation

The vast majority of the first week's Orientation is going to be in your Classroom Management/Learning Management System or class web site.

In future weeks, you will use this book for background information and instructions, and then use the Classroom Management/Learning Management System or class web site to watch related videos, to access related tutorials, or to download software or required files, as well as to turn in homework and tests.

Please review your school's Academic Integrity, Computer Use, Phone, and Attendance Policies in the Student Handbook, typically listed under Under Student or Student Resources

IMPORTANT: When using eMail, some 'real' mail gets sorted to your Quarantine/Spam/Junk Folder... please check this folder frequently, release legitimate mail, and delete and purge the junk mail. Make sure you include your class as part of email subject lines, and your name in any email.

IMPORTANT: When emailing from your Classroom Management / Learning Management system, make sure you correct student email system is being used.

Storage

Many students can benefit from owning a thumb drive, as floppy disks hold so little, and many new computers do not have floppy or CD drives. Thumb drives are also known as jump drives, USB drives, etc.



Students may also store files on their network or cloud drive, which can be accessed over the Internet when off campus.

Plan B

In order to complete this class, you need to use a computer. Have a backup plan in case your home computer or Internet crashes.

Assistance

Please look up your Professor's current office hours, so you know in advance when they are available for help.

The book provides instruction material, the Classroom Management/Learning Management System or class web site will provide specific due dates, the videos and files to download, as well as supporting material.

Things to Review in our Classroom Management/Learning Management System or class web site for the first week (for Temple College: **D2L**)

Syllabus and any appendix information

Electronic versions of books for the class

Tutorials on using your Classroom Management/Learning Management System or class web site

Class policies

Make Up Work

All material is due on a specified date, electronically submit the material if you cannot attend class. Late work may not be accepted, or may be heavily penalized.

A missed test grade is generated as a percentage of the relevant section of the Final Exam; the lowest test grade may be replaced by a percentage of a markedly improved relevant section of the Final.

Key to success in my classes

Attend classes, participate, and turning in your homework almost guarantees passing; test grades build on that success.



eLearning students and traditional students must check into D2L at least twice a week, and participate using the Discussions area of D2L.

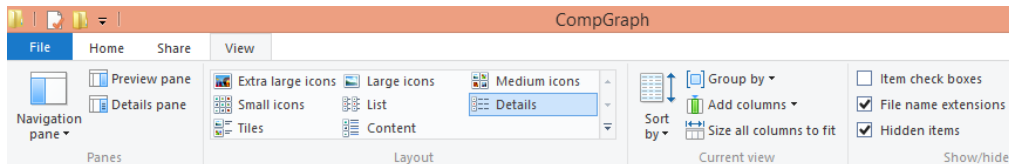
The majority of my tests are short answer/fill in the blank, to ascertain what you have actually learned, to duplicate the real test before getting a job, the job interview.

Cheating prevents me from seeing what you are weak in, which prevents you from learning it. So, don't cheat, or break the rules.

Controlling File Names

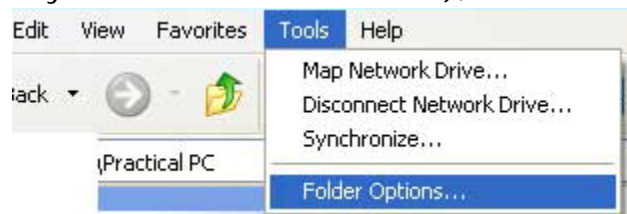
Many Windows computers are set up to hide known file extensions; this can be very confusing for computer students. To set your computer to display the entire file name:

Windows 10 users: Click Start  or the  key on your keyboard, and select File Explorer, also known as This PC. From the This PC window, select the View tab and click File name extensions to instruct the computer to show the entire file name.

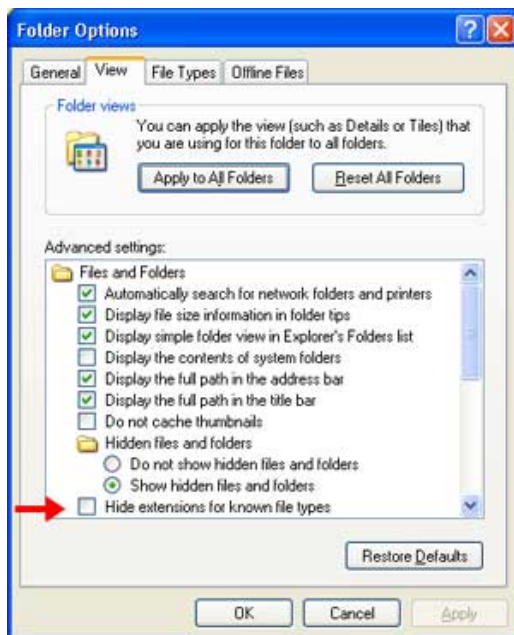


Windows XP, Vista, or Windows 7 users

- Click the Start icon, or Start key on your keyboard, and open (My) Computer
- Choose Tools\Folder Options... (for Vista or Windows 7 users, press the [Alt] key to reveal the Tools menu), then select Folder Options)





- Choose the View tab



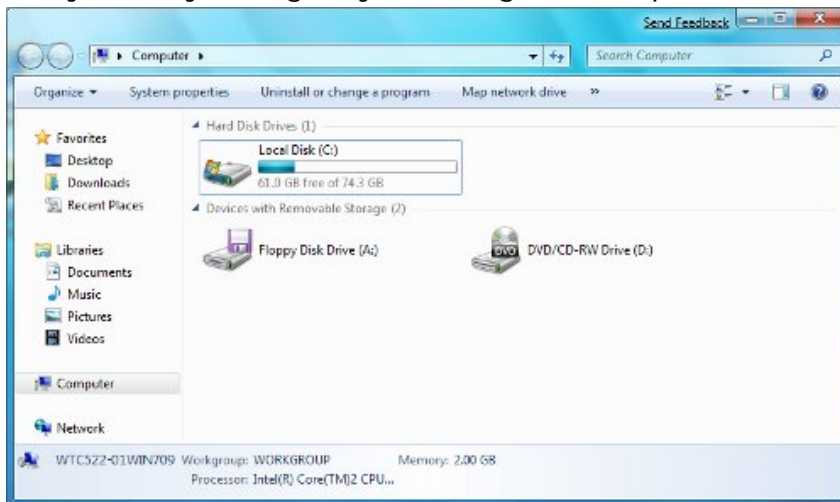
- Click **off** the check mark next to 'Hide extensions for known file types'
- Click OK

Navigating Windows

Windows 10 users: Click Start  or the  key on your keyboard, and select File Explorer, also known as This PC.

Windows 7 users: Click Start  or the  key on your keyboard, and Select Computer

The side bar on the left contains Favorites, Desktop, Computer, and Network. Many times you begin by choosing the Computer icon or the This PC icon.



Properties of selected items display at the bottom.

Press the [Alt] key to reveal hidden menus

COURSE CALENDAR (See course web site for up to date calendar, topics, & activities)

6 Week Semester	16 Week Semester	Notes	Lecture Topics	Labs
Week 1	Week 1		Syllabus/Orientation	
	Week 2		Representing Digital Images, Hardware, Cameras	
	Week 3		Bitmaps, TIFF	Lab 1 due
Week 2	Week 4		Bitmap to GIF, compression	Lab 2 due
	Week 5		GIF animation, transparency	Lab 3 due
	Week 6	Test 1	Review, Test 1	
Week 3	Week 7		JPEG, PNG	Lab 4 due
	Week 8		Editing tools, crop, resize	Lab 5 due
	Week 9		Editing tools, optimize	Lab 6 due
Week 4	Week 10		Erase Copy Clone	Lab 7 due
	Week 11		Layers, Text	Lab 8 due
	Week 12	Test 2	Review	
Week 5	Week 13		Paths, color balance	Lab 9 due
	Week 14		Video, Flash	Begin Lab 10
	Week 15	Test 3	Review	Capstone Lab 10 due
Week 6	Week 16	Final	Final (The FINAL EXAM IS DUE WELL BEFORE FRIDAY, check website for due date)	

Most labs and tests are due Friday, 11:59am of the week mentioned.

Tests typically due Wednesdays, 11:59am, of the week mentioned











The Capstone Lab is due the last of classes, 11:59am, before the Finals begin

The final exam is made up of three parts.

All three parts must be completed with 2 hours of beginning, and must be completed by the posted due date.

Notes:

Course Competencies

<p>Students will be able to:</p> <ul style="list-style-type: none"> • Discuss how digital images are created and stored • Use cameras and scanners to capture digital images • Compare and contrast bitmap and TIFF file formats • Construct and edit bitmap and tiff files using Paint • Discuss compressions • Construct and edit compressed gif files • Construct and edit animated gif files • Discuss Transparency • Construct and edit transparent aspects of files • Compare an contrast jpeg and png files • Create and edit jpeg and png files using advanced editing tools • Discuss optimization • Implement optimization 	<ul style="list-style-type: none"> • Discuss Layers • Create and edit images that use layers • Discuss Paths • Create and edit images that use paths • Discuss Text • Create and edit images that use text • Discuss color balance • Create and edit files that use color balance • Discuss Video • Create and edit Video • Discuss Flash • Create and edit images that use Flash • Evaluate various tools and methods to create and ed digital images
	<p>Lab 1: Create simple vector and raster images, using Paint and Inksape, video tutorials available. The process starts by creating a lab1 folder, and saving ball.bmp and test.svg within. The folder and its contents are then zipped, renamed yourname-lab1.zip, & placed in the D2L Lab 1 dropbox. A quiz in D2L covers the activity.</p>
	<p>Lab2: Using Paint, experiment with file types, color depth and the impact on images. The process starts by creating a lab2 folder, and creating 6 bitmap, tif, and gif images The folder and its contents are then zipped, renamed yourname-lab2.zip, & placed in the D2L Lab 2 dropbox. A quiz in D2L covers the activity.</p>
	<p>Lab 3: Animate an image. Video Tutorial available. The process starts by opening ball.bmp and saving as lab3a.gif in a new lab3 folder, and creating a 2nd modified version as lab3b.gif. Using unFREEze, animate the files as lab3ani.gif, controlling frame rate/looping. A bonus is available. The folder and its contents are then zipped, renamed yourname-lab3.zip, & placed in the D2L Lab 3 dropbox. A quiz in D2L covers the activity.</p>
	<p>Lab 4: Further exploration of gif using GIMP, to add transparency to an image, lab4.gif. Video tutorial available. The folder and its contents are then zipped, renamed yourname-lab4.zip, & placed in the D2L Lab 4 dropbox. A quiz in D2L covers the activity.</p>
	<p>Lab 5: When finished, your lab5 folder should contain lab5.jpg, lab5-crop.jpg, lab5-resize.jpg, and lab5-canvas.jpg The folder and its contents are then zipped, renamed yourname-lab5.zip, & placed in the D2L Lab 5 dropbox. A quiz in D2L covers the activity</p>
	<p>Lab 6: Combine provided images to introduce rotation, brightness, contrast, file optimization, the use of png for print, and balancing quality and file size for jpg web delivery. A video tutorial is available. The folder and lab6.jpg and lab6b.png are then zipped, renamed yourname-lab6.zip, & placed in the D2L Lab 6 dropbox</p>
	<p>Lab 7: The student will take any image they choose, and demonstrate GIMP tools, such as smudge, and clone. The folder and the before and after image are then zipped, renamed yourname-lab7.zip, & placed in the D2L Lab 7 dropbox. A quiz in D2L covers the activity</p>
	<p>Lab 8: Use GIMP to add text, and arrange various portions of a project in layers layers. A video tutorial is available. Using the color tools, palettes, and web friendly Hexadecimal (base 16, Hex) colors are introduced as well. The working version will be saved as lab8.xcf; a flattened web or print version will be saved as lab8.png or .jpg The folder and its contents are then zipped, renamed yourname-lab8.zip, & placed in the D2L Lab 8 dropbox A quiz in D2L covers the activity</p>
	<p>Lab 9: A quick lab to demonstrate the threshold tool. Copy threshold-lab9.jpg, and save as lab9.jpg. Zip and submit.</p>
	<p>Lab 10: The Capstone lab demonstrates all the skills acquired over the semester. Combine and edit images and drawings, use transparency, text, and layers. Save the working file as yourname-lab10.xcf. Save the image in print quality, called yourname-lab10.png. Optimize the image for web delivery, calling it yourname-lab10.jpg. Include a Word document that describes all the steps you used in the project, saved as yourname-lab10.docx* Must pass lab to pass class.</p>

Lab Procedures

General Lab Directions

Note: There is not enough time in lecture to cover all the material; go over your reading material BEFORE you begin the lab

Note: Typically labs will require you to invest some time in the lab, outside of class lecture hours

- Note: Please read any related overview material before continuing with your lab
Check with your Instructor for due date, typically Friday, 11:59AM
(see class web site/D2L News for due dates)

- Most labs have 2 parts:
Parts 1) Graphic Activity, and
2) Hands On/ Q&A

At the end of this process, you may be 'turning in' your Q&A using the Quizzes area of your Classroom Management/Learning Management System or class web site. So, to get the best score, complete the documentation and Q&A's on paper, first.

You MAY use your notes when taking lab quizzes, and you may take as long as you want on the quiz... just don't **submit** the quiz until you are finished.

Part One: Activity, create or modify an image (usually 40%)

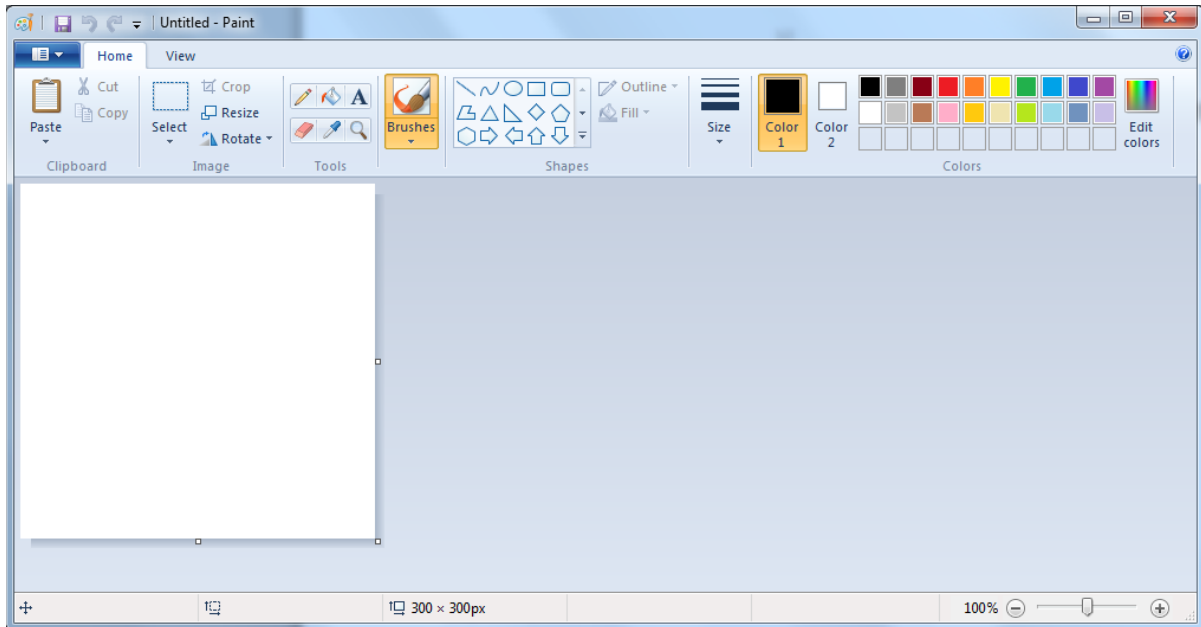
When finished, you will zip the folder that holds all files required, and submit in the dropbox. Instructions on how to zip files are included at the bottom of each lab.

Part Two: 'Hands On' Questions, to evaluate understanding of the lab (usually 60%)
These questions again help prepare you to take the lab quiz in your Classroom

Optional Preview of Software to be used:



Microsoft Paint, comes with Windows



A basic raster graphics program capable of creating, opening, and basic editing of image files, including bmp, jpg, gif, and png.

You may use other software as long as you can figure it out, and as long as it can save files as

24 bit bmp (the default bitmap file type for Paint is bmp),



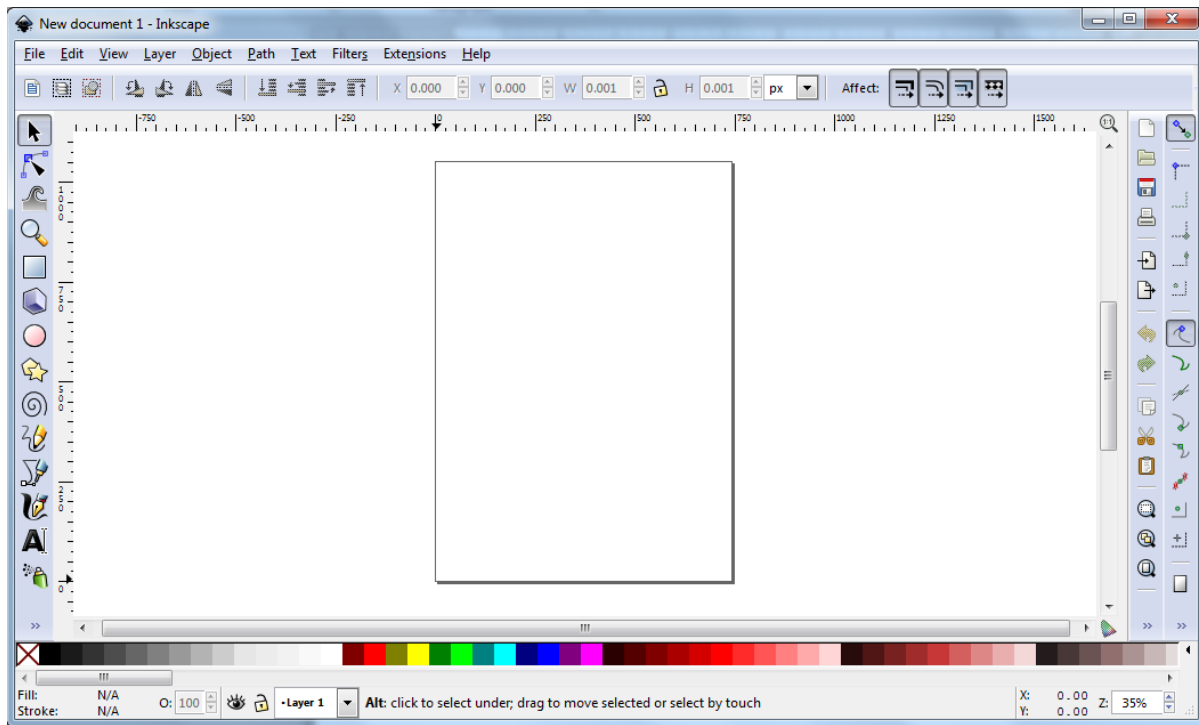
256 color bmp,
16 color bmp,
monochrome bmp,
jpeg/jpg,
gif, and
png or even tif.

Note: any time you see the "Write this down" pencil, you really should right down the information in your notes, as it is an important fact or concept, and you will probably need this information later for a lab, or a test.





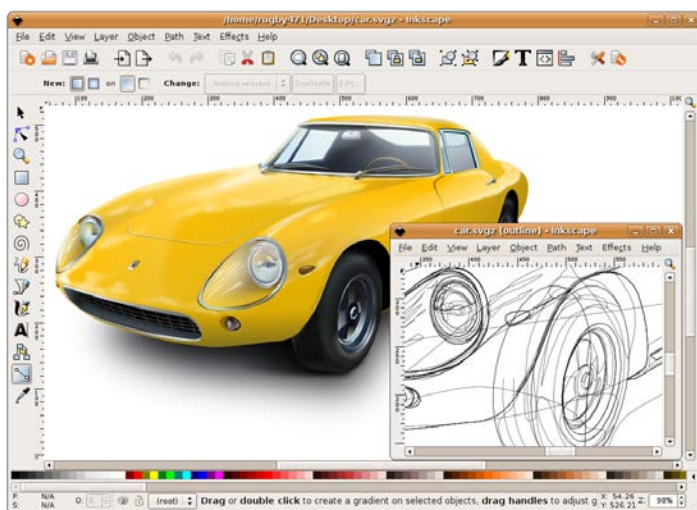
Inkscape, available at <http://inkscape.org/> or Adobe Illustrator, if available



A vector graphics program that can create 3-dimensional appearing shapes that can be manipulated independently, and even combined into complex shapes.

In this course, we only experiment with the program, creating very simple objects.

Once completed, Inkscape files are saved as a svg file type, scalable vector graphic, which can be opened by your browser.



Example of what Inkscape can do... I don't expect anything like this in our class.

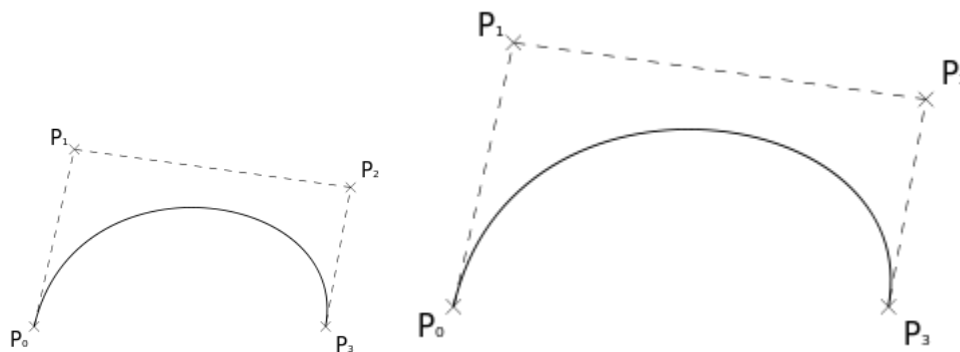
If you have access to Adobe Illustrator, you may certainly use Illustrator instead of Inkscape, but I don't provide tutorials for this product, which runs \$19.99 a month.

I like the free Inkscape program, but here is a little on Illustrator for comparison.



Illustrator can save as an pdf or eps file, but the project file is an ai filetype.

A huge part of both Inkscape and Illustrator is the ability to create smooth Bézier curves that can be scaled indefinitely



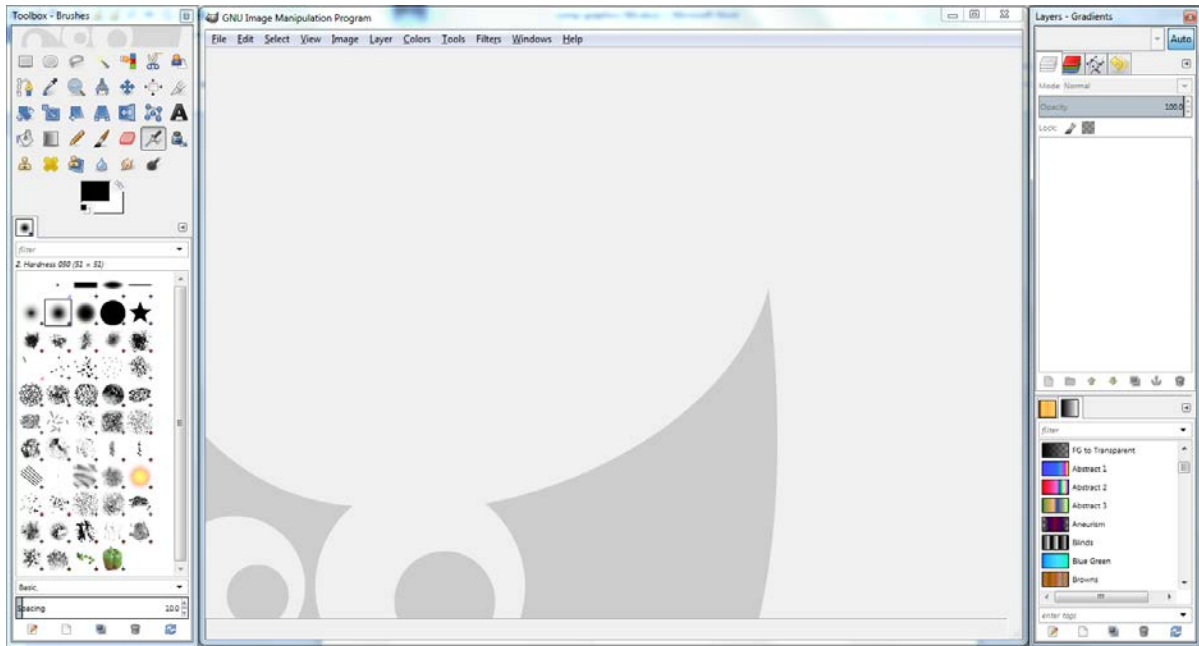
or even to create new fonts. See Appendix B for more on curves.

AGAIN, in this class we only experiment with simple shapes.

Note: Inkscape can open Illustrator's ai filetype.



GIMP, available at <http://www.gimp.org> or Adobe Photoshop, if available



A full featured Graphical Image Manipulation Program which can use layers to separate items in a project, as well as add scalable vector text. Similar in function and use to Photoshop, which saves files with a psd extension, GIMP can open a psd or use its native xcf extension.

While not quite as robust as Photoshop, it is close; and fantastic as a free alternative (released for free under the GNU Open License agreement), if you can live with a few quirks. (I cover GIMP and Photoshop in my videos.

Quirk #1 When GIMP starts, it opens three windows; **DON'T** close the individual windows... when finished chose the **File** menu on the center GNU Image Manipulation Program Windows, then select **Quit**



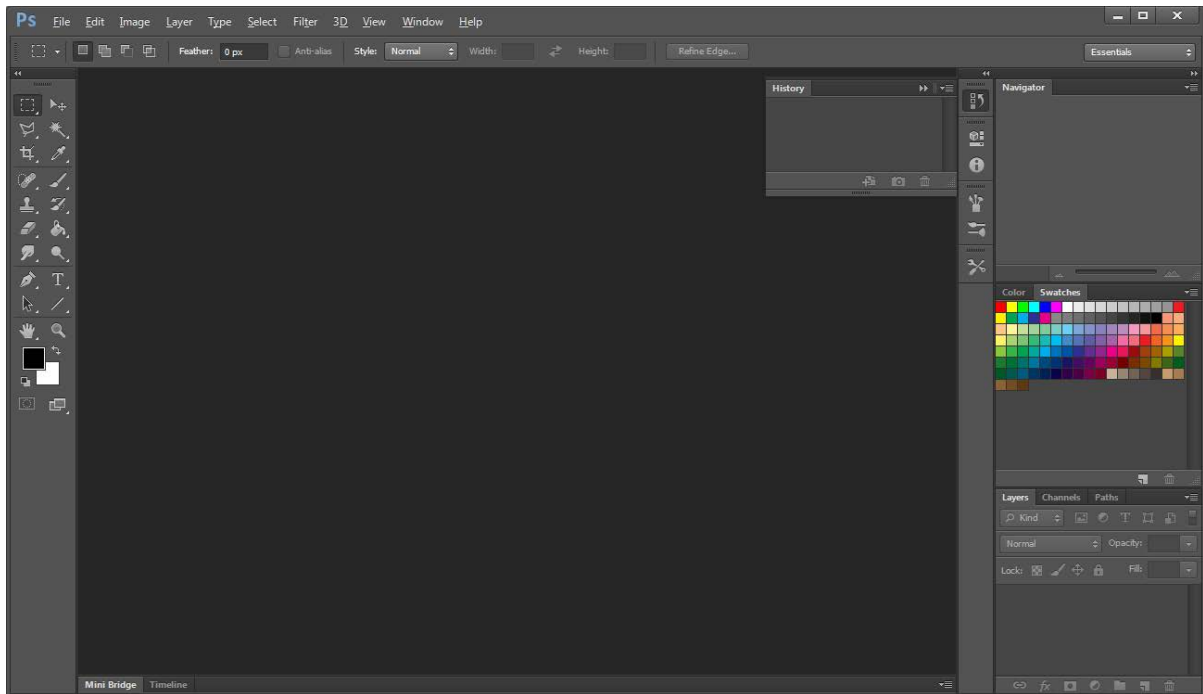
Quirk #2 If opening images, and then later saving them as another type of file, you export the file.



If you have access to Adobe Photoshop, you may certainly use Photoshop instead of GIMP; many of the icons and steps are identical, and most are at least similar... I even have some YouTube tutorials that show both GIMP and Photoshop.

But for this class, you don't need to pay for this product, which runs \$19.99 a month, just use the free GIMP.

But here is a little bit on Photoshop, for the curious.



Note the similar layout to GIMP:
tools on the left
canvas in the center
pallets, history, etc. on the right.

Some nice things Photoshop does:

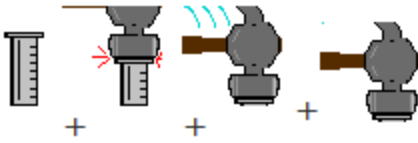
- *When you click a tool on the left, the top menu bar changes with options for that particular tool
- *When optimizing images, it can give you four previews
- *Optimization can make smaller files than GIMP

but GIMP is free, and all we will need for this class.



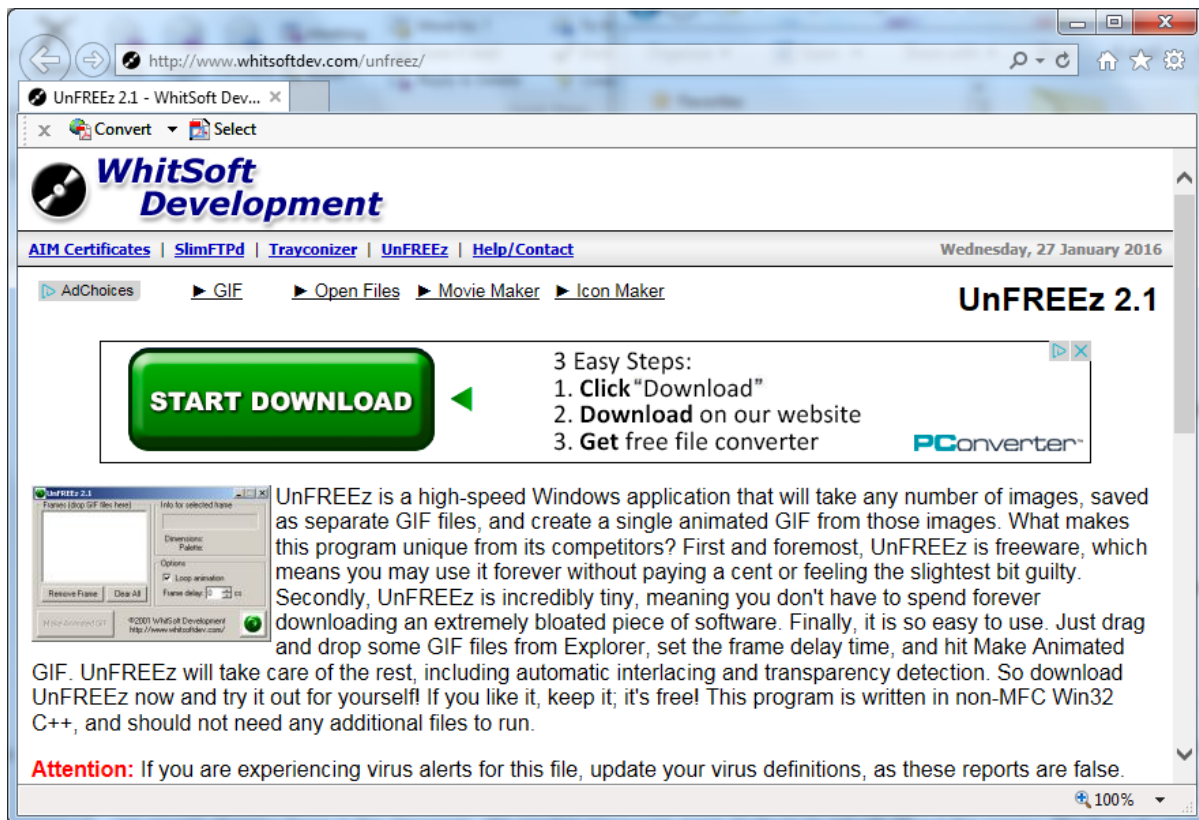
unFREEze, available at www.whitsoftdev.com/unfreez/

Back on the old days, if you wanted to animate something, you would display one picture, then replace it with another, and then another.



made a nail being driven in by a hammer.

While there are other ways to do this today (think Flash), gif animation is still popular... so we will learn a bit about unfreeze as a free tool to make animated gif files.



Just so you know, you can make really long animations with this, but it would be a pain... it is best for very small animations.

Example, a TV picture is 30 pictures a second, or 180 pictures a minute, or 10,800 pictures an hour!

Not only will we edit still images, we'll learn a little about editing videos.

While you can make videos on your phone, you can also make videos on your computer.

CamStudio, record what you see, hear, or do on your computer

<http://camstudio.org>



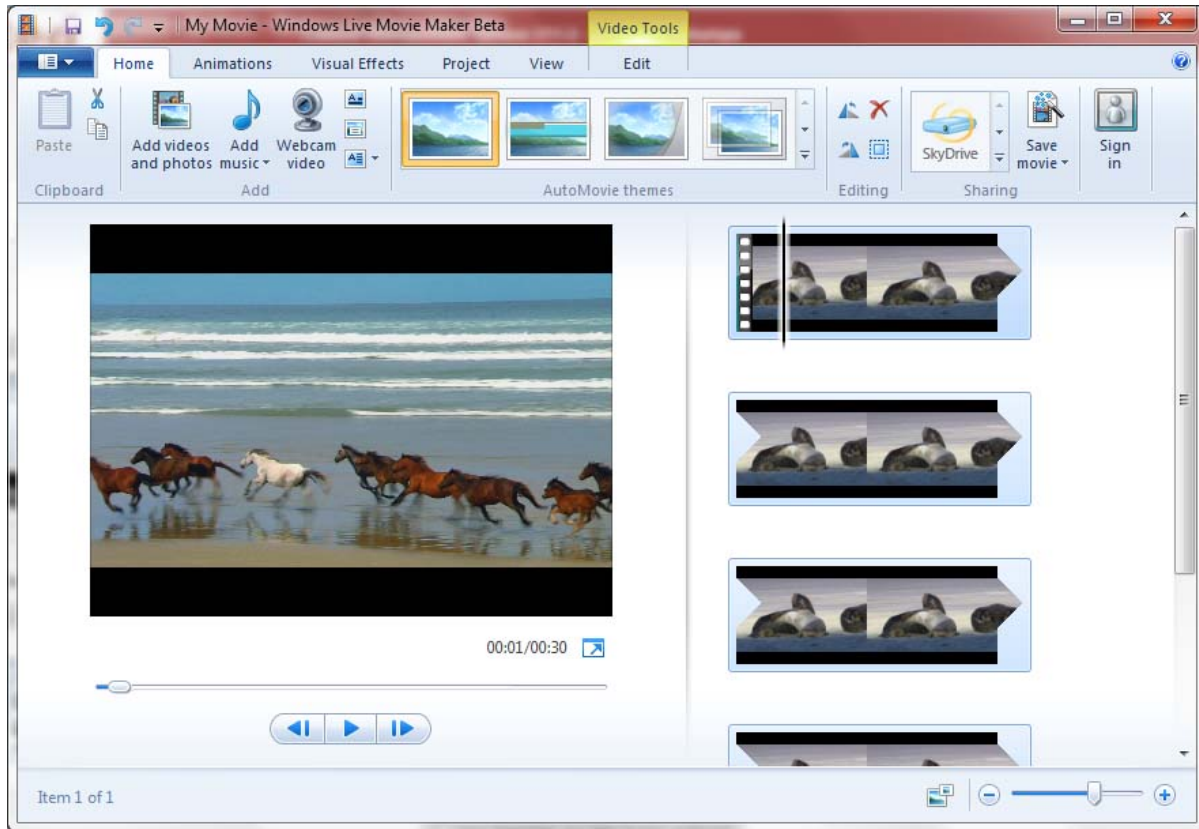
What is it?

CamStudio is able to record all screen and audio activity on your computer and create industry-standard AVI video files.

Now that you have a video to edit, here is one software title you can edit it with.

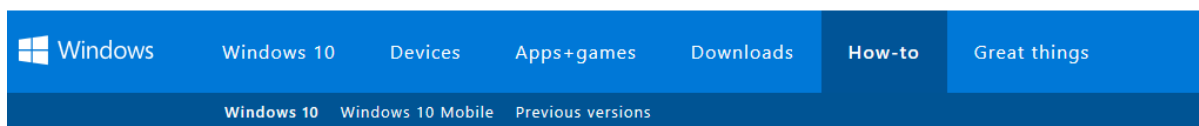


Windows Live Movie Maker available to Windows users at <http://explore.live.com/windows-live-movie-maker>



Split videos into scenes, rearrange scenes, add titles and effects, all with software that used to come with Windows, but is still available for free.

And you can still use it in Windows 10.



Where is Movie Maker in Windows 10?

Applies to Windows 10

- Windows Movie Maker is not supported for Windows 10, but you can still [download Movie Maker](#) if you really want it.

What's due this week (YES, there is something due!)

This week, you will take a quiz, and do two discussions.

- **Syllabus Quiz:** The quiz is not graded, but you **MUST** do it to continue.

The following discussions may not be visible until you complete the above quiz.

- **Participation Discussion 1** Respond in the class Discussion forum to the following:

Please Introduce yourself to the class

- **MUD 1 (My Understanding, Details)** Respond in the class Discussion forum to the following:

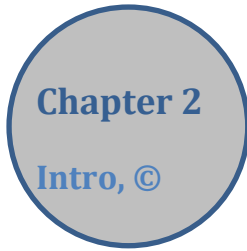
What was helpful this week?

What do you hope we talk about next week?

There was a continuous orientation video you were supposed to watch...
comment on that as well.

There is also a **contract** you need to download, sign, and return to your professor.

End chapter 1, your notes can go here



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Intro to Computer Graphics

© Copyright

Microsoft Paint (Raster graphics)

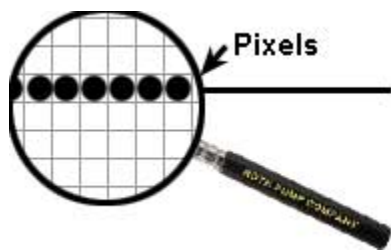
Inkscape/Illustrator (Vector Graphics)

Intro to Computer Graphics

This course, Intro to Computer Graphics, covers a wide range of topics, including the hardware and software involved with displaying and working with computer graphics, different input and output options, the different types of media included, features of still digital image editing software, and an overview of video. Below is a quick overview of what is covered in this course, details to follow in the coming weeks.

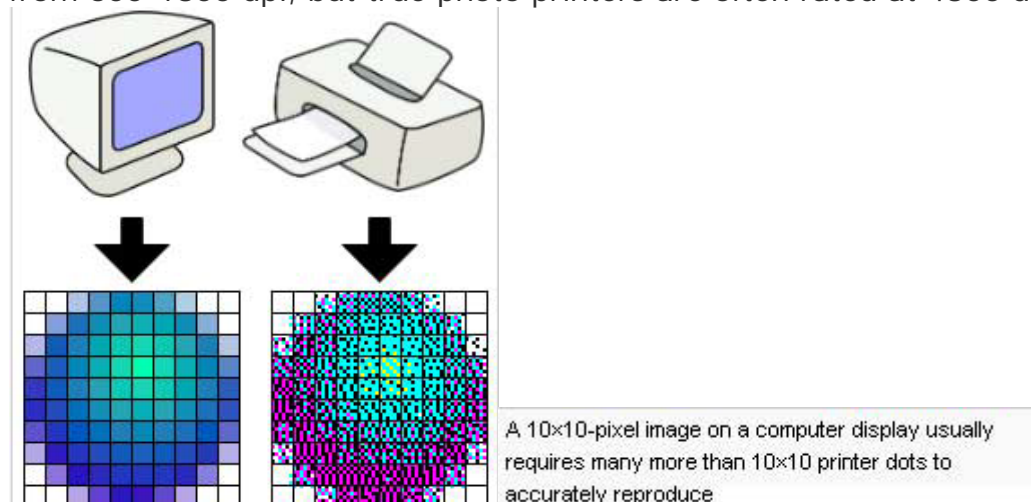
How it works.

To begin with, for most people, computer graphics is about representing three dimensional (3D) objects in two dimension, usually on a screen or some sort of print out. But how is this process started? To feed information into a computer, you use some sort of input hardware. This could start with a camera, or a mouse, but both alternatives are about recording an image, using dots of light called pixels (short for picture element).



Resolution

In general, the more pixels that are used when capturing an image, the sharper the stored image is. This is called resolution, and is often measured in dots per inch, or dpi. For a monitor, 92 dpi is fairly standard, but for printing, that would be very poor quality. The reason is, the printing process can often require a region from four to six dots (measured across each side) in order to faithfully reproduce the color contained in a single pixel. So for a printed image to rival a monitor's appearance, you would need from 400-600dpi. An Inkjet printer often prints at 360 dpi, at the extreme low end. Color laser printers can often use from 600-1800 dpi, but true photo printers are often rated at 4800 dpi.



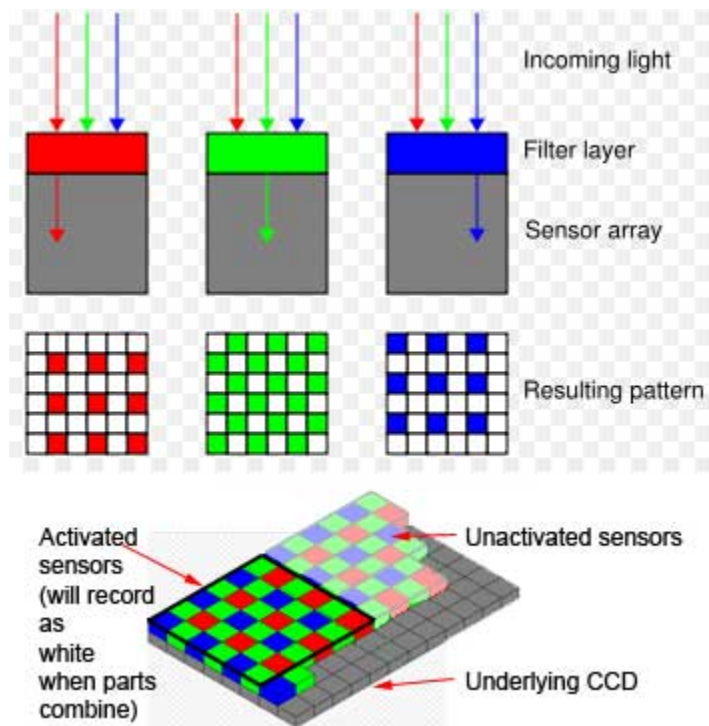
Another problem of printing a digital image is the monitor is mixing Red, Green, and Blue (called RGB), but printers often mix Cyan, Magenta, Yellow, and Black (called CMYK), meaning the colors you see on the screen may not print precisely, unless you make adjustments.

Color Depth

Aside from the number of dots, the number of possible colors each dot can be is a huge issue. Most 'true color' monitors use 256 shades of red x 256 shades of green x 256 shades of blue to generate up to about 16.7 million possible shades for each dot. In a computer, that requires twenty four 1s and 0s for each dot. This is why digital image files can be so large, lots of pixels with lots of 1s and zeros to describe the colors. But how do those pixels get into the file in the first place?

Input Devices

As mentioned earlier, there are two main families of input devices: cameras and pointing devices. A camera (or a scanner) uses what is called a CCD (Charge Coupled Device) to scan an image; as light falls on the CCD, its color is recorded for each pixel by how much red, green, and blue need to be mixed together.

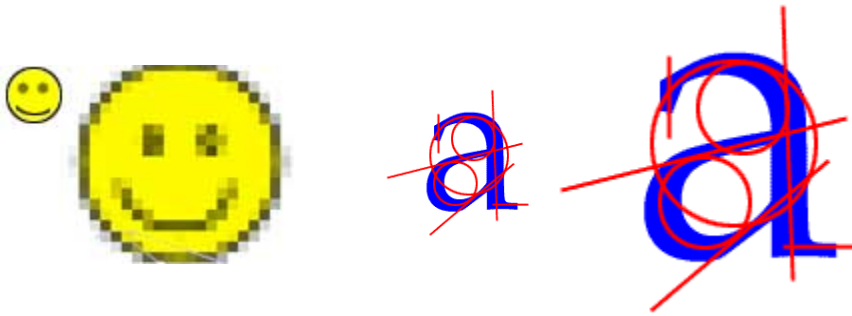


Pointing devices can also be used to create new graphics, such as using your mouse to draw. Professional use digitizing tablets, that allow them to draw on the screen, using something that feels like a pencil.

The difference between Illustration software, and Painting software:

The images described above are stored as a series of dots, called Rasters. But some programs use a combination of straight lines and ovals called vectors to

form shapes. The advantage of vectors is they can be magnified very easily, while magnifying rasters can lead to distortion and jagged edges.

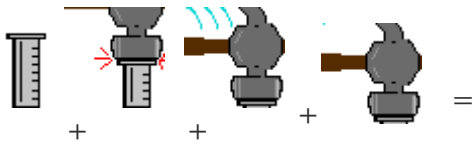


Raster, and scaled larger

Vector, and scaled larger

Animation

Animation can be as simple as a series of still images, just like a flip book. Show each picture for a second or two, and replace by the next... and your image appears to move.



see the animation on the
class web site



Video

If the images you are adding to a flip book are generated by a camera, then it is video, like movies. Computer software can cut scenes, let you rearrange the scenes, and add titles and features like fading in or out.

Software types

When it comes to computer graphic software, you normally have a free program or two on your computer, or you can acquire a more robust program, with more features. An example of a free, on your computer, basic program, is Microsoft Paint for digital images, and Microsoft Movie Maker or Apple i-Movie for video.

A more advanced program for digital images would be the top of line Adobe Photoshop, or the fully featured, open source GIMP. The things the more advanced programs can do would include:

- Compression, reducing the file size
- Optimization, compressing a file as small as possible, but with the highest possible quality
- History, being able to go back 3 or 4 changes, in order to try something, then put it back the way it was
- Layers, laying a clear sheet over your image to make changes, without changing the original

- Text, adding vector based letters that scale well, normally they are on a clear layer over the original
- Paths, an image outlining option to remove unwanted background, and create transparency

Other computer graphic topics

Just as you can create an image with vectors instead of rasters, you can create animation with vectors, as in Adobe Flash. And, just as you can compress images, you can also compress video. A great option is called Streaming Media, where the file can start playing as it downloads, instead of after the whole file is retrieved. The down side to streaming media is small size images called postage stamp windows, and reduced frame rate (number of images per second) which makes it jerky. These more advanced graphic tools also typically require special software to edit or play.

Note: some of the images on this site are based on open source image files, the majority are under my copyright.

© Copyright

Also check out <http://www.copyright.gov/>

Patents, Trademarks, and Copyrights... protect the rights of those who create something.

The way this applies to web pages, very briefly, is as follows.

If you create something, and put it in a tangible form, it is automatically copyrighted. A web page is a fixed, tangible form, and therefore it is copyrighted. It helps if you note this on your material with the ©, and it helps if you register your material with the Copyright Office of the Library of Congress, but these steps are not required.

Once created, no one can use your material without permission until their copyright or patent expires. Period.

This also means you may not use other people's material on your web site without their permission. Period.

Some sites have notices, which state that you may use their drawings, etc.; this is their way of granting you permission. If this notice is not present, you must ask them. E-mail is usually is not considered legal permission, as there is no signature or proof of who sent it.

Legal Gray Areas

It is possible to get a picture of Mickey Mouse from sites aside from Disney, and while these 'generous' sites may grant you permission to use *their* version of Mickey... they did not have permission in the first place, so them granting you permission to copy it to your site is useless. They are breaking the law, and you

would be distributing illegal copies.

It is possible to pull an image from Disney, and display it on your site, which seems legal, as you are not storing the image. And, Disney had put it up there on the Internet already for people to look at... but this is theft of bandwidth, and the image is not being used as the copyright holders intended.

Finally, copyrights do expire, normally 50 years after the death of the author, or 75 years after the item was released if the author is still alive.

How you can copyright something someone else made.

Aside from being able to copyright the original, you *can* copyright your version, if you have permission to make your own version or if there is not copyright in place.

Example: Barnes and Noble can copyright the Sherlock Holmes books that *they* publish, or the New York Philharmonic can copyright *their* performance of Beethoven's 9th Symphony, as they have the legal right to publish or perform the material since both original copyrights have expired. But again, these new, legal expressions are now copyrighted... preventing you from photocopying a book, or copying a CD.

You can make your own version of the Mona Lisa if you paint it from memory as the original is out of copyright; but if you use a photograph as your starting point, you are violating the copyright of the photographer.

So, in this class,

- 1) you must have created it yourself, or
- 2) you must have written permission to use anyone else's material, or
- 3) you must have legal permission to use the material, by way of fair use.

Fair Use: A POSSIBLE exception to copyright law

Fair use states that *some* work can be used without permission under a few rules:

- 1) to parody a copyrighted work
 - 2) to critique or review a copyrighted work, only a small portion is used (a rule of thumb is 10% or less) and credit is given
 - 3) review a copyrighted work for scholarly purposes (again, only if a small portion is used and credit is given)
- PS You can't claim your webpage on a game, mp3, or movie is scholarly.

So let me repeat, in this class, to use something on your web page,

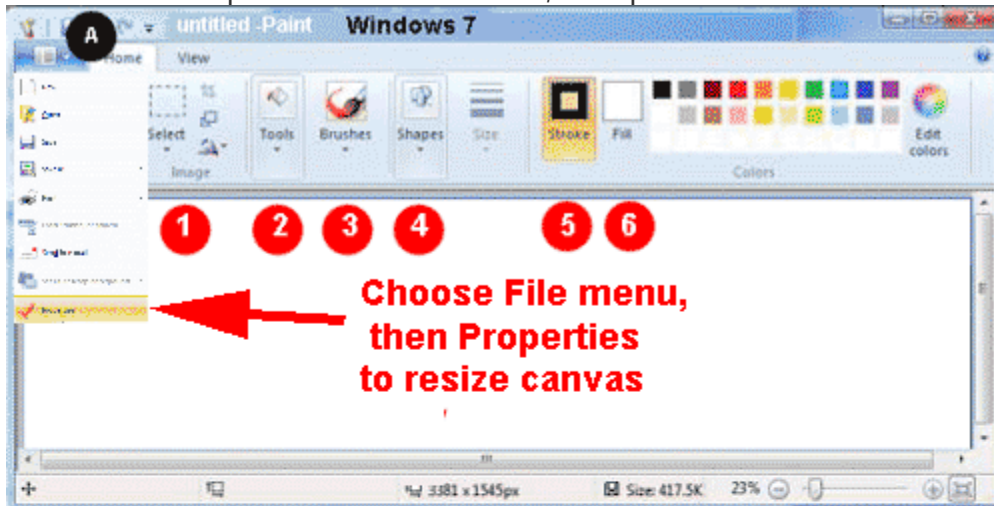
- 1) you must have created it yourself, or
- 2) you must have written permission to use anyone else's material, or
- 3) you must have legal permission to use the material, by way of fair use.

Check before using something you didn't make.

Microsoft Paint

Press the start key on your keyboard and type PAINT

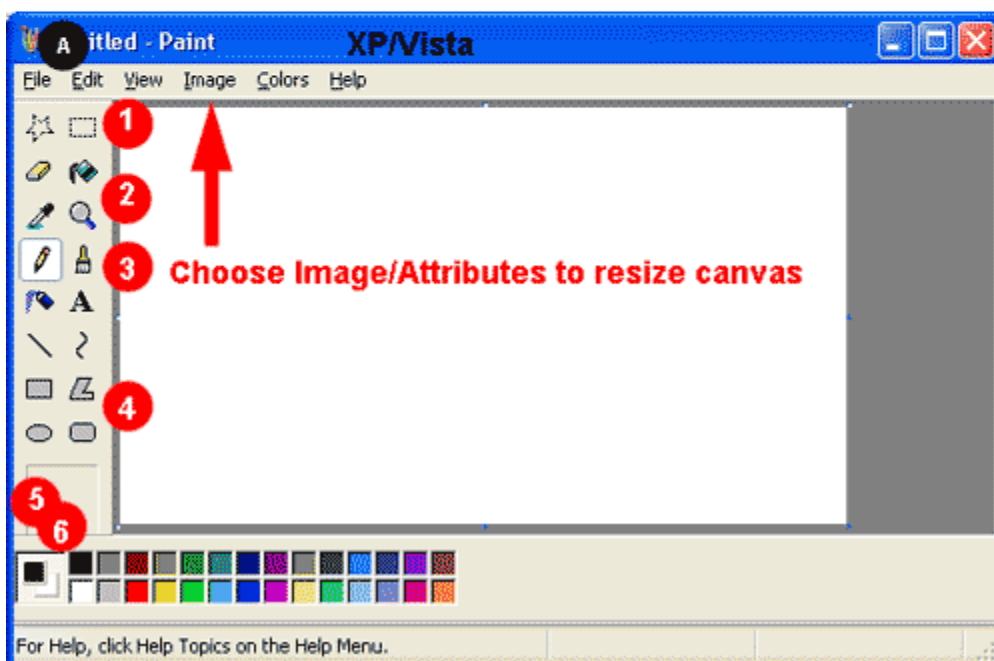
Below is a comparison of Windows 7, and previous versions of Paint



A) File menu
1) Selection tools

2) Other tools
3) Brush

4) Shapes
5/6) Foreground/background color



The class website (D2L) includes links to videos on how to use Paint.



Inkscape

The class website includes links to download the free Vector Based program Inkscape (You may use Adobe Illustrator if you have access to it)

The class website (D2L) includes links to videos and tutorials on how to use Inkscape.



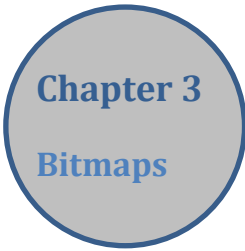
What's due this week

This week, you will do two discussions in D2L.

• **Participation Discussion 2** Respond in the class Discussion forum to the following:
What Graphics programs have you used before?

• **MUD 2 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 2



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Bitmaps

TIFF

Zip

Like Lab 1

Lab 1

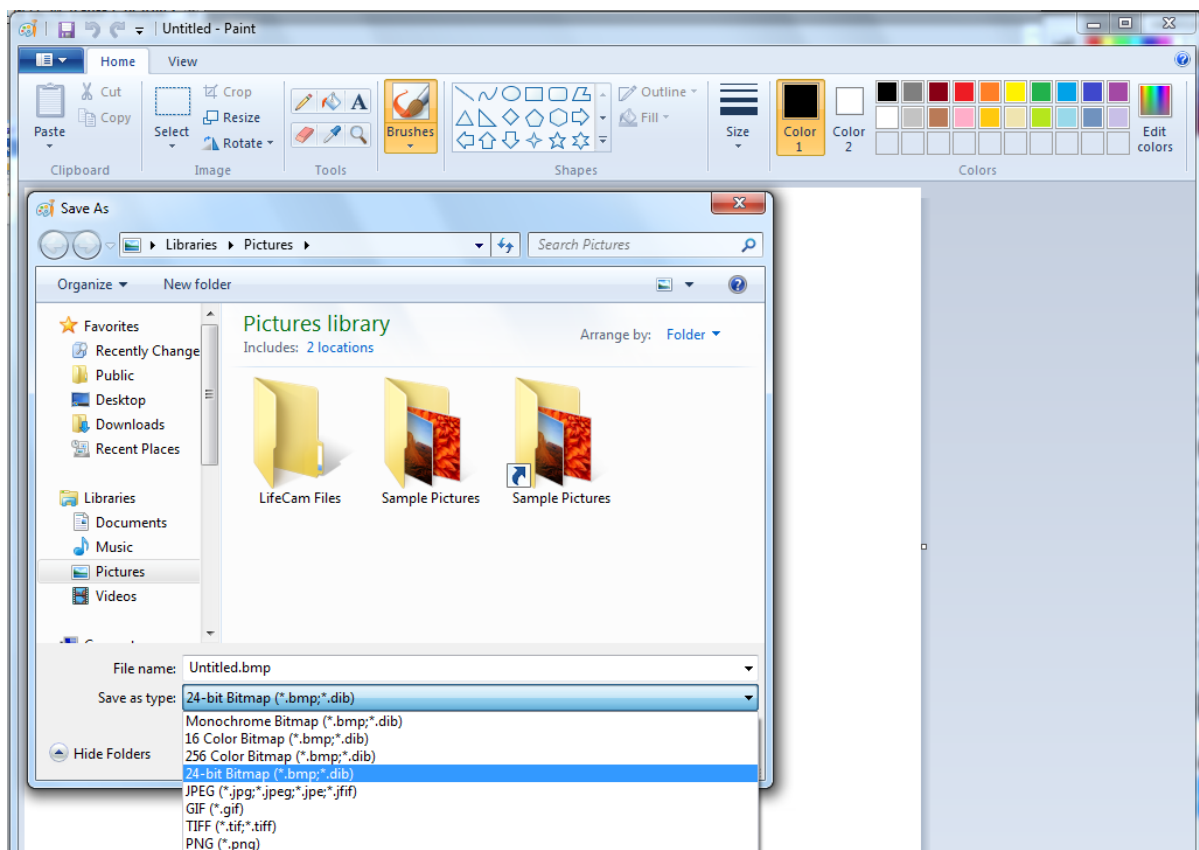
Bitmaps and TIFF

Bitmaps are a type of raster image where the image is represented as a series of colored dots, or pixels. Each pixel is stored as a specific color, represented by a series of 1s and 0s. The default bitmap file type for Microsoft Paint is the 24 bit .bmp, which uses twenty-four 1s and 0s to represent up to 16.7 million shades.

The format is fairly low resolution; that is, a fairly low number of dots per inch (often between 70 and 90), so it is best suited for simple line drawings, charts, etc. As it is often such low resolution, many consider the quality too low for photographs, which often need to be crisp so they can be printed on high resolution printers.

The files tend to be quite large, as there is no attempt to compress the file. (optional information on color representation in web pages is available on the class web site; compression will be covered in the next chapter)

Review the information in the previous chapter on Paint.



Notice that paint can also save as tif or tiff. TIFF stands for Tagged Image File Format files. While the format allows many other features, it is important typically because it can handle 24 bit or greater colors AND high resolution files.

This makes it a popular option to store original scanned or digital camera images.

But, as with bmp, the files can often be quite large, to store the large number of colors and preserve the resolution. (Some tiff files can be compressed to an extent, but normally without changing the color depth. (optional information on color representation in web pages is available on the class web site; compression will be covered in the next chapter)

The tiff format is widely used for storing original photos; but neither .bmp or .tiff formats are used by most web browsers, due to the large file size and the inability of most monitors to display high resolution.

Further, there are several different *versions* of tiff, so different programs may create a tiff file that has features not fully supported by other tiff capable programs. Sort of like a Microsoft Word 2010 file cannot be opened by Word 2003. That means you can use tiff as a format, but if you are sending the file to someone else's computer, other formats, such as png, may be better to use. More high quality file formats soon.

In the next chapter, generating files that are web appropriate (meaning less quality to download faster) will be started, beginning with the format best suited of simple line drawings and charts... gif

Zip

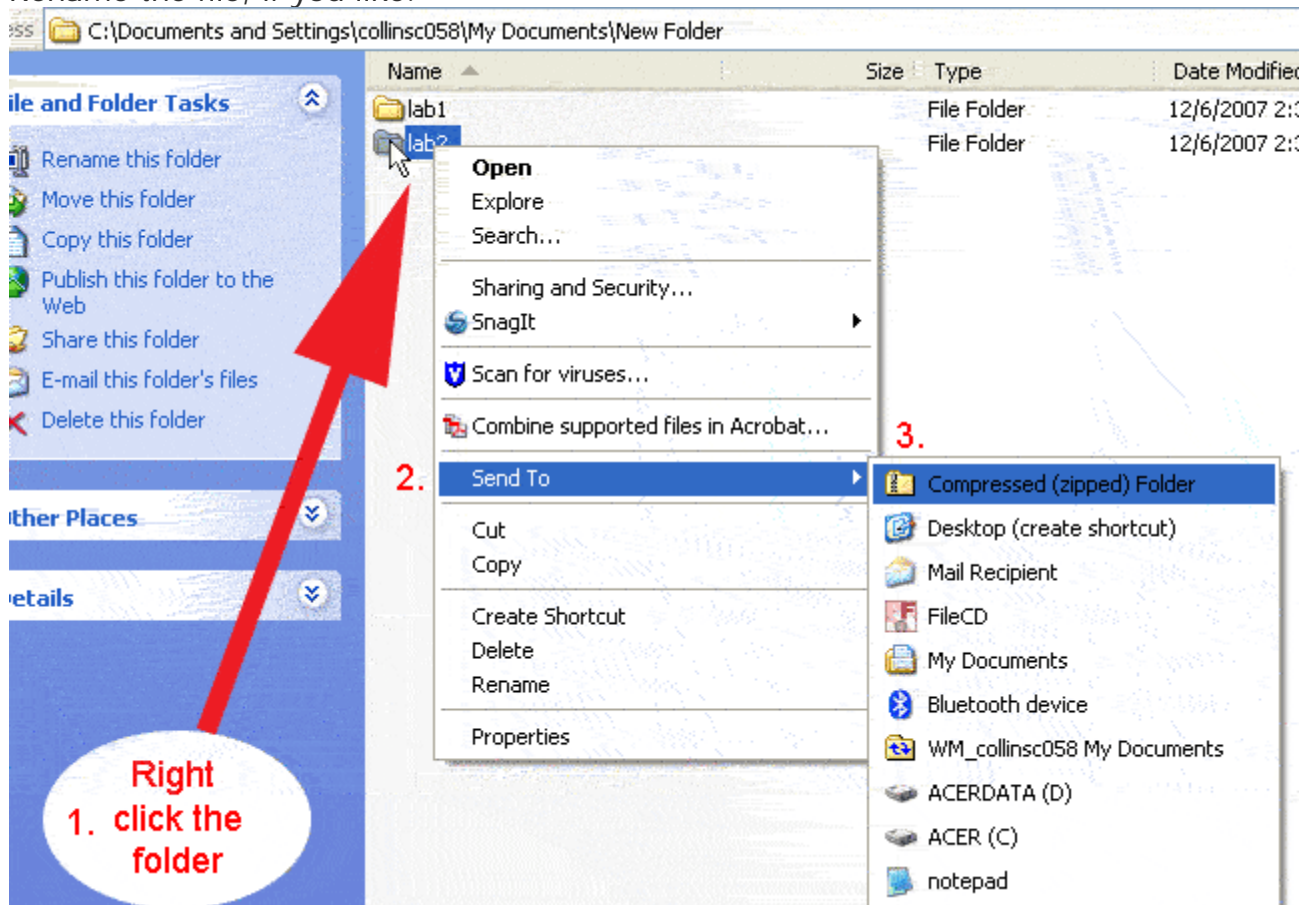
A file that can contain multiple files, or more importantly, a file that is compressed to take up less space;

- useful for emailing attachments, or for uploading.
- NOTE: the ZIP contents are not always usable as is.
 - Thus, you should not try to read or edit zip files until you download them and extract them.
- If redoing a lab, delete the zip, and edit the original files.

How to Zip

Select the files you wish to zip

1. Right click the selected item (if you have selected several items, right click *one* of them)
2. Choose Send To
3. Choose Compressed (zipped) Folder
4. The new file will be created in the same location
5. Rename the file, if you like.



The class website (D2L) includes links to videos and tutorials on how to





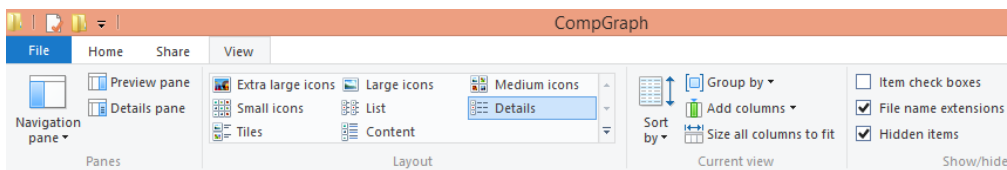
Like Lab 1

Before you begin, make sure you see the entire filename

Controlling File Names

Many Windows computers are set up to hide known file extensions; this can be very confusing for computer students. To set your computer to display the entire file name:

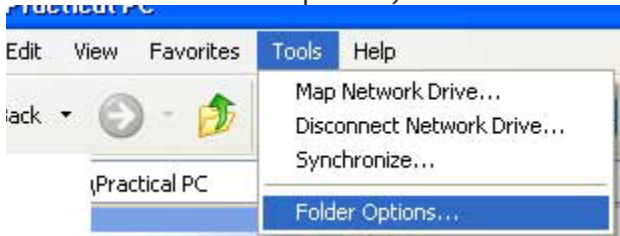
Windows 10 users: Click Start  or the  key on your keyboard, and select File Explorer, also known as This PC. From the This PC window, select the View tab and click File name extensions to instruct the computer to show the entire file name.



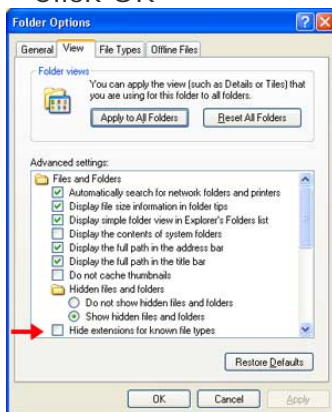
Windows 7 or earlier: Open My Computer or Windows Explorer

- Choose Tools\Folder Options...

(for Vista/Windows 7 users, press the [Alt] key to reveal the Tools menu), then select Folder Options)



- Choose the View tab
- Click **off** the check mark next to 'Hide extensions for known file types'
- Click OK

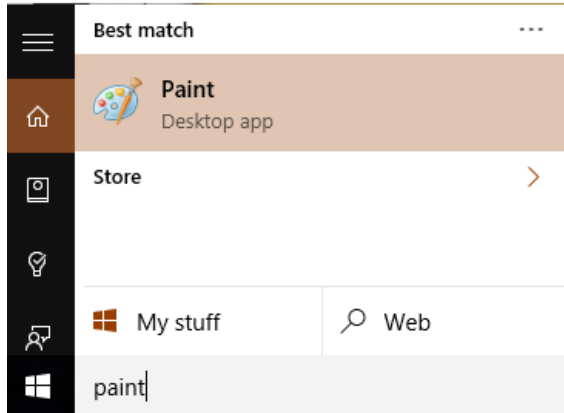


See page 8 for larger images

Again, turn OFF the checkmark next to Hide extensions for known file types.

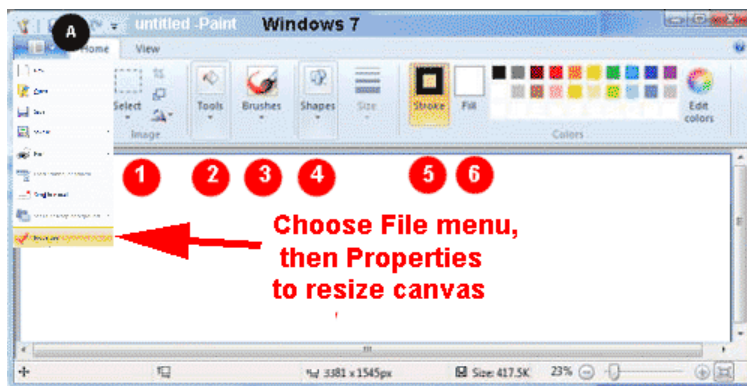
Starting Paint

Normally, this is found by pressing the Start key, then typing PAINT

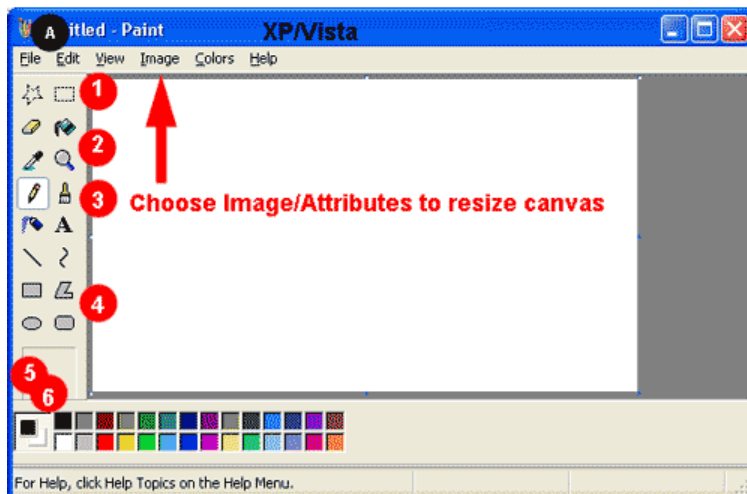


Versions of Paint

(Windows 10 Paint is shown below, then an older version; you can easily see how to implement the same steps regardless of version.



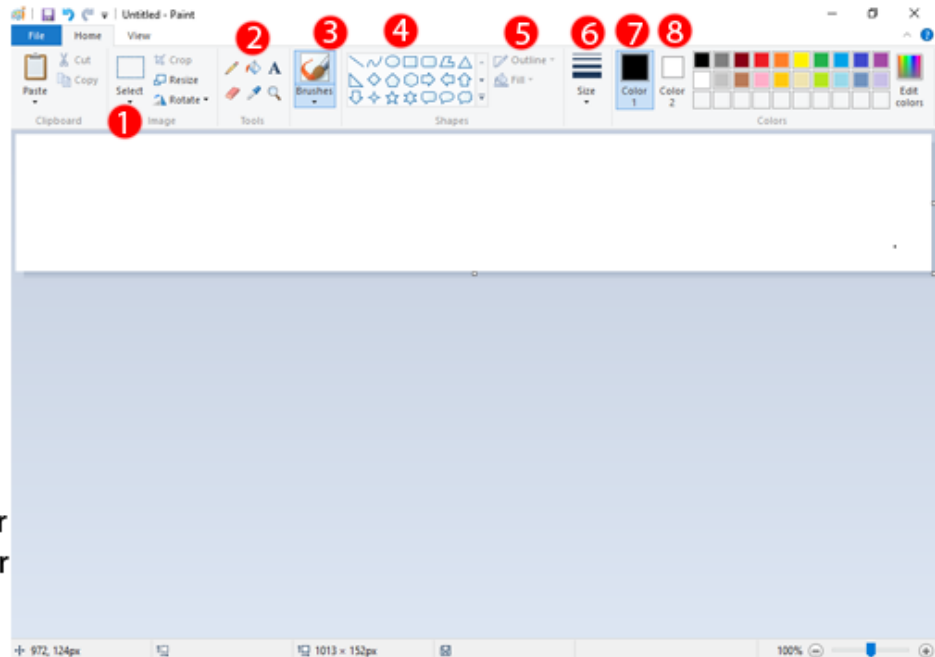
- A) File menu 2) Other tools 4) Shapes
 1) Selection tools 3) Brush 5/6) Foreground/background color



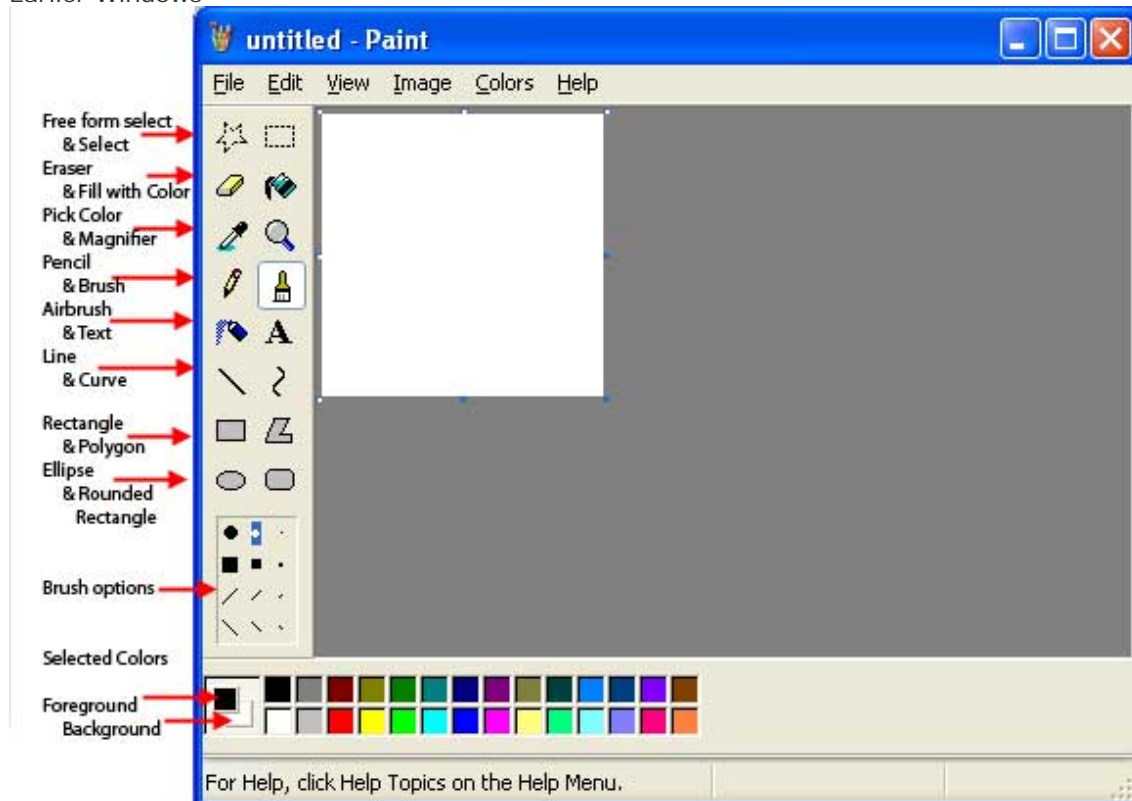
To select a foreground/ background color, choose the option, then select a color from the palette

Windows 10

- 1 Select options
- 2 Pencil
- Fill with Color
- Text
- Eraser
- Color picker
- Magnify
- 3 Brush options
- 4 Lines & shapes
- 5 Outline options
- Fill options
- 6 Line/brush size
- 7 Foreground color
- 8 Background color



Earlier Windows



Experiment with all of the tools and options before beginning the lab.

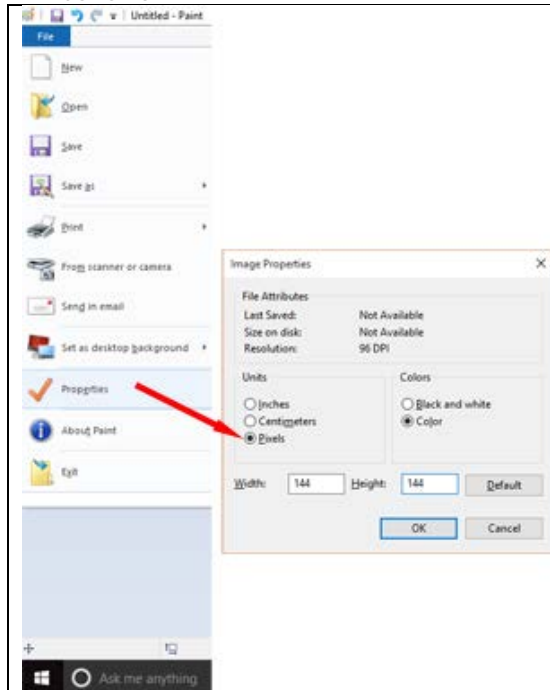
Starting the Lab

Create a folder named lab1. You will be saving all lab 1 files in this folder.

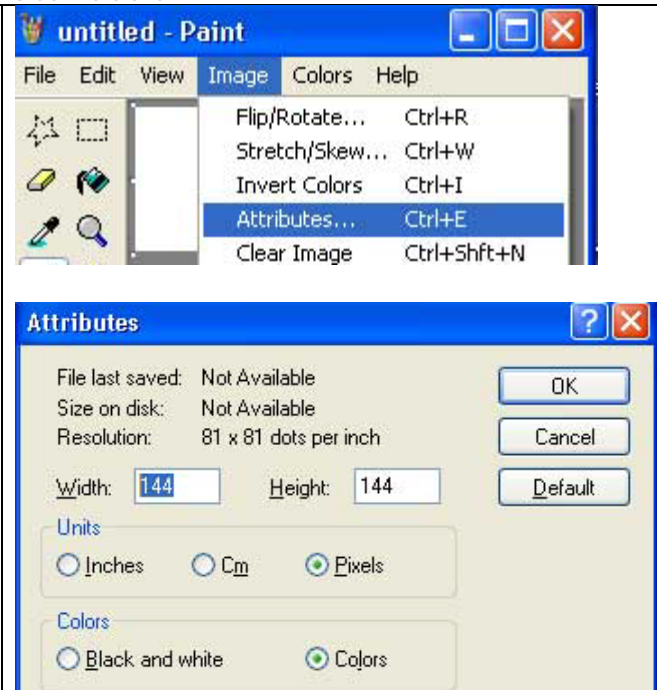
For the lab, begin by setting the size of the image.

This can be measured in pixel, inches, etc. We will use pixels. Many times the screen resolutions is between 72 and 96 dpi, so an image 144 pixels by 144 pixels would be about 2 inches square.

Windows 10



Older versions

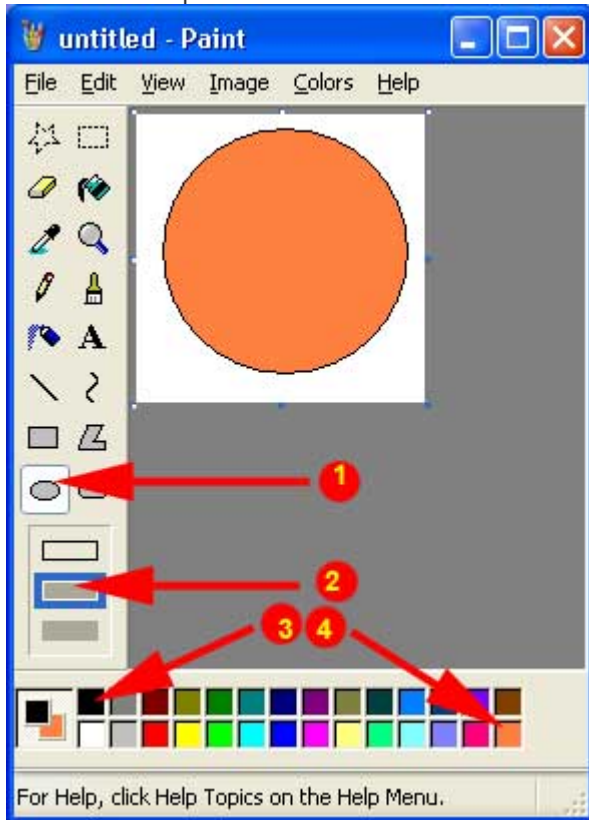


To get a round shape that has a black outline and an orange interior:

- 1) Choose the Ellipse tool
 - 2) In the Fill options area, choose ▼ then select Solid color.
- This will set foreground color for the outside, & set background color for the inside.
- 3) Click the Foreground Color box, then click black to set the foreground color.
 - 4) Click the Background Color box, then click orange to set the background color.
- (Old versions of paint you right clicked to set the background color)
- 5) Click and hold the left mouse button and drag the mouse to form the oval.
- Tip: to make it perfectly round, hold down the Shift key as you drag the mouse.

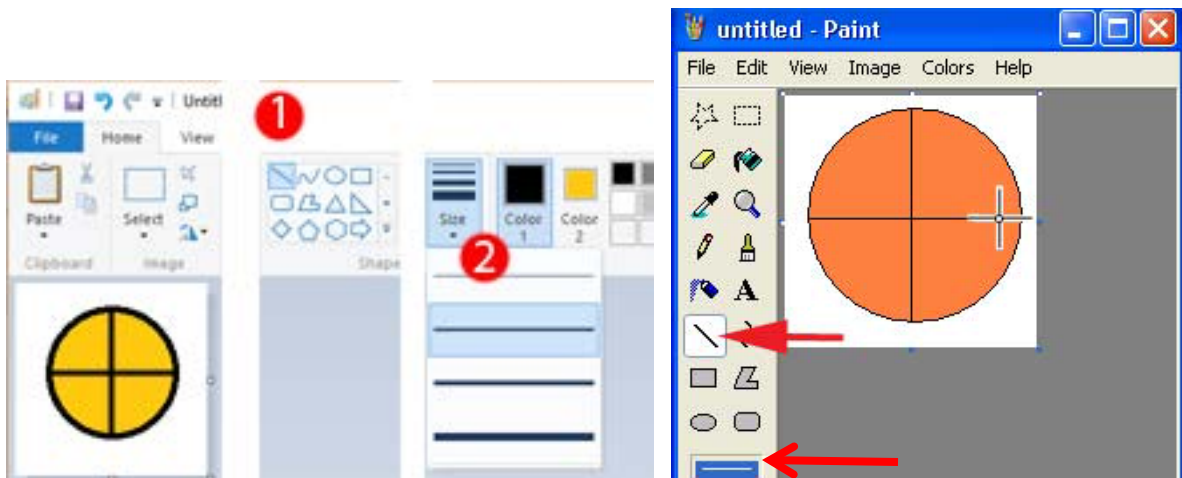


Old version of paint



Now choose the Line tool, then set size, and draw the vertical/horizontal lines, by dragging the mouse

Tip: to make the lines perfectly straight, hold down the Shift key as you drag



Now, choose the Curve tool.

Draw a straight line to the left of your vertical line

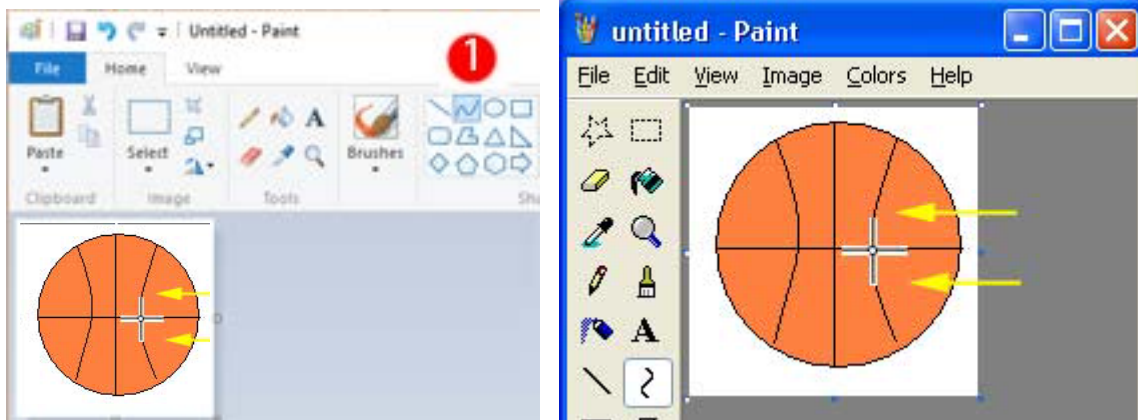
Click in the middle of the new line and drag it toward the vertical line to curve it.

IMPORTANT: to lock in the new shape, click on some other tool, like the selection tool.

Now, choose the Curve tool again.

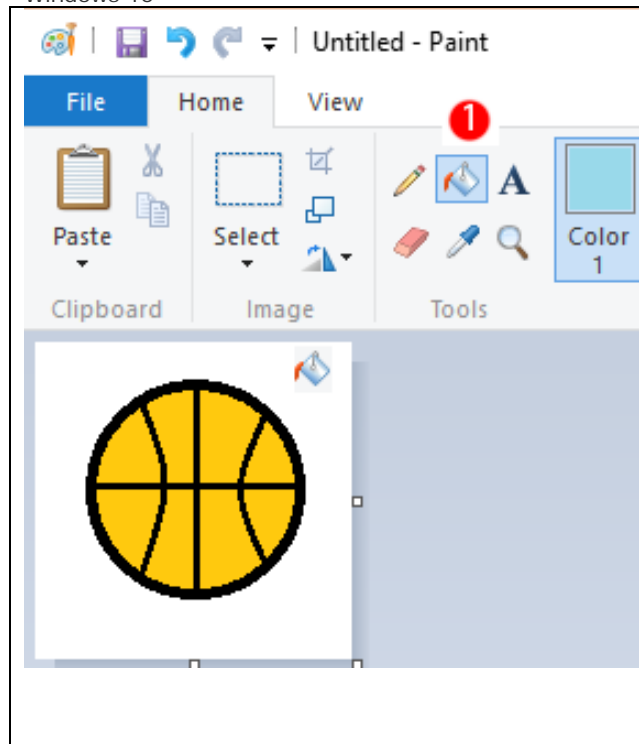
Draw a straight line to the right of your vertical line

Click in the middle of the new line and drag it toward the vertical line to curve it.
 IMPORTANT: to lock in the new shape, click on some other tool, like the selection tool.

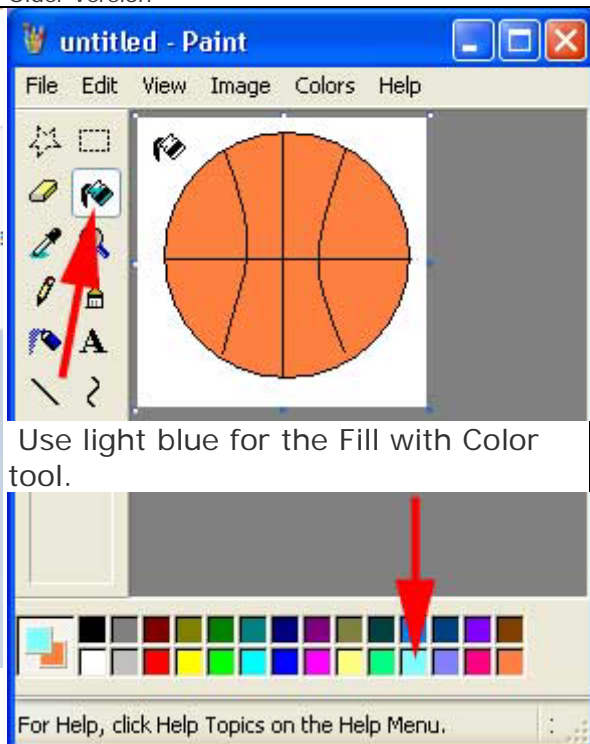


Now, go ahead and fill the white canvas with a different color.
 The Fill With Color tool will flood a connected area with the color you choose
 Note: if there is any gap in any lines or circles, the Fill With Color tool will replace the old color

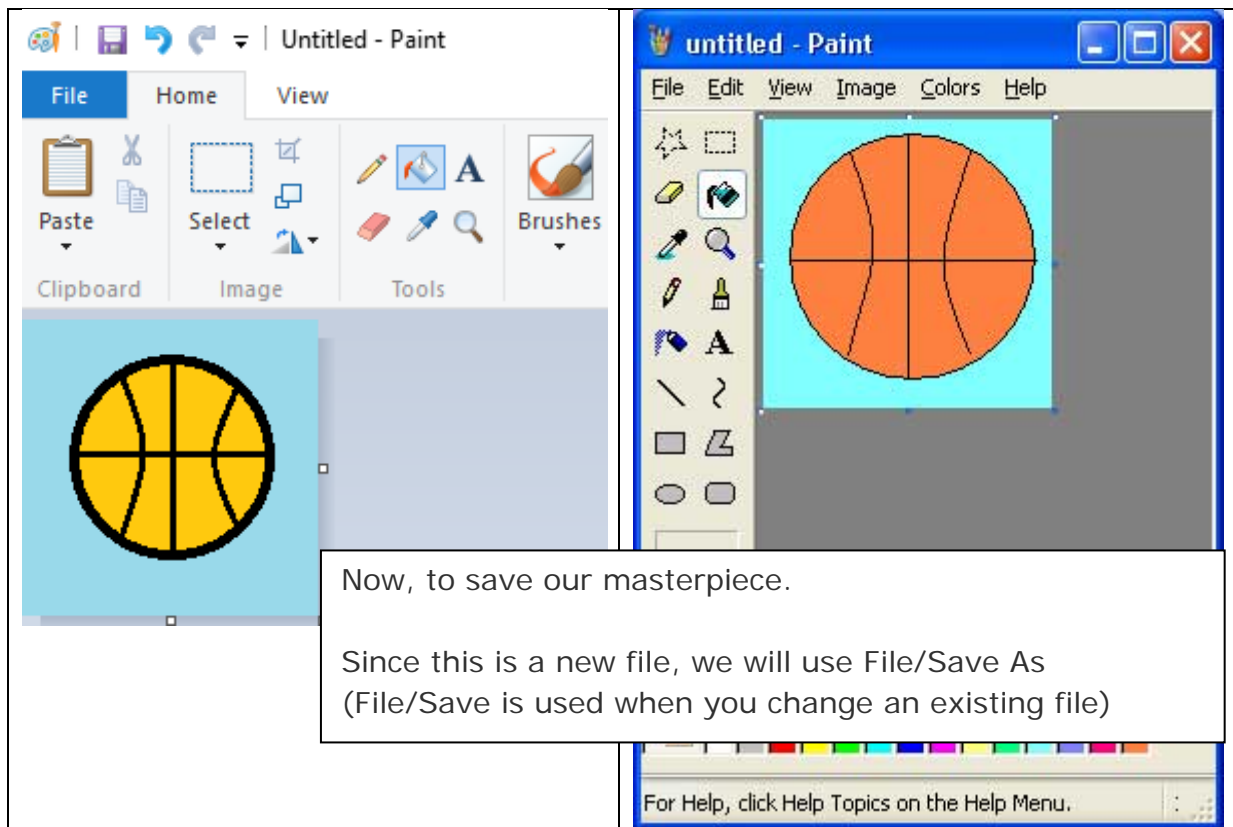
Windows 10



Older version



The final product should look something like this:



Windows 10



older version



You should have already created a lab1 folder somewhere

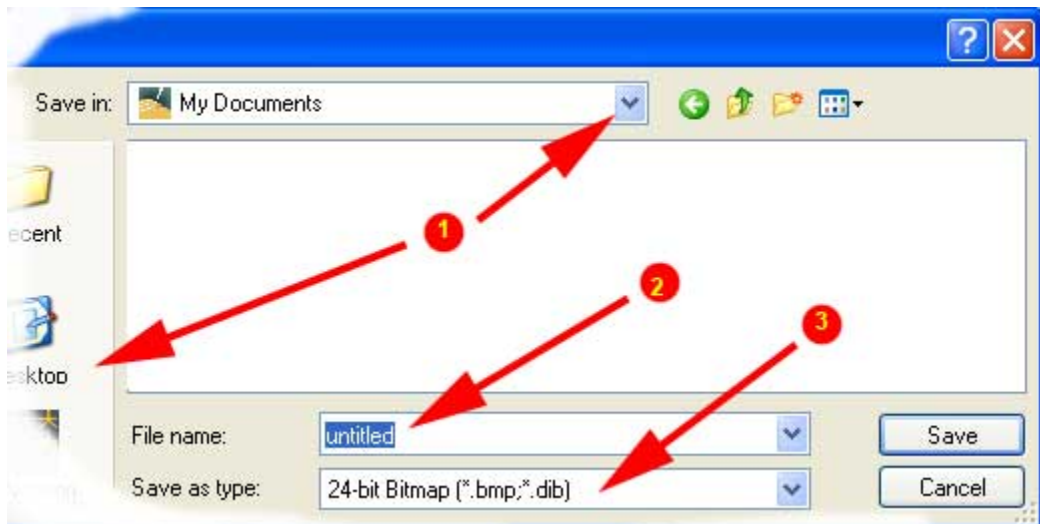
1) Choose where you want to save your image (browse to lab1 folder)
You may have to click Computer on the left to help locate where you created your lab1 folder.

2) Type the name you wish to use (ball)

3) For ARTC 1325 lab 1, make sure it will be saved as a 24 bit Bitmap...
this will add .bmp to the filename: ball.bmp
(bmp is the default extension for bitmaps)



Other options, for different applications, include .gif (which can be animated) and .jpg (these are covered later)



Once you choose Save, you'll see the name of your image on the title bar.

The class website (D2L) includes links to a video similar to Lab 1.

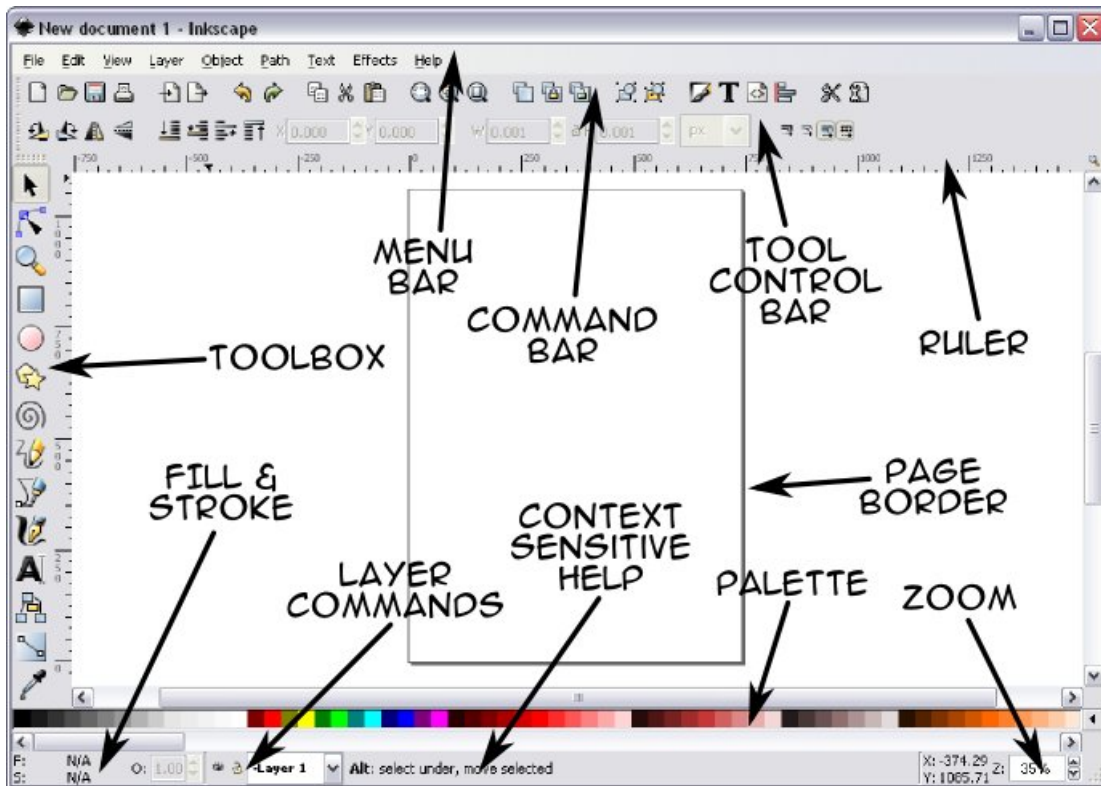


The next step in Lab 1...

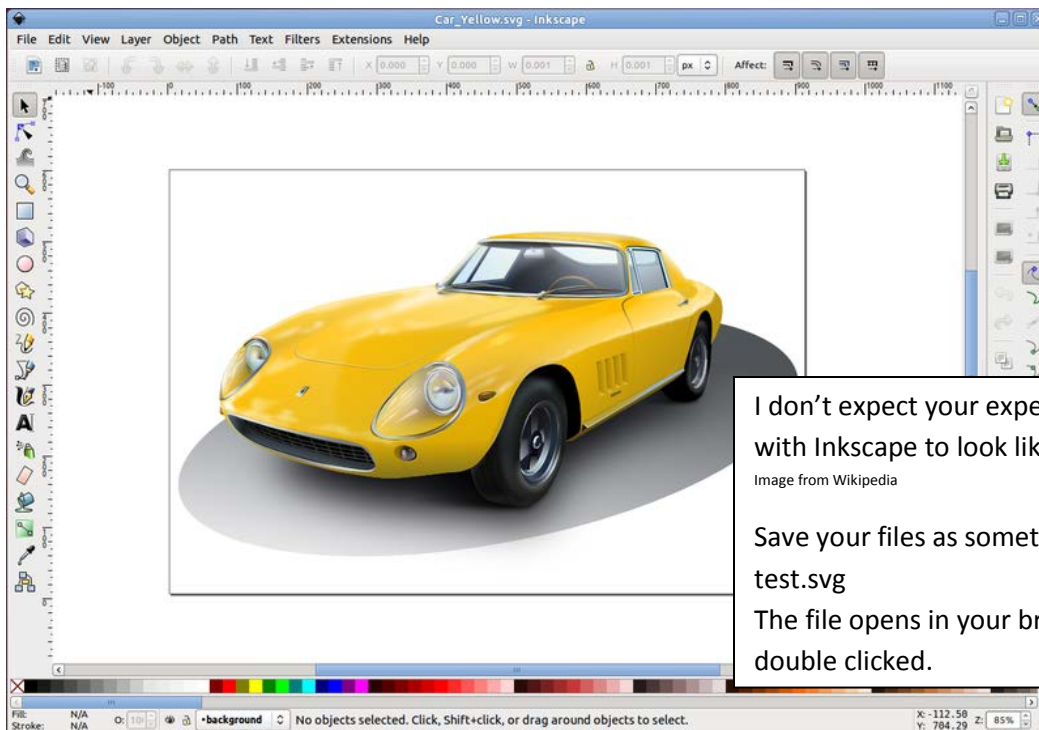
Now, on to just a little hands on with a vector program: Inkscape.

As this is INTRO to computer graphics, this will be a light overview, mainly just experimenting with VERY basic shapes, etc. There are online tutorials, if you want to get a little deeper into Inkscape. See also Appendix B, at the back of book.

Inkscape



The class website (D2L) includes links to a videos and tutorials on Inkscape.



I don't expect your experiments with Inkscape to look like this

Image from Wikipedia

Save your files as something like test.svg

The file opens in your browser when double clicked.

Finishing Lab 1

You should have already finished:

- creating the lab ball.bmp file, and a simple vector saved as perhaps test.svg.

Soon you will answer questions concerning topics covered in the Lab

(You will later transfer this information into a D2L quiz)

- At the end of this process,

1) you will submit the web page files by zipping them, and placing them in the D2L dropbox area.

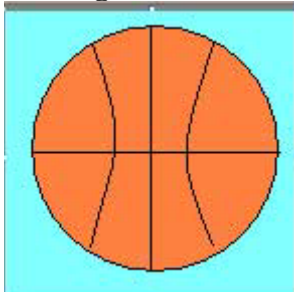
2) you will 'turn in' your documentation and Q&A by taking the ARTC Lab 1: quiz in the Quizzes area of Desire2Learn. So, to get the best score, complete the documentation and Q&A, first.



Lab 1 Part 1, Activity (40%)

The class website (D2L) includes links to a videos and tutorials on Paint and Inkscape.

- Create a folder named lab1
- Experiment with Paint, create images using various tools in Paint.
Save some of your work in the lab1 folder.
- Using Microsoft Paint, create a basketball, ball.bmp as demonstrated



Grade Points

5 points: folder named lab1 created

5 points: Paint image is 144 x 144 pixels

5 points: Paint correct colors and tools chosen and used

5 points: Paint image is similar in appearance to screenshot above

5 points: Paint file named ball.bmp is saved in the lab1 folder

- Experiment with Inkscape or Adobe Illustrator,
save some of your work in the lab1 folder, perhaps named test.svg.

5 points: create a simple vector illustration with Inkscape (try shape tools, pen tool, etc.; you may specify the name, such as test.svg; save in lab 1 folder)

I may give you a bonus point if other creative bmp or svg files are submitted.

5 points: the lab1 folder is zipped, renamed to *yourname*-lab1.zip

To Zip, browse to the the location of lab1 folder (don't open the folder)

Right click the lab1 folder

Choose **Send To...**

Choose **Compressed (Zipped) Folder**

You may rename the new zip by right clicking it.

The file name should be *yourname-lab1.zip*

5 points: *yourname-lab1.zip* uploaded to D2L dropbox.

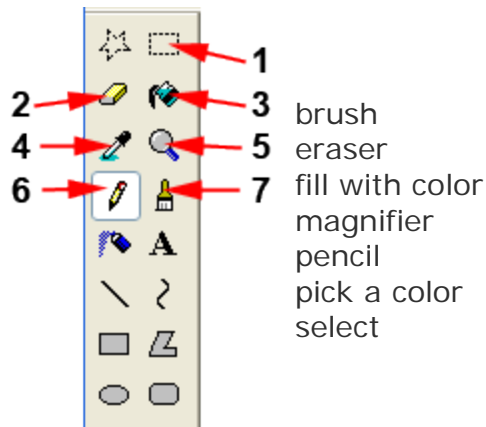
Lab 1 Part 2, Hands On (60%)

Be prepared to discuss/demonstrate new tools and concepts used in this lab.

At the end of this process, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

- Match the terms with the correct Paint tool (icons the same in old/new version)



- One way to resize a Paint canvas is to click the drag handles on the sides, or corners. What's the other way?
 - File\Properties
 - Edit\Canvas
 - View\File Size
 - Image\Attributes
- True/False, you select the **foreground** color by left clicking the desired color box.
- To make a line straight, or an ellipse perfectly round, you hold down the _____ key
 - alt
 - ctrl
 - F1
 - Shift

- True/False,
If you select the brush tool, you can select multiple brush size/shape options
- The default for a Paint **bitmap** file type is
a) bmp b) gif c) jpg d) png
- When using the curve tool, the easiest way to lock in the curve in place is to
a) press F1
b) select another tool
c) click the lock button
d) select a different color
- If you have a box drawn that you wish to fill with color, first make sure
a) the box has no gaps, or the color will flood other parts of the image, also
b) the background color is set to the same shade as the foreground color
c) you must select another tool, before using the tool again
d) that the new color is darker than the old color
- True/False, You can copy an image from another program, and paste it into Paint

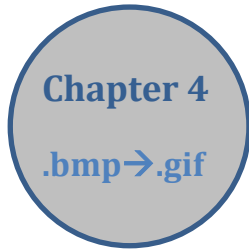
What's due this week

This week, you'll do two discussions in D2L, plus lab 1 dropbox & quiz.

- **Participation Discussion 3** Respond in the class Discussion forum to the following:
What is the default extension for a bitmap file created in Microsoft Paint?

- **MUD 3 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 3



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

gif
Compression
Notes
Lab 2

Vector, shapes that can be manipulated, such as in an inkscape svg file.

Raster, similar to dots of color on a paper... Paint makes raster files.

While paint can save as its native .bmp format, it can save into other raster formats, such as gif, tiff, png, and jpg (also known as jpeg)

All but gif are suitable for photographs, but gif has a couple of tricks worth mentioning.

gif

Graphics Interchange Format, or gif, is an 8 bits per pixel bitmap; this means the image can have no more than 256 different shades, making it best suited for line drawings and charts.

The low number of bits yields smaller file sizes than bmp, but gif files can also be compressed, to further reduce the file size. (More about compression coming)

Originally, gif was under a patent, meaning it cost companies to add gif support to digital image editors... so there were several attempts to replace the format on the Internet. Now that the patent has expired, gif is freely distributed, and remains popular on the Internet for simple files that don't use a lot of color.

Other features that made gif popular are:

transparency

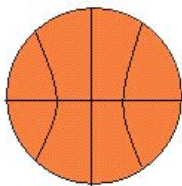
interlacing, and

animation, and

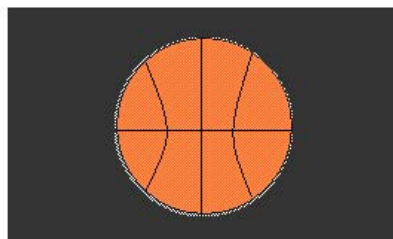
the fact that Microsoft Paint can save a simple line drawing as a gif.

Transparency

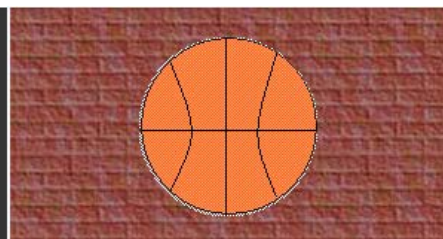
Transparency is telling the computer to ignore part of an image, so whatever is behind it shows through



File with transparent background
on bgcolor="white"



Same file with transparent
background on bgcolor="black"



Same file with transparent background
on background="bricks"

Interlaced

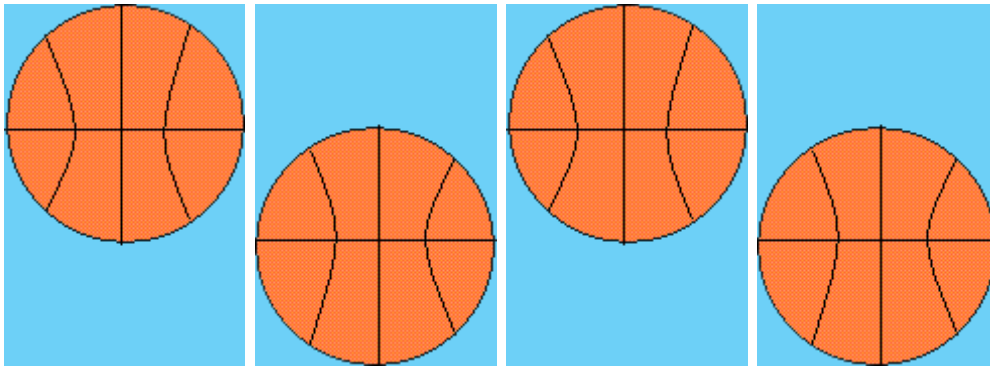
Interlacing is a method of displaying an image that was used primarily for slow Internet connections. Normally, an image won't display until it fully downloads. If a file was interlaced, parts of the file would display almost immediately, and the image would continue to "fill in" until the whole file was downloaded. The faster your internet connection, the faster the image would "fill in."



The class website (D2L) includes an animation of interlacing.

Animation

Animation with gif is the ability to store multiple images in the same file, and display them one at a time. This behaves just like a flip book kids often make... draw several images on separate sheets, then flip through the pages to see animation. (More on animation to come.) An animation can be just two images (ball at the top, ball at the bottom, and as soon as it shows both in sequence, it starts over)



The class website (D2L) includes the bouncing ball animation.

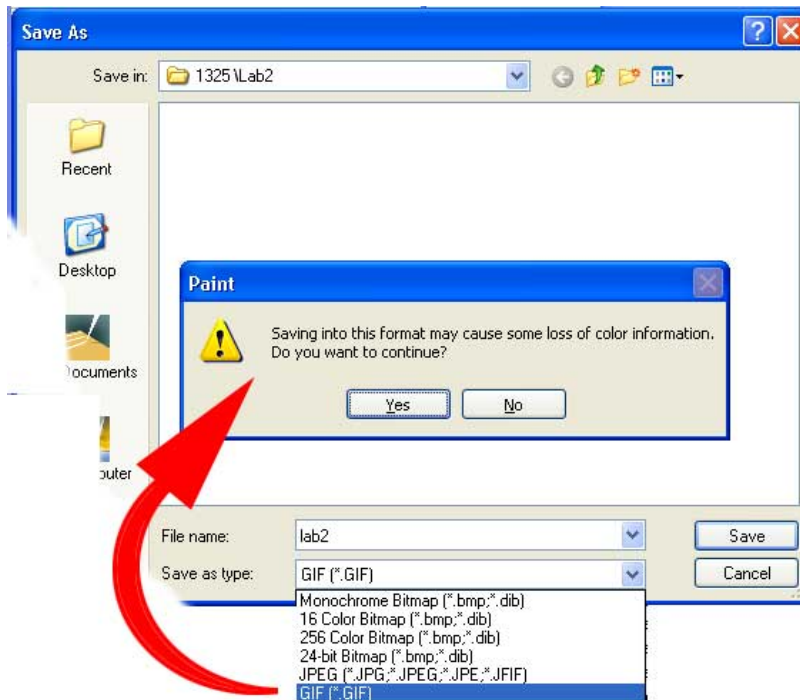
Using Microsoft Paint to save as gif

If you open an existing image in Paint, you can choose File\Save As ... gif

Since the image you opened is 24 bit color, and gif is limited to 8 bit color, the computer will attempt to mix colored dots to approximate other colors, this is called dithering.

Below is a close up of how Paint will dither to make the blue and orange from the limited palette.





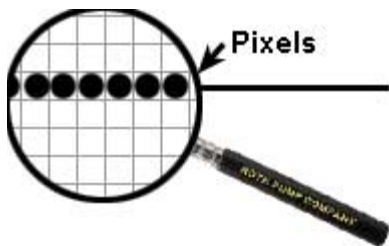
Later, the discussion will include tools better suited to gif than Paint, such as GIMP and Photoshop

Compression

Zippping reduces file size, called compression. But some files are compressed when saved, especially images.

Again, compression is about reducing file size; smaller files take up less space on hard drives, and download faster. Basically, there are two ways to compress a file, to remove redundant or superfluous data.

Redundant data is repeated data; as computers are very good at detecting and repeating patterns, this is a favorite method of compression.



Example: Let's say we point a digital camera at a white board, and snap a picture. The camera detects colors at various points, usually by dividing the image to be captured into rows and columns, then collecting color information at the intersections. VGA resolution is 640 points along the horizontal, and 480 rows, for just over 30700 pixels, or picture elements. Below is a magnified view of a line on that white board, so you may see the pixels that make up the image.

Each pixel is represented by a series of 1s and 0s that dictate the color... some cameras will assign 24 ones and zeros to each pixel, allowing up to 16.7 million

colors to be represented at that single point. That means you have $640 \times 480 \times 24$, or a total of 7372800 1s and 0s for that one image. That is just over 7 megabytes! Obviously, we need to compress the image, and one way is to get rid of the redundancy. On the rows that are just white pixels, instead of saying 'white pixel,' 'white pixel,' 'white pixel' over and over, why not just tell the computer to repeat the white pixel 640 times. And if you have 400 or 500 similar rows, why not tell the computer to repeat the 'white row' 400 or 500 times? This immediately gets rid of a lot of 1s and 0s, making the file smaller. The file has not changed, just how we describe it. This is called loss-less compression.

Another way to compress a file is to remove 'extra' information.

Example: consider $2+2=4$. Is there any part of that statement that does not need to be stored? The computer can add $2+2$, so why store the answer? The answer will not change the next time it is added, to the answer is superfluous, or extra.

Now, consider a picture of a rainbow. Can you really detect the 16.7 million shades, or would 256 shades get your point across? Moving from 24 bit color to 8 bit color, thus removing some of the 1s and 0s that indicate color, you can compress a file by removing the 'extra' color information, and a lot of 1s and zeros that make up the file. The file has changed, but perhaps not in a meaningful way. This is called lossy compression.

For the images that follow, on the left is a jpg; while still compressed, it is still a good image. (More about jpg later.) However, on the right, that image has been stripped down to 216 colors; now, there is no smooth transition between shades. This would NOT be a good compression, as TOO much info was removed.



In images, a .bmp file is lightly compressed, and not good for say Internet downloads as the files stay large. So instead, you could use .gif, if your file is limited to 256 colors, as in a pie chart. If it is a photograph, as before, use .jpg which allows for more colors, but still has good compression.

PS, that 7 MB picture of the white board can compress to 900 KB (24 bit 16.7 million shades bitmap image), or 37 KB (monochrome bitmap image)... or a 5 KB jpg file... but since we don't need a lot of colors, it is best suited to be a gif, which comes in at mere 1.7 KB! From 7 MB to 2 KB without losing the meaning... that is about 2400% improvement in storage space, and download time.

Notes

bmp is capable of high color; from monochrome 2 bit (black or white) all the way up to 16 bit (~65000 colors) to 24 bit (16.7 million shades), but as you have seen, bmp is a low resolution format (Paint can do between 72 and 96 dpi)

gif, like bmp, is a low resolution format, but is limited to no more than 256 colors

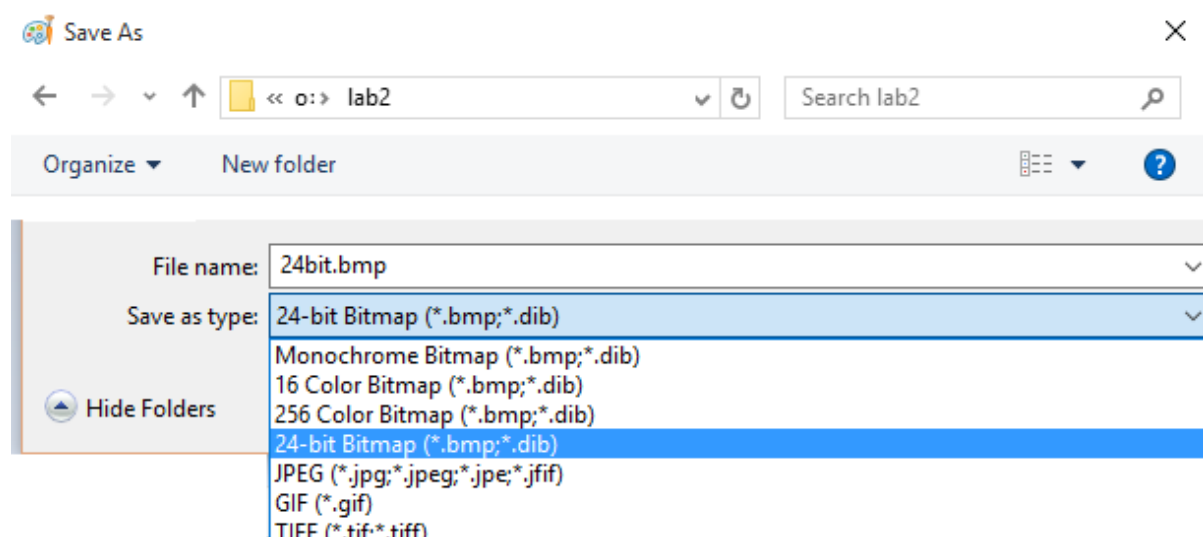
We will shortly see that tiff, png, and jpeg have to be high resolution **and** high color, if they are going to do a good job on photos.

You can also get more info at Wikipedia, and other sources, on compression.

Lab 2

Part 1 Activity (40%)

- Create a folder named lab2
- Create an image using Microsoft Paint, and save as a 24 bit .bmp file
Start with a good size canvas, use lots of colors: DO something interesting!
- Include many different colors, lines, circles, etc.
- Save as a 24 bit .bmp file called 24bit.bmp



- Save as a 256 color.bmp file called 8bit.bmp
 - Save as a 16 color .bmp file called 4bit.bmp
 - Save as a monochrome .bmp file called 2bit.bmp
 - Close Paint
 - Start a new Paint session, and open 24bit.bmp
 - Save as a tiff file called 24bit.tif
 - Close Paint
 - Start a new Paint session, and open 24bit.bmp
 - Save as a gif file called 24bit.gif (will warn about color loss)
 - Close Paint
 - Browse to you lab2 folder, and compare file size.
 - Right click each image, and choose Preview to compare how the images look
- Zip the lab2 folder, rename it *yourname-lab2.zip* & submit in the D2L Lab 2 dropbox

Grade Points

30 points: lab2 folder contains 24bit.bmp, 8bit.bmp, 4bit.bmp, 2bit.bmp, 24bit.tif, and 24bit.gif (6 pt ea)

10 points: lab2 zipped, renamed *yourname-lab2.zip*, & uploaded to D2L dropbox

Part 2 Hands On (60%)

Be prepared to discuss/demonstrate new tools and concepts used in this lab.

At the end of this process, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

- True or False: gif stands for Great Image Format
- gif is a _____ image type
 - a) vector b) raster c) pixelmap d) iTunes
- gif is best suited for
 - a) photographs
 - b) simple line drawings with few colors
 - c) simple line drawings with millions of colors
 - d) music files
- gif files are typically used
 - a) on the internet
 - b) for saving photographs
 - c) for printing photographs
 - d) to compress photographs
- True or False: the gif format is protected by a current patent

- What features are supported in new gif files? (Choose all that apply)
 - a) 24 bit color
 - b) animation
 - c) high resolution
 - d) transparency
 - e) 256 color
 - f) non-interlaced
 - g) interlacing
- Telling the computer to ignore part of an image is
 - a) transparency c) interlacing
 - b) animation d) compression
- Displaying a image gradually, until the image fills in, is called
 - a) transparency c) interlacing
 - b) animation d) compression
- Displaying one image, followed by another image, is called
 - a) transparency c) interlacing
 - b) animation d) compression
- Match the file types according to quality and file size

24 bit bitmap	Large file size, high resolution file with millions of possible colors
dither	
256 color bitmap	Large file size, low resolution file with millions of possible colors
16 color bitmap	
monochrome bitmap	Small file size, 256 color limit, suitable for use on the Internet
tiff	
gif	mixing colored dots to approximate another color

What's due this week

This week, you'll do two discussions in D2L, plus lab 2 dropbox & quiz

- **Participation Discussion 4** Respond in the class Discussion forum to the following:

What is gif best suited for?

- **MUD 4 (My Understanding, Details)** Respond in the class Discussion forum to the following:

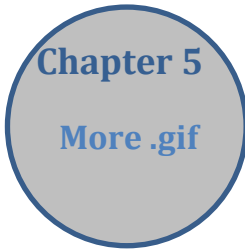
What was helpful this week?

What do you hope we talk about next week?

There was a continuous orientation video you were supposed to watch...

comment on that as well.

End chapter 4



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Interlacing

Animation (This week's lab, Lab 3, is using unFREEz to animate a file).

unFREEz (This week's lab, Lab 3, is using unFREEz to animate a file).

Introduction to GIMP (Not part of lab 3, but on upcoming test)

if GIMP doesn't open all the correct windows... see page 60

More on Transparency (Not part of lab 3, but on upcoming test)

Preview of Lab 4 Transparency (Lab 4 is due week 7)

Lab 3 begins on page 70

Interlacing

While Interlacing was discussed earlier, you might want to get in the habit of researching other folks reference material on some of these topics, to get a more rounded overview. There is a link on the class website (D2L) to a nice Wikipedia page. (While several studies have shown that Wikipedia is about as accurate as an encyclopedia, it still might be a good idea to only trust wikis from folks you know, who have vetted the information... or if it seems to jive with what you already know.)

Animation (This week's lab, Lab 3, is using unFREEz to animate a file).

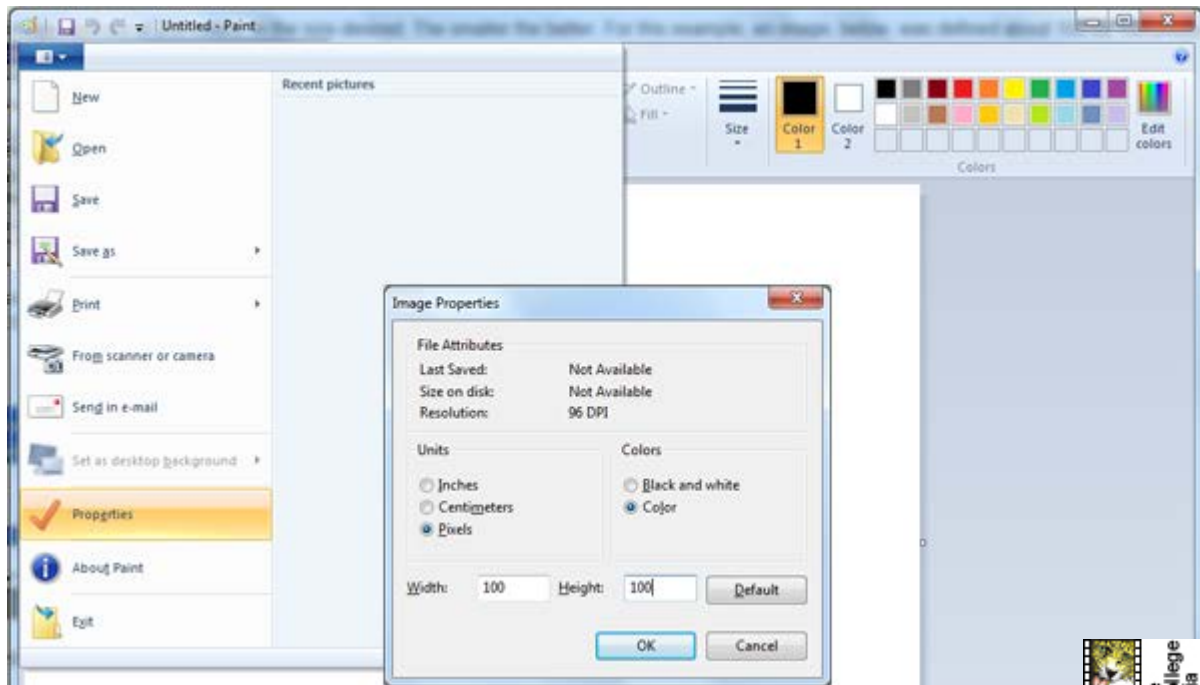
Creating an animated .gif file is actually a pretty straight forward proposition, requiring just three basic steps: create the original images, import the images into an assembly program (such as Gifcon32 or unFREEz), then optionally add controls.

An important note is that many graphic programs cannot display the resulting animation... you may need to use your browser to view any animation you create. (Right click the file, Choose View With and choose your browser)

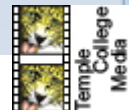
Later, if you don't want to create animations, many are available online; careful you don't violate a copyright.

Creating .gif's

Create a new image, defined in color, in the size desired; the smaller the better. For this example, an image, below, was defined about 100 by 100 pixels.

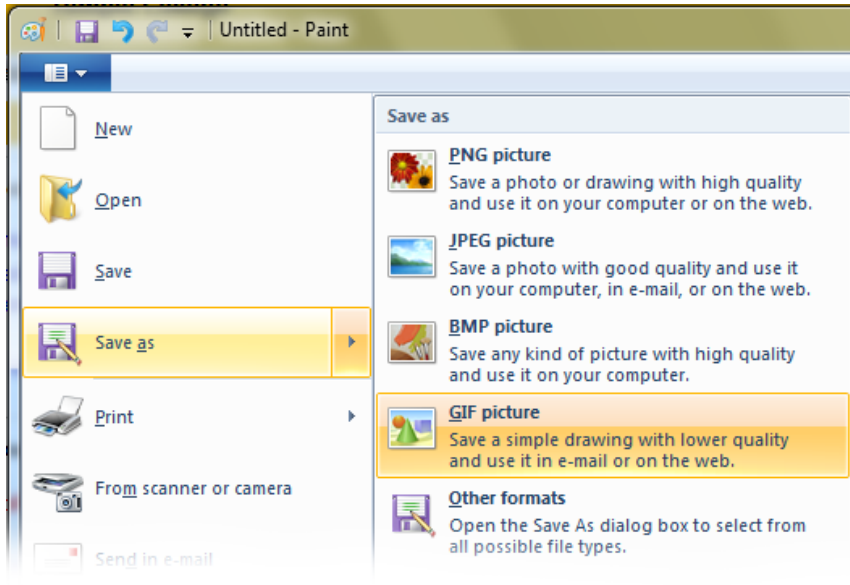


The class website (D2L) includes Step by Step directions and samples.



When complete, save as a .gif file. Some colors may dither to get to the 256 color limit. Change the original a bit, then save as a new gif.

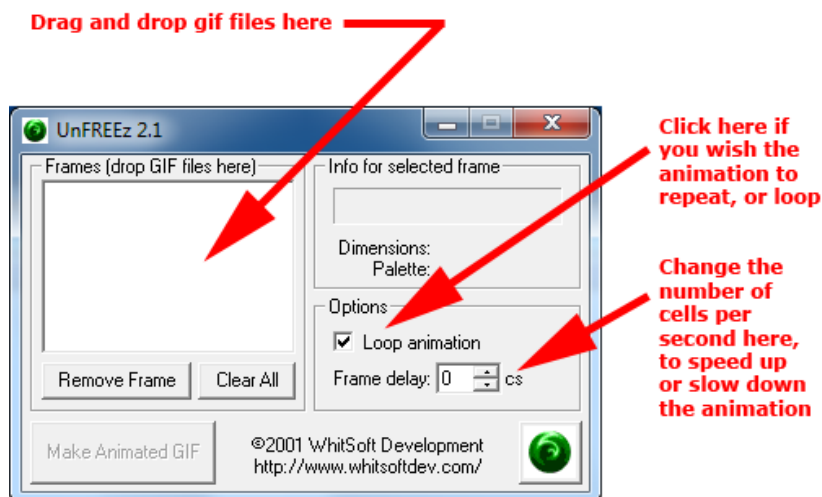
Repeat the creation process, making small adjustments that will later make up the animation, and saving as a new .gif file.



Animating .gif's

There are many tools that you may choose to animate the above files. A simple, free program, is **unFREEz**, available at <http://www.whitsoftdev.com/unfreeze/>

You simply drag your .gif files in, and set the frame delay between the images.



Click [Make Animated GIF] when finished, and give the file a new name.

View a video on using unfreeze on the class web site.



An important note is that many graphic programs cannot display the resulting animation... you may need to use your browser to view any animation you create. (Right click the file, Choose View With and choose your browser)

The class website (D2L) includes Step by Step directions and samples.

GIMP

There is a wide array of digital image editing software that can deal with basic gif files, from Microsoft Paint to Paintshop Pro, from GIMP to Adobe Photoshop. But to deal with transparency, you need to go up a step from Microsoft Paint.

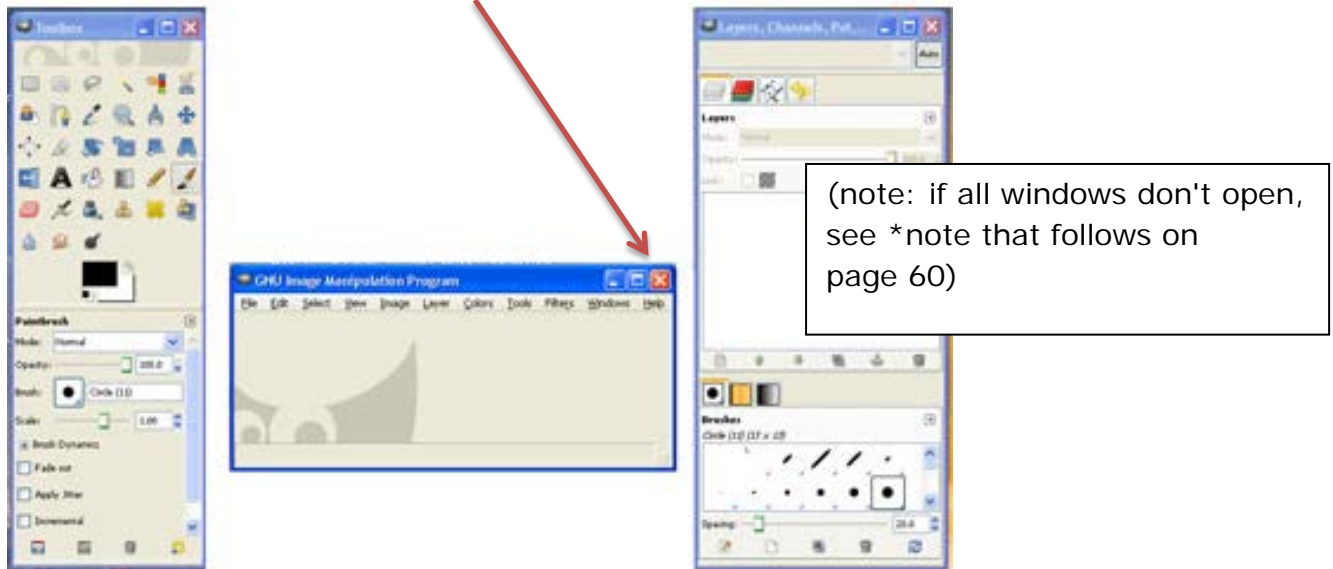
While Photoshop is often considered the gold standard, GIMP is more than adequate for our tasks... and is an open source program (read: free; not only is the software free, but there is also a free on-line book you may use for reference: GIMP-Savvy: <http://gimp-savvy.com/BOOK/index.html>).

If you don't already have it on your machine, you can Download GIMP free. Links to download, and to find out more about GIMP are on the class web site.

NOTE, GIMP LOADS VERY SLOWLY, NORMALLY PAUSING ON FONTS

Once started, GIMP opens in multiple windows

Click **here** to close GIMP More about Layers... later



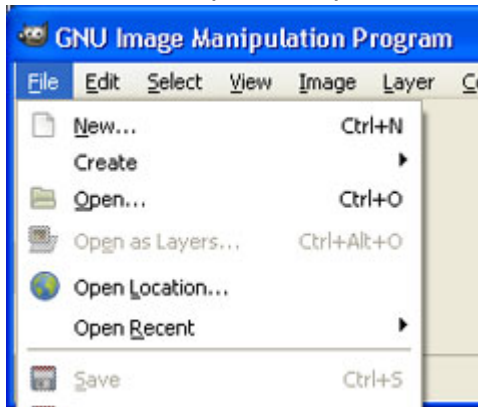
(note: if all windows don't open, see *note that follows on page 60)

Toolbox window, the GNU Image Manipulation Program window, the Layers... window

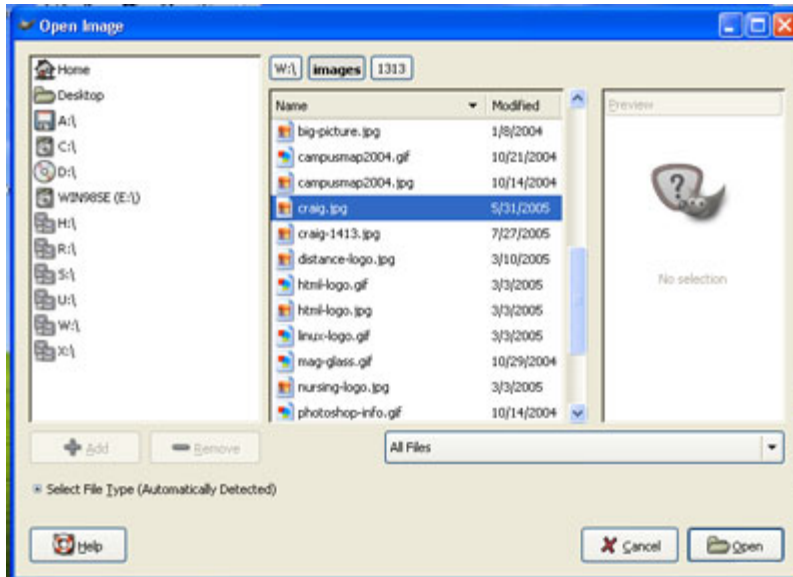
Important: To close GIMP, click the [X] on the Image Window;

DO NOT click the [X] in the Toolbox or Layers Window.

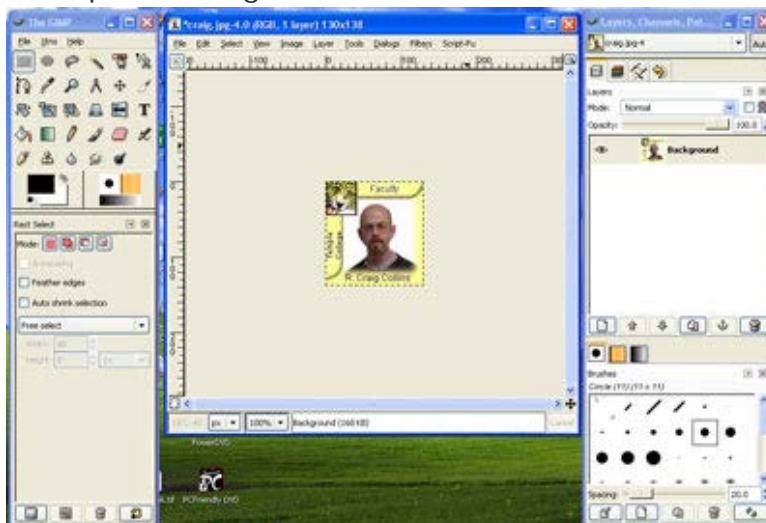
Choose File/Open to open an image.



Locate the file you wish to edit



The opened image, and the GIMP windows



To begin with, we won't be using a lot of different options...

Most of what we will do will be on the Image window:

File	Edit	Select	Image	Tools	
Save	Cut	All	Crop Image	Color tools	->color balance
Save As	Copy	None			->brightness-contrast
	Paste				

***Note If GIMP does not open the Toolbox or Layers window,**

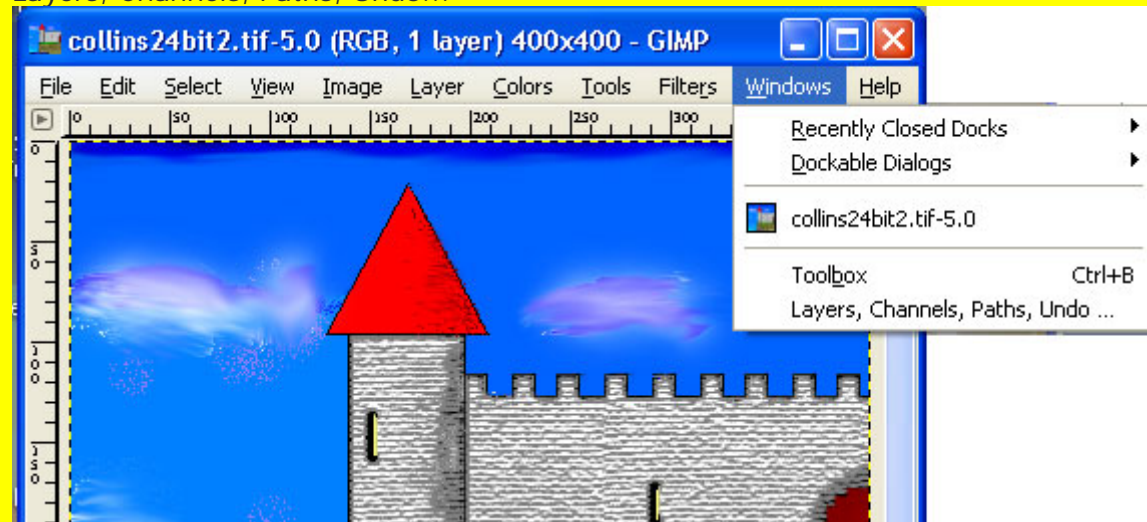
in the GNU Image Manipulation Window

Choose Window, then click the missing item, either

Toolbox –Tools Options

or

Layers, Channels, Paths, Undo...



More on gif Transparency

The way transparency works, and the way you often implement it, are two different things.

The way it actually works is similar to how the weather person stands in front of a background, and a computer replaces the color of the background with another image. This is often called Chroma Key in TV.

The visual effect is the colored screen is rendered transparent, so something else can show.



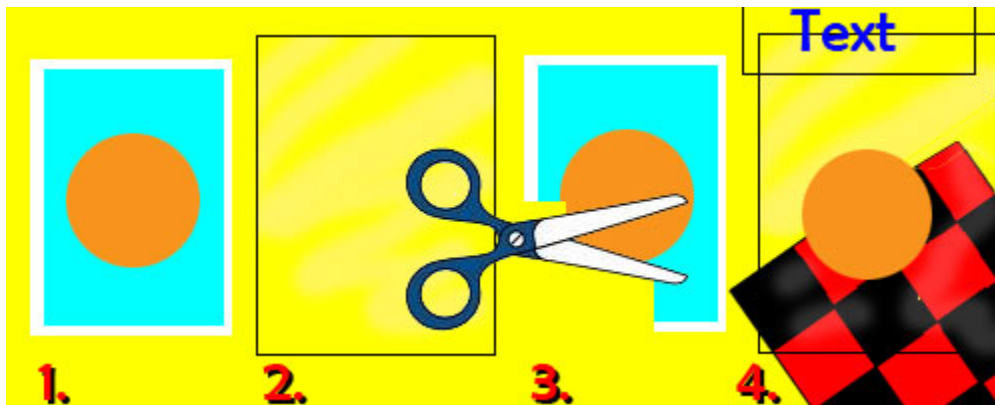
Your digital image editor has two ways to do this.

One, is to select a color or area, and instruct the computer to ignore it when the file is being saved, as in Chroma key. In GIMP, this is called the alpha channel. (More on alpha channel later)

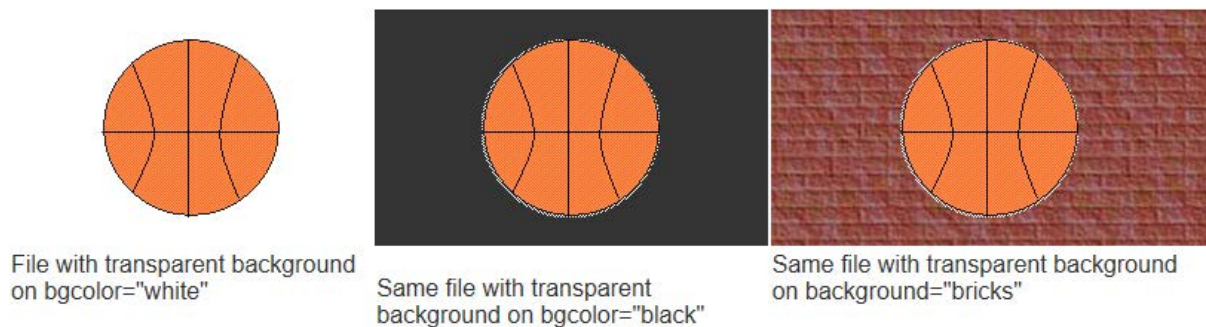
The other way of using transparency is the equivalent of using clear, or transparent, plastic sheets.

Example:

1. Start with your photograph
2. Take a piece of clear plastic, to place under your photograph.
3. Then using scissors, you cut away part of the picture, and lay it back on the clear plastic.
4. Perhaps you add another piece of clear plastic on top of the background and the photo... you could write on the top layer, without messing up the layer underneath, and still see the material behind the image.



When your digital editor saves the image as a gif, the computer knows to select those areas to be transparent, leaving the desired result. (More on these layers, later.)



Next, read over a preview of lab 4, to prep for the test. Lab 3 is on p. 70

PREVIEW Lab 4 (Lab 4 is due week 7, but GIMP basics *are* on the test)

A video of the Method One portion of the activity is also available on the class web site; but read over the steps first.



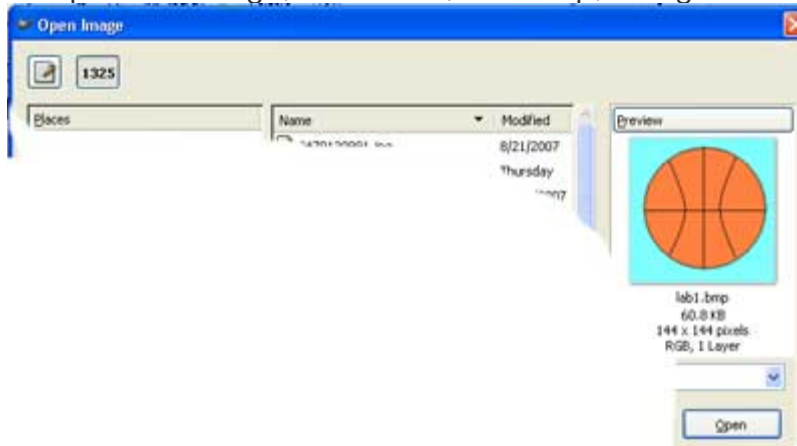
As mentioned previously, there are two ways to make a file with transparency. Method One: (required for lab 4), Mark an area or color, and tell the computer to ignore that area or color (steps below)

or

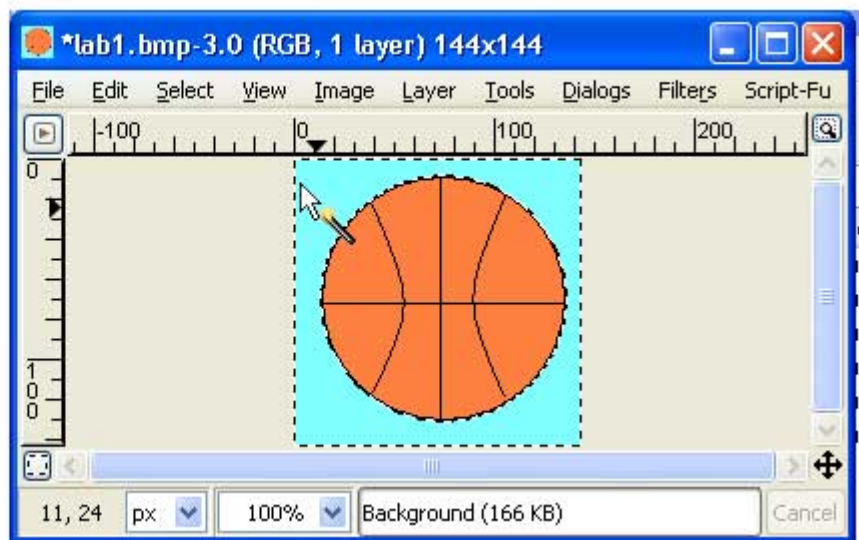
Method Two, add a transparent layer, and cut out the parts you don't wish to see (this method will be covered in more detail again later in the semester).

Method One: Tell the computer which area to ignore, which makes part of the image transparent.

1. Open the image, from lab1, ball.bmp, using the GIMP software



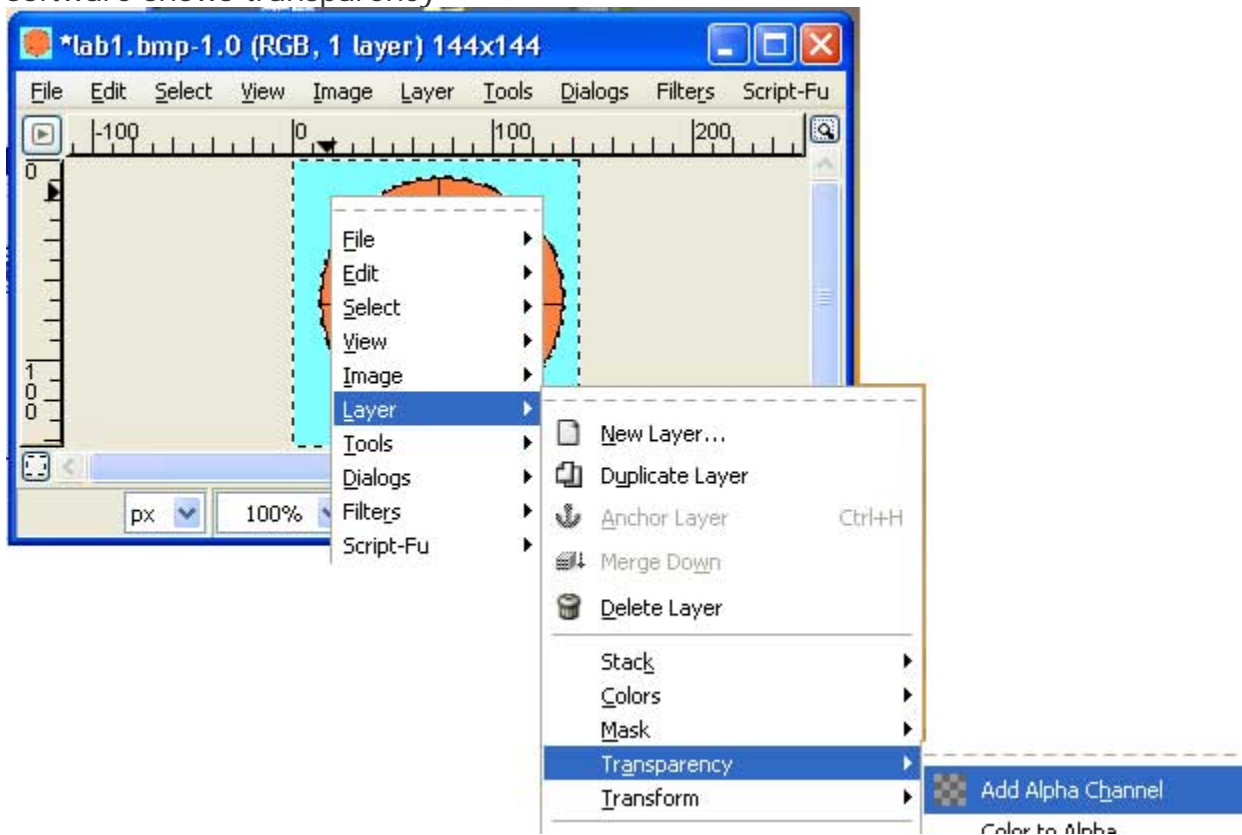
2. Choose the 'Select contiguous regions' tool, and click the blue background. This selects the area that we want to eventually tell the computer to ignore, allowing transparency.



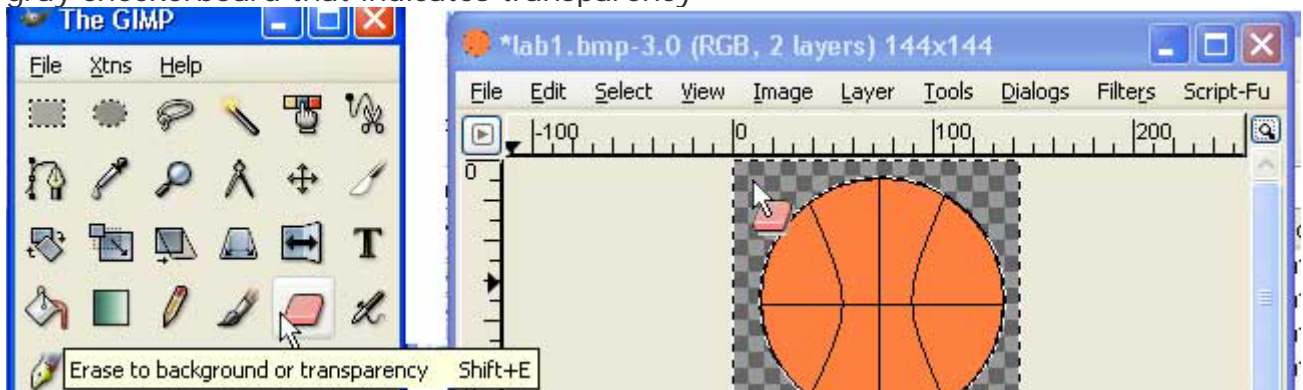
3. **Right click** the selected blue area,
then choose Layer\Transparency\Add Alpha Channel.
(You can also select the Layer menu,
then choose Transparency\Add Alpha Channel)

The Alpha channel will be covered more later, but for now, just associate Alpha Channel with the green screen the weather man stands in front of... it will be removed by the computer.

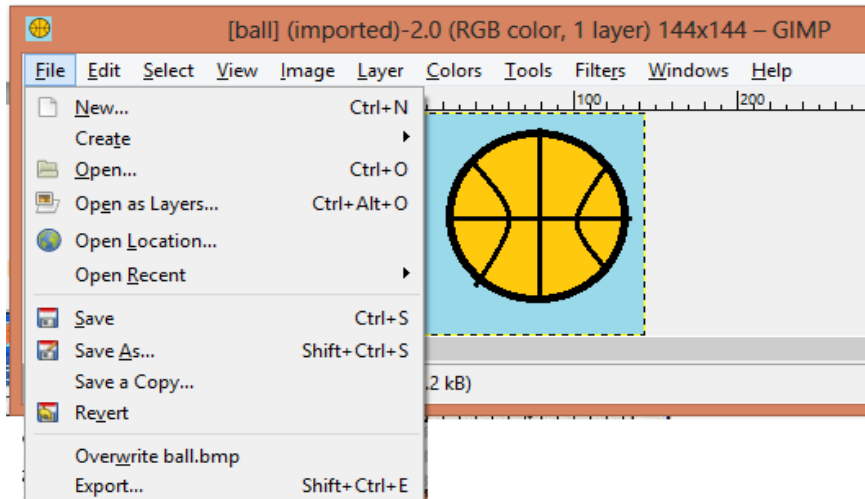
The Alpha Channel looks like a gray checkerboard... that is how the GIMP software shows transparency



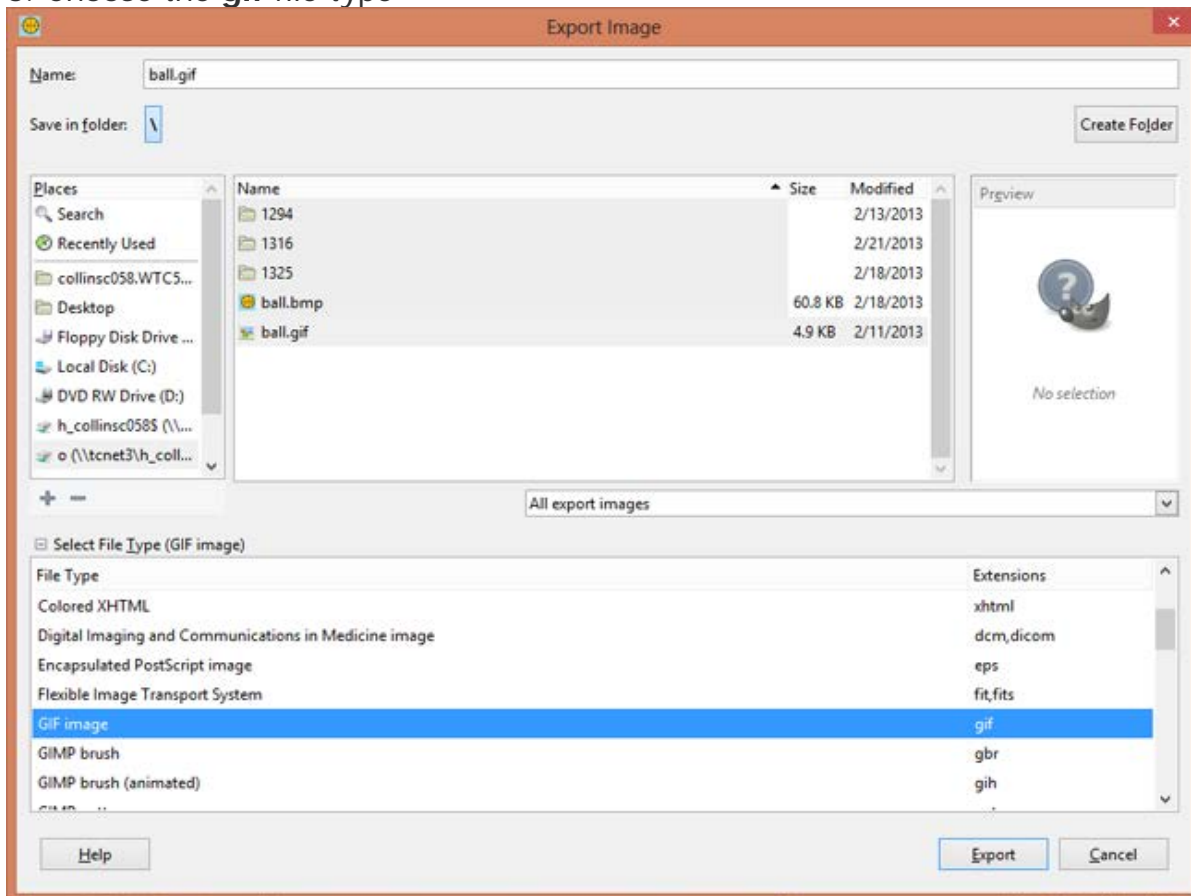
4. Select the Eraser tool, which can now be used to erase the blue, leaving the gray checkerboard that indicates transparency



5. Now to save the file, using File\Export...



6. Choose the **gif** file type



7. The GIMP software warns that the file must be exported, a step to convert the information to meet the 256 color limit



8. You may leave a comment, this will not display.



The next method is very similar to how Photoshop deals with transparency. More on GIMP and Photoshop in the Video listings in D2L.

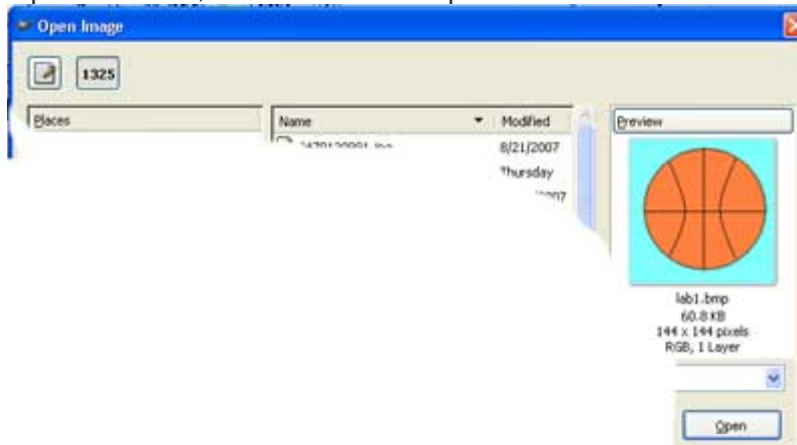
RECALL, the transparency lab, Lab 4, is not due until week 7. But get started on Lab 4 as soon as you finish lab 3, to help prepare you for the test coming in WEEK 6!



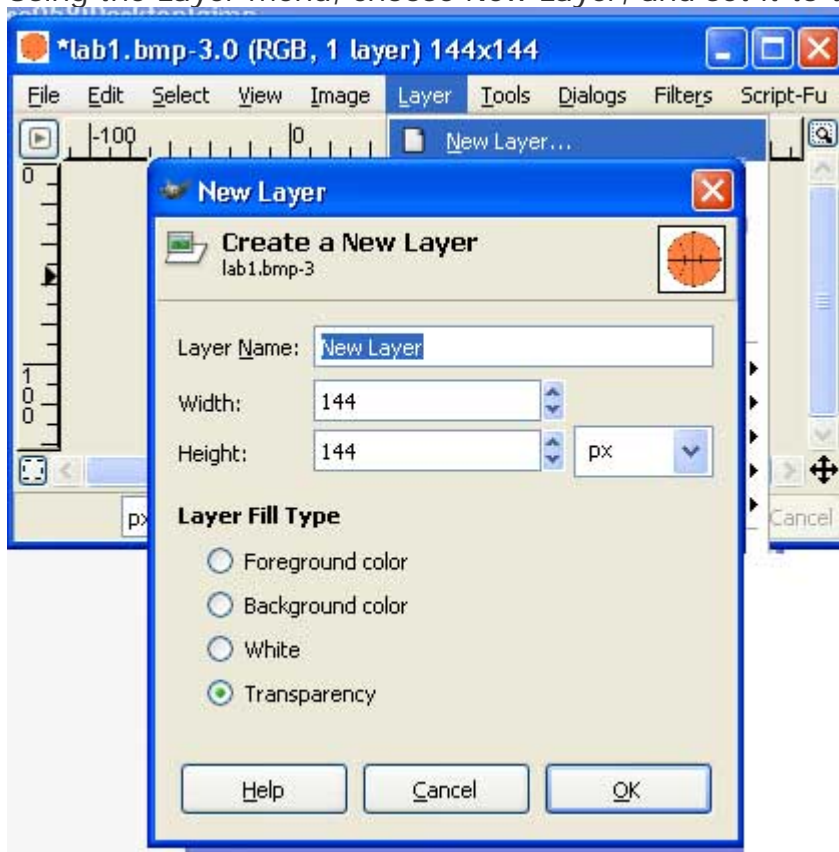
Again, Lab 3 is what is due this week. More on Lab 3 on page 70.

Method Two, adding a transparent layer (**NOT** the method for lab 4).
Transparent layers will be covered in detail later, this is just for background info.

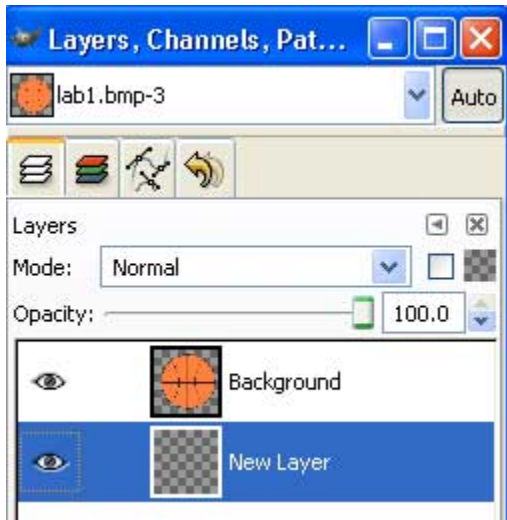
Open the file, such as ball.bmp



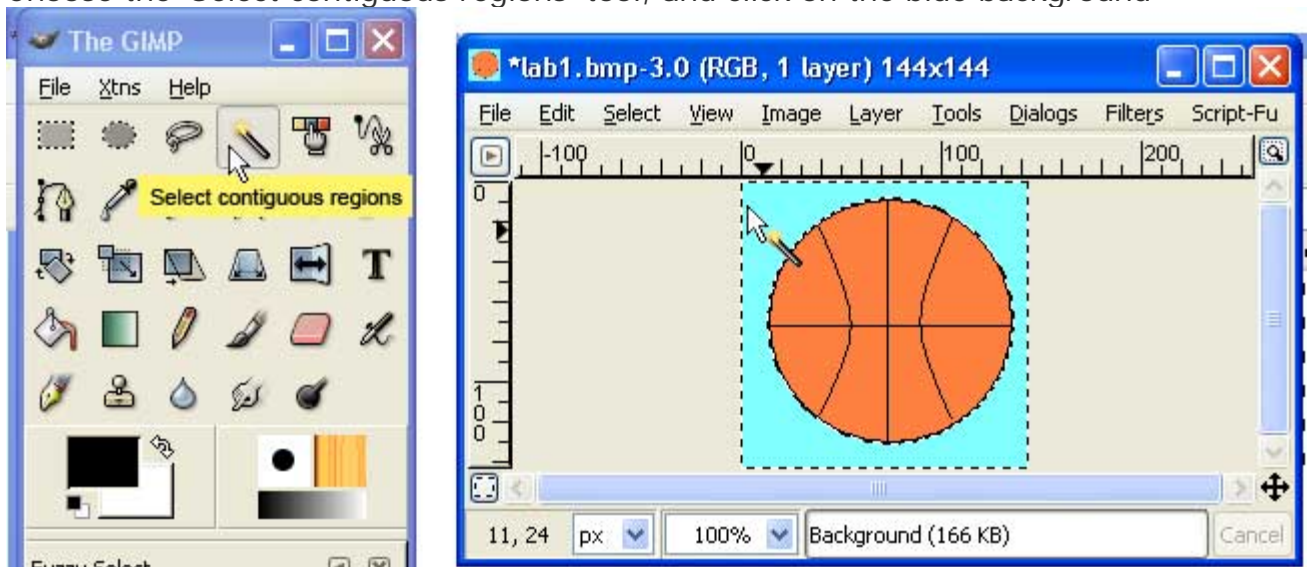
Using the Layer menu, choose New Layer, and set it to transparency



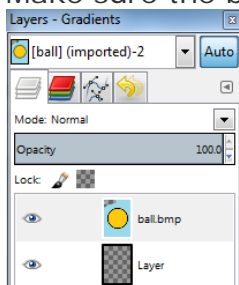
Rearrange the layers so the transparent layer is below the old background layer, with the ball. There is a trick to this, it will be covered later... again, this section is just for background info... a preview of things to come.



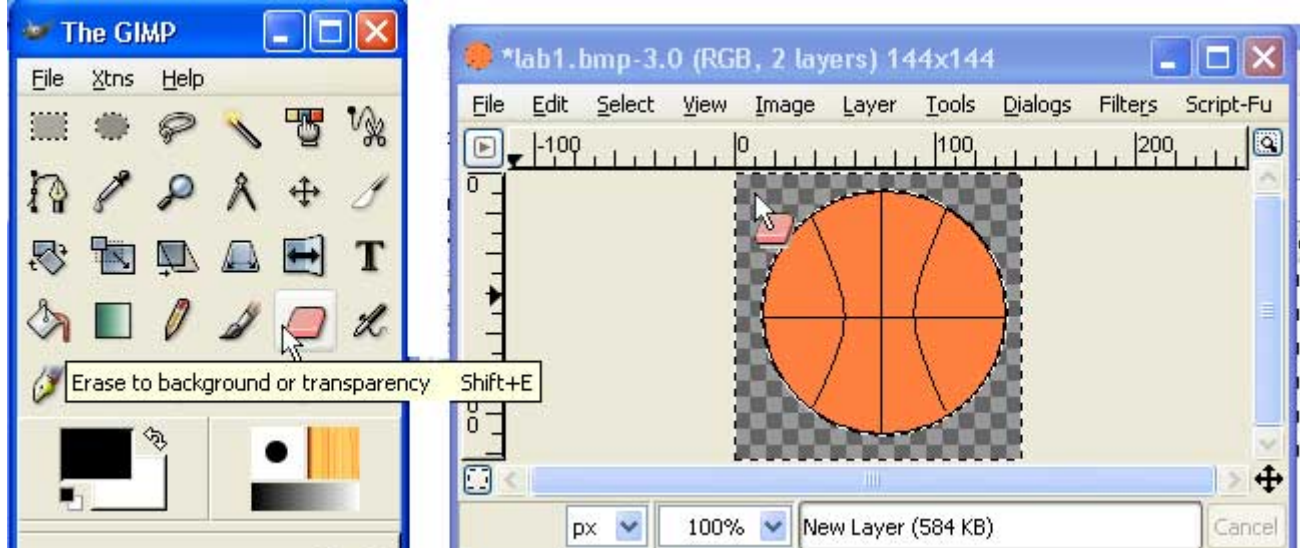
Choose the 'Select contiguous regions' tool, and click on the blue background



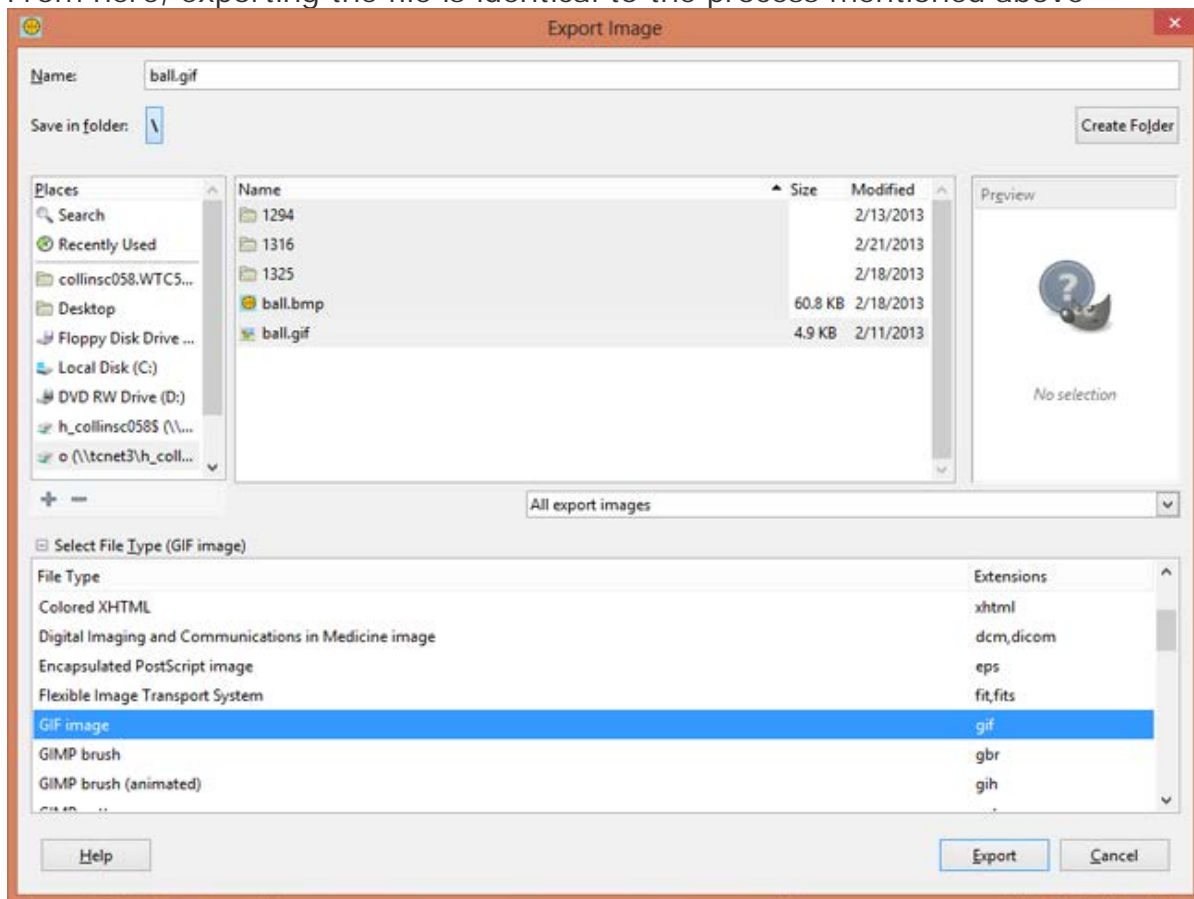
Make sure the ball layer is selected (highlighted in blue or gray)



Use the Eraser tool to remove the blue background, leaving the transparent layer behind it



From here, exporting the file is identical to the process mentioned above





You may add a comment if you like



A video of the Method One portion of the activity is also available on the class web site

Recall, lab 3 is animation, due this week. Lab 3 follows. Lab 4 is transparency, and is not due now; but begin practice on lab 4 as the concepts of GIMP and transparency are on an upcoming test.

Lab 3, Animation



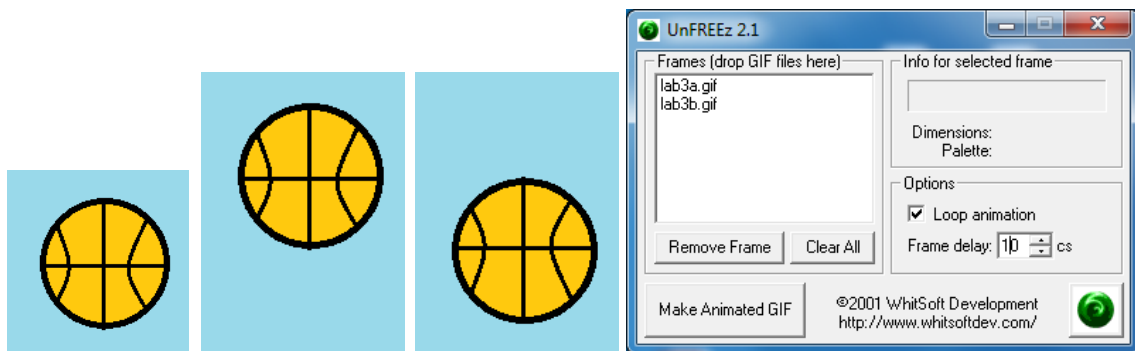
A video similar to lab 3 is available on the class web site.

Part 1, Activity (40%):

- Copy your lab1 folder, and renamed the new folder lab3

Using Microsoft Paint, you will modify your basketball into two gifs to form an animated version of the ball bouncing

- Open Paint, and then use File\Open to open ball.bmp
- Use Image\Attributes or File\Properties to make the image 200 pixels tall, save as lab3.bmp
- Use Fill with color tool to match the new area to the existing background, save.
- Use File\Save As to name this new file lab3a.gif
- Reopen lab3.bmp
- Use the rectangular selection tool to move the ball to the bottom of the image
- Use Fill with color tool to match the blank area to the existing background
- Use File\Save As to name this new file lab3b.gif
- Browse to your lab3 folder
- Open unFREEz (see class web site for download info)
- Drag lab3a.gif and lab3b.gif into the unFREEz window



ball.bmp lab3a.gif lab3b.gif Drag lab3a.gif and lab3b.gif into unFREEz
Experiment with Frame delay, if you like

- Choose [Create Animated .gif]
- In the File\Save As window, name this new file lab3ani.gif

An important note is that many graphic programs cannot display the resulting animation... you may need to use your browser to view any animation you create.

- Right click lab3ani.gif, choose Preview to see how the image looks.
- If this doesn't work,
- Right click the file, choose Open With and choose your browser

BONUS: If you create a more complex animation, *in addition to this one*, I will award extra points. Get creative!

- Zip the lab3 folder (including any bonus work),
rename it to yourname-lab3.zip and submit in the D2L Lab 3 dropbox

Grade Points

5 points: ball.bmp resized to 144 x 200

5 points: new area matches background

5 points: ball.bmp saved as lab3a.gif

5 points: ball.moved, background matched

5 points: newly adjusted lab3a saved as lab3b.gif

10 points: lab3a.gif and lab3b.gif dragged into unFREEz to animate,
file saved as lab3ani.gif

5 points: lab3 folder (with ball.bmp, lab3a.gif, lab3b.gif, and lab3ani.gif)
zipped, renamed to yourname-lab3.zip, uploaded into D2L dropbox

Part 2: Hands On (60%):

Be prepared to discuss/demonstrate new tools and concepts used in this lab.

At the end of this process, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

- True or False
An animated file is actually several image files stored together, being displayed one at a time.
a) true b) false

The following questions are based on the unFREEz program

Note **Options** and **Frames** in the screenshot below



- Refer to unFREEz window on page 71 and answer True or False
When an animated gif is created, you can control if the animation goes through each image and then quits at the end, or if it will constantly loop through the images
a) true b) false
- Refer to unFREEz window on page 71 and answer True or False
Frame delay is controlling how fast or slow the animation is... unFREEz allows you to control Frame delay
a) true b) false
- Based on your readings on unFREEz answer True or False
The final product of unFREEz is a gif, so you can only drag in gif files to unFREEz for animation
a) true b) false
- You _____ add sound to an animated gif
a) can b) cannot
- Logic question, answer True or False
Since the animated gif file is made of many individual gifs, the more individual files included, the larger the animated file will be.
a) true b) false

What's due this week

This week, you'll do two discussions in D2L, plus lab 3 dropbox & quiz

- **Participation Discussion 5** Respond in the class Discussion forum to the following:
Why are longer animations larger files than short animations?

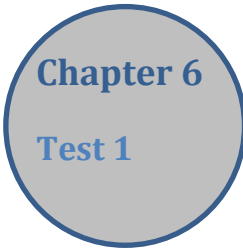
- **MUD 5 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

Then get started on Lab 4 so you will be prepared for the upcoming test due in the middle of next week, week 6.

While you should start Lab 4 now, Lab 4 is due at the end of week 7.



End chapter 5



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

GIMP/Transparency

Re-read about

Test 1 Review

How to study for a test

How to take a Collins test

Test #1

Spend a LOT of time experimenting with GIMP

Toward the end of the week, perhaps Begin Lab 4 (due next week)

GIMP/Transparency

On the class web site, there are several links to the online book and GIMP help on GIMP basics, GIMP first steps, Alpha Channel, etc.

Also review the section in Chapter 5 on gif transparency in GIMP.

Test 1 Review

PS, The first part of the final will include the same information as Test 1.

The test is open book, 35 minutes; but you won't have time to look up all the answers, so review well. If uncomfortable with testing in D2L, I also suggest you Log into D2L, choose Quizzes, then choose to take the Practice Test.

Before continuing, verify you are caught up with class participation discussions and MUDs.

To check your progress: in the D2L, choose the arrow icon next to your name



to check your Discussion progress, use the dropdown Tool and select Discussions...choose Apply.

You will need to scroll down to see which discussions you have and have not posted to.

|

Your participation grade will be penalized at the end of the semester for discussions you have not posted .

From **Chapter 1** (Overview, Syllabus): Answer the following questions

1. In this class, can homework be turned in whenever you want?
2. Since make up tests aren't done, what replaces a missing test, or is used to improve your lowest test score?

From Chapter 2 (Images, Hardware, Camera): Answer the following questions

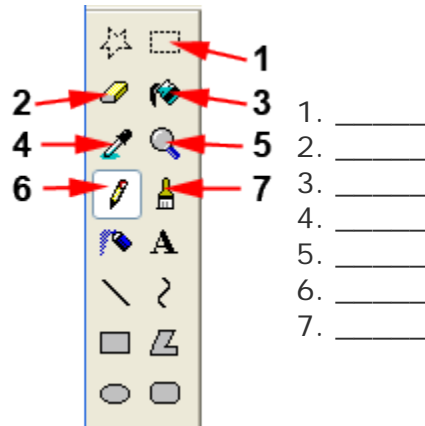
3. What does pixel stand for?
4. How is resolution measured?
5. True color monitors can display how many colors?
6. Images created by a series of pixels are called _____ (raster or vector)

From Chapter 3: (Bitmaps, TIFF) Answer the following questions

7. What kind of raster images are fairly low resolution? Think Microsoft Paint files.
8. What kind of raster images are fairly high resolution, and well suited for storing original photograph files?
9. Are the file formats mentions above widely supported on the Internet? Why not?

From Lab 1: Answer the following questions

10. Label the following Microsoft Paint tools (they are similar regardless of version)



11. One way to resize a Paint canvas is to click the drag handles on the sides, or corners.

What's the other way?

12. How do you select the foreground color in Paint?

13. How do you select the background color in Paint?

14. To make a line straight, or an ellipse perfectly round, you hold down the _____ key

15. True or false, When you select the brush tool, you can select multiple brush size/shape options

16. The default for a Paint file type is _____

17. When using the curve tool, the easiest way to lock in the curve in place is to _____

18. If you have a box drawn that you wish to fill with color, you must first make sure

- a) the box has no gaps, or the color will flood other parts of the image, also
- b) the background color is set to the same shade as the foreground color
- c) you must select another tool, before using the tool again
- d) that the new color is darker than the old color

19. True or false, You can copy an image from another program, and paste it into Paint

From Chapter 4: (Bitmap to GIF, compression) Answer the following questions

20. What is compression?

21. What are the two ways to compress a file?

22. True or False: gif files are smaller than bmp files

23. What are the two ways to compress a file?

From Lab 2: Answer the following questions

24. True or False: gif stands for Great Image Format

25. gif is a _____ image type
- a) vector
 - b) raster
 - c) pixelmap
 - d) iTunes
26. gif is best suited for
- a) photographs
 - b) simple line drawings with few colors
 - c) simple line drawings with millions of colors
 - d) music files
27. gif files are typically used
- a) on the internet
 - b) for saving photographs
 - c) for printing photographs
 - d) to compress photographs
28. True or False: the gif format is protected by a current patent
29. What features are supported in new gif files? (Choose all that apply)
- a) 24 bit color
 - b) animation
 - c) high resolution
 - d) transparency
 - e) 256 color
 - f) non-interlaced
 - g) interlacing
30. Telling the computer to ignore part of an image is
- a) transparency
 - b) animation
 - c) interlacing
 - d) compression
31. Displaying a image gradually, until the image fills in, is called
- a) transparency
 - b) animation
 - c) interlacing
 - d) compression
32. Displaying one image, followed by another image, is called
- a) transparency
 - b) animation
 - c) interlacing
 - d) compression

33. Match the file types according to quality and file size

24 bit bitmap dither	Large file size, high resolution file with millions of possible colors
256 color bitmap	Large file size, low resolution file with millions of possible colors
16 color bitmap	
monochrome bitmap	Small file size, 256 color limit, suitable for use on the Internet
tiff	
gif	mixing colored dots to approximate another color

From Chapter 5 (GIF animation, transparency): Answer the following questions

From Lab 3: Answer the following questions

34. An animated file is actually _____ stored together, being displayed one at a time.
35. When an animated gif is created, you can control if the animation goes through each image and then quits at the end, or it can be set to _____ through the images
36. _____ is controlling how fast or slow the animation is...
37. When using unFREEz, you can only drag in _____ files for animation
38. Do animated gif files support sound?
39. Why is a longer animated gif file normally a larger file?

From lab 4: Answer the following questions

40. The GIMP when started opens _____ window(s).
41. When you use the GIMP window to open a file, the image opens in a _____ window
42. Match the commands with menu the command is found on in the GIMP

Edit menu	Select\None command
File menu	Copy command
Image menu	brightness-contrast command
Select menu	Save As command
Tools menu	Image Crop command

43. On TV, the weather person used a process called _____ to appear to stand in front of a map

44. In gif files, the hiding of an area or color, using a(n) _____, can create transparency
45. Another method that can create transparency is to add the equivalent of clear plastic over the image, these clear sheets are called _____



46. (1) in the image above is below the Select _____regions ...
47. and Select_____ regions tools
48. (2) in the image above is right below the Select _____regions...
49. and Select _____regions
50. (3) in the image above is below, and to the right of the _____ to background or transparency tool

How to study for a test

Most learning is easiest to recall in a similar environment to where you learned it... meaning if you only study at night, taking a test during the day, at a foreign location, testing can be a problem.

To minimize this, follow the following guidelines.

- Don't Cram
- Don't load up on caffeine
- Don't load up on sugar
- Don't change too much of your routine

Cramming isn't learning, as the info just goes into short term memory, which evaporates like RAM when you write your name on the test. Instead, try to really learn the material by reviewing daily, and making a list of things that give you trouble. Focus on those items, instead of confusing things you actually already know. The next day, make a new list, which should be shorter, until you get to test day, and you are comfortable with all the material. Do some gentle review around the time of day you plan to take the test, to overcome the foreign testing situation even further.

Some of you will still cram, though. You'll stay up late, and then you'll show up at the testing center dead tired... don't go get some coffee! Caffeine is actually a depressant that will drop you after it gives you a case of hyper nerves.

But you're still tired... (because your crammed, and didn't sleep) so if you can't have a coffee or cola, maybe you're tempted to have a dozen Krispy Kreme donuts for some quick energy, instead. DON'T! Sugar is muscle food, not brain food. You'll have plenty of energy to run to the testing center, but you will have diverted blood flow away from your brain.

But what if you normally stay up until 3:00 am, get up to a gallon of coffee and a box of Ding Dongs? Well, don't break your routine... stay in routine as much as possible... again, night owl may need to practice getting up a day or two before the test.

Next, test taking is about decisions, here are a few tips on actually selecting the right answer.

- Read the whole test... it is almost impossible to make a test that doesn't reveal some answers somewhere else.
- Look for distracters and keywords... distracters are important looking words that have nothing to do with what is really being asked. Keywords on the other hand should alert you to the meat of the question.
- Go with your first reaction, it is usually right.

Finally, no one will care what you made on a test in five years... so don't stress. In a well-designed class, a test is a learning tool, not punishment. It points out where you still need work, and gives you the opportunity to actually do what school is supposed to be about: learning!

How to take a Collins Test

Make sure you go over the review material... you may submit review for feedback

1. Take the practice test in D2L, to see how they work
2. There is no such thing as a multiple choice job interview, expect the tests to include fewer multiple choice questions and more fill in the blank and short essay questions as the semester progresses. (The test material isn't harder, but I expect you to be able to supply more information)
3. Look over the entire test before you begin answering questions
4. Read the question thoroughly before answering;
some fill in the blank questions may specify a choice of answers;
some questions specify using a single word, tag, or command.
Part of the real world is following directions...please don't expect me to give you credit because you didn't follow directions
5. Save your answers by clicking the disk icon.
If the save button doesn't work, verify you are submitting the appropriate type of answer... such as numbers instead of letters for matching.
6. If the answer still will not save, IMMEDIATELY close the quiz WITHOUT submitting.
Return to the quiz and choose **Continue Quiz**.



For tests I am trying to see how much of all the material you are retaining, so the test by design covers a very broad area with fairly deep coverage; I consider it both an assessment and a learning opportunity... trying to let us both see what you have mastered, and what you may need a little more work on... So, as with the SAT, you are not expected to make a perfect grade on my tests; below is how I make the test grades fair

7. Typos are auto-graded as incorrect. If the computer operation in the real world wouldn't accept an instruction or command, the test won't either.
Note: I do manually review each test, and award credit where appropriate (I can't foresee all valid responses)
8. Resist the urge to change the answer to a question unless you realize you misread the question, or another question reminds you of the correct answer; often (but not always) your first choice is the correct choice
9. Questions that include the word DISCUSS imply I am looking for **more** than two or three words. Be thorough, but no need to be long winded
10. Short answer/short essay are marked incorrect immediately after taking the test... I will manually review each test, and add back in points.
11. After taking the test, you will have the opportunity to review the questions... recall, **the grade shown is not valid** until the tests are reviewed by me. The class will be notified when the grades are correct.
12. The highest grade in the class sets the curve mark... if the highest test grade is a 97, everyone gets 3 points added as the curve
13. If the majority of students miss a question, I will often determine the question was bad, and not count it against you, but still award points for those who got it right.
14. If you do poorly on a test, recall from the syllabus and appendix that the lowest test score can be improved if you do well on that section of the final.
15. The final exam is basically taking the same three tests again... so review your individual test study guides, and review your tests in D2L.
16. To look over a previously taken test in D2L, choose the Quizzes area, select the test, then go to the submissions tab.

Test#1

Check with the instructor for when the test is scheduled, due dates, etc.
If you can take the test in my classroom, I do go over the test when finished.

Begin Lab 4 (Due Next week)

See Chapter 5 for steps, see Chapter 7 for the lab, but get started on it now.

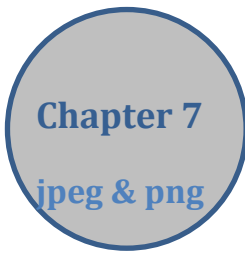
What's due this week

This week, you will do two discussions in D2L, start a lab, take a test.

• **Participation Discussion 6** Respond in the class Discussion forum to the following:
Is a gif is well suited for the Internet? Why? List three aspects that make gif well suited for the Internet

• **MUD 6 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch... comment on that as well.

End chapter 6



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Reminder: online resources

jpeg/jpg and png

Comparing jpeg/jpg and png

Additional Reading: Scanners

Additional Reading: Digitizing Tablets

Additional notes: jpeg/jpg and GIMP

Complete Lab 4

NEW RULE OF THUMB:

png is for high quality source originals, and printable versions...

jpeg/jpg is for web delivery

Reminder: online resources

The online GIMP book (see class web site for link) contains information on your first steps when using GIMP, and there is a section on loading and saving images. GIMP has a good online help section as well.

My instructions and videos (links on the class web site) should be sufficient to complete the labs; but anytime you are curious about doing more, or need a second explanation, please don't forget these online resources.

jpeg/jpg and png

In earlier discussions, TIFF and gif were covered. TIFF can be a good choice for saving original images that will later be edited, but there are so many variations and non-standard features of TIFF that many users have been looking for full color alternatives, especially one that can work with web browsers. The gif format can provide animation and transparency, and is supported by web browsers, but it is limited to 256 colors, so again, many users have been looking for an alternative.

Aside from gif, the only file formats that can be used by standard web browsers are png and jpeg. Not only are both jpeg and png are full color formats, both have standard feature sets... meaning most graphics editing software can be used.

The older of the two formats is jpeg, also known as jpg. The format derives its name from the **J**oint **P**hotographic **E**xperts **G**roup, so the format is obviously well suited to photos, whereas gif certainly is not. (The proper name of the file format is jpeg, but files can be saved with either a jpeg or jpg extension... don't let the two terms throw you.)

The downside for jpeg is that it does not support transparency or animation, and that to reduce file size it loses some information when being saved; this can make it harder to re-edit later. Many people will take a TIFF, edit it, then save the result as a jpeg for use on the web, keeping the TIFF in case they want to make changes in the future.

The newer of the two formats is png, which was designed from the very beginning to be an alternative to gif. Probably the biggest driving force was that the gif format at the time was legally protected, and vendors had to pay fees for its use in software they were selling. As with many open source ideas, or software that can be freely distributed without vendors (or users) having to pay money, the actual derivation of the name is subject to debate. Some say it was originally stood for **P**ng, **N**ot **G**if, but these days the moniker is **P**ortable **N**etwork **G**raphics.

The png format will not replace either gif or jpeg, though it can be an alternative. The png files, like TIFF, retain all information, meaning the files remain in great shape even after editing, but the resulting file will be larger than a similar jpeg. Larger files are not popular on the Internet as they waste storage space and take longer to download, meaning jpeg will probably remain the favorite option for the time being.

Speaking of file size, when compared to gif, a png will be smaller, normally, than a similar gif. The png format not only supports transparency, but it also provides a unique translucent feature. The one thing the png lacks when compared to gif is a standard method of animation, meaning again gif will probably remain a favorite option.

So, how does one decide on which format to use? It might be a good idea to save your original files as a png file. Like TIFF, it will serve as platform that retains information, but can be used by almost any editing program. Again there should be no loss if you open your camera or scanner's full color, high quality image, and save it as a png. After editing, if the image is to be used on the web, save the new file as both a png and a jpeg; place the smaller of the two files on your web site, as that is the file that will download the fastest.

If the image lends itself to the gif realm of simple line graphics, or you want to use transparency, after editing save the new file as both a png and a gif; place the smaller of the two files on your web site, as that is the file that will download the fastest.

This discussion keeps mentioning the "editing" of files... the bulk of the next discussions will cover exactly what a good graphics program should be able to do with images. By and large, our output will have two paths... high quality for printing (png), or smaller file size for use on the web (jpeg). There is not difference in the editing, the only difference is what file format we save it as.

Subsequent discussions will not only focus on getting the smallest file for the web, but also balancing file size with the quality of the file... this is called optimization.

Comparing jpeg/jpg and png

This can also be viewed on the class web site, where you can actually interact with the real files. Note, some of the images are very large, and may take some time to download

1st, compare the quality of the png and jpeg images. For reference, look at the windmill

denmark.png, 1050x740 pixels, 833 KB



denmark.jpg, 1050x740 pixels, 432 KB



Notice the images are nearly identical, but the jpeg version has a smaller file size. That is the jpeg compression at work, and while not noticeable on the screen, in order to reduce file size, information was lost. The change would be more noticeable if both items were printed.

If our prime focus was not printing, but rather web delivery, we could reduce the file size even further.

Below is a side by side comparison of how optimizing could impact file size. Again compression is about is reducing color depth, reducing dots per inch, etc.; but notice how the quality can dramatically fall in order to reduce file size... the goal obviously is to get the best balance of clarity and file size, which is called optimization.



But before we get started with optimizing, there is one other option. By reducing the actual dimensions of the image, the file size drops.

Below is the same image resized from denmark.png, 1050x740 pixels, 833 KB to 500x352, resulting in 204 KB.



We could also reduce file size by cutting out part of the image, called cropping. Below denmark3.png, 532x364 pixels, 201 KB



So, the next chapters will cover resizing and cropping, then optimization.

Additional Reading: Scanners

A scanner is a piece of equipment that allows one to copy documents and images for use in a computer. It's use is similar to a copy machine, but it creates not a paper copy, but instead a digital image. The resulting file can later be edited for display on a computer screen as in a web page, or for printing.

**Types of scanners**

The three main types of scanners include the very hard to use hand held scanners, as well as the flatbed scanner and the sheet fed scanner.

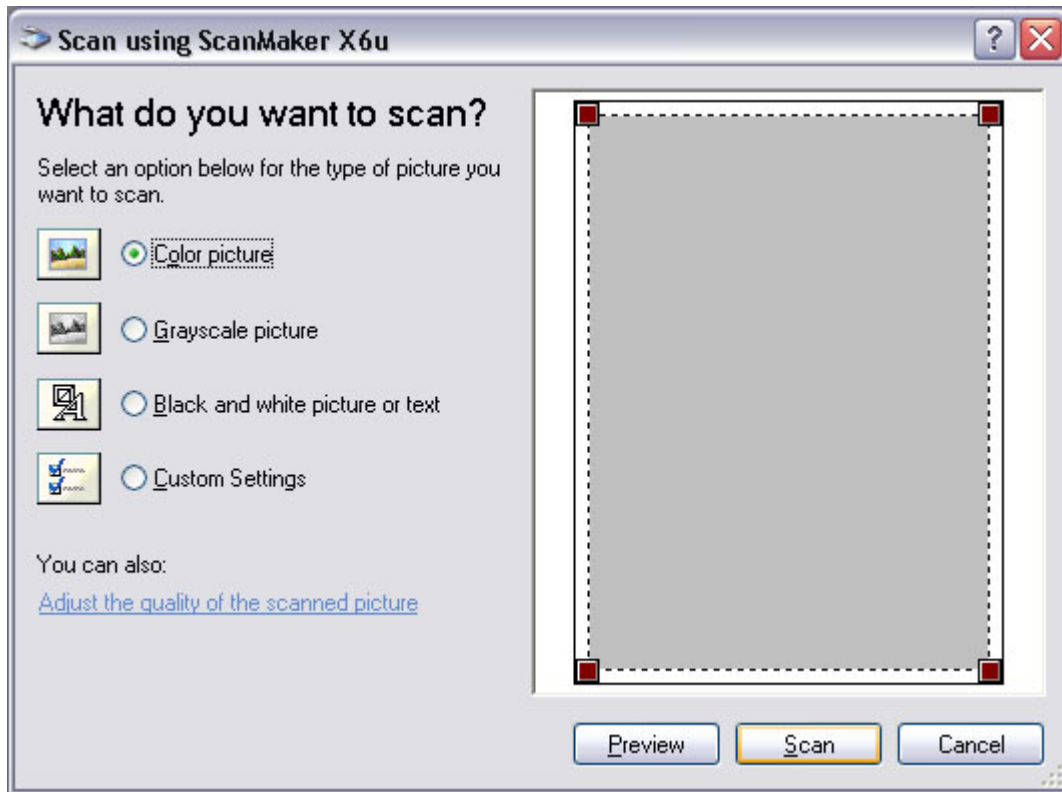
The flatbed scanner is the most common, and again similar to a copy machine; it has a lid that opens to reveal a glass platen where the item to be scanned is placed. Scan friendly items include paper documents, books, photographs, and any other objects that can be placed on the flat surface. Some flatbed scanners can also accommodate photographic slides with the addition of a special attachment.

A sheet fed scanner differs in that it has a slot where only a sheet of paper can be fed into the scanner.

Operating Instructions

Instructions on using scanners are very hardware/software specific due to the many different manufacturers involved, so this will focus on the fairly universal basics.

You will need some software that is aware of the scanner, and can accept the image... most scanners come with some sort of software for this, and some functionality is built into Windows.



Better yet, use photo editing software package such as Photoshop or GIMP that gives you even more control.

Once the software for scanning has been started, the first step is normally to preview.

Previewing

The preview is a quick, low quality scan primarily to show you the position of the object to be scanned on the glass platen. After the preview, you may need to reposition the object on the glass, or use your mouse to move the scan area, indicated by a dotted line (click your mouse on the line and drag it).

Once you are happy with what will be captured, you then need to decide how good the image will be. This involved how high the resolution and color depth are set to. I suggest scanning good quality to begin with; this gives you a good version for printing, and then the image can be optimized for web delivery later.

Resolution

Before initiating the scan, you will also want to set the scanning resolution. As mentioned earlier, resolution is measured in dpi (dots per inch). Try using a dpi of at least 300 for images that you plan to print on photographic paper. If your source is text only, 100-200 may be sufficient.

Note: The higher the resolution or dpi, the more detailed the image AND the more room it will take up on your hard drive. Images scanned at a very high resolution can be in the megabyte range or more; so don't use a higher resolution than you need, especially if the final product will be for web pages.

Color Depth

If the item to be scanned is text, choosing "black and white" or gray scale would be sufficient. For simple graphics, 256 shades, or 8 bit color, would do. For photographs, use 24 bit color, roughly 16.7 million shades.

Types of Scans

Many scanners come with some preset options which set resolution and color depth; these presets can speed up scanning text or photos, but don't be afraid to experiment. To begin with, you may wish to make several scans of the same info, to see which setting works best for your intended use, and don't be afraid to experiment with custom settings.

TWAIN & OCR

Here are a few other terms you should know when scanning.

TWAIN: The industry standard used to connect the scanner and computer. Nearly every scanner made today is TWAIN compatible. Again, as with many items created by geeks, the acronym is odd:
Technology Without An Interesting Name.

OCR: A scanner simply takes a picture whatever is on the glass. However, if your sample was text, OCR can compare the items in the image to known typed characters, and convert them to text that can be manipulated by a word processor. OCR (Optical Character Recognition) software comes with many scanners, and is also a part of packages like Adobe Acrobat.

Final thoughts

Don't expect even a good scanner to accurately capture a high quality photo very well, but it is a great way to capture some images for use on web pages. It is easy to scan, but may take a few scans to get the best balance of quality and file size... but when in doubt, scan for good quality as a starting point, and later optimize the image for web delivery.

Additional Reading: Digitizing Tablets

So, you don't have one of those slick tablet computers, that you can use a stylus or your finger to draw with?

Are you getting tired of trying to draw with a mouse?

Don't feel like drawing on paper, and then scanning the image to get it into your editing software?

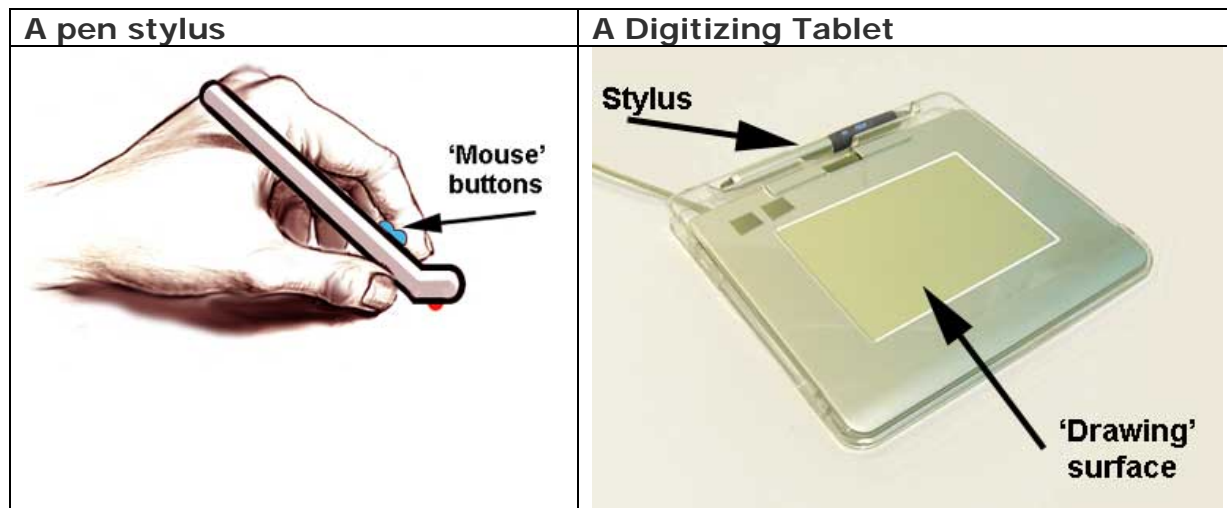
Perhaps you need to come up with a different input device, instead of the mouse. Two come to mind, a pen stylus mouse, and a digitizing table.

A pen stylus (or ePen) is mouse shaped like a pencil or pen... some are battery operated, and most today use USB to plug in.

I find them difficult to work with, as they are often bulkier than a pencil, and you have to lay it down, pick it up, lay it down, etc., when not drawing.

Another drawback is a lot of people don't like looking at the screen while drawing someplace else.

But you can use them anywhere, 'writing' or 'drawing' on your desk, your leg, or tracing a drawing... and as a second mouse plugged in, they can be nice for occasional drawing.



Digitizing Tablets are similar to a stylus mouse, but consists of a flat surface upon which the user may "draw" an image using an independent stylus, that is often smaller and lighter than the self-contained pen stylus mouse. Again, the image generally does not appear on the tablet itself but, rather, is displayed on the computer monitor. Some digitizing tablets are pressure sensitive, allowing you to draw thicker by pressing harder... more like a regular pen or pencil... but the stylus ONLY works when moved around the tablet's 'drawing' surface.

Additional notes: jpeg/jpg and GIMP

Unlike other programs, GIMP does not like to Save as a different file type.

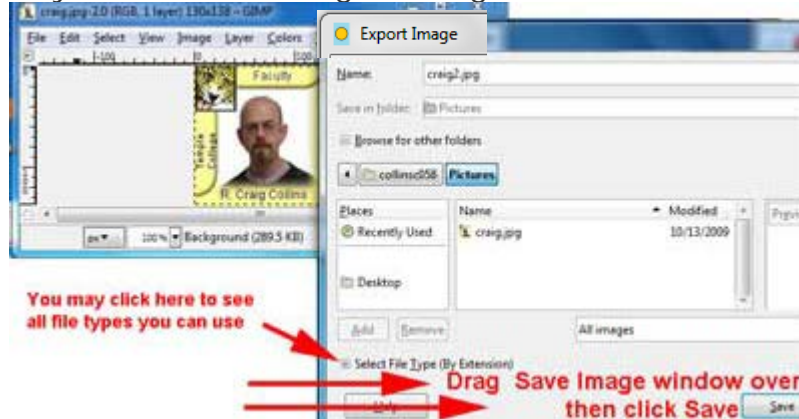
So you can't open a .bmp and select File Save As and make a new .gif file out of the first. Instead, you must choose File Export As, and then select the file type.

As an example, if the filename you wish to use is denmark85.jpg, just select Export As, select jpg, and, the file will be saved in JPEG format.
(You may need to click the [+] box to locate the different extensions)

- When saving a file as jpg in GIMP, it goes through an export system, as it compressed the file.
Again, the two areas of compressions typically are repeat or remove colors, or remove resolution

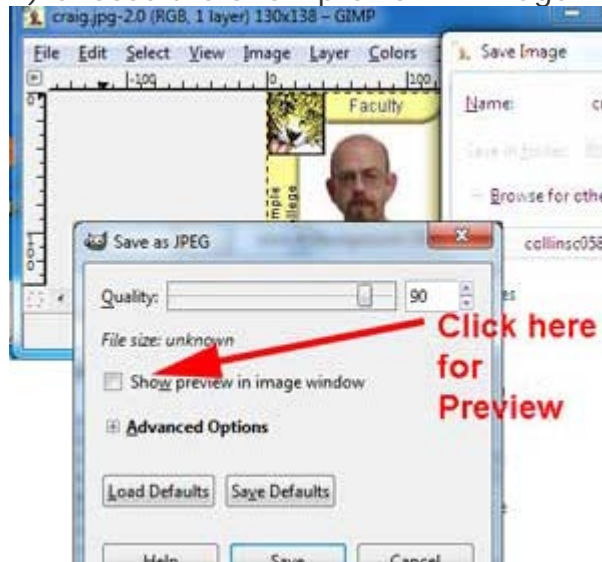
Reducing quality to reduce file size

1) When you choose File\Export as... move the save as dialog box to the right, so you can see the original image



A new screen opens with jpeg options.

2) Choose the Show preview in image window box



3) Drag the Quality down, you can actually see color depth and resolution changing in the Image window... typically below 30 is too poor quality to use, even on the web.

More on quality issues, and Advanced Options, later

Activities



Open denmark.png, or any png image you may have

You may go to the class website (D2L) **Content and locate** Denmark.png
Actual file is 800 K, and is 1050x740. To save you may need to right click the image, and choose Save Picture As...

- Open the png image you may have,
Zoom in to 800%, and analyze the image, especially details, such as the windmill in the lower right corner.
Use the GIMP to Export the file (85 quality) as denmark85.jpg; close the image.
Check the file size and compare to the original png
Use then GIMP to open the new file, zoom in to 800%, and analyze the image, especially the windmill in the lower right corner. What do you notice?
- Open or switch back to denmark.png, or your starting png image ,
Use the GIMP to Export the file (50 quality) as denmark50.jpg; close the image.
Check the file size and compare to the original png
Use then GIMP to open the new file, zoom in to 800%, and analyze the image, especially the windmill in the lower right corner. What do you notice?
- Open or switch back to denmark.png, or your starting png image ,
Use the GIMP to Export the file (30 quality) as denmark30.jpg; close the image.
Check the file size and compare to the original png
Use then GIMP to open the new file, zoom in to 800%, and analyze the image, especially the windmill in the lower right corner. What do you notice?
- Spend time using the various selection tools in the GIMP; select by shapes, and using the color selection options.

From here on out:

png is for high quality source originals, and printable versions...

jpeg is web quality.

Complete Lab 4

See also page 62 in Chapter 5 for steps

Part 1, Activity (40%):

• **NOTE:** • See a video on the class web site like lab 4



- Copy your lab1 folder, and call the copy lab4
1. Open the image, ball.bmp, using the GIMP software
 2. Choose the 'Select contiguous regions' tool, and click the blue background. This selects the area that we want to eventually tell the computer to ignore, allowing transparency.
 3. **Right click** the selected blue area, then choose Layer\Transparency\Add Alpha Channel.
(You can also select the Layer menu, then choose Transparency\Add Alpha Channel)
 4. Select the Eraser tool, which can now be used to erase the blue, leaving the gray checkerboard that indicates transparency
 5. Now to save the file, using Export\Save As...
 6. Choose the gif file type, and name the file **lab4.gif**
 7. The GIMP software warns that the file must be exported, a step to convert the information to meet the 256 color limit
 8. You may leave a comment, this will not display.
- Zip the lab4 folder, rename it to *yourname-lab4.zip* and submit in the D2L Lab 4 dropbox

Part 2: Hands On (60%): Be prepared to discuss/demonstrate new tools and concepts used in this lab. **At the end of this process**, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

- The GIMP when started opens ____ window(s).
 - a) 1
 - b) 2
 - c) 3
 - d) 256
- True or False
When you use the GIMP window to open a file, the image opens in a new window
 - a) true
 - b) false

- Match the commands with menu the command is found on in the GIMP

Edit menu	Select\None command
File menu	Copy command
Image menu	brightness-contrast command
Select menu	Save As command
Tools menu	Image Crop command

- On TV, the weather person used a process called _____ to appear to stand in front of a map
 - a) alpha channel c) Chroma key
 - b) animation d) layers
- in gif files, the hiding of an area or color, using a(n) _____ , can create transparency
 - a) alpha channel c) Chroma key
 - b) animation d) layers
- Another method that can create transparency is to add the equivalent of clear plastic over the image, these clear sheets are called
 - a) alpha channel c) Chroma key
 - b) animation d) layers

SUBMITTING THE LAB

In Windows, zip the entire lab4 directory, and rename to *yourname-lab4.zip*.

•Example: *yourname-lab4* or *yourname-lab4.zip* (if your extensions are visible)

Log into Desire2Learn, choose this class, choose Dropbox, and select Lab 4.

Browse to *yourname-lab4.zip* and upload it.

What's due this week

This week, you will do two discussions in D2L and submit lab 4.

See also Chapter 5 and Chapter 6

- **Participation Discussion 7** Respond in the class Discussion forum to the following:

Name a good point for jpeg. Name a good point for png. Could png completely replace jpeg or gif?

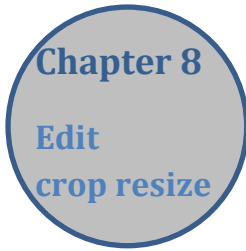
- **MUD 7 (My Understanding, Details)** Respond in the class Discussion forum to the following:

What was helpful this week?

What do you hope we talk about next week?

There was a continuous orientation video you were supposed to watch... comment on that as well.

End chapter 7



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Reminder: online resources

About Increasing canvas size

About rotating an image

About Cropping

About Scale, Resizing

Watch a video on crop, scale, and resizing canvas

Lab 5

NEW RULES OF THUMB:

png is for high quality source originals, and printable versions...

jpeg/jpg is for web delivery

File\Save As works if the file is the same type, use Export if changing file type

As mentioned previously, it is preferable to use File\Save As or File\Export as, and create a new file, instead of replacing the original.

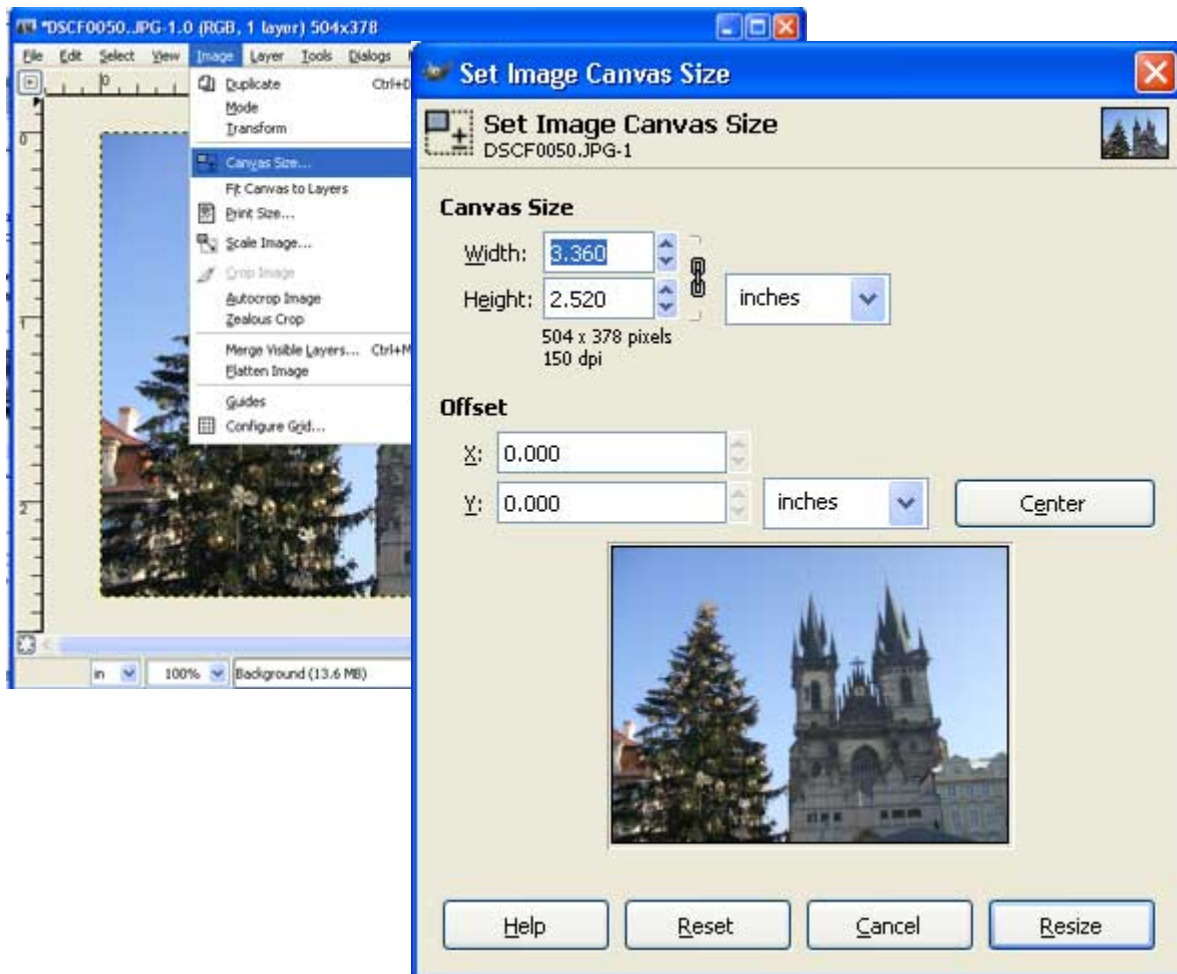
Reminder: online resources

The online GIMP book (see class web site for link) contains information on **Layers**. GIMP has a good online help section as well.

My instructions and videos (links on the class web site) should be sufficient to complete the labs; but anytime you are curious about doing more, or need a second explanation, please don't forget these online resources.

About increasing canvas size

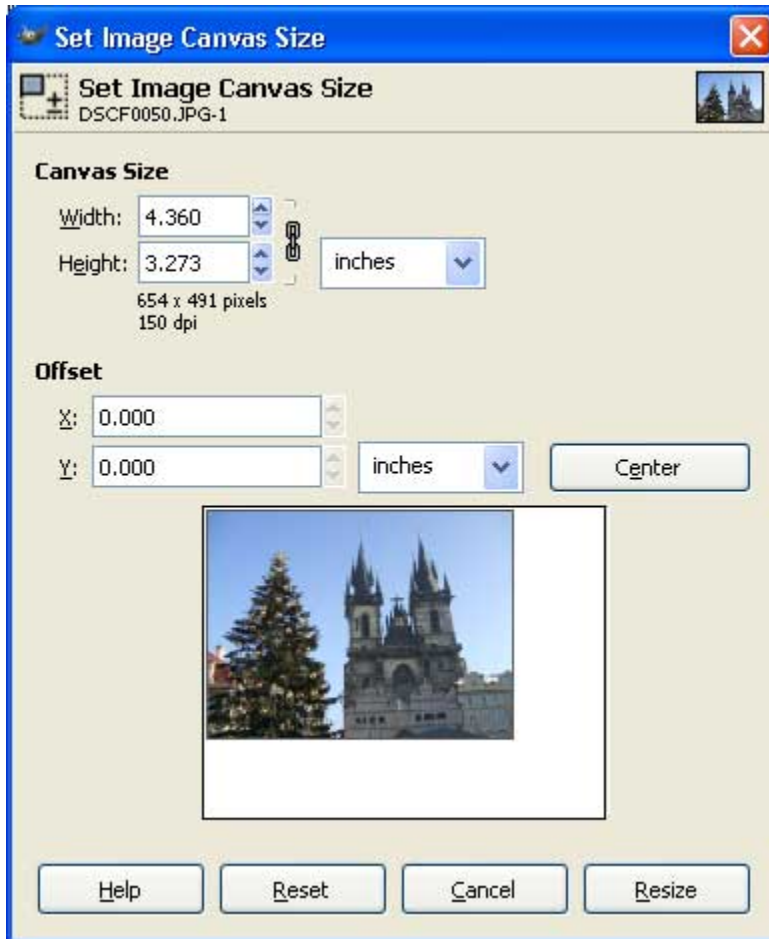
Typically one makes the canvas larger than the image; one reason to do this might be to put a white border all the way around the image, or add space at the bottom, to make space for text to be added later. This is done from the Image\Canvas Size...



The offset is used to control where the extra space is added. Note that by adding one inch to the width would put space to the right and bottom, if no offset was used. You may also click the [Center] button. If you do NOT want to keep the same aspect ratio, unclick the chain link.

Below we are going from 3.36 inches wide to 4.36 inches.
As the chain link icon is still selected, it scales with height in proportion, going from
3.360 x 2.520 to 4.360 x 3.273.

Note: the new space is being added to the bottom right in the preview.

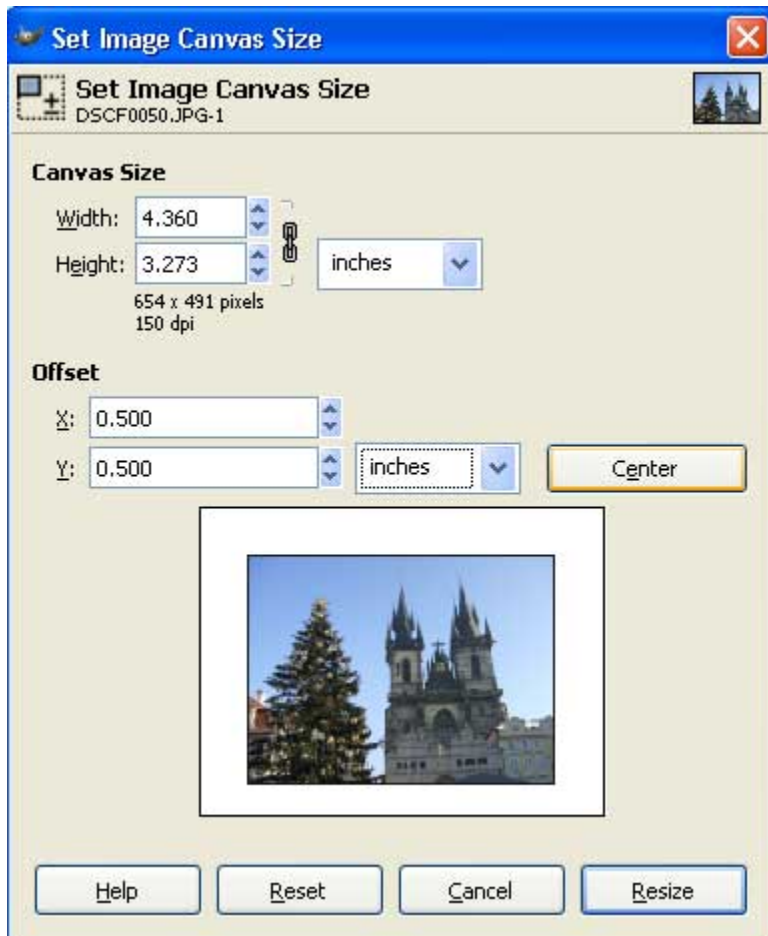


To center the image in the new space, we need to add an offset.

The x axis is horizontal, the y axis is vertical. While we could be more precise, simply adding half an inch to both would get us close...

On the next page, .5 inches was manually added, and the resize button was clicked; note, we could also have used [Center] to get it exactly in the middle. If you click the Chain icon, you can change the items individually, if you leave the chain icon it will change in proportion, keeping the aspect ratio.

The preview screen after adjustments... to finish, click Resize



Note: in the GIMP, on occasion, when resizing the canvas, you must choose Layer\Layer to Image Size in order to use the entire Canvas. Much more about how to really use layers is coming in Overview 11...

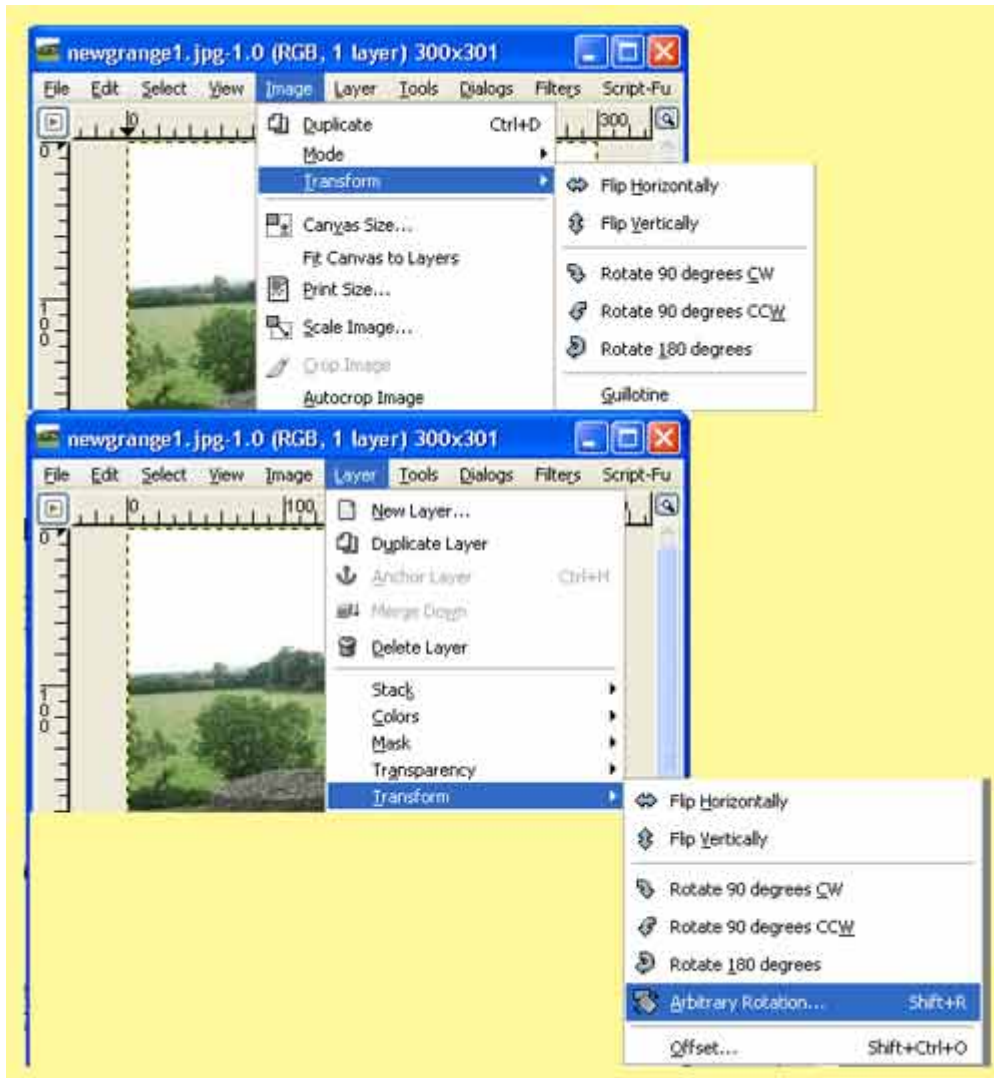
As mentioned previously, it is preferable to use File\Save As or File\Export as, and create a new file, instead of replacing the original.

You may go to the class website (D2L) Content and locate Newgrange.jpg for an image to practice on.

About rotating an image

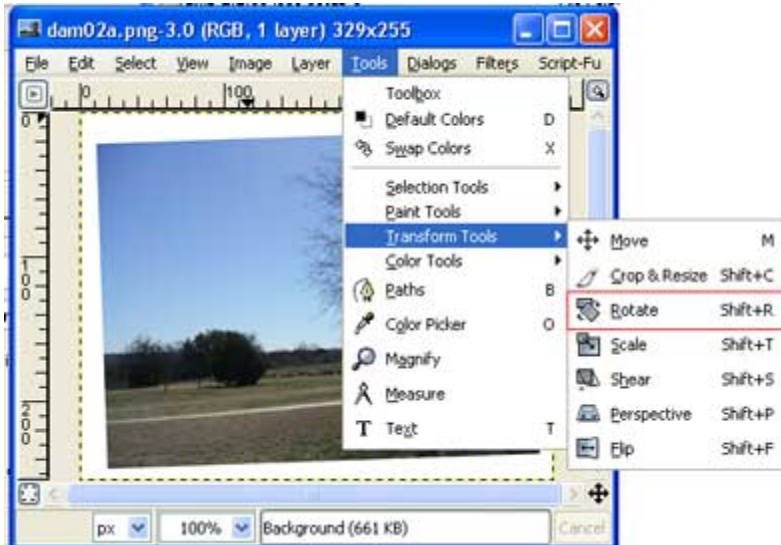
There are several ways to rotate images; descriptions and screenshots follow.

To do a basic image flip, or to rotate 90° or 180°, choose Image\Transform.
To do a slight rotation, or a specific rotation such as 37°, choose Layer\Transform\Arbitrary Rotation...



(More about layers, soon)

Or, choose Tools\Transform Tools\Rotate
(More about layers, soon)



Or, you can rotating by clicking the Rotate icon on the toolbar



About cropping

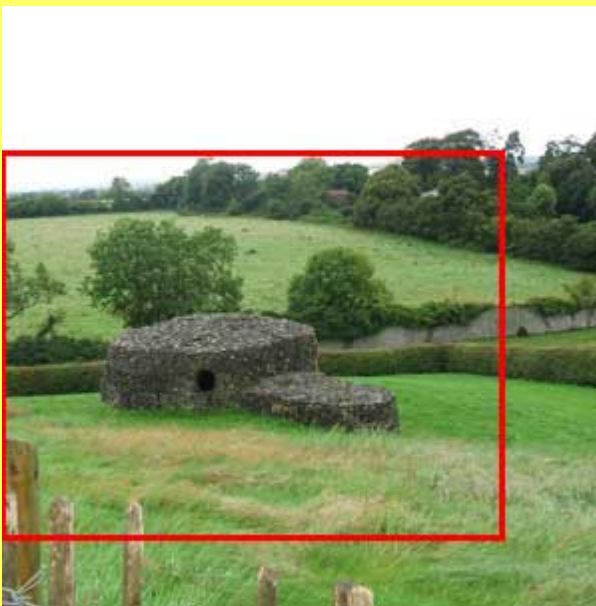
Many people consider photo manipulation to be cheating, such as somehow putting the President next to a space alien in the National Enquirer... but, cropping is not only permissible, but often is a recommended method used to improve an image.

In the last overview, you viewed an image, and then you viewed a **portion** of the original image; when you select an area and remove everything else, it is called cropping. So cropping could be like cutting coupons out of the newspaper... you only need the coupon so you remove everything else that is on the page. But there is a little more to it than that.

Notice in the example that follow, that not only can unwanted areas be removed, but cropping can also center an image, or change the aspect ratio.



Original image



Focus area



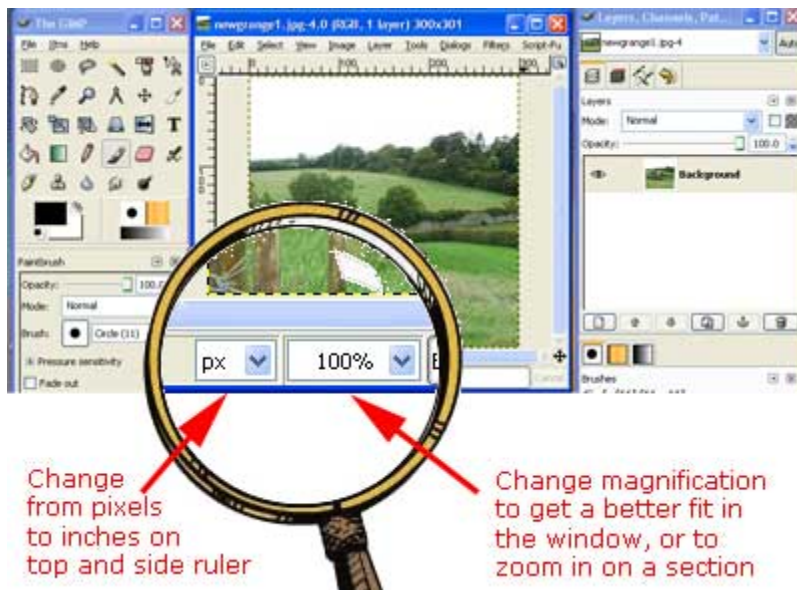
Image after cropping

On the preceding page, the original aspect ratio was about 300x300 or 1:1, the final cropped image's aspect ratio is 250x133, or about 2:1. That means if you have an image that doesn't fit in a frame because one of the side measurements is too long, you could 'trim' the image to fit. This is also often done to make wide screen images fit on older TVs or computer monitors, or to make a better fit for photos on a web page or in a book. Even new HT monitors aren't the same aspect ratio of some movies, so black bars are often added to the movie to fill in the missing space if they don't want to cut out part of the image.

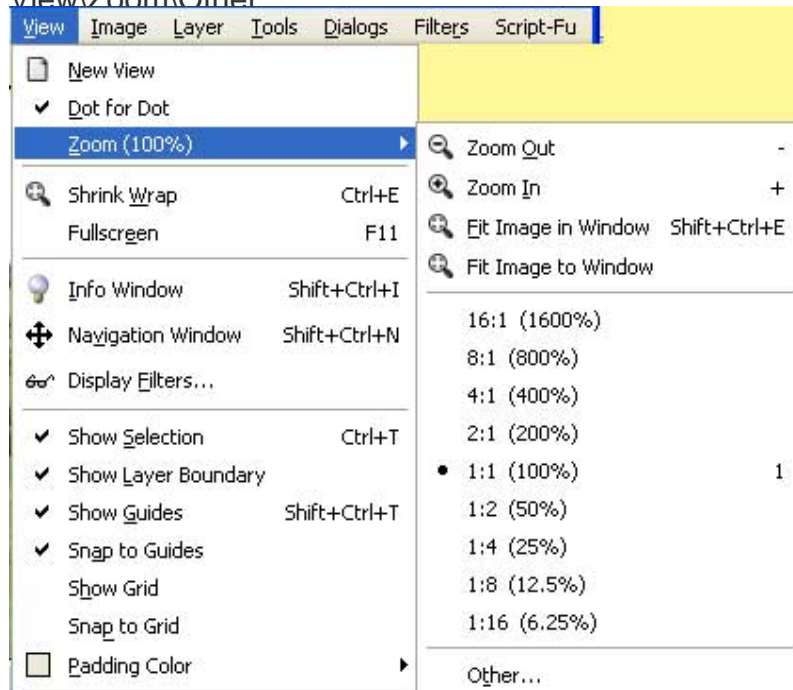
But typically, cropping is to emphasize something... to accentuate the subject matter. In the image of Newgrange, Ireland, the audience may be looking at the trees instead of the burial mound, or they might be distracted by the picket fence... cropping draws the focus to what the photographer wants the audience to see.

How to crop, using the GIMP

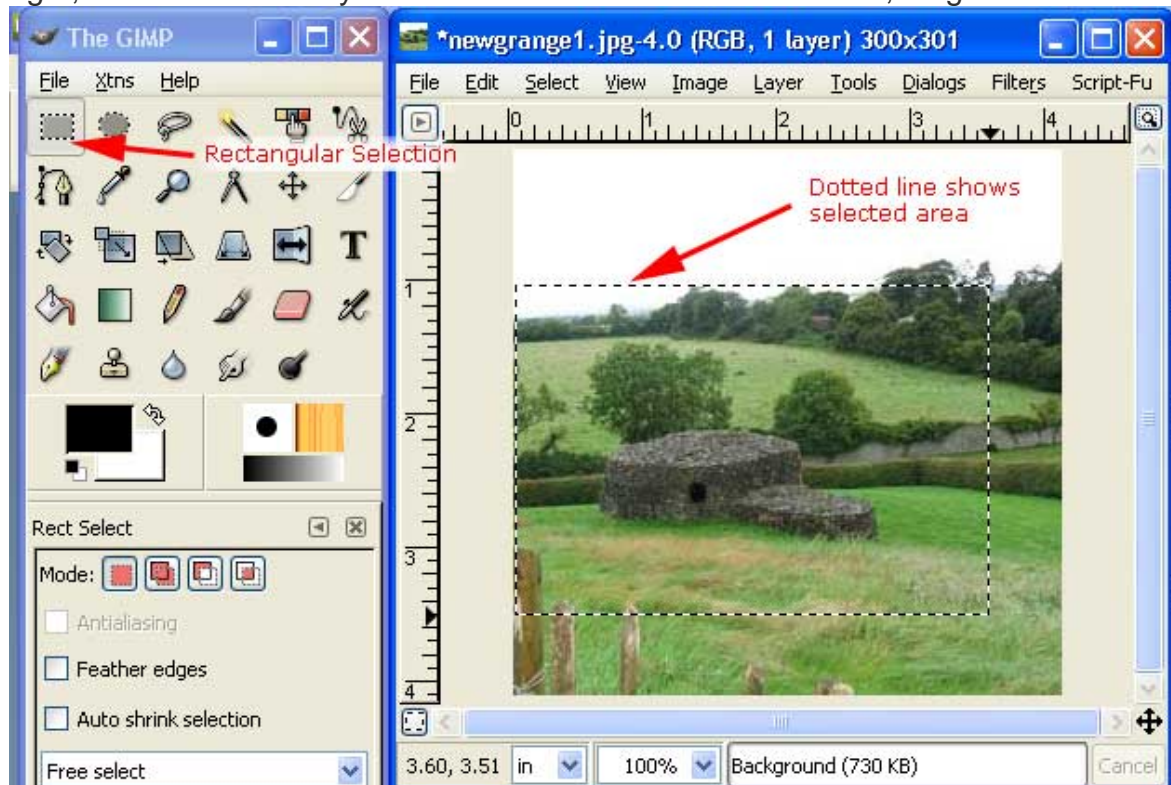
After opening the image, the image may not easily display in the image window, or you may wish to display inches instead of pixels on the rulers around image. To change these, you may use the controls below the image.



For more granular control of the image size, choose on the image window, **View\Zoom\Other**



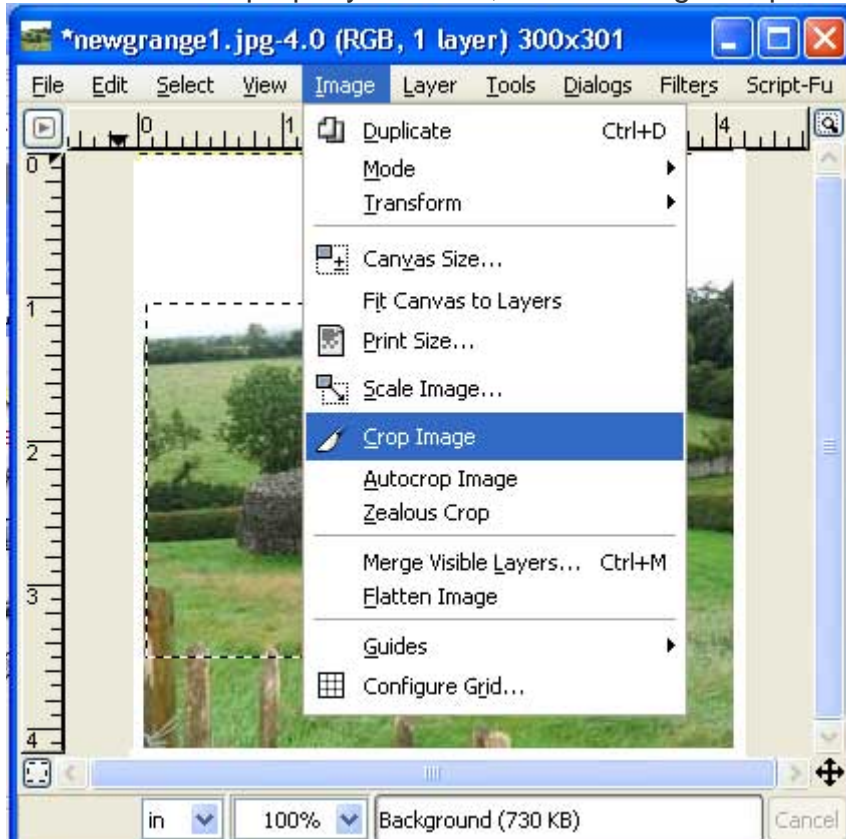
To crop, first choose the select 'rectangular regions' button. Now, to use the selection tool, click and drag across the image; I prefer to go from top left to bottom right, but it doesn't really matter. Once the selection is created, let go of the mouse.



Note: If the dashed line that marks the selection is not quite right, do **not** click in the selection with your mouse and try to drag it; this moves the selected area of the image. If the dimensions are wrong, click someplace else, and try again.

Don't forget, [Ctrl]+[z] is undo, and will put it back the way it was.

Once the item is properly selected, choose Image\Crop



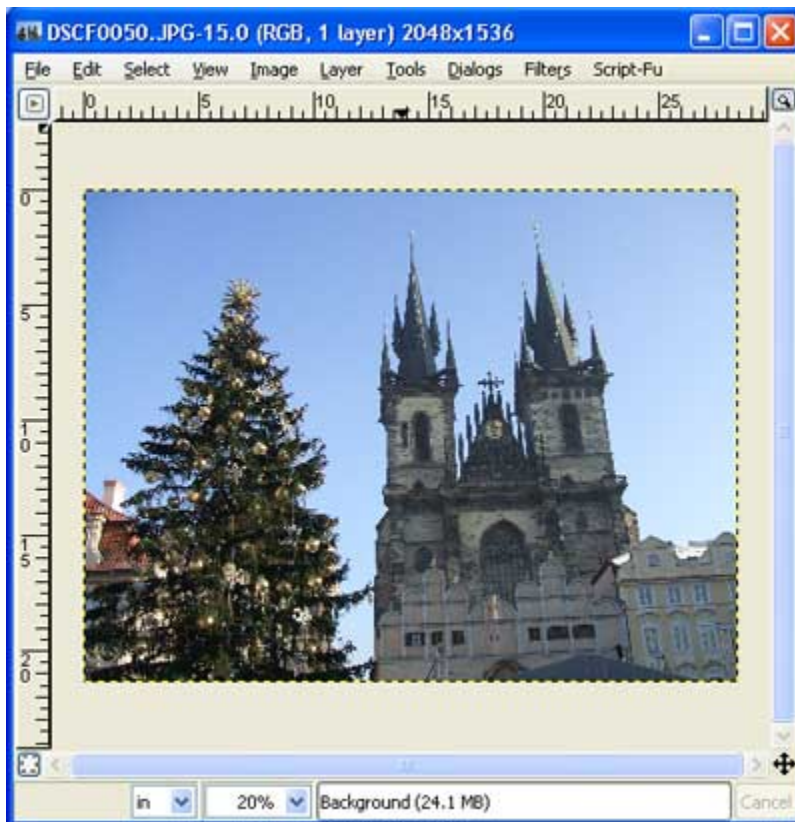
Note: It is recommended that you use File\Save As to create a new file, rather than replacing the old file.

You may go to the class website (D2L) Content and locate Newgrange.jpg for an image to practice on.

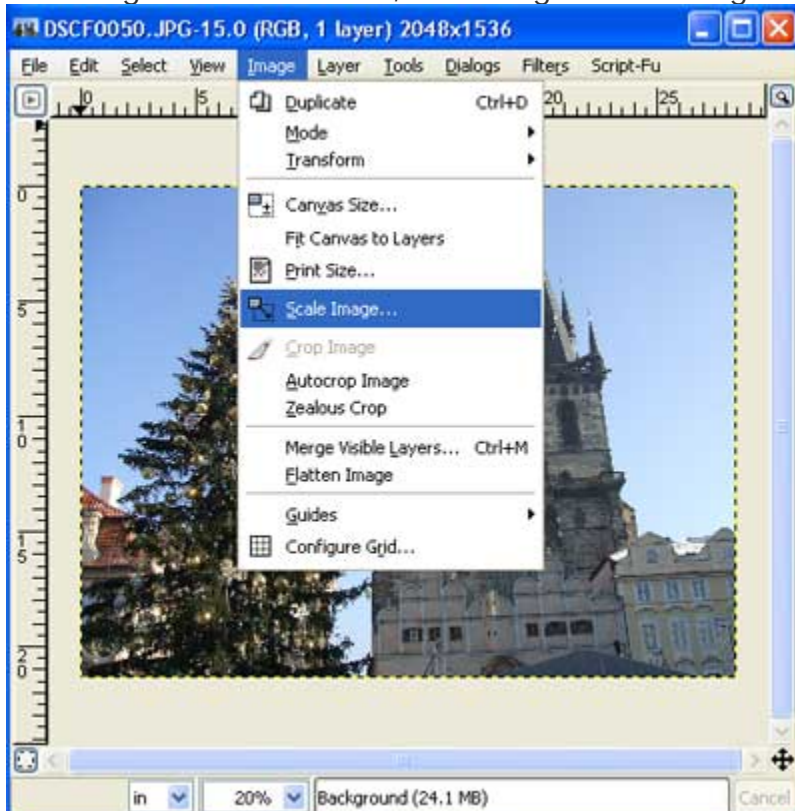
If your file doesn't need cropping, or if after cropping is still the wrong size for your use, you may resize the file.

About scale, resizing

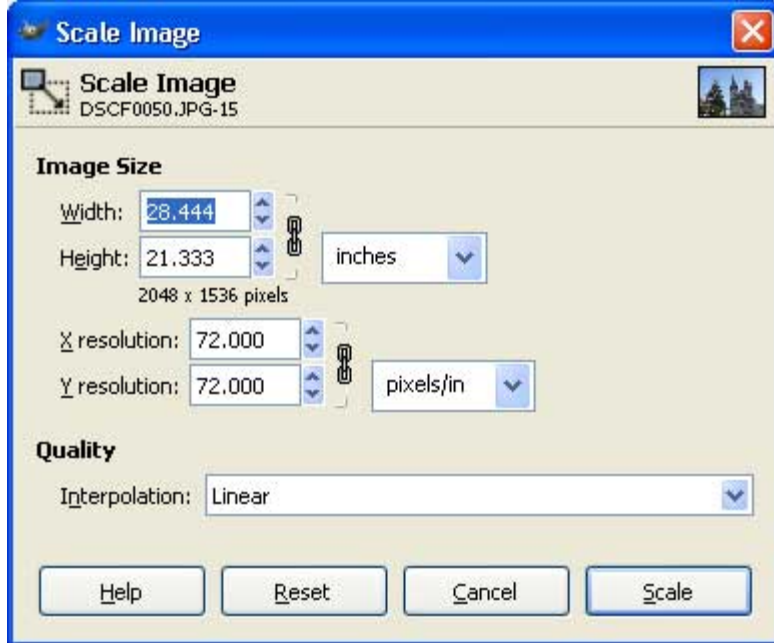
Many times a digital camera's image is 28.44x21.33 inches, or 2048x1536 pixels (1.33: 1). This is far larger than any web browser can display, and larger than most frames you have around the house, if you were to print it. The reasoning behind this is to capture the best quality image to start with, and adjust it later; that adjustment often is to resize the image. Following is an image of the New Town Square in Prague. Note the zoom is 20%, to see the entire image.



To change the dimensions, use Image\Scale Image...



The Scale Image dialog box is below.



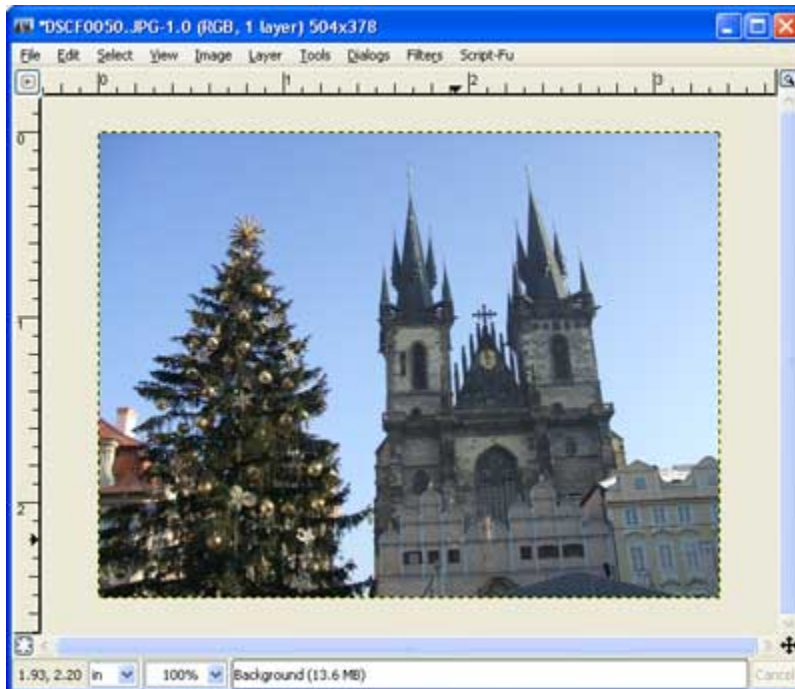
Note: Typically, resizing keeps the same aspect ratio, **proportionally** reducing both the width and the height. The chain symbol means if you change one value, the other will be changed to match proportionally, just by pressing the tab key. If you wish to change the aspect ratio without distorting the image, see the discussion on cropping.

One nice feature is the ability to change resolution here, also. While making images larger tends to destroy the clarity, scaling smaller can be accompanied by increasing the resolution, to better keep clarity.

Again, changing a chained value will keep the change proportional.

Below is the image scaled to about 3.5x2.5 inches, and the resolution has been doubled to 150 dpi.

Note that the image is now being displayed at 100%



Scaling with the Toolbar



As mentioned previously, it is preferable to use File\Save As or File\Export as, and create a new file, instead of replacing the original.

Note: Think about the order I now provide

1. Adjust canvas size to hold new information or
2. allow rotation

(Note, you may have to choose Layer/layer to Image Size or
Note, you may have to choose Layer/layer to Canvas Size)

3. Crop to improve an image, but consider impact of aspect ratio
4. Scale an image for a better print size, or size on a monitor

This works for me.. how about for you?

Activities

- *You may go to the class website (D2L) Content and locate Newgrange.jpg*



- Open any image you may have, then use the GIMP to crop; then compare file size to the original.



- Open your new image and use GIMP to resize the image to about half as wide; compare file size to the other versions.

Video

On the class website (D2L), watch a video on Photoshop Basics, to see how other programs do functions similar to GIMP



Lab 5



To see a video similar to lab 5, check out the Class web site (D2L).

Part 1, Activity (40%):

- Create a lab5 folder
- **You may go to the class website** (D2L) **Content and locate** lab5.jpg, and save the image as lab5.jpg in your lab5 folder.



London

1. Open the lab5.jpg image using the GIMP software
2. Crop the image until only the photographic part is left; that is, remove the yellow, the white, the text, and the rulers.
3. Save this as lab5-crop.jpg
4. If not already open, open lab5-crop.jpg and scale it to 2 inches wide; let the height be adjusted proportionally
5. Save this as lab5-resize.jpg
6. If not already open, open lab5-resize.jpg and resize the canvas to 3x3 inches; center the image in the resized canvas

Recall from the notes you must click the chain icon, as we are changing the aspect ration

Recall from the notes, this is to add an offset, or you may use [Center]

Don't forget you must choose Layer, Layer to Image size to use the newly sized canvas.

7. Flood the new space with a color, if you like;

Recall from the notes, you may have to choose Layers\Layer to Image size or Layers\Layer to Canvas size

Save this as lab5-canvas.jpg

8. You should now have 4 images in your lab5 folder: lab5.jpg, lab5-crop.jpg, lab5-resize.jpg, and lab5-canvas.jpg **See page 112 for example**

- Zip the lab5 folder, rename it to yourname-lab5.zip and submit in the D2L Lab 5 dropbox

Part 2: Hands On (60%): Be prepared to discuss/demonstrate new tools and concepts used in this lab. **At the end of this process**, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

1. When you select an area of an image, and remove everything else, it is called _____ the image.
 - a) canvas
 - b) cropping
 - c) rotating
 - d) scaling
2. When you make a 5x5 inch square 3x3 inches square, it is called _____ the image.
 - a) canvas
 - b) cropping
 - c) rotating
 - d) scaling
3. When you add space around an image, you are adjusting the _____ size.
 - a) canvas
 - b) cropping
 - c) rotating
 - d) scaling
4. Cropping can be used to: (choose all that apply)
 - a) flip an image
 - b) remove unwanted areas
 - c) rotate an image
 - d) accentuate subject matter
 - e) increase the size of an image
 - f) change the aspect ratio
 - g) center an image
5. True or false: It is recommended that you use File\Save As to create a new file after cropping, instead of replacing the old file.

6. When scaling an image to get a different image size, it is not recommended that you scale it larger, due to loss of clarity. But when scaling an image down, to a smaller size, you may also [increase *or* decrease] resolution to improve clarity.
7. The aspect ratio is
 - a) the width compared to the height, expressed as a ratio, such as 1.5:1
 - b) the angle the file is being view from
 - c) the image quality compared to the image file size
8. True or false: Wide screen or Panoramic images have the same aspect ratio as a computer monitor
9. When adjusting the canvas size, you may normally (choose all that apply)
 - a) make it wider only
 - b) make it taller only
 - c) adjust the width and height proportionally
 - c) adjust the width and height individually
 - e) center the image in the new space
10. When rotating an image in the GIMP, you may Choose
Image_____
 - a) transform
 - b) rotate
 - c) modify

What's due this week

This week, you will do two discussions in D2L and lab 5.

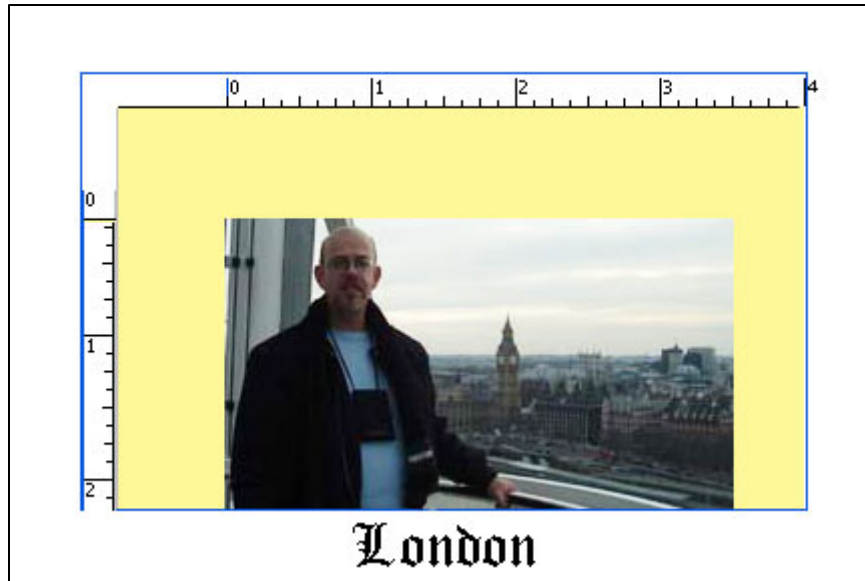
• **Participation Discussion 8** Respond in the class Discussion forum to the following:
Should you crop or resize first?

• **MUD 8 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

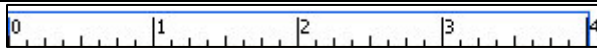
File\Save As works if the file is the same type, use Export if changing file type

As mentioned previously, it is preferable to use File\Save As or File\Export as, and create a new file, instead of replacing the original.

End chapter 8, after examples



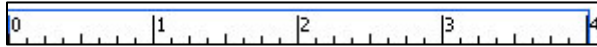
lab5.jpg (original)



Ruler to show scale, not part of next image



lab5.crop



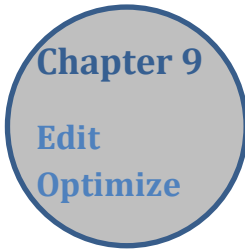
Ruler to show scale, not part of next image



lab5resize.jpg



lab5canvas.jpg



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Grades

Brightness and Contrast

Optimization

Layers

Lab 6

Grades

First things first. Are you spending enough time on this class?

Many of you are taking this class as an online class, or as a hybrid class. That means you are supposed to take quite a bit of time on your own to practice and explore the tools presented. In a traditional setting that would mean 3 ½ hours of lecture and lab practice in a room where I am a week. Are you putting in that much time to read and watch the videos? Don't forget you can come in and use the lab when I am there. I am the only person on campus that schedules an open lab like this. So, if you are close to campus, are you using the lab time afforded to you, to work on labs, and ask questions?

Most colleges advise their students to spend additional time outside of the classroom for rereading, reviewing, studying, and completing homework. Instead of straight lecture our Class includes your book(s), my notes on my web site, and the videos provided with the book or on the class web site. So, some folks might invest 4-5 hours a week; are you spending enough time reading, experimenting, and preparing?

Are you getting the most out of my lecture?

Not all students learn best by reading. That is why I provide videos, so you can see a demonstration even if you aren't on campus. You want to follow along with the guided activities. But, if you have not read the required material BEFORE, you won't be prepared for the videos or lecture if you attend face to face.

So what do you do if you didn't 'get it'?

Ask questions. But don't wait until the last minute. Work ahead, so if you encounter an issue I can address it before you need to worry about submitting homework. I try to respond to posts and email very quickly, but I can't help you Thursday at midnight.

Again, if possible, come by my office hours or open lab time. They are listed on the class web site. Many times I can show you something in 3 minutes that might take 3 or 4 emails to sort through.

Next, are you using email and the feedback forum in D2L to get prompt feedback, or to suggest areas in my notes that might benefit from more or new information? Click your Progress in D2L Classlist to see if you are posting to all the forums you should be, to get the best participation grade possible.

What I won't do.

I want to help you learn, but don't expect me to constantly repeat what I have already said, or what is already written down for you. After a bit, I will simply point out on my web site the relevant information. It is up to you to review the steps until you master them. I can provide insight, I can provide some learning tips, or refer you to campus institutions that can help with your reading or learning skills, I can provide info on where the material resides on my web site or in your book, but I can't sit by you the entire time... other people may have questions too.

Don't expect me to do your lab. I will show you the steps, but it is up to you to string those steps together... use your notes until the steps are second nature.

A final note on using the material to assist you during the learning phase.

Between the book and my notes, EVERYTHING is covered. Nothing is said in lecture classes that isn't available for you in the book or on my web site. Many software related

items have videos to demonstrate the techniques, but you simply can't learn by skipping to the videos. You must read the material first. You may need to print the material from the web site, then, as you watch the videos provided...stop the video, and compare the notes to what you see.

Okay, I am paying attention, doing my reading, but my grade is low. What is going on? Most people in my class that are not getting A's or B's can attribute that to not turning in work.

Are you turning in all parts of the lab? Almost every lab has two parts, a software related activity, and a quiz over a related topic.

The activities are turned in by using the D2L dropbox.

Lab quizzes are open book, open note, and taken using the quizzes feature in D2L.

To find out at any time what your scores are, go to the grades area in D2L, and scroll down; seek out feedback on what can be redone to improve your grade. A separate section on feedback on the class web site.

If you are not doing the labs, you will not be prepared for the Tests. To get the best test grade: do the labs, and really spend some time on the provided test reviews. Almost everything on the test comes from the review. You may complete and email me a test review for feedback on your material.

And remember, your lowest test score can be improved by doing well on that section of the Final exam.

Make Up Work

All material is due on a specified date, electronically submit the material. Late work may not be accepted, or may be heavily penalized.

A missed test grade is generated as a percentage of the relevant section of the Final Exam; the lowest test grade may be replaced by a percentage of a markedly improved relevant section of the Final.

Key to success in my classes

Set aside time for this class, participate, and then turn in your homework almost guarantees passing; test grades build on that success. The majority of my tests are short answer/fill in the blank, to ascertain what you have actually learned, to duplicate the real test before getting a job, the job interview.

Cheating prevents me from seeing what you are weak in, which prevents you from learning it. So, don't cheat, or break the rules.

How to: Study

You might want to re-read my section on studying, too.

I'll get off my soapbox now... back to class material.

Brightness and Contrast

Many digital images, whether from a camera, or a scanner, often seem to be too dark or too light. This can especially be troublesome if you plan on combining images.

Most high end computer graphics software has tools to adjust the brightness and contrast. However, for new users this is more art than science. Brightness has to do with how light or dark the image appears... often you can 'add light' to a photo in a dark room, or tone down an overly radiant daylight photo so the sky is bluer, rather than a washed-out with white.

Compared to brightness, contrast is fairly difficult to explain. While at first blush it appears to brighten or darken, it actually is sharpening or dulling the differences within the image. Adding contrast tends to make items stand out, removing contrast allows items to sort of fade into the background.

In the GIMP, the brightness and contrast tool is accessed from the Tools/Color Tools menu, and presents two sliders: one to adjust brightness, and of course one to adjust contrast. This tool works best if the Preview box is selected.

You first perhaps drag the brightness control a little... then look at the effect to decide if you need to move it more, or back up some. It is often preferable to first adjust the brightness, then try the contrast.



To see a video on brightness and contrast, check out the Class web site.

Optimization

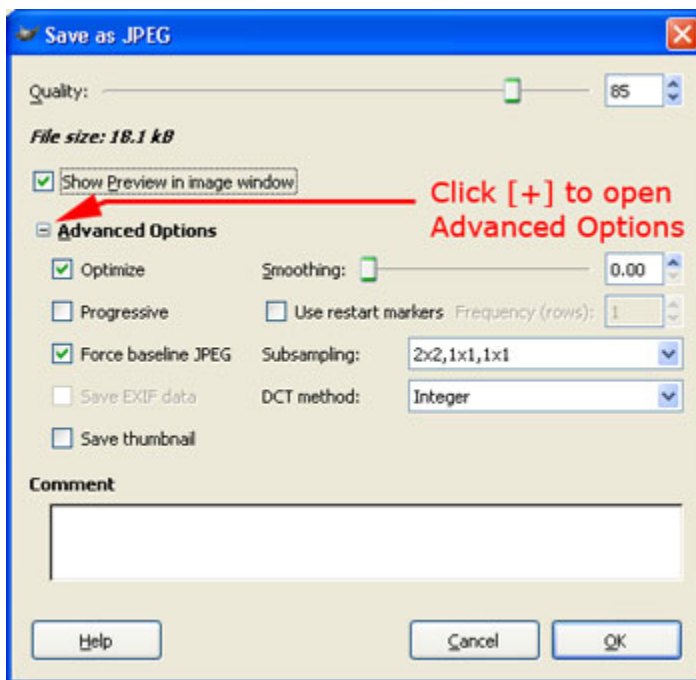
Compression is all about making a file smaller. This could include reducing the color depth, such as going from saving 16.7 million shades to instead only using 65,000 shades. A brutal compression would go to 256 colors. Compression could also include reducing resolution, such as going from 1500 pixels per inch, as used by very nice printers, to say 300 pixels per inch for a 5x7 in print out. You could also compress to 96 pixels per inch, as many computer monitors can't display more than 96 dpi anyway, so there is no apparent lose. But using too aggressive a compression scheme, and suddenly colors are blotchy, and/or straight lines seem less crisp.

Bottom line, too much compression might ruin an image.

Optimization is the process of compressing a jpeg file into a smaller file size; but instead of indiscriminate compression, a balance is struck between the quality of the image and the ultimate file size. In some graphics programs, you can view

multiple versions of the same file, with differing levels of compression... and you choose the image that you feel is the best balance of compression and file size.

In the GIMP, a slider is used... move left to apply more compression, move right to improve quality; stop when the preview is the best tradeoff between quality (file size) and clarity. Choosing the Advanced Options will reveal the Optimize option



To see a video on optimization, check out the Class web site.

You should be taking some notes right here, don't you think?

Compressed is _____

Over compressing can _____

Optimized is _____

I don't want to forget _____

A little more on Layers

Selection

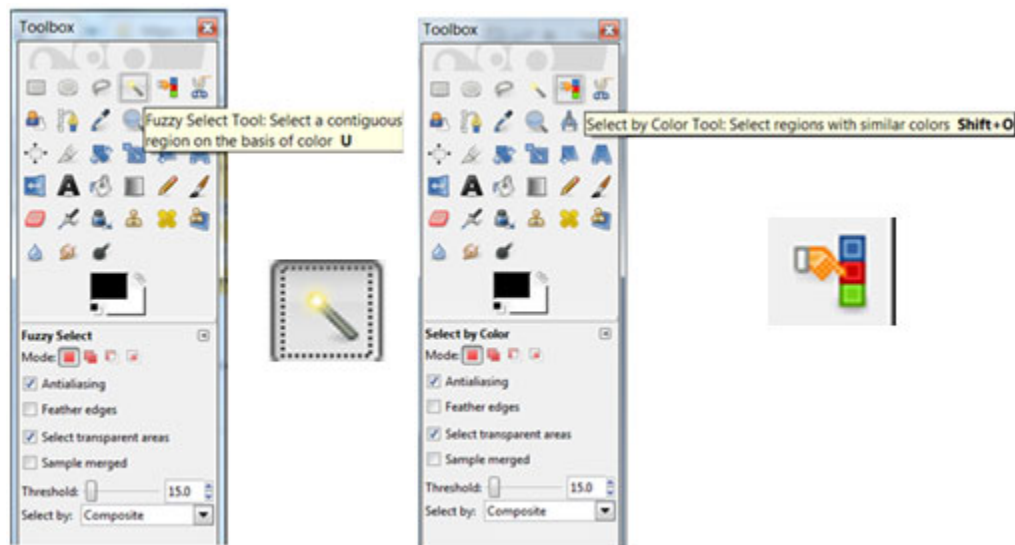
Both GIMP and Photoshop have the ability to select by color... either a contiguous region
(click a spot of blue and only that spot becomes selected)

or

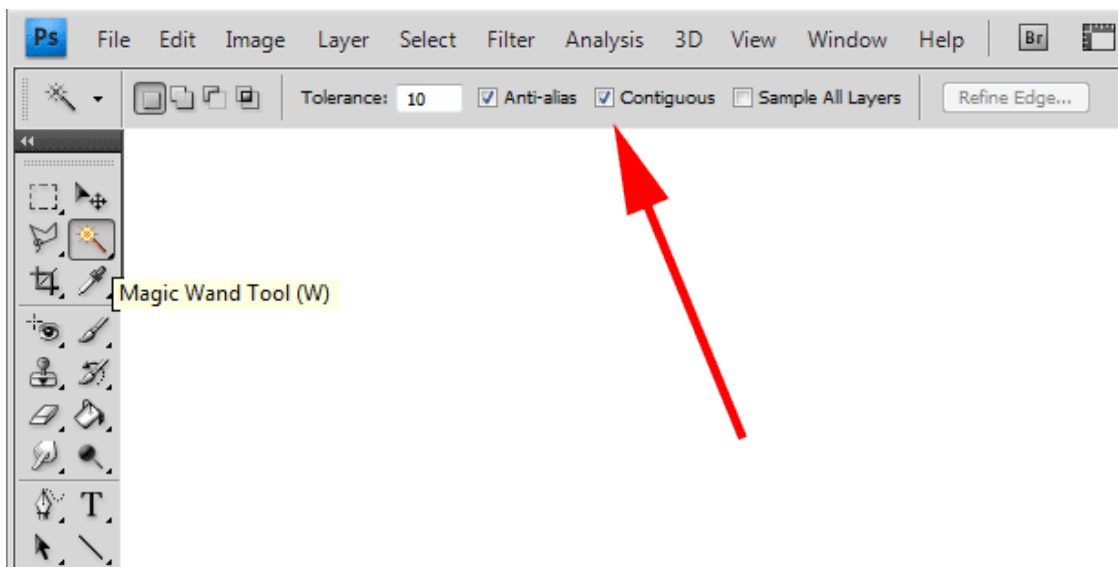
non-contiguous

(click a spot of blue, and any similar blue in the image is selected.)

In GIMP, this is done with two separate tools, the fuzzy select gets contiguous; the select by color does not.



In Photoshop, you use the Magic Wand tool; click on or off the []Contiguous box



While you have a color range selected, investigate the filters and color tools: color balance, hue and saturation, etc.

Both Photoshop and GIMP can also choose irregular shapes with the Lasso shaped selector option.

Note: You can ADD to a selection by pressing the Shift key down, and then selecting an additional area.

Layers

A tip on layers is to open a NEW image, and set the background color to Transparent. Make this image larger than you plan on needing, it will save you image and canvas sizing later... thought the file will be huge during the edit process.

This will also let you click on a layer and rearrange it in the stack, as Photoshop does not like to move the background layer.

The open images in other windows, select all (Ctrl+A), the copy (Ctrl+C). Switch to the new window and paste the image. In GIMP, choose Paste As\New Layer to avoid having to anchor the floating layer, etc.

File types while working

As neither png or jpeg support layers or transparency, you may wish to save your work-in-progress as the editor's native format.

GIMP uses xcf to implement layers and/or transparency, while Photoshop uses psd to implement layers and/or transparency.

While neither of these files types works on the web, and neither are good formats for distribution (you need the software to open the file), it is a great way to save your edited works for later re-edits.

Note: While Photoshop cannot open xcf, GIMP can open both xcf and psd.

Lab 6



To see videos helpful to lab 6, check out the Class web site.

Refer also to earlier chapters and readings on layers, crop, resize, scale, etc.

Lab 6 Part 1, Activity (100%, no quiz this week)

- Create a lab6 folder
- Copy dam02a.png and dam02b.png into the lab6 folder.

You may go to the class website (D2L) **Content and locate** the needed files.

dam02a.png



dam02b.png



- Rotate dam02a.png 2° clockwise. Save as lab6.png
- Increase the canvas size to about 5 inches wide, with the new space to the right

We could open an image, expand the canvas size, then copy and **Paste** the other two graphics into the image.

In the GIMP, on occasion, when resizing the canvas, you must choose Layer\Layer to Image Size in order to use the entire Canvas.


When pasting, you may wish to anchor a floating layer into the existing layer, using Layer\Anchor Layer.

Or you could use **Paste Into** to drop the copied item directly into the existing layer.

Starting now, you'll see that the images should each be on separate layers, allowing us to move them around until everything lined up... so instead of anchoring the layer, you could use Edit/**Paste As** and choose New Layer... then we can move the items on different layers independently. You just need to make sure you have selected the proper layer in the Layers, Paths, and History dock, which normally opens on the right of the desktop.

- Paste dam02b.png into your new lab6.png

Note: in the GIMP, on occasion, when pasting, you must go to the Layer tab of Layers, Colors and paths, right click the pasted layer, choose **New Layer**... before you can actually use the layer; or use Layer\Anchor Layer.

Use the  tool (red outline, below, to drag the dam02b.png image until it lines up with dam02a.png

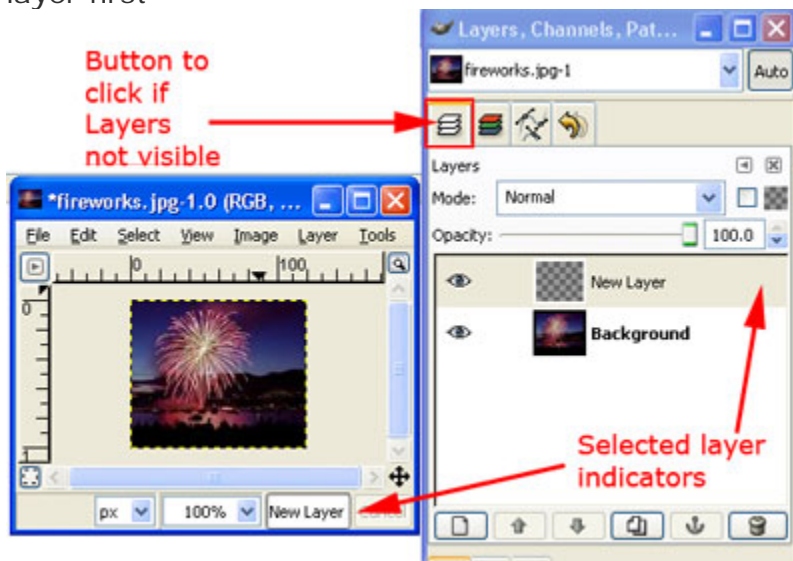


You may cut away parts of each file if it helps.

Just make sure the correct layer is selected, choose the rectangular selection tool (gray outline above)

select the area you no longer wish to include, then choose Edit/Delete

(Remember, you may be working on two separate layers, select the correct layer first



- Move dam02b until it lines up, making a new panorama image
- Adjust the brightness and contrast as needed (may need to select the correct layer to adjust)
- Crop as needed to get just the new, combined image.
- Save as lab6b.png
- Final step, create an optimized jpeg file: Export as lab6.jpg, and optimize.

Final product should look similar to image below
(obviously without the **Sample** text running across it. I didn't want you to just 'borrow' this one :)



- Zip the lab6 folder, rename it to *yourname-lab6.zip* and submit in the D2L Lab 6 dropbox

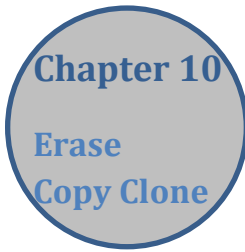
What's due this week

This week, you will do two discussions in D2L and lab 6.

- **Participation Discussion 9** Respond in the class Discussion forum to the following:
Why should you optimize image files if you are placing them on the Internet?

- **MUD 9 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 9



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Photo editing

Pencil, Paintbrush, Ink

Eraser, Blur/Sharpen, Smudge, Dodge/Burn

Clone

Lab 7

Photo Editing

Up until now, we have been 'adjusting' images; now is the time for 'fixing' images.



-  Paint hard edge
-  Paint fuzzy brush stroke
-  Airbrush w/variable pressure
-  Draw in ink
-  Paint using patterns or image regions (clone)
-  Blur or sharpen
-  Smudge
-  Dodge or burn strokes

While the selection, move, and rotation tools are at the top of the tool box, some really useful tools are down a little further. Some are analogous to the tools we used in Paint, such as the 'fill with color' tool. The 'fill with a color gradient' tool, right next to the 'fill with color' tool on the tool button window, is neat for background layers, or for creating sunset like images... going from perhaps black to dark blue... etc.

How to use the gradient tool.

Select the tool, then select the type of gradient you wish to create, such as going from the foreground color to the background color. Apply the effect by dragging a line in the direction of the gradient. This tool can also work its magic in a radial, as seen below.



If using the brush, the Paint hard edge (pencil) or the Draw in Ink (pen), you'll want to control the size of the line you make.

1. Select the paint brush or other tool of your choice

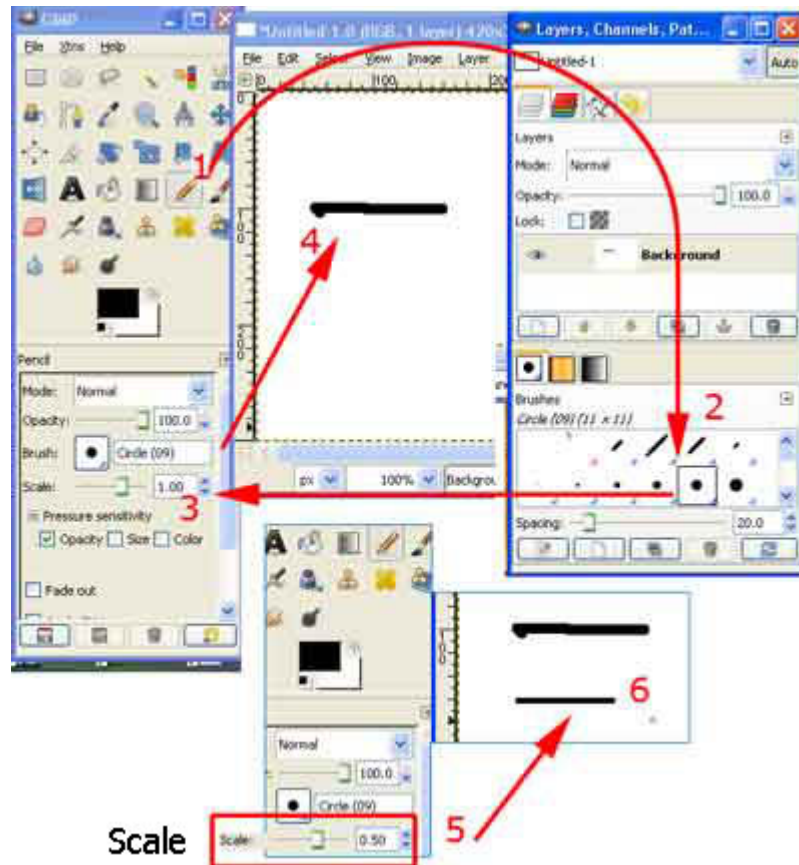
2. Choose the brush size that is closest to what you want

3. Note: The scale should be set to 1.00

4. Click your mouse and drag to draw the line


5. If you wish to scale the brush a bit, change the scale
in this example, the scale is now .50

6. The new line drawn is half the size of the original



The real challenge to using a good computer graphics tool is to put into an image items that the camera missed. Obvious tools are the pencil like 'paint hard edges' tool, or the 'draw in ink' tool to place crisp or not so crisp lines. The 'smudge' and 'blur or sharpen' tool's jobs are also fairly obvious. But this document is going to cover some photo lab tricks, and some artistic tools.

Dodge tool applied to top and left

 Dodge or burn strokes

Burn tool applied to right and bottom

Dodge and burn are photo lab terms. Imagine a light projecting an image onto old fashioned photo paper. The longer the light is projected, the deeper and richer the image becomes.

During the exposure, **dodging** reduces the exposure for areas of the print that the photographer wishes to be lighter, such as lighter edges. After an image is fully developed, **burning** gives extra exposure to areas that photographer wishes to be darker.

The 'dodge and burn' tool in the GIMP can lighten or darken parts of an image, using brush like strokes... rather than adjusting brightness and contrast to the parts of an image.



'select shapes from image' tool



As you have seen before, you can copy an image into another image. But it is also possible to copy part of an image, then paste the copied item back into the same file. This works well if what you wish to copy is a rectangle or circular, as these selection tools are built into most graphic editors.

For something not round or square, use the 'select shapes from image' tool (also known as the irregular selection tool in other programs... in the GIMP it is the curved line with scissors) to outline select your body in a picture, then copy and paste... so there are two of you, making it look like you are twins.

How to use the 'select shapes from image' tool.

To do this, you click to form a series of connected dots... to finish, you click one more time on the first dot you made, completing the outline. Then, click in the middle of the surrounded area to select the area for copying, then pasting. This typically creates a temporary layer... it is best to add a new layer for the copied item to reside on.

To switch between layers, select the appropriate layer on the guide to the right. To hide a layer so you can focus on a different layer, click the eyeball icon. To un-hide, click the same button.

The original image that was the starting point for the 'twins' picture is at the bottom, for comparison.

A great thing about layers, by the way, is to allow you to erase parts of your image without messing up the other.

Erasing can be one of the most challenging tasks... it normally helps if you magnify the image about 2 or 4 times (200% or 400%), then experiment with different size and shaped erasers.

Hard edges can be softened with the blur tool, or perhaps dodge and/or burn can be used to tweak the addition, to better match the background image.

Experiment with one of the class pics for example; cut someone out, clean up around the person with the eraser, then paste them into a different image, making adjustments as needed.

Note: (the GIMP Red Eye Removal: Filters \ Enhance \ Red Eye Removal)

Don't forget that you may have to flatten the image in order to save it as a jpeg or png. In the GIMP, choose Layer\Merge Down.



Finally, one of the most elegant copy tools in GIMP. Perhaps your image has an ugly trash can right in the middle of your picture of the park. You might be tempted to select a square area of grass around it, and then paste over the trash can. But too often the mismatch in texture betrays your edit. Or perhaps your photo of a great sunset includes power lines across the sky. As the sky is shifting in color throughout, it could be a nightmare to try and copy/paste clear sky over the power lines. The tool that rides to the rescue is often called the clone tool, or the rubber stamp tool.

The clone tool is used to replace information for one part of a picture by duplicating information from another part. The most common usage, in the photo lab, is to remove blemishes. Simply point out a good part of the image to the computer, then point out the marred area, and as you move your clone tool, the target color and texture is applied. As with the eraser, the size and hardness of the clone tool can be varied, letting you select very specific area to use when touching up.

The images below, at the Trianon-Petite near Versailles in France, show how some people were removed, by duplicating very small but specific areas, using the clone tool. The image on the right is still in process, but the people by the line of trees are completely gone, and the jacket shoulder in the lower right is almost gone. A little more cloning, a bit of blurring or smudging, and the casual observer would not be aware of the edit.



Is this cheating? As we are not misrepresenting anything, most experts agree that is a legitimate use of the tools at hand.

Experiment; open an image, find an area to cover up, then use the clone tool to copy from another part of the image, with a brush.

How to use the clone tool.

If you want to clone from an image, instead of a pattern, you must tell GIMP which image you want to copy from. You do this by holding down the Ctrl key and clicking in the desired source image. Until you have set the source in this way, you will not be able to paint with the Clone tool: the tool cursor tells you this by showing a "forbidden" symbol.

If you clone from a pattern, the pattern is *tiled*; that is, when the point you are copying from moves past one of the edges, it jumps to the opposite edge and continues, as though the pattern were repeated side-by-side, indefinitely. When you clone from an image this does not happen: if you go beyond the edges of the source, the Clone tool stops producing any changes.

To learn to use these tools, it is probably best to watch the related video on the Class web site.



An un-scaled version of the original Stirling Castle picture



Reminder: online resources

While the best way to learn about many of the GIMP tools is discovery... that is, click the tool and mess with it, play with it, LEARN it... but for more info, the online help section has a lot of good information on the

Pencil, Paintbrush, Ink

Eraser, Blur/Sharpen, Smudge, Dodge/Burn, and Clone tools.


See links on the class web site.

Lab 7

To see videos helpful in this lab, check out the Class web site.

**Part 1, Activity (40%):**

- Create a lab7 folder

 <p>Paint hard edge</p> <p>Paint fuzzy brush stroke</p> <p>Airbrush w/variable pressure</p> <p>Draw in ink</p> <p>Paint using patterns or image regions (clone)</p> <p>Blur or sharpen</p> <p>Smudge</p> <p>Dodge or burn strokes</p>	<ul style="list-style-type: none"> • Copy any images you wish to use into the lab7 folder • Demonstrate the use of all the tools mentioned: • Use the pencil, and ink tool (adjust the brush size, as needed) • Use the eraser tool (adjust the brush size, as needed) • Use the blur/sharpen tool (adjust the brush size, as needed) • Use the smudge tool (adjust the brush size, as needed) • Use the clone tool (adjust the brush size, as needed) <p>These effects may be done in one image, or these effects can be done on different images... the choice is yours.</p> <p>Submit both the original image(s) and the edited image(s)</p>
---	---

Please don't simply draw lines and clone random objects...

... actually use to tools to enhance an image or images.

You get to choose how you use the tools, but this should not be a two minute lab!

- Zip the lab7 folder, rename it to *yourname-lab7.zip* and submit in the D2L Lab 7 dropbox

Part 2: Hands On (60%): Be prepared to discuss/demonstrate new tools and concepts used in this lab.

At the end of this process, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

1. Which image file did you use the pencil tool on?
How did you use it?
2. Which image file did you use the ink tool on?
How did you use it?
3. Which image file did you use the eraser tool on?
How did you use it?
4. Which image file did you use the blur/sharpen tool on?
How did you use it?
5. Which image file did you use the smudge tool on?
How did you use it?
6. Which image file did you use the clone tool on?
How did you use it?

What's due this week

This week, you will do two discussions in D2L and turn in lab 7.

- **Participation Discussion 10** Respond in the class Discussion forum to the following:

When is adding or removing probably the wrong thing to do.

When is it okay to add or remove something to an image?

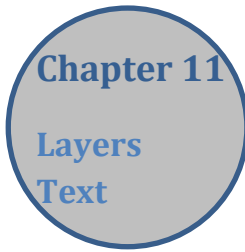
- **MUD 10 (My Understanding, Details)** Respond in the class Discussion forum to the following:

What was helpful this week?

What do you hope we talk about next week?

There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 10



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Colors

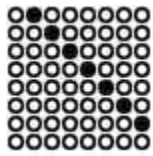
Layers

xcf file type

Text

Lab 8

Colors



If you zoom in on a digital image, you would see something like the image to the left... a series of dots.

The most simple image might be black and white dots... to tell the computer how to save this, you might just say white=1 and black=0.

Now think of a box of crayons, maybe the white=7, red=6, magenta=5, yellow=4, green=3, turquoise=2, blue=1, and black=0.

So numbers can represent colors. The more shades you want, the larger the number would be for each dot.

But better than 8 colors would be about 200 colors, or 65,000 colors.

But in modern digital images, color is about mixing wavelengths of light to form **millions** of colors. When discussing color and computers, you normally are discussing combining various values, or intensities, of:
red, green, and blue.

A computer monitor typically creates the colors you see with thousands and thousands of pixels, or picture elements. These tiny glowing points of light that cover your screen consist of three tiny points, one that controls the intensity of red, one for green, and one for blue.

For each dot or pixel you see on a screen, a series of 1s and 0s is being feed to the computer, indicating the values to be fed to the red, green, and blue pixel components. When you mix these pixel parts, your eyes see different colors.

Normally, to get about 16 million colors, this would be sent to the computer as twenty four 1s and 0s
eight 1s and 0s for red,
eight 1s and 0s for green, and
eight 1s and 0s for blue.

Something like

110010110011110011001010

|←Red part →| |←Green part→| |←Blue part→|

While not a problem for computers, all of these numbers get quite out of hand for people, so the three color octets are normally represented with their hexadecimal equivalents, which range from 00-FF, or 256 possibilities per primary color. (See my web site for an explanation on hex.)

And again, these primary colors are combined to generate the 16 million odd shades, and on the Internet are represented with the three hex values for red, green, and blue in sequence, such as bgcolor="#ff0000" to color the background a bright red. (Think full red, no green, and no blue)

How computers mix colors

Again, there are three components involved: Red Green Blue.
In binary, it is

110010110011110011001010
|←Red part →| |←Green part→| |←Blue part→|

In hex, it would be

X X X X X X
Red part Green part Blue part

that is, the amount of each color ranging from 00 (none) to FF (all) that are mixed together.


The mixture behaves like light:

add full values of red, green, and blue light,
in equal parts, and you have white light (FF FF FF).

Add no red, green or blue light, and you would be in the dark, or black (00 00 00).

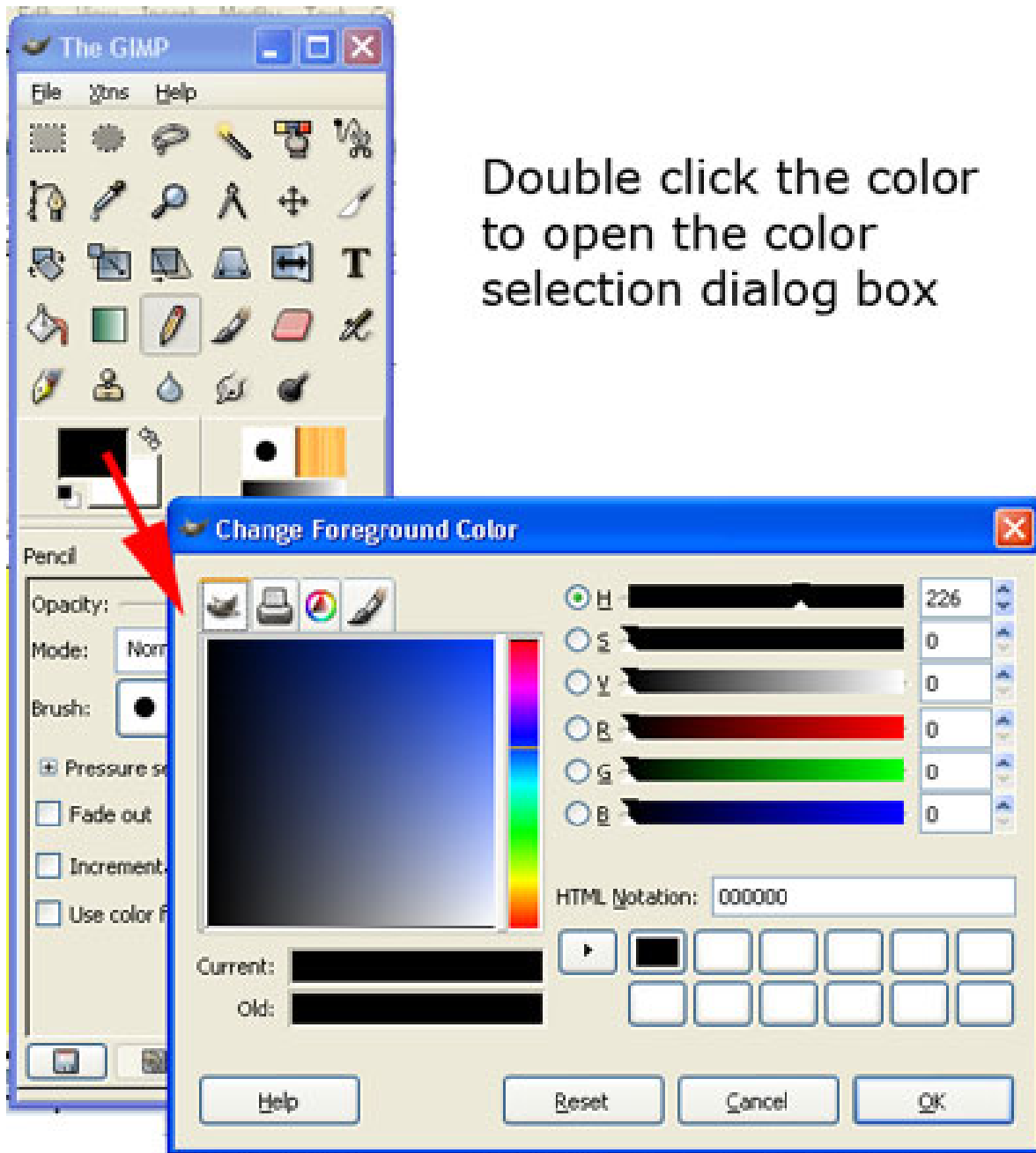
There are links to Color Charts on the class website (D2L)

Our 8 crayon box colors, in hex :)

000000		Black		0000FF		Blue
00FF00		Green		00FFFF		Turquoise
FF0000		Red		FF00FF		Magenta
FFFF00		Yellow		FFFFFF		White

Setting colors in GIMP

To set a color, double click either the foreground or background color.



Click on the rainbow to choose your color, and then adjust the red, green or blue to fine tune the color. you may click the [>] to add the current color to a color history palette. If you have a color chart, you may also enter the HTML hex value.

Layers (See also class web site for links to GIMP help on Layers)

Previously, when discussing layers, those layers were used as an intermediate step... a holding area until we resized, rotated, etc.; but once the adjustments were made, the layers were flattened or merged into one layer that could be saved as a gif, a jpeg, or a png.

Recall from our previous discussion on layers:

We could open an image, expand the canvas size, then copy and **Paste** the other two graphics into the image.

In the GIMP, on occasion, when resizing the canvas, you must choose Layer\Layer to Image Size in order to use the entire Canvas.

When pasting, you may wish to anchor a floating layer into the existing layer, using Layer\Anchor Layer.

Or you could use **Paste Into** to drop the copied item directly into the existing layer.

Starting now, you'll see that the images should each be on separate layers, allowing us to move them around until everything lined up... so instead of anchoring the layer, you could use Edit/**Paste As** and choose New Layer... then we can move the items on different layers independently. You just need to make sure you have selected the proper layer in the Layers, Paths, and History dock, which normally opens on the right of the desktop.

Note: You must often choose Select/None before starting an editing job, to make sure you aren't limited to the wrong part of the image you are working on.

Note: You must often choose the correct layer before starting an editing job, to make sure you aren't limited to the wrong part of the image you are working on.



xcf File type

But, from time to time, it might be nice to keep those layers, and not flatten the image right away. Each major graphics program typically has a file type reserved for just this purpose...Photoshop uses the psd file type, and the GIMP uses the xcf extension.

The xcf format is the only format that can save all the GIMP features and states if you wish to continue working on a project.

So it is recommended that all major projects are saved using the xcf format while in progress, and saved as an xcf again when the final version is ready. Then the xcf can be exported as a different file type that can be placed on the web or printed, such as jpeg or png.

To save a GIMP file with layers, choose File\Save As and choose the xcf file type.

To create a jpeg version from this, for example, now choose File\Save As and choose the jpg file type...

you will be prompted that the file will be exported, and the layers will be merged or the jpeg version,

BUT NO CHANGES WILL BE MADE TO THE original XCF.

Now that layers don't have to be discarded, many new opportunities become available. Layers can be hidden, allowing different versions of a file to be exported to many different file types.

Other Layer Tips

New layers can be a solid color, or transparent.

Layers can be rearranged; so what was near the bottom and was being obscured by a higher layer, can be moved to the top.

Click the layer in the Layers and Channels box and drag it above or below a different layer.

Note: the background layer cannot be moved, and is always at the bottom.

Layers can be duplicated. Right click the layer in the Layers and Channels box, normally on the right, and choose Duplicate Layer.

Note: as the background layer cannot be moved, the solution is to duplicate the background, and rearrange the copy. You may hide the original background layer.

Layers can be renamed. Right click the layer in the Layers and Channels box, normally on the right, and choose Edit Layer Attributes...

Making shapes on Layers

Create a new transparent layer.

Choose the foreground color you wish to use. Use the round or rectangular selection tool to 'draw' your oval or square, and then choose Edit/Stroke Selection

Text

If using Microsoft Paint, and you use the text tool, for all practical purposes what was there is replaced by new colored dots that form the letters. Later, if one wishes to get rid of the text, you will find you can't just erase the text, you erase everything, leaving nothing behind it. More powerful graphics programs deal with this issue by placing the text on layers.

Some programs, such as Photoshop actually render text as a vector instead of a raster... meaning the text can easily be scaled, rotated, and yet still be edited.

Current versions of the GIMP are not quite to this point... but as the text resides on a separate layer, that layer can be rotated or scaled. If you catch a typo, right click the text layer in the Layers and Channels window, and choose Text tool to reopen the editor.

Note: normally you create a separate layer for each block of text entered, just to keep them separate, and easy to move or hide.

Note: the text layer automatically is named by the first few words of what was typed.

To enter text in the GIMP

Click the 'Add text to Image' tool, or choose Tools\Text.

The bottom of the GIMP windows allows you to change the font face (shape, such as Arial, Times, etc.), change the color, the size, etc.

Typically, anti-aliasing helps keep the text smooth.

Click where you wish to add the text.

The GIMP Text Editor tool opens... type your text.

Choose Close; the editor window closes, and your new text layer is created.

To edit the text, right click the text layer in the Layers and Channels window, and choose Text tool to reopen the editor.

There is a video on using Text and Layers on the class web site



Lab 8

Part 1, Activity (40%):

- Create a lab8 folder
- Copy any image(s) you wish to use into the lab8 folder
- Open an image and edit as needed, such as
 - adding additional images or portions of images on separate layers (BE CREATIVE)
 - cutting or cropping as needed
 - adjusting brightness and/or contrast as needed
 - using the dodge, burn, cloning, pencil, paintbrush, or ink tools as needed (may place on separate layer)

- Create a new layer for the image
- Use the selection tool to draw a rectangle, then use edit/stroke to outline the rectangle on the new layer
- Use the 'fill with color tool' to flood the rectangle with color
- Add your name using the text tool, place the text over the colored rectangle
- rearrange the layers as needed (drag a layer up or down to impact what is visible)
- Save the image and it's layers **in the xcf** format, calling it lab8.xcf
- Save and Export a flattened, merged version of the image to the png or jpeg format, calling it lab8.png or lab8.jpg

Please don't simply combine random objects...

... actually use the tools to enhance an image or images.

You get to choose how you use the tools, but this should not be a two minute lab!

- Zip the lab8 folder, rename it to *yourname-lab8.zip* and submit in the D2L Lab 8 dropbox

Part 2: Hands On (60%): Be prepared to discuss/demonstrate new tools and concepts used in this lab. At the end of this process, you will be turning in answers using the Quizzes area of Desire2Learn, based on the following questions. So, to get the best score, fill in all the answers in this document first.

Answer the following questions

1. From Lab 7: To use the 'clone' tool (paint using patterns or image regions)
 - a. press the alt key, select the target area, let go of the alt key, then click on the destination area to paint
 - b. press the control key, select the target area, let go of the control key, then click on the destination area to paint
 - c. press the shift key, select the target area, let go of the shift key, then click on the destination area to paint
2. From Lab 7: Dodge (lightens or darkens), while Burn (lightens or darkens)
3. What colors are blending to create colors on monitors?
 - a. cyan, magenta, yellow
 - b. cyan, magenta, yellow, black
 - c. red, green, blue
 - d. red, green, blue, white
 - e. red, green, blue, black
4. Computers use the binary numbers 1 and 0. How many 1s and zeros does a computer use to generate 16.7 million colors?
 - a. 2
 - b. 8
 - c. 24
 - d. 256

5. The hex number for black is _____ and the hex number for white is _____
 - a. black is 000000 and white is FFFFFFFF
 - b. black is FFFFFFFF and white is 000000
 - c. black is 0F0F0F and white is F0F0F0
 - c. black is F0F0F0 and white is 0F0F0F
6. The background layer can be rearranged with other layers
 - a. True
 - b. False
7. A new layer 2 can be moved above a new layer 3
 - a. True
 - b. False
8. Once added in the GIMP, text cannot be changed
 - a. True
 - b. False
9. The file format that can save states and layers in the GIMP is
 - a. psd
 - b. pdf
 - c. xcf
 - d. xls
10. A saved GIMP image with layers _____ if you wish to make a jpeg or png file
 - a. can be exported
 - b. cannot be used
 - c. must be flattened or merged in the GIMP file first,
 - d. cannot be made, so just choose Save As

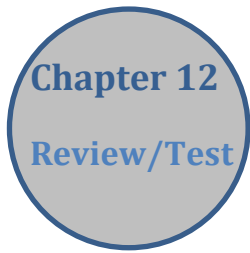
What's due this week

This week, you will do two discussions in D2L and lab 8.

• **Participation Discussion 11** Respond in the class Discussion forum to the following:
Photoshop and the GIMP are not drawing or paint tools, they are photo-editing tools.
That is why it is perhaps a little more difficult to paint a circle for example.
So, how do you paint a circle?

• **MUD 11 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 11



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Test 2 Review

How to Study for a test

Take Test #2

Preview Lab 9

Test 2 Review

Feel free to copy this to a word document and send it to me... I won't give you the right answers necessarily, but I'll let you know where you still need a little work.

Note: This test is a little more challenging

PS, The first part of the final will include the same information as Test 2.

I also suggest you Log into D2L, chooses Quizzes, then choose to take the Practice Test.

Before continuing, verify you are caught up with class participation discussions and MUDs.

To check your progress: in the D2L, choose the arrow icon next to your name▼;

to check your Discussion progress, use the dropdown Tool and select Discussions...choose Apply.

You will need to scroll down to see which discussions you have and have not posted to.

Your participation grade will be penalized at the end of the semester for discussions you have not posted to.

From **Overview 7** (jpeg, png): Answer the following questions

1. The _____ is best suited for photographs on the web, hence its name derivation from Joint Photographic Experts Group.
2. True or False: While excellent for photographs, the jpeg format loses some information during the save process, so it is not well suited for original files.
3. The _____ format was designed to be an alternative to the then legally protected gif format.
4. While png files with few colors compare well in size to gif, and can handle transparency, png lacks a standard method of _____.
5. As png is better standardized, it makes a great alternative to _____ files as far as saving original files goes.
6. True or False: jpeg files are often smaller than similar png files.

From Overview 8 (crop, resize, rotating images, and lab 5)

7. True or false? Cropping is an acceptable method used to improve an image.
8. Not only can cropping remove unwanted areas, but cropping can also _____ an image or change the _____.
9. True or false? Cropping is typically used to emphasize something, accentuate the subject matter.

10. Digital images often have more detail than needed for printing... to reduce the height and width is called resizing or _____.
11. Typically, resizing keeps the same aspect ratio, defined as reducing both the width and the height _____, or by the same amount.
12. If you wish to add an image next to an existing image, you first would probably change the _____ size, to allow both images to fit in the new, larger space.
13. Often, copied images wind up not in the same space as the original image, but in a new _____.
14. True or false? Normally, when editing photos, you choose File Save and replace the current image.
15. If your image is not lined up horizontally, you may _____ the image, such as 90° clock wise.
16. Review Lab 5

From Overview 9 (Brightness and Contrast, Layers, Optimization, lab 6)

17. _____ is how light or dark an image appears, _____ is how sharp an object is within an image when compared to another part of the image.
18. True or False: When you resize the canvas, you may have to choose Layer\Layer to Image size, in order to use the entire canvas.
19. _____ is making a file smaller, such as by reducing color depth or resolution.
20. _____ is balancing the image quality when making a file smaller in the number of bytes
21. Review Lab 6

From Overview 10 (Photo editing, lab 7)

22. True or false: a gradient is a smooth transition between two colors
23. Based on photo lab developing with light, _____ simulates reducing the light exposure for an area, while _____ simulates giving extra light exposure.

24. Aside from the circular and rectangular selection tools, you can also use the select shapes from image tool, similar to playing connect the _____ to outline an image.
25. True or False: Erasing part of one layer allows items in a layer below to show through.
26. Be able to **discuss** blur, sharpen, and smudge.
Discuss means a short paragraph, not a word or two
27. Be able to discuss cloning.
28. Review Lab 7.

From Overview 11 (Colors, layers, xcf, text, lab 8)

29. The colors mixed by monitors to represent the full colors spectrum are _____, _____, and _____.
30. True or False: Hexadecimal is using base 16 to represent colors.
31. 6 hex digits can represent 24 1s and 0s, allowing _____.7 million colors to be represented
32. Be prepared to give the hex values for red, green, blue, white, and black, using just 0's and F's.
33. In order to save an image with all its layers in the gimp, you must choose the _____ file format.
34. Layers can or cannot be rearranged.
35. Be able to discuss text layers.
36. In order to 'draw' a circle or rectangle, after selecting the shape, choose Edit_____ to outline the selection with the foreground color.
37. Review Lab 8.

How to study for a test

See Chapter 6

Test #2

Check Web Site for test due date

Lab 9 and Lab 10 Previews

As this is a short week, you might want to **move on** quickly to the next chapter and begin learning about paths, color balance, and the GIMP threshold tool.

Lab 9 by design is an easy lab... simply using the threshold tool; there is no quiz but several questions that will be on test #3 are presented.

The reason lab 9 is so short is so you can begin lab 10 and have the maximum amount of time for this capstone lab, where you will demonstrate EVERYTHING you have learned this semester. (Recall from the syllabus, you MUST get a passing grade on lab 10 in order to pass the class.)

Lab 10 Preview:

- Demonstrates all you have learned this semester.

Open gimp and

- add a layer with an image or shape you have created (5%)
- add at least two more layers with a digital image on each layer (10%)
- a portion of one of the images must be made transparent (5%)
- Select an area, then choose Layer/Transparency/Add alpha channel
- You may need to erase to reveal the transparency
- save as yourname-lab10.xcf

Adjust the image as needed, such as brightness, contrast, scale, & update yourname-lab10.xcf (20%)

Tweak the image, such as using blur, clone, paintbrush, etc., and update yourname-lab10.xcf (20%)

Add text with your name, and update yourname-lab10.xcf (5 % for image)

You must submit the xcf with layers, etc.

- Save the file for print, calling it yourname-lab10.png (10 points)
- Save the file as an **optimized** jpeg format, calling it yourname-lab10.jpg (10 points) Optimized means 10-100 K, not 3 MB, etc.

• Include a Word or rtf document that describes EVERYTHING you did to earn points as you created this lab (15 points)

- Save the file as yourname-lab10.doc, yourname-lab10.docx, or yourname-lab10.rtf

THIS IS NOT A 5 MINUTE LAB. YOU HAVE A FEW WEEKS, USE A FEW WEEKS!

There are also bonus points available in lab 10, covering material to be presented in the next few weeks.

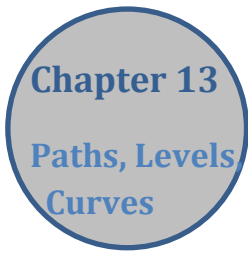
What's due this week

This week, you will do two discussions in D2L and Test #2.

• **Participation Discussion 12** Respond in the class Discussion forum to the following:
How can the test be improved?

• **MUD 12 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 12



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Layers, Channels, Paths, and History

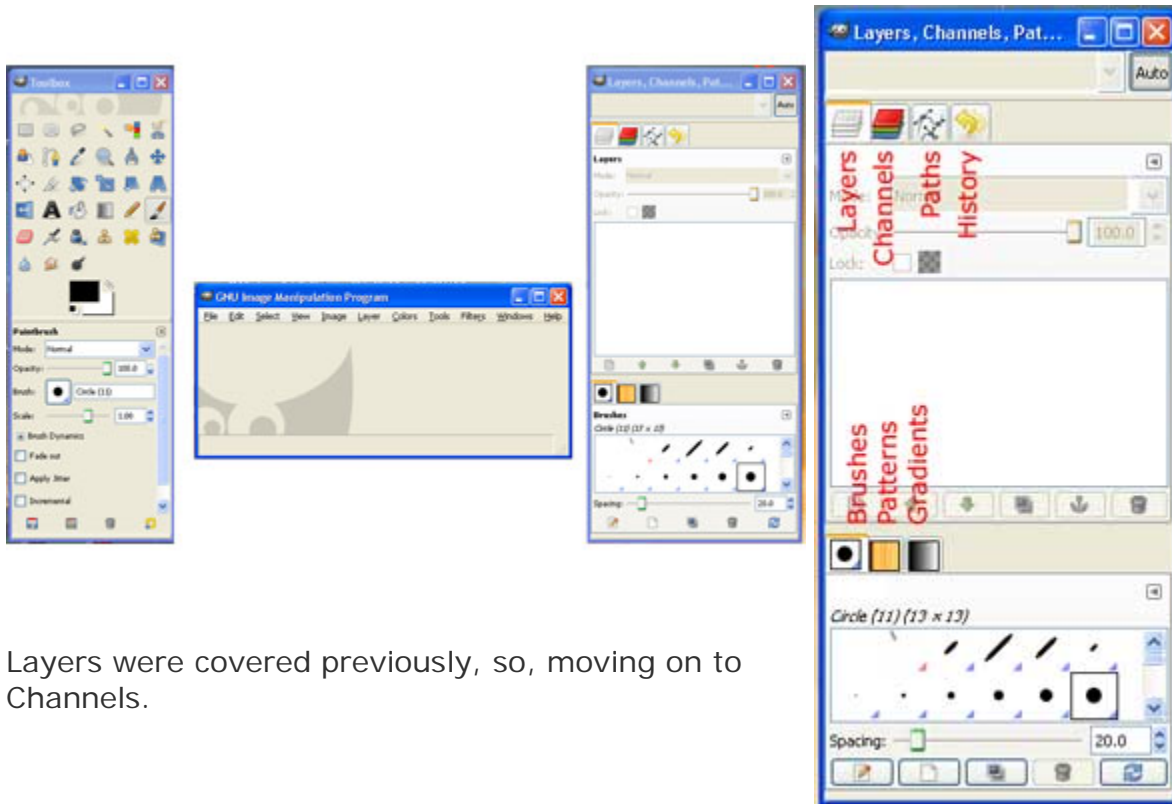
Levels and Curves

Lab 9

Light material this week, move on to Chapter 14 and Lab 10

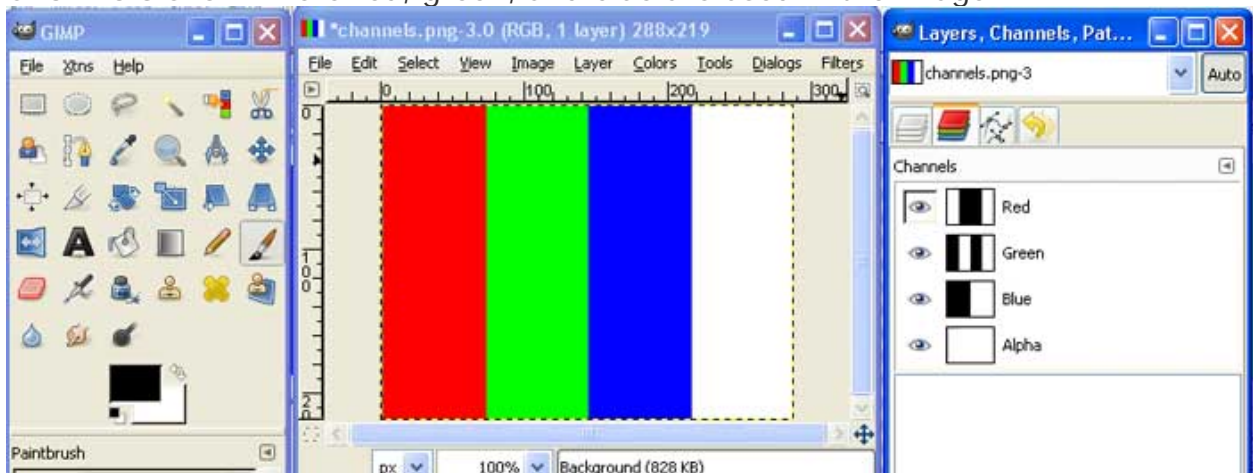
Layers, Channels, Paths, and History

This last discussion on digital photographs is a quick introduction to using the GIMP Tool window that normally opens on the right... Photoshop also has a similar toolbox. The GIMP toolbox can display information on Layers, Channels, Paths, and History. You can also have access a Color Palette tool set, brush options, etc.



Layers were covered previously, so, moving on to Channels.

Channels show where red, green, and blue are used in the image.




Notice the red channel shows that red is used in the red block AND the white block (recall, white is a mixture of red, green, and blue). Similarly, the green

channel shows that green is used in the green block AND the white block, and the same with blue.

While beyond the scope of an Intro to Computer Graphics class, by hiding and selecting channels, you often can get very precise masks to select items... but again, most colors are mixtures of red, green, and blue... so it isn't always easy.

The alpha channel shows where there is transparency, perhaps on different layers.

Paths are an extension of using the scissors tool to select. . Instead of

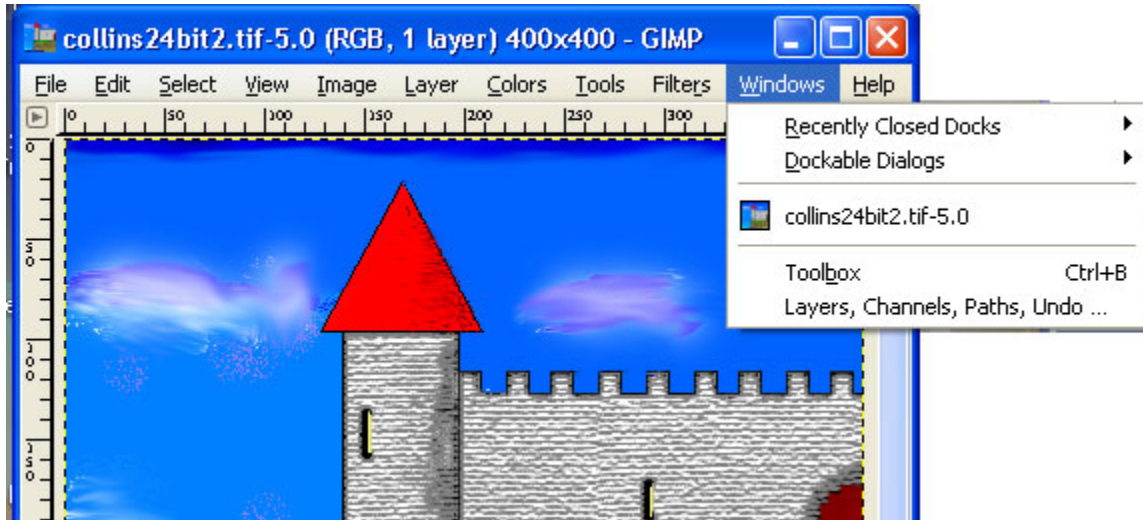
selecting to **cut**, we can simply **select** with the path tool . The path tool is used to select objects like the scissors, but instead of cutting, the selection may be used in order to adjust brightness and contrast of just an area, etc. Both are like playing connect the dots. But the paths tool has a few tricks after you have selected the object. If you click on one of the lines connecting the dots, you may curve in or curve out the line by dragging it, for more precise control of your selection. The difference is, if you use the paths tool, the GIMP remembers what you selected. Click on the paths tab, and you can choose previously defined paths, and click to turn 'on' the eye icon to make the selected path reappear.



History is like undo on steroids. Not only can you undo the last change you made, but by using history, you can go 38 steps back.

Note, if you do go back 38 steps and make a new change... everything from the old step 39 goes away.

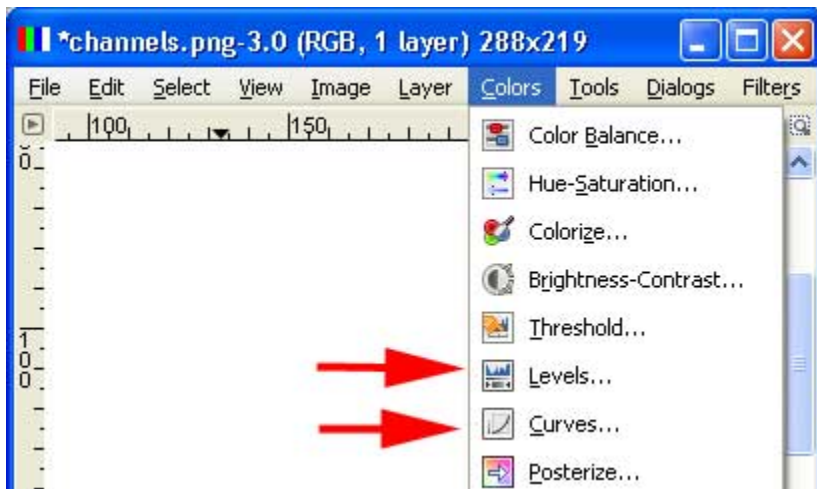
*If GIMP does not open the Toolbox or Layers window,
in the GNU Image Manipulation Window
Choose Window, then click the missing item, either
Toolbox
or
Layers, Channels, Paths, Undo...



See also the class web site for links to GIMP Online help on paths

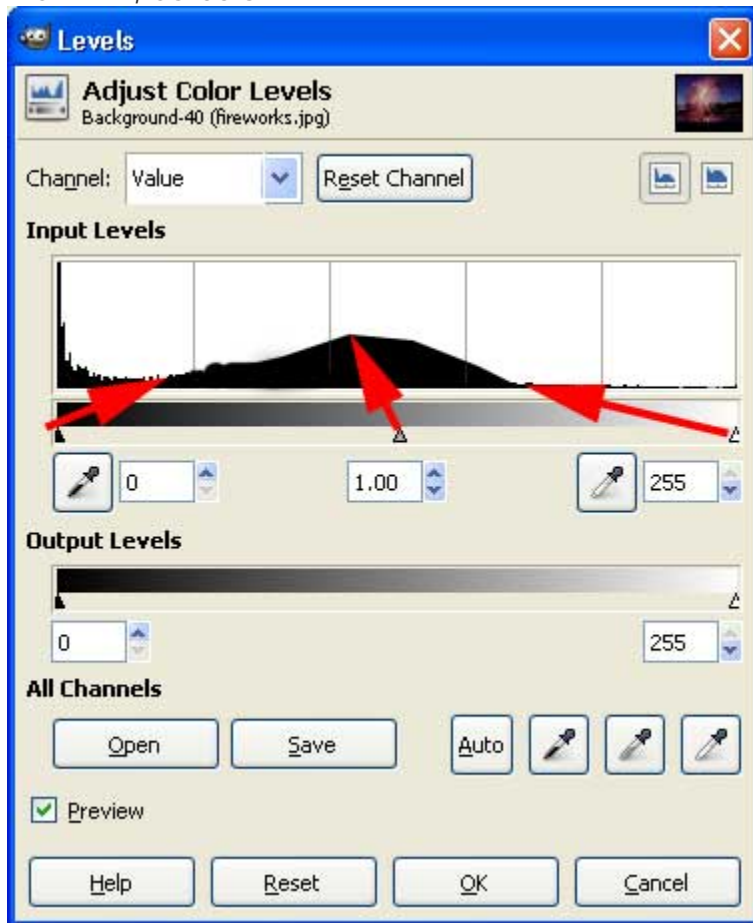
Levels and Curves

When adjusting brightness or colors, often the slider tools require a lot of experimentation. Some of this experimentation can be avoided by using levels and curves. To access, from the Image window, choose Colors\Levels... or Colors\Curves.



Color Levels. A detailed description of levels is beyond this intro, but, if you open an image such as fireworks against a dark sky, the levels might look something like a series of hills, with perhaps one big hill.

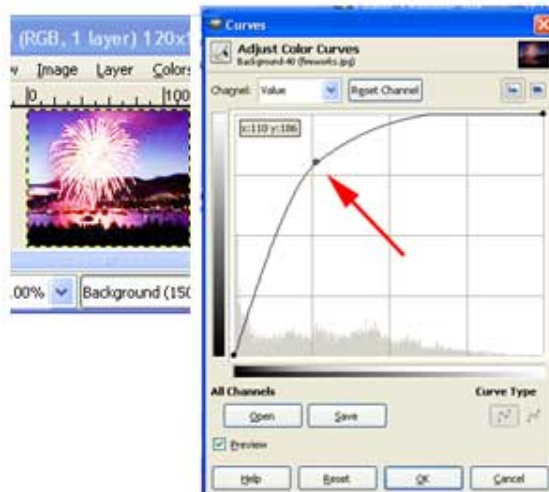
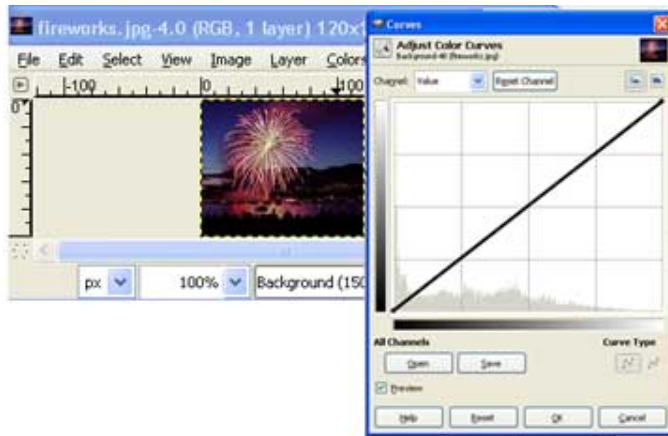
A quick way to get a good start on color balancing the image is with the input levels: drag the left slider to the left side of the main hill, drag the middle slider to the middle of the main hill, and drag the right slider to the right end of the main hill, as below.



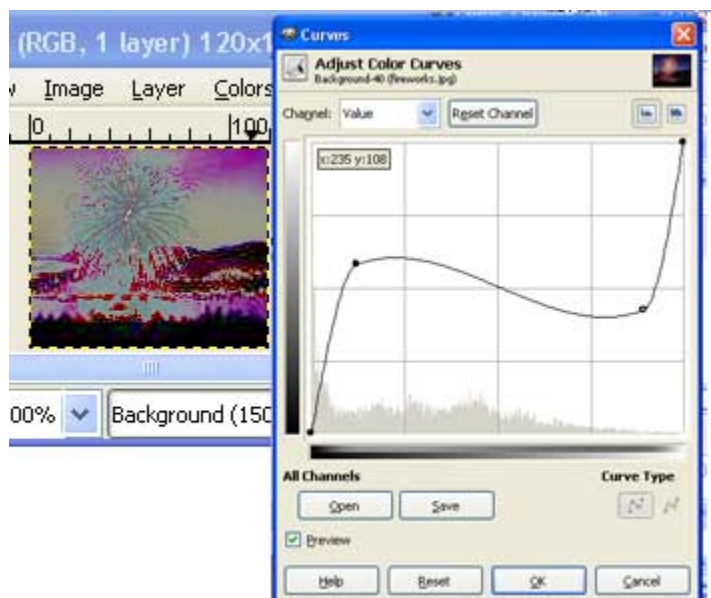
After you use the input sliders to adjust the tonal range, you may drag the output sliders to limit the total tonal range... I would leave this if the hills cover most of the area... the diagram above has a lot of activity on the left... so I would leave the left output slider, and maybe drag the right slider to the first hint of a hill.

You still need to experiment to get the best results, but levels can be a good start... drag the slider and watch the impact on the image. You can even adjust using channels to vary just the red, green, or blue channel.

Color curves. Another way to adjust colors is to use curves. In this case, input and output are represented by the horizontal and the vertical axis. By dragging the line up, you increase the brightness. By dragging down, you decrease the brightness.

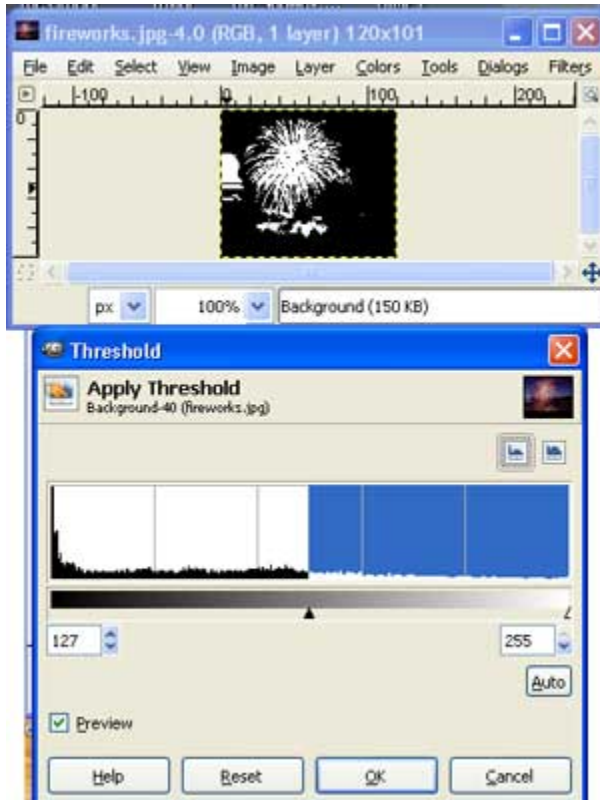


After dragging, you can also let go, and then click another area of the line and drag. Each time you click, you create a Control point, allowing you to vary the results.



Again, an in depth use of some of these tools is beyond the scope of this intro, but experiment with them.

Threshold. You might have noticed Threshold when you open the Colors menu (it is also at Layer\Colors\Threshold or Tools\Color Tools depending on your version, etc.) If you scan a book page, you may have lots of shaded areas that are not page white or text black. Threshold remove shades of gray; move the left slider further left until the shades disappear.



Making masks. A mask is the outline of an area you may wish to make transparent, cut, or edit. There are a couple of ways to make this mask start with duplicating a layer; then try threshold or curves or levels to really isolate areas in your image. Then use the fuzzy select tool (magic wand tool) to select the region.



In the layer created with the threshold dialog above, we could obviously select the black area to make a mask of the sky, or select the black and then choose Select\Inverse to get a mask of everything that was not black.

See also the class web site for links to GIMP Online help on levels, curves, and threshold

Lab 9

Part 1, Activity (100%):

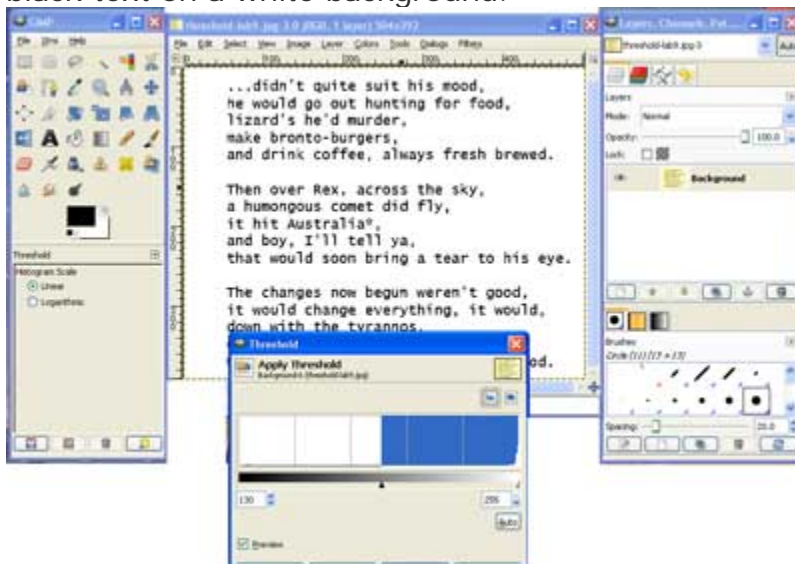
- Create a lab9 folder
- Copy the image [threshold-lab9.jpg](#) below and place in the lab9 folder (threshold-lab9.jpg is text over a colored background)

...didn't quite suit his mood,
he would go out hunting for food,
lizard's he'd murder,
make bronto-burgers,
and drink coffee, always fresh brewed.

Then over Rex, across the sky,
a humongous comet did fly,
it hit Australia*,
and boy, I'll tell ya,
that would soon bring a tear to his eye.

The changes now begun weren't good,
it would change everything, it would,
down with the tyrannos,
up with the mammals,
well, there goes the old neighborhood.

- Open the image
- Using the Colors\Threshold tool, remove the color behind the text, leaving just black text on a white background.



- Save the file in the jpeg format, calling it lab9.jpg
- Zip the lab9 folder, rename it to *yourname*-lab9.zip and submit in the D2L Lab 9 dropbox

Part 2: Hands On (00%): No quiz this week, but be prepared to discuss/demonstrate new tools and concepts used in this lab.

There is no quiz in D2L for this lab... however items from this overview will be included in test 3.

Could you answer the following questions? On the class web site, drag your mouse over to see the answers revealed.

1. What is the channels tab allow you to see?
2. What is the alpha channel used for?
3. What does the paths tool do?
4. What does the paths tab allow you to do?
5. What does the History tab allow you to do?
6. What does the color levels tool allow you to do?
7. What does the color curves tool allow you to do?
8. What does the threshold tool do?
9. What does the fuzzy select tool do?
10. What can channels, paths, levels, curves, and threshold all allow us to do?

Preview, Bonus, and other wonderful stuff coming up!

For those who would like to work ahead or are interested in related technology:

- As we wrap up raster based still graphics, you might experiment with vectors
- Optional, on the class web site:
 - Vector Based Graphics with Inkscape (similar to Adobe Illustrator)
 - Download Inkscape (free)
 - Inkscape Tutorials
- A little about Video, and Movie Maker
 - Bonus: Camstudio, a free screen capture too to make movies of what is on your screen, similar to the videos I have of GIMP
 - Bonus: Camtasia, a top of the line screen capture tool to make movies of what is on your screen, similar to the videos I have of GIMP
 - Bonus: Comparison of Video Editors
 - Bonus: Sound Editing tools
 - Bonus: optimizing videos
- A little about Flash
- A little more about Copyright
- A little about Burning CDs

What's due this week

This week, you will do two discussions in D2L and lab 9 (no quiz).

• **Participation Discussion 13** Respond in the class Discussion forum to the following:

Which of the tools discussed (channels, paths, history, levels, or curves) will you perhaps use the most, and why?

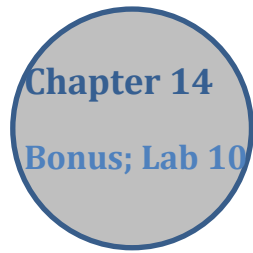
• **MUD 13 (My Understanding, Details)** Respond in the class Discussion forum to the following:

What was helpful this week?

What do you hope we talk about next week?

There was a continuous orientation video you were supposed to watch... comment on that as well.

End chapter 13



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Reminder on Vector graphics

Video

Bonus: Flash

Important Reminder: More on Copyright

Bonus: Burning CD

Begin Lab 10

Reminder on Vector Graphics

There is material at the beginning of the book on using Inkscape to create vector graphics, and there are links on the class web site related to Inkscape, including the free download, and tutorials.

Recall, a completed vector can be exported to a raster format, and used in GIMP, so if you have the need for shapes in an image, consider Inkscape to create them, and then add them to a GIMP layer.

Video

The class web site includes a short video on this



For all practical purposes, video is just a series of still images viewed in sequence, very much like an animated gif. But there are differences... audio can be included, the images are typically photographic quality, and there are usually between 24 and 30 images per second when approaching movie or TV quality.

Most operating systems now include some software for taking raw video footage and editing it; as well as software to display the video. Apple has iMovie, and Microsoft has Movie Maker for editing videos, and Quick Time and Media Player for playback.

One of the more common standards for raw video is MPEG, for the Motion Picture Experts group. Some of the more common output formats are .avi for Windows, and .mov for Apple.

Editing

Editing a movie differs from editing an image in that normally you limit yourself to scenes and titles. Technically, you could edit all 24 images per second for balance and contrast, etc., but this discussion limits itself to just the basics.

A *scene* is a series of related images. A long video may have several scenes in it; think how TV shows may have an indoor scene, an outdoor scene, then a scene showing a later time period. Scenes can be split into pieces, and the pieces can be rearranged, duplicated, or deleted. Further, scenes from one video can be inserted into a different video, just as still images can be combined.

Often, there are transitions between scenes... a transition is the visual effect between scenes, such as fading in or fading out.

Titles are words that either come before or after a scene, or display over the scene, just as text can display on a transparent layer in an image.

Below is a simple overview to using Microsoft Movie Maker... a link to a 30 second video is available, if you would like to experiment using the product.

Windows Movie Maker. (While not part of Windows 10 it is available)

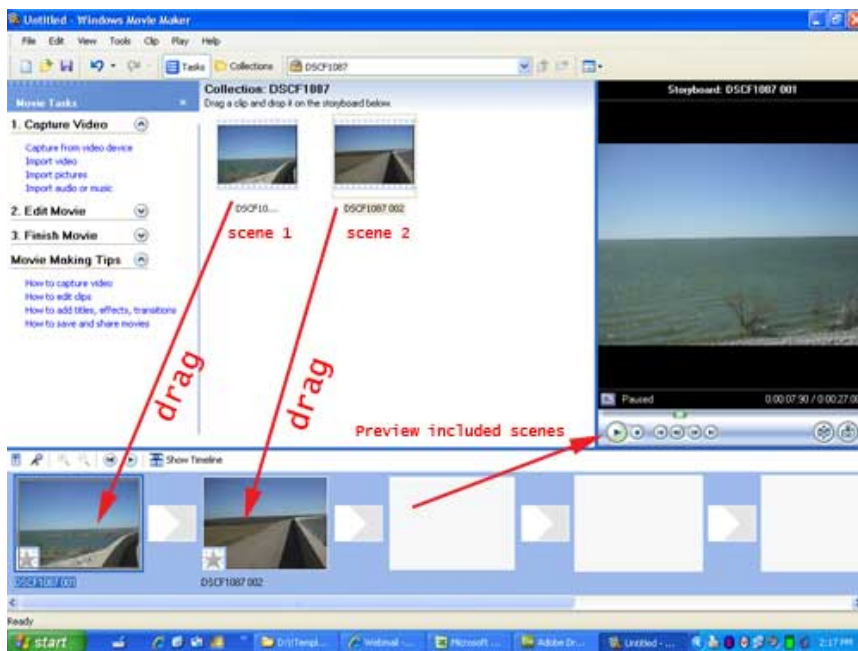
In Movie Maker, the steps of use are:

- 1) Capture the video, still images, and audio
- 2) Edit the movie, and
- 3) Finish the Movie.

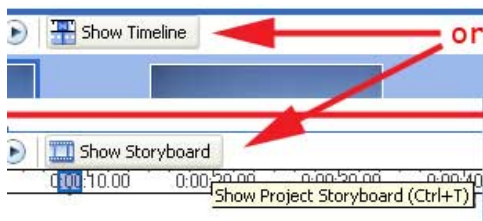
Capturing the video is either pulling information from a camera, or copying files into the current production. For this class, I have prepared a very boring, short avi video of a lake you may use. It can be found on the class web site. Right click the file, and choose to save. Then import the AVI using Movie Maker.

Movie Maker may detect scenes, if so, drag any scenes you wish to use down to the storyboard at the bottom.

You preview the video in the player to the right. Note: All editors are similar.



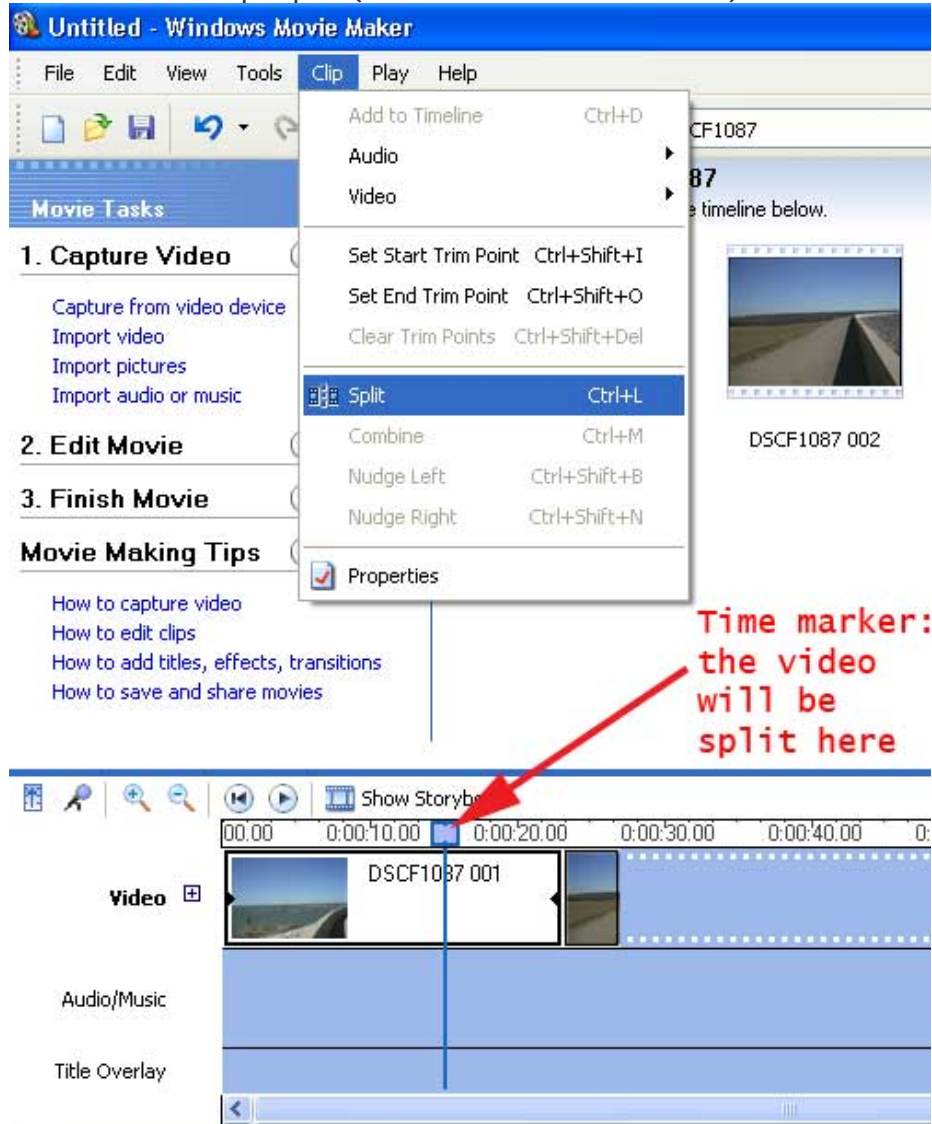
If available, I prefer to use a timeline that instead of showing scene previews, shows time durations... it is also easier to split a scene in timeline.



To divide, or split a scene, place the time marker where you would like the split to occur.

(You can review the movie, then click stop; or drag the time marker over the time line.)

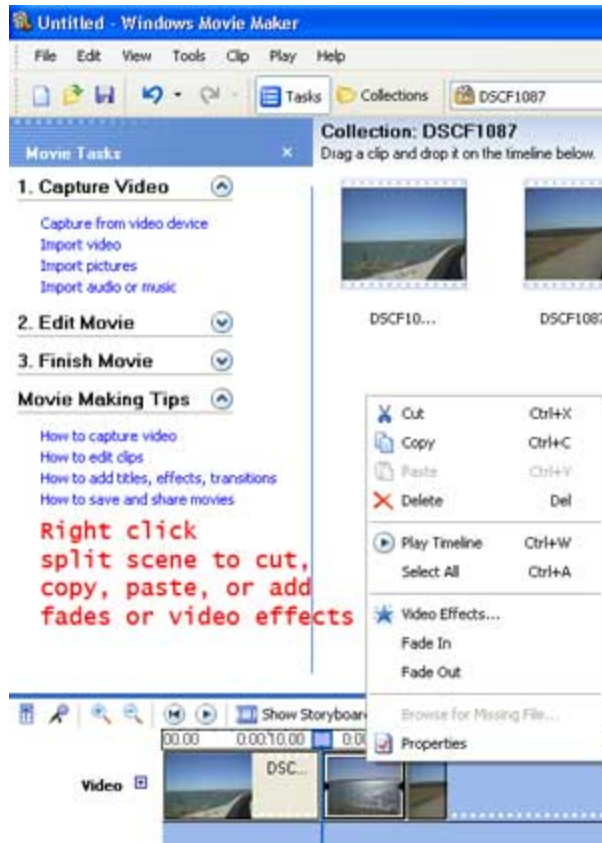
Then choose Clip\Split (or Ctrl+L in Movie Maker).



You can also import images and drop them on the timeline to insert a still image that displays for a few seconds. Drag in a bunch of images, and make a movie slide show, if you like.

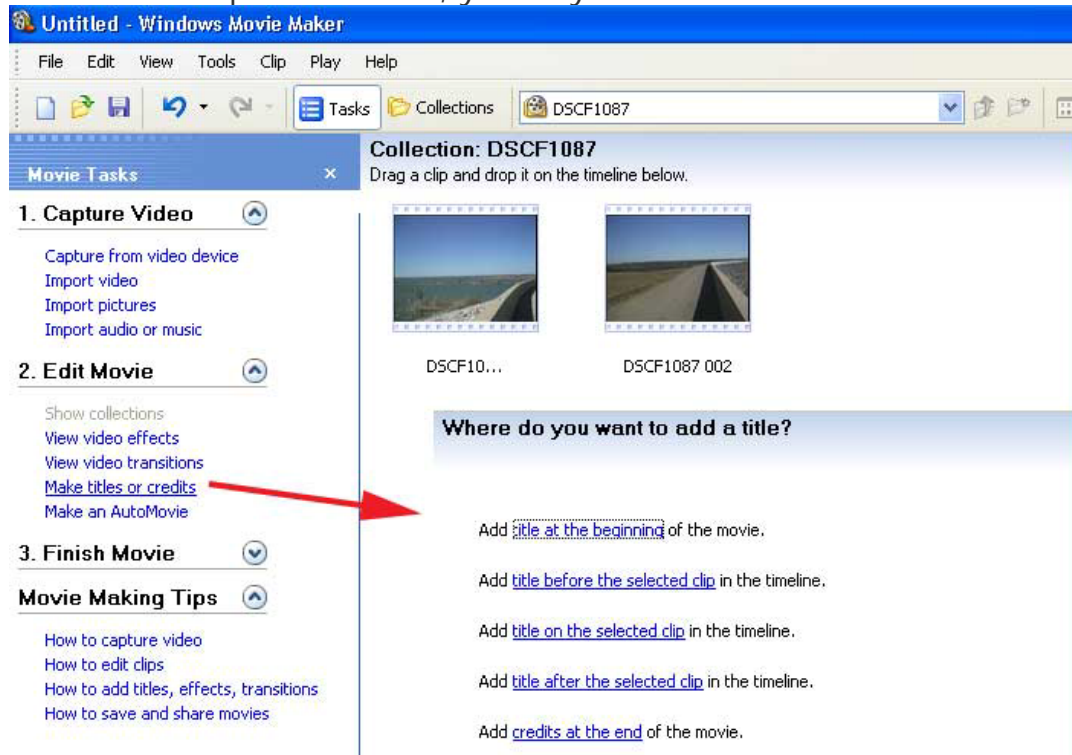
Rearranging scenes.

Once a scene is split, treat it like a word processor. Drag to a different location, right click and copy, or add a fade if you like. A fade is a transition, that is, how the next scene appears. More on editing to follow.



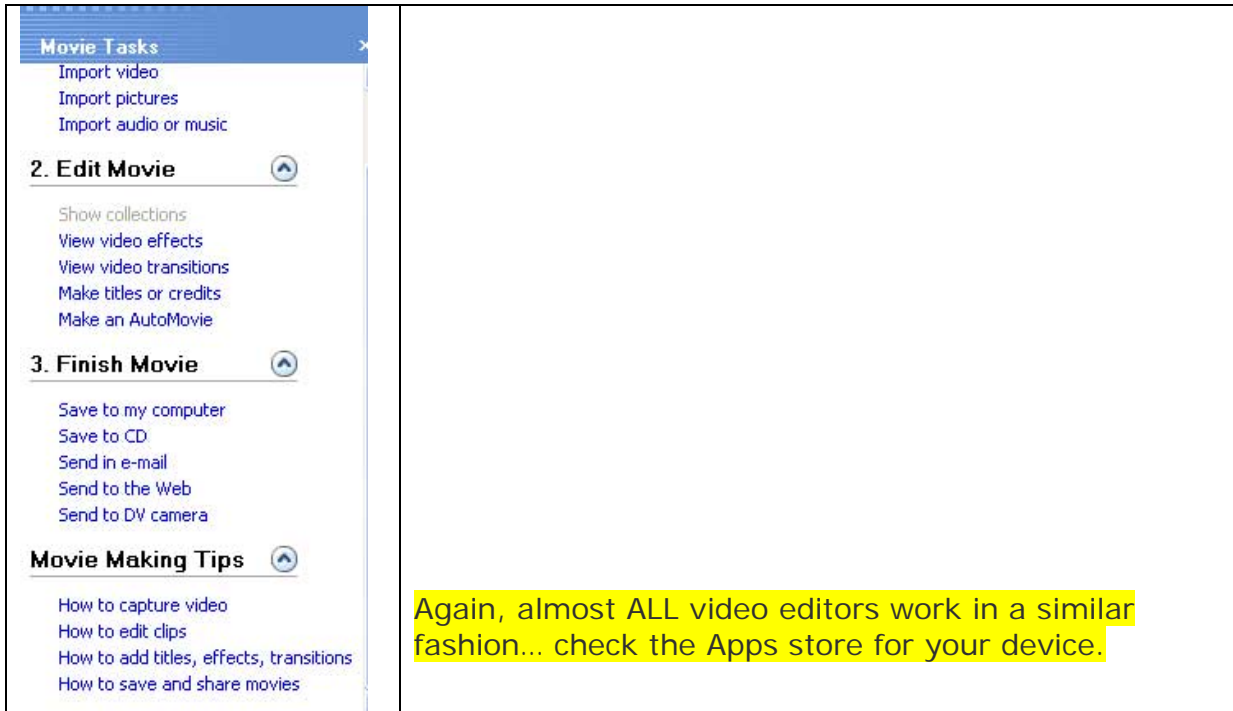
2. *Edit Movie* to further edit

Aside from simple transitions, you may also add titles or credits.



3. Finish Movie

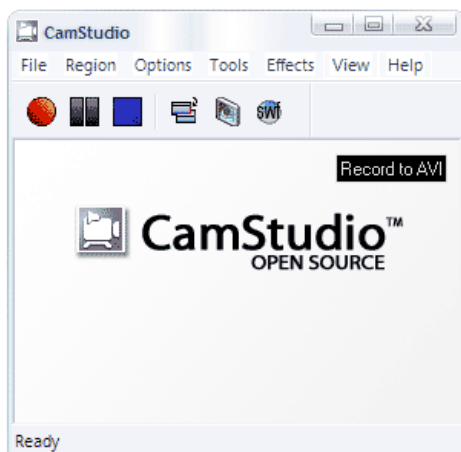
Once you have arranged your scenes, perhaps added additional audio, titles, and credits, it is now time to save the project. The options are shown below.



Bonus Material: Video Capture tools

You can actually make a video of anything you see on your computer monitor, using tools like Camtasia or the free download, Camstudio.


To download Camstudio free, visit <http://camstudio.org/> and scroll down to Download links and Camstudio20.exe



Things to set before clicking record :

- Click the SWF button to toggle between AVI or SWF
AVI can be edited later, using Movie Maker
SWF creates a web page to display the video
- Click the Region Menu to get full screen, or to select a region

- Click Options to turn on/off audio recording, toggle hide or show the cursor... I recommend against autopan unless you have a lot of experience... the system tries to follow the action too closely zooming in on the wrong items
- It is possible to create screen annotations, but these must be done in advance... I recommend using CamStudio simply to capture your screen work, then edit in an external program, such as Movie Maker if desired.

Once you finish recording , you will be prompted to save the file.

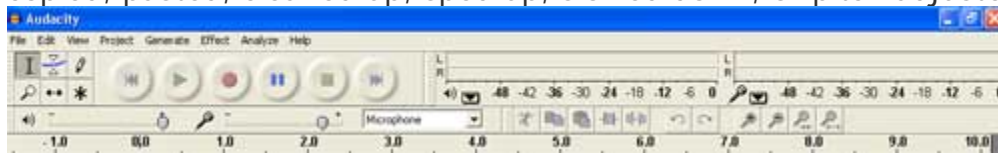
See the class website (D2L) for links to CamStudio, and Techsmith's Camtasia

See the class website (D2L) for a comparison of Video editors.

Bonus Material, Audio: You can also extract audio from a video, and edit it separately. Digital Sound can be synthesized or digitized.

For our purposes, we can use an open source program called Audacity, which has a nice features set, and plenty of tutorials.

As with video editing, our work is saved as a project, and mp3, wav, and ogg files can be imported. Each new item gets its own track. Items can be split, cut copied, pasted, cleaned up, sped up, slowed down, or pitch adjusted.



Tools



	Selection
	Envelope
	Draw
	Zoom
	Time Shift
	Multi-tool

Tools

The I Selection tool is to select a range that can be cut, copied, or split

The Envelope Tool can increase or decrease volume, by dragging the top and bottom of the waveform closer or further apart

The Draw tool can let you move individual samples, if zoomed in enough

The Zoom Tool: to zoom in or out on the waveform

The Time Shift Tool lets you move individual clips left or right

The * Multi-tool lets you change volume, move clips, etc.



Some common editing tasks in Audio, found under the Effects menu

AMPLIFY: changes the volume

SPLIT: Instead of cutting a clip into pieces, split removes the highlighted area and places it on another track for editing.

EQUALIZE: to adjust various audio ranges, such as making the highs more pronounced

NORMALIZE: matches the volume of various disparate clips

CHANGE PITCH: changes the pitch without changing the tempo, making a voice higher or lower, for example

CHANGE SPEED: is how they made Alvin and the Chipmunks, by speeding up the audio

CHANGE TEMPO: changes the tempo without changing the pitch

CLICK REMOVAL/NOISE REMOVAL: to get rid of unwanted background noise

ECHO: repeats a section and lets it fade (decay)

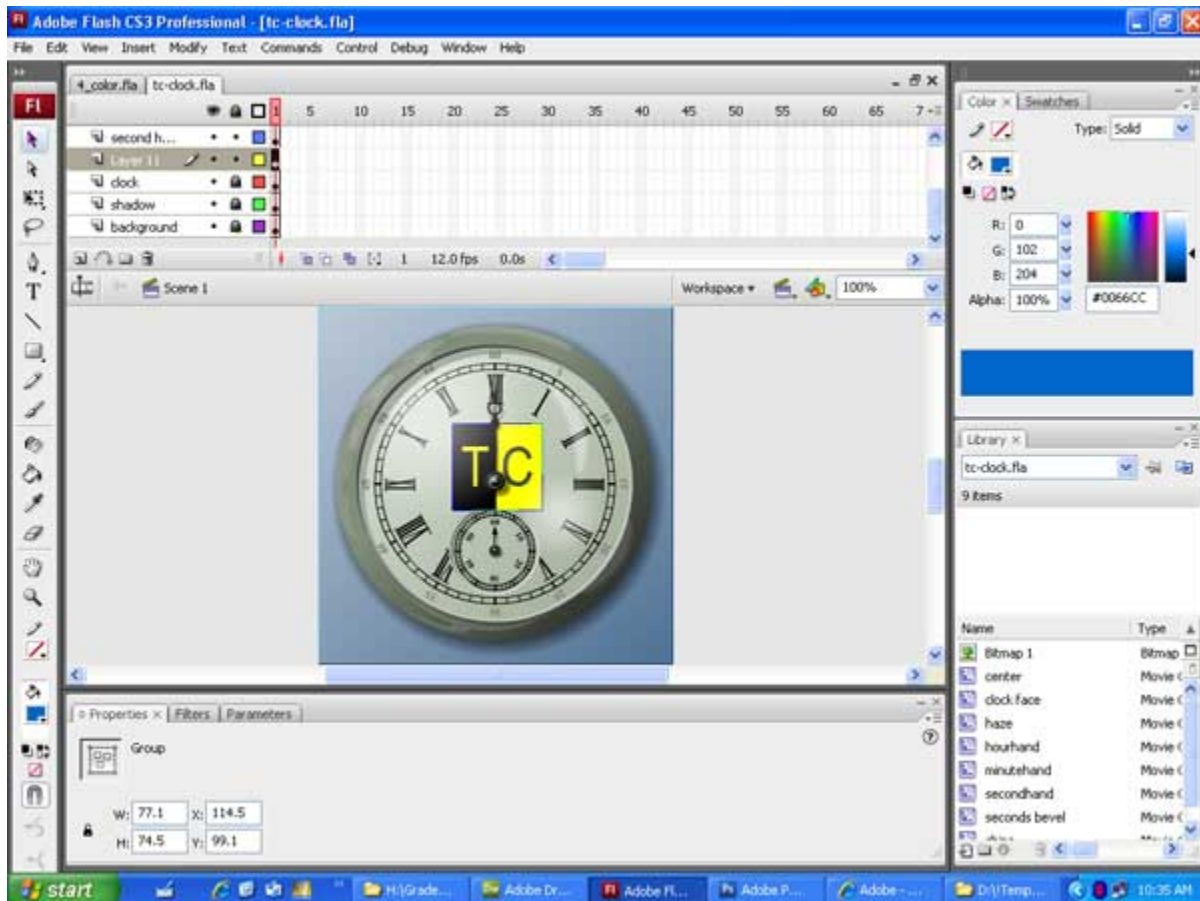
FADE/CROSS FADE: a cross fade eases out of one track as it gradually introduces the next track.

Bonus Material: Flash

In 1995, Flash started out as a computer animation program created by Future Wave Software called *Future Splash*. Future Splash could use raster and vector information, therefore the animated files could be very small files, and could download very quickly on web pages. In 1996, Macromedia purchased the product, combining Future Splash into Flash. Macromedia was acquired by Adobe in 2005.

Flash animations can be run on the standalone Flash player, a free download from Adobe, or within web pages that use the Flash plug in.

After opening flash, there is a time line. Raster and/or vector illustrations are created and added to the timeline. Subtle changes can be made, and the new version is added to the timeline, and Flash smoothly connects the two, to animate the movement. Scripts can also be created to program part of the animation, as to make games.



See the class website (D2L) for the working Flash clock, and some optional Flash tutorials. **Note Flash is being phased out, but still neat.**

Important Reminder: More on Copyright

As you prepare for your lab 10, it is appropriate to remind you to again read over copyright, from the beginning of the book.

For projects created for this class, we have what is called fair use. Fair use is a doctrine in United States copyright law that allows limited use of copyrighted material without requiring permission from the rights holders IF used for scholarship.

What this means is, you were able to 'borrow' images for your labs, but this permission does not apply to 'borrowing' images if they are going to be distributed outside of the class.

As it applies to your lab 10, if you only plan on showing me your completed project, you may again 'borrow' images, but it might be time to start using your images!

Bonus Material: Burning CDs

While Windows and Mac come with tools to burn CDs, it is possible to have a certain item open automatically when you insert the CD. Open Notepad and copy in the following

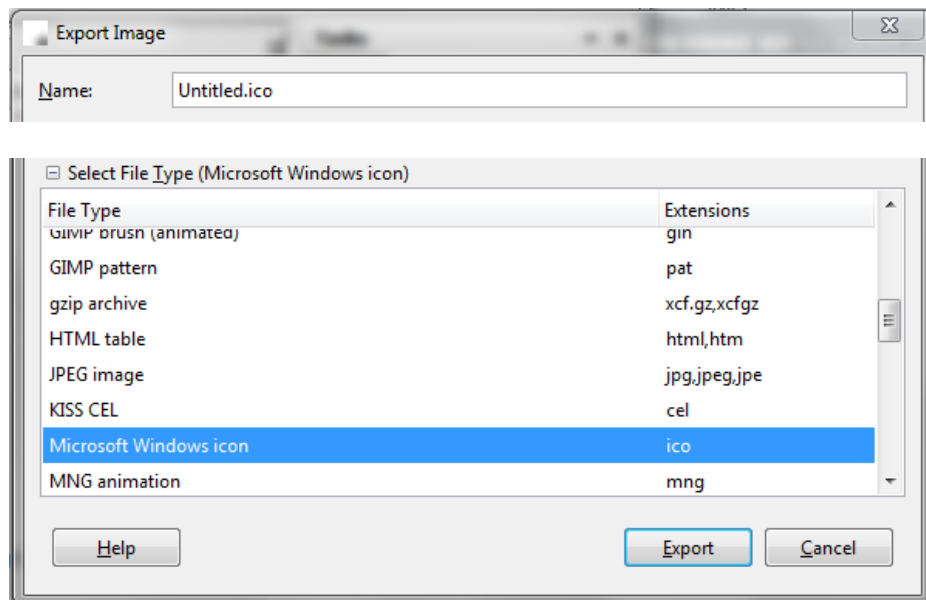
```
[AUTORUN]
shellexecute=index.html
icon=myfile.ico
```

Save the file as autorun.inf

Make sure as you burn your CD that autorun.inf and your web page (index.html) are saved with in the root directory of the CD, along with myfile.ico

References: How to make a web page can be found on the class web site.

References: You may edit myfile.ico, available on the class website (D2L) using GIMP, as long as you don't change the color depth, file type, or image dimensions.



Okay, enough with the optional stuff... it is time to start on the lab!

Begin Lab 10 Due Wednesday of Week 15. This is supposed to take weeks... don't do this at the last minute

- Create a lab10 folder

Part One (100%) No Quiz, dropbox only.

- Demonstrates all you have learned this semester.

Open gimp and

add a layer with an image or shape you have created (5%)

add at least two more layers with a digital image on each layer (10%)

a portion of one of the images must be made transparent (5%)

Select an area, then choose Layer/Transparency/Add alpha channel

You may need to erase to reveal the transparency

save as yourname-lab10.xcf

Adjust the image as needed, such as brightness, contrast, scale, and update yourname-lab10.xcf (20%)

Tweak the image as needed, such as using blur, clone, paintbrush, etc., and update yourname-lab10.xcf (20%)

Add text with your name, and update yourname-lab10.xcf (5 % for image) **You must submit the xcf with layers, etc.**

- Save the file for print, calling it yourname-lab10.png (10 points)
- Save the file as an **optimized** jpeg format, calling it yourname-lab10.jpg (10 points) Optimized means 10-100 K, not 3 MB, etc.

• Include a Word or rtf document that describes EVERYTHING you did to earn points as you created this lab (15 points)

- Save the file as yourname-lab10.doc, yourname-lab10.docx, or yourname-lab10.rtf

THIS IS NOT A 5 MINUTE LAB. YOU HAVE A FEW WEEKS, USE A FEW WEEKS!

Lab 10 Bonus points

BONUS POINTS (up to 3%) available if you add several of your Lab 10 still images to a video file using Movie Maker or some similar software, making a video slideshow of your lab 10 images.

. Save the file as lab10.avi, lab10.wmv, lab10.mov, etc.

and/or

BONUS POINTS (up to 3%) if you make a flash animation.

. Save the file as yourname-lab10.flv and must include your name.

and/or

Lab 10 Bonus points , continued

BONUS (up to 5%)

- Create or download and edit a SHORT video. You may use the video clip DSCF1087.AVI, found on the class web site.

Save the ORIGINAL into your lab10 folder

Divide the clip into at least two scenes

Insert a graphic between the scenes

Add at least one transition

Add a title to the beginning of the movie

Add a credit roll at the end of the movie

Save your new movie as yourname-lab10-bonus.wmv,
yourname-lab10-bonus.mov, etc.

NOTE: Saving the project in Movie Maker does NOT create a new movie.

You have to Export as a Window Media file (wmv), or avi, etc.

Include a description of what you did in your documentation

Lab 10, when finished

- Zip the entire lab10 folder and all item, required and bonus,
rename it to *yourname-lab10.zip* and submit in the D2L Lab 10 dropbox

You should make some notes about what YOU are going to do for lab 10.



Help with Lab 10

The first thing to do in lab 10 is to come up with a plan.

My idea is to make a small poster to show off some of the pictures I took when I went to Zürich.

I know that the lab states that I will need to

- make some shapes
- add some digital images, using transparency
- follow copyright law, and only use my material, or have written permission to use other people's material
- edit the images as needed
- add some text, including my name,
- save my work in an xcf file to maintain layers, transparency, and text
- save my work in a high quality, printable, png
- save my work in an optimized, web quality jpg
- keep track of what I did in a Word or rtf document

Steps to follow, click link for more details

Note to self, make sure I finish early, so I can turn it in and get feedback, and resubmit if needed.

(No way can you turn this one in late.)

The short version, details follow

Job 1 Make some shapes, using Inkscape, Paint, or GIMP. (Record what I did in my documentation)

Job 2 Import the shapes into GIMP (Record what I did in my documentation)

Job 3 Save my working copy as an xcf

Job 4 Add transparent layers with digital images, anchor layers and size layers to image size, as needed (Record what I did in my documentation)

Job 5 Rotate, crop, arrange images as needed (Record what I did in my documentation)

Job 6 Add some text, including my name (Record what I did in my documentation)

Job 7 Adjust the image, as needed (brightness, contrast, color balance) (Record what I did in my documentation)

Job 8 Save the completed work as an xcf, yourname-lab10.xcf

Job 9 Save the work in a high quality, printable, yourname-lab10.png

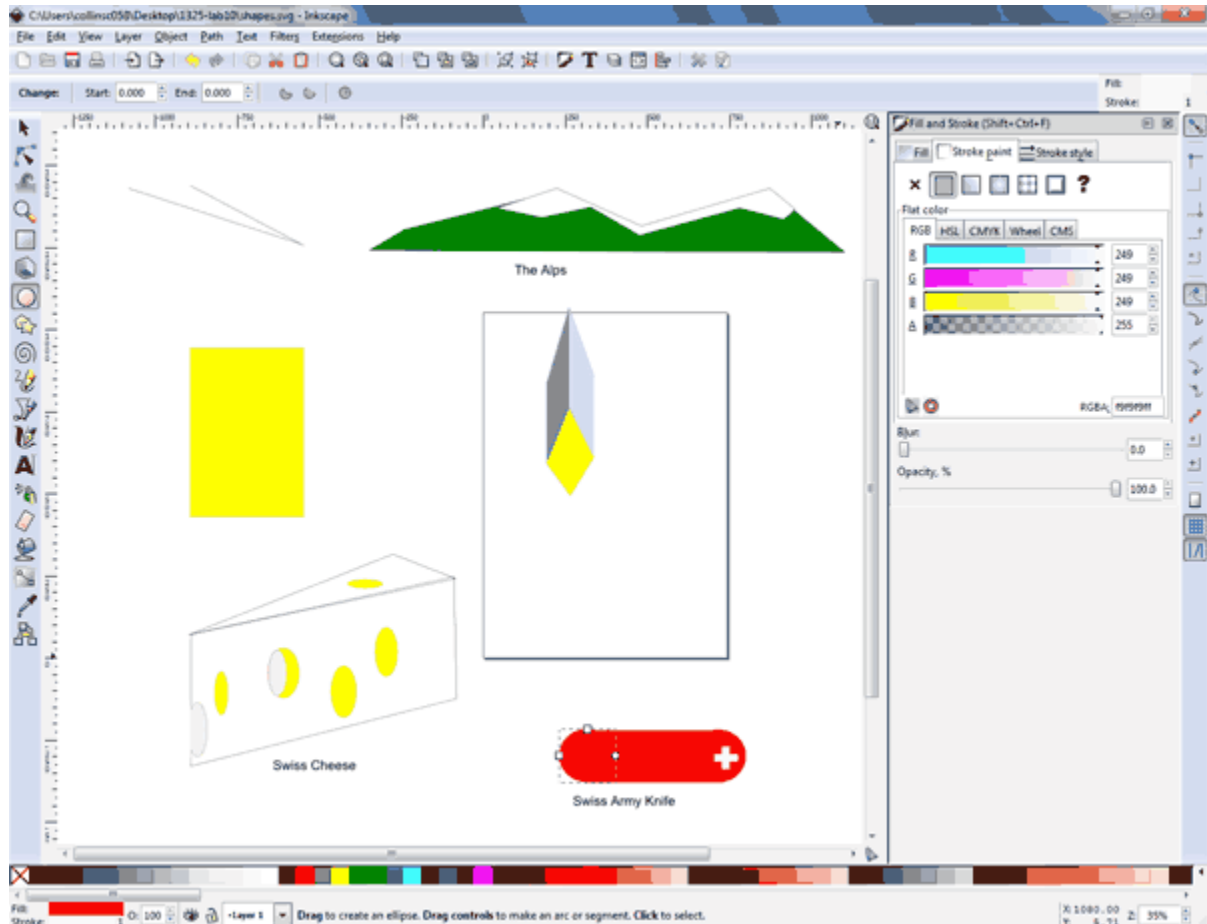
Job 10 Save the work in an optimized, web quality yourname-lab10.jpg

Job 11 Save the documentation as yourname-lab10.docx, or doc, or rtf

Job 12 Decide if I want to do some bonus work (See lab 10)

Job 1 Illustrated: Make some shapes, using Inkscape, Paint, or GIMP.

As my theme is Swiss, I will make a Swiss Army knife, some swiss cheese, and the Swiss Alps.



The knife was easy, two red disks, a red cylinder, then two white lines.

I tried the cheese two ways, the cube, and just drawing straight lines. Then I added ovals, and used the fill tool.

The mountains were just a series of jagged lines, flooded.

(Record what I did in my documentation)

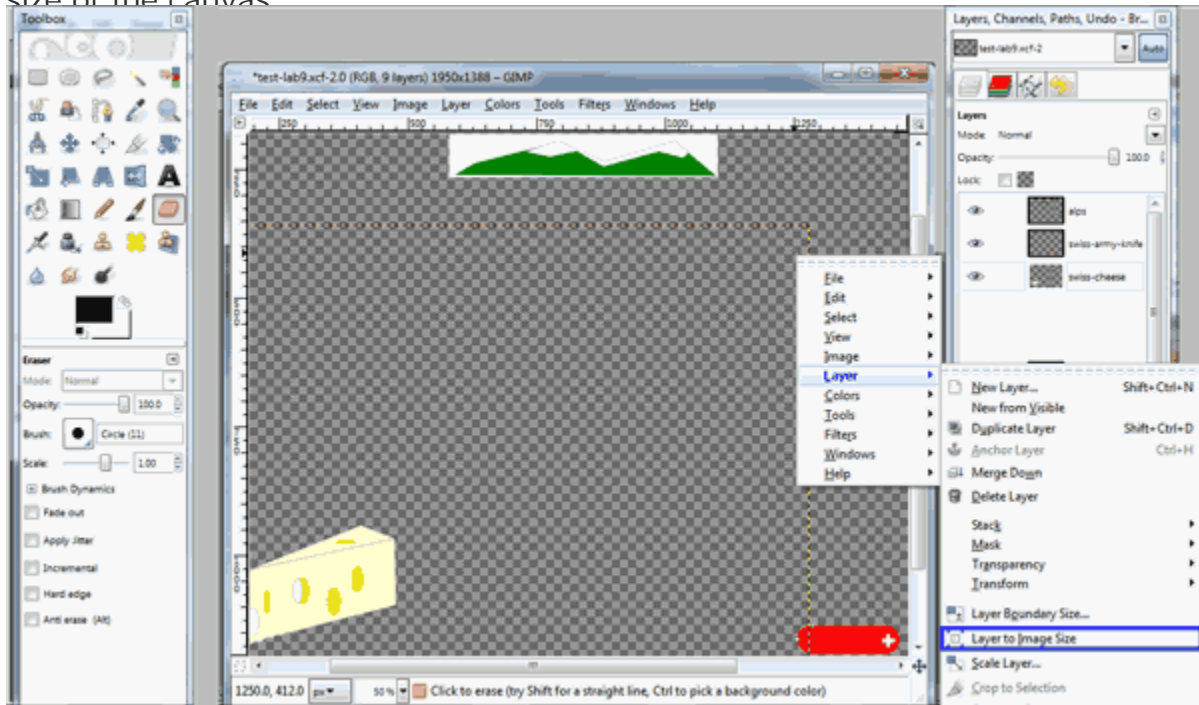
Documentation of how you do Lab 10 is a big part of the grade, so make a word document and keep track of it AS YOU GO.

Job 2 Illustrated: Import the shapes into GIMP

GIMP can open an SVG file, or a paint BMP, the SVG will be rasterized during the import process.

I then copied the layer three times, selected the individual items, used Select/Invert and then deleted everything but the items, one per layer.

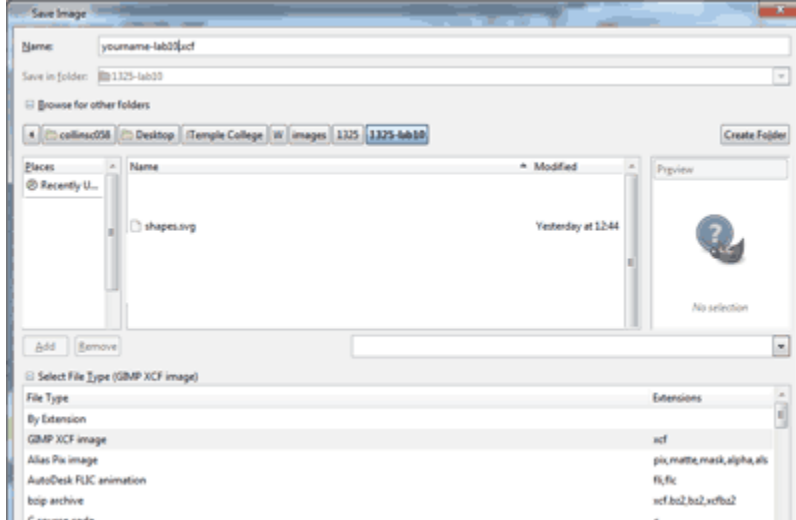
I right clicked the layer, and renamed each to a meaningful name. I move the objects to where I thought they needed to be, and made sure the layer was the size of the canvas



(Record what I did in my documentation)

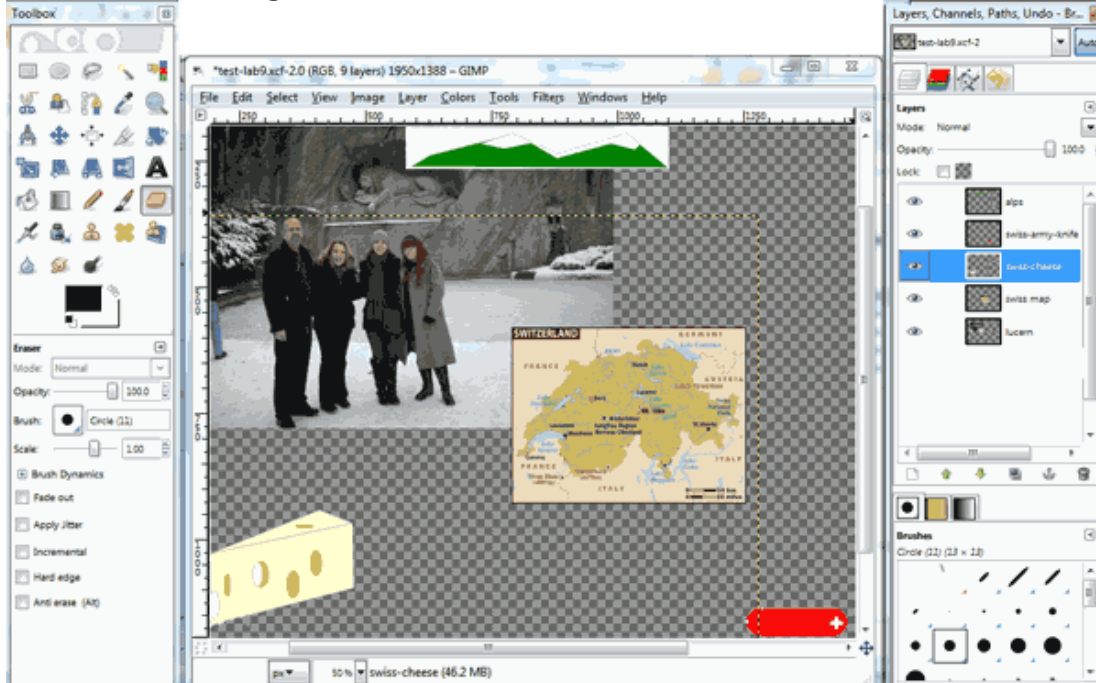
Job 3 Illustrated: Save my working copy as an xcf

Make sure you choose File/Save As and choose the xcf file type



(Record what I did in my documentation)

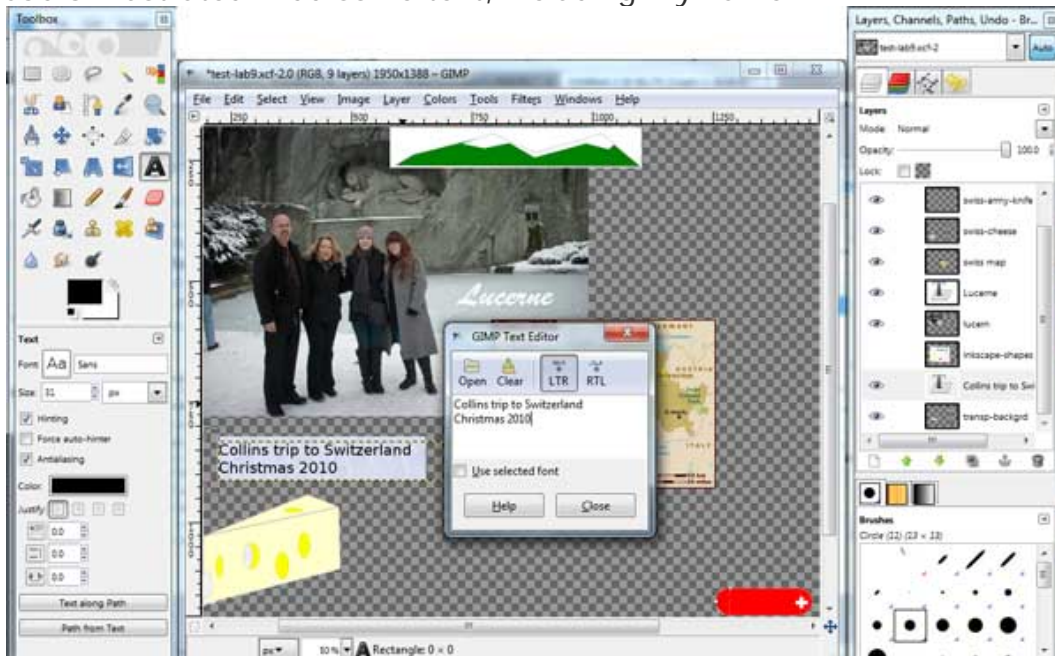
Job 4 Illustrated: Add transparent layers with digital images, anchor layers and size layers to image size, as needed



(Record what I did in my documentation)

Job 5 Illustrated: Rotate, crop, arrange images as needed
See Class overviews for these items (Record what I did in my documentation)

Job 6 Illustrated: Add some text, including my name



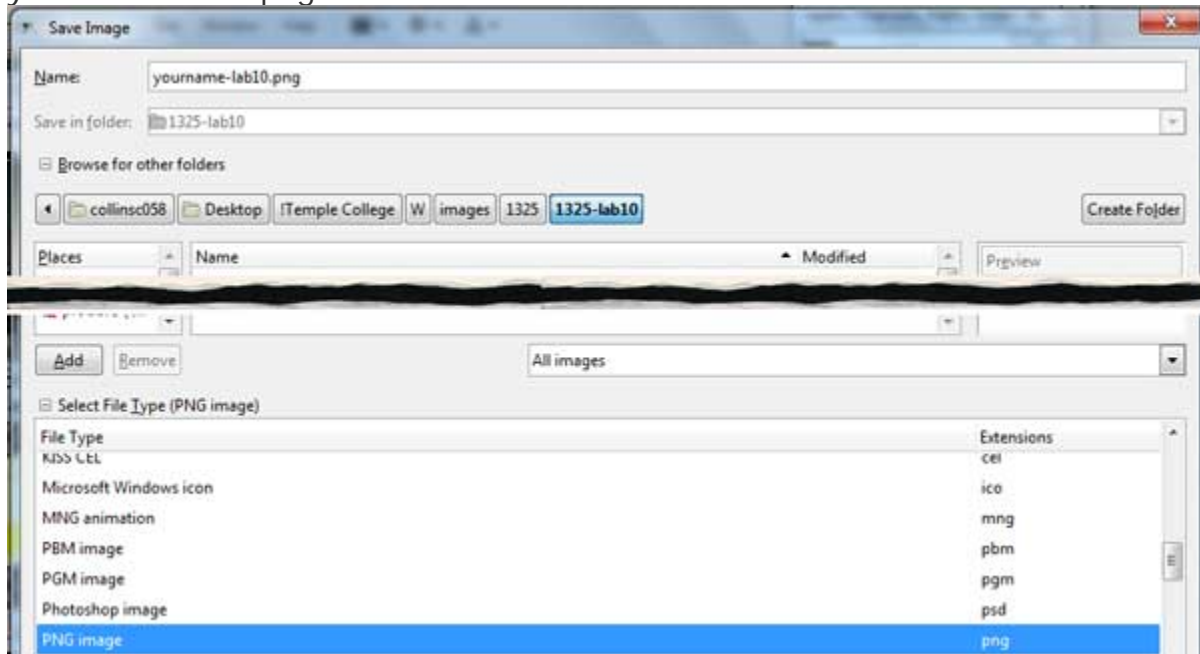
(Record what I did in my documentation)

Job 7 Illustrated: Adjust the image, as needed (brightness, contrast, color balance) See Class overviews for these items
(Record what I did in my documentation)

Obviously, more will be needed than what I am showing

Job 8 Illustrated: Save the completed work as an xcf, yourname-lab10.xcf

Job 9 Illustrated: Export the work in a high quality, printable, yourname-lab10.png



(Record what I did in my documentation)

Job 10 Illustrated: Export the work in an optimized, web quality yourname-lab10.jpg See the book section on how to Optimize
(Record what I did in my documentation)

Job 11: Save the documentation as yourname-lab10.docx, or doc, or rtf

Job 12 Illustrated: Decide if I want to do some bonus work

What's due this week

This week, you will do two discussions in D2L.
(Lab 10 is NOT due this week.)

• Participation Discussion 14 Respond in the class Discussion forum to the following:

Many of the lab demo video scenes were split to add titles.

Why else might you split a scene?

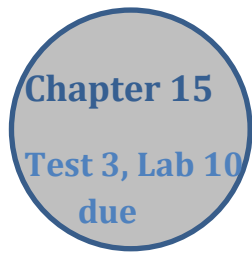
• MUD 14 (My Understanding, Details) Respond in the class Discussion forum to the following:

What was helpful this week?

What do you hope we talk about next week?

There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 14



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Test 3 Review

How to Study for a test

Take Test #3

Turn in Lab 10

Test #3 Review

Before continuing, verify you are caught up with class participation discussions and MUDs.

To check your progress: in the D2L, choose the arrow icon next to your name ▼;

to check your Discussion progress, use the dropdown Tool and select Discussions...choose Apply.

You will need to scroll down to see which discussions you have and have not posted to.

Your participation grade will be penalized at the end of the semester for discussions you have not posted to.

Feel free to copy this to a word document and send it to me... I won't give you the right answers necessarily, but I'll let you know where you still need a little work. Hint: highlight the questions.

Now that you are mastering the theory, it is time to ramp up the tests a bit..

This will be a fairly challenging test.

Just as there are no multiple choice job interviews, the third test is designed to see not what you recognize, but what you have learned. The test and review below, have more picky fill in the blank and short answer /short essay questions, where you have to write out a short phrase or a short paragraph to answer the question. You'll have 40-45 minutes for the test, so you will need fairly rapid recall to finish in the allotted time. Go over your completed review frequently, though, and you'll do just fine!

PS, The third part of the final will include the same information as Test 3.

I also suggest you Log into D2L, chooses Quizzes, then choose to take the Practice Test.

From **Overview 13** (Paths, Layers, Channels, History, and Color Balance):
Answer the following questions

To see the answers, go the class web site, and drag your mouse across the question.

1. Think of Paths, Layers, Channels History; show where red, green, and blue are used in an image
2. White would have information on which channels?
3. What is the alpha channel used for?

For the next few questions think about paths and masks being used to create reusable selections.

4. One reason for using channels is to create precise , to be able to quickly select or reselect.
5. Paths are a series of connected dots used to select items, but instead of going away, the path is available to later
6. History allows you to previous steps, not just the last step
7. and are other ways to adjust brightness and contrast
Think about the Tools/ Color tools menu items discussed in class
8. Levels allows you to adjust the range using input sliders
9. Curves allow you to adjust the input and output with a line, with the and representing the input and output
10. removes shades, such as shades of gray

- 11. A mask is a _____ used to cut, copy or to adjust transparency
- 12. Review lab 9.

From Overview 14 (video, flash, and copyright)

- 13. Video could be defined as photographic images viewed in sequence, often _____ frames per second if approaching movie and TV quality
- 14. The free video editing packages that come with Windows and Mac include _____ and _____
- 15. The free video viewing packages that come with Windows and Mac include _____ and _____
- 16. Video editing often focuses on _____ and _____ and _____
- 17. A _____ is a series of related images
- 18. A scene can be divided into smaller scenes that can be copied or rearranged, by clipping or _____ the scene
- 19. A _____ is the effect, such as fading, between scenes
- 20. _____ are words that appear before or after scenes... in some cases the text can appear over a scene
- 21. Microsoft Movie Maker uses either a _____ or a _____ to arrange scenes
- 22. _____ is used for web animation
- 23. Flash has (higher or lower) _____ bandwidth requirements than traditional video formats
- 24. For class you may invoke _____ to use copyrighted images; this kind of use is not available outside of class
- 25. Review Lab 10.

How to study for a test

See Chapter 6

Take Test #3

Check the class website (D2L) for due dates

Turn in Lab 10

Check the class website (D2L) for due dates

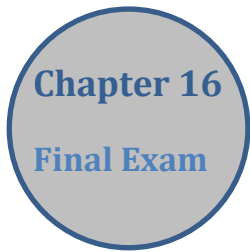
What's due this week

This week, you will do two discussions in D2L turn in lab 10, and take a test.

• **Participation Discussion 15** Respond in the class Discussion forum to the following:
What was the hardest part of this class? Questions about other graphic issues?

• **MUD 15 (My Understanding, Details)** Respond in the class Discussion forum to the following:
What was helpful this week?
What do you hope we talk about next week?
There was a continuous orientation video you were supposed to watch...
comment on that as well.

End chapter 15



Reminder: Did you check your TC EMail? Did you check the Quarantine/Junk folder?

Final Exam Schedule

Reviewing for the Final Exam

Final Exam info

Take the Final Exam

Final Exam Schedule

The final exam schedule is set by the college, not the instructor; the schedule can be found on the School's web site.

Reviewing for the Final Exam

There is no separate review for the final exam. As the final is comprehensive, it covers the material on the previous three tests. So to review you should start by going over the test 1, test 2, and test 3 reviews in the book or on the class web site. Better yet, review your test 1, test 2, and test 3 in D2L.

Final Exam info

The final exam is test 1 again, test 2 again, and test 3 again.
Your lowest test score can be improved by doing well on that section of the final.
No curve on the final.

You may take your final early, but you cannot take your final late. You must make a passing grade on the final to pass the course. See instructor for details.

You have two hours to take the final. That is, you must finish all three parts of the final within two hours of beginning the final. Pay attention to individual test timers in D2L.

Take the Final Exam

Check the class web site for details.

What's due this week

This week, you will do a discussion in Desire2Learn and take all three sections of the final exam

- **Participation 16** Respond in the class Discussion forum to the following:
What other classes should TC offer in this area?

End chapter 16

Begin appendix A

Other Graphic tools

Free stuff

So far this book has covered software that can be used to create and raster and vector images, and well as touching on different types of animation.

Software mentioned so far includes:

- Paint for basic raster design and editing
- Inkscape and Illustrator for vector design and editing
- unFREEz for simple GIF animation assembly
- GIMP and Photoshop for raster image editing with support for transparency, layers, vector lines and text
- CamStudio and Camtasia for video capture
- Audacity for basic audio editing
- Movie Maker for basic video editing,
- Camtasia for more advanced audio/video editing
- Flash, for vector illustration

As this is an intro class, we just focus on the basics, of computer graphics, and especially using free tools as a starting point.

However, there are a huge number of other programs that can take you even further.

A great tool to investigate is **Adobe InDesign**, a desktop publishing tool that can make posters, brochures, and books for electronic delivery or for print. But for those on a budget:

Scribus: open source graphics software

Again, if you need to make a poster, brochure or a PDF that you can share with potential employers, friends, or clients, and if you need something with a bit more under the hood than Microsoft Word or LibreOffice Writer ... I suggest Scribus, an open source desktop publishing tool that can help you create print-ready output.

While Scribus is similar to tools like Adobe InDesign or QuarkXPress, being free means that it may not have as many deep features, but it is more than capable.

And while free, just like GIMP and Inkscape, Scribus does have good documentation.

The Scribus Project provides packages and installers for Linux, Mac OS X, and Windows

We did not even discuss 3D modeling, or 3D animation.

An open source tool to look into is Blender, which is capable of impressive 3D work, and not just outputting still images.

Few novice graphics folk will need this kind of power, but Blender is on par with proprietary tools if you have need for 3D modeling and are on a budget.

The downside to any 3D modeling is a steep learning curve.

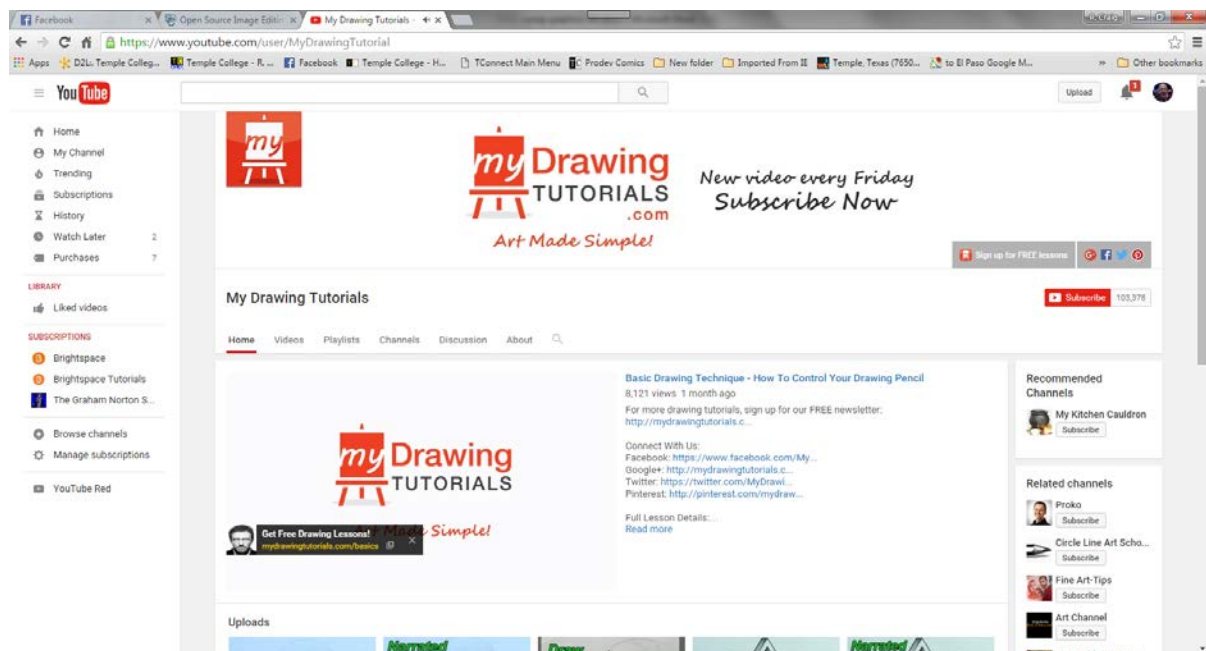
Blender is available for Windows, Linux, Mac OS X and more.

Finally, I have shown you how to edit, but not really how to draw.

I have two solutions for you.

One solution is to use freely distributed clip art as a starting point, such as from the Open Clip Art Library. (<https://openclipart.org/>) The OCAL is a collection of clip art licensed under the Creative Commons Public Domain license. So, anything in the OCAL should be free to use, royalty free, in any project that you're working on.

My next Solution is to Google How to Draw... you can find tons of Web sites and YouTube videos to help you, if you want to go down that path.



End Appendix A

Begin appendix B

Inkscape Pen Tool

From http://en.flossmanuals.net/inkscape/ch016_pen-tool/

Pen Tool

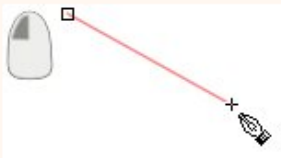
The **Pen Tool** is used to draw paths made of **bezier curves**; beziers can form unclosed paths or closed shapes. The pen tool is useful for drawing figures with smooth curves, and can be particularly efficient for tracing images (e.g. for *rotoscoping*).

How to use the Pen Tool

Start the Pen Tool one of three ways:

- Click on the Pen Tool button in the Toolbox;
- Press **b**;
- Press **Shift** + **F6**.

Left-click on the canvas to create the first **node**.



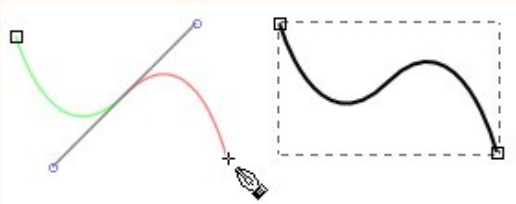
Draw a Straight Segment

To draw a straight segment, click again where you want the segment to end; a straight segment will be drawn between these two points.



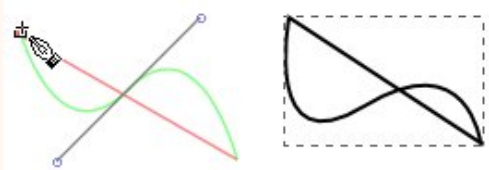
Draw a Curved Segment

To draw a curved segment, click to add a new node and hold down the mouse button, then drag to adjust the curve of the segment (this also makes curve control handles appear).



End a Path

To end a path, either click the first node of the path (if you want it to be a closed shape), or press **Enter** or **double-click** (if you want the path to remain open); **right-clicking** will add a new node and end path editing at the same time.



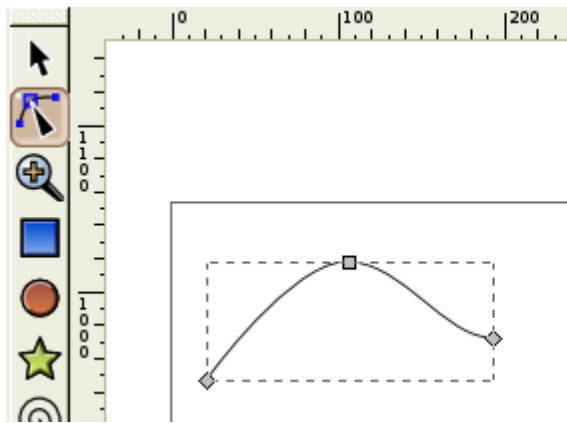
Continue a Path

To continue a path that has been previously drawn, select the path and start the Pen Tool; then click either the beginning or end node and add segments as normal.

Delete a Segment

To remove the most recently added segment/node, press **Delete**.

You should also experiment with the Node tool



Clicking on the node tool when a curve is selected reveals another node in the middle of the curve. If you then click on the middle node you will see the bezier handles appear. You can then further manage the curve. Try it

End appendix B

Begin Windows 10

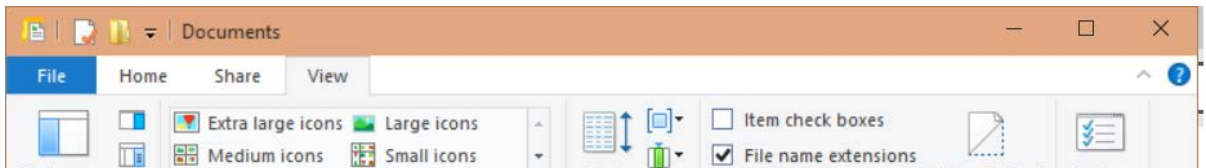
Appendix

Just a few quick tips if you are new to Windows 10.

- The fastest way to start any program is to click the Start key on your keyboard, and then just start typing the name of the program... once Windows has found the program click the icon.
- If you have a microphone, you can also start a program by saying "Hey Cortana, Launch ..." and name the program you wish to start.



- Windows by default hides the extension of file names, you really need to be able to see those extensions, so you can tell the difference between a jpg and gif file.
To show the extensions, Click the folder icon on the task bar, then click the View tab.
Add a check mark next to File name extensions



Back book cover

Paint and the *Art* of Computer Graphics

