Gimp Basics

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1. Introduction

1.1 What is 'Gimp'?

'GIMP' comes from the 'Gnu Image Manipulation Program' . 'Gnu' comes from the Linux-world; it is a project started by Richard Stallman and its target has been to create a free operating system environment around the Linux kernel. Maybe you know, that a Finnish student Linus Torvalds created Linux operating system, but an operating system without programs would be of no use; so Gnu has aimed to make those programs and Gimp has been one of them. But for a long time Gimp has been available also for Windows and Mac environments. Because Gimp is an Open Source program, it means that it is free for any use. The only limitation is that if you would develop your own version of it, you should publish your program's source code for free to any further development.

You'll find Gimp from www.gimp.org. Go there and answer the questions (Finnish version in http://www.gimp-suomi.org):

1.2. Why use Gimp?

There are nowadays many free image manipulation programs to choose. Gimp is probably not the easiest on to learn, but the easiest one don't have as many functions as Gimp. So if you need advanced image manipulation, Gimp is a good choice.

2. Using Gimp

2.1. Front end

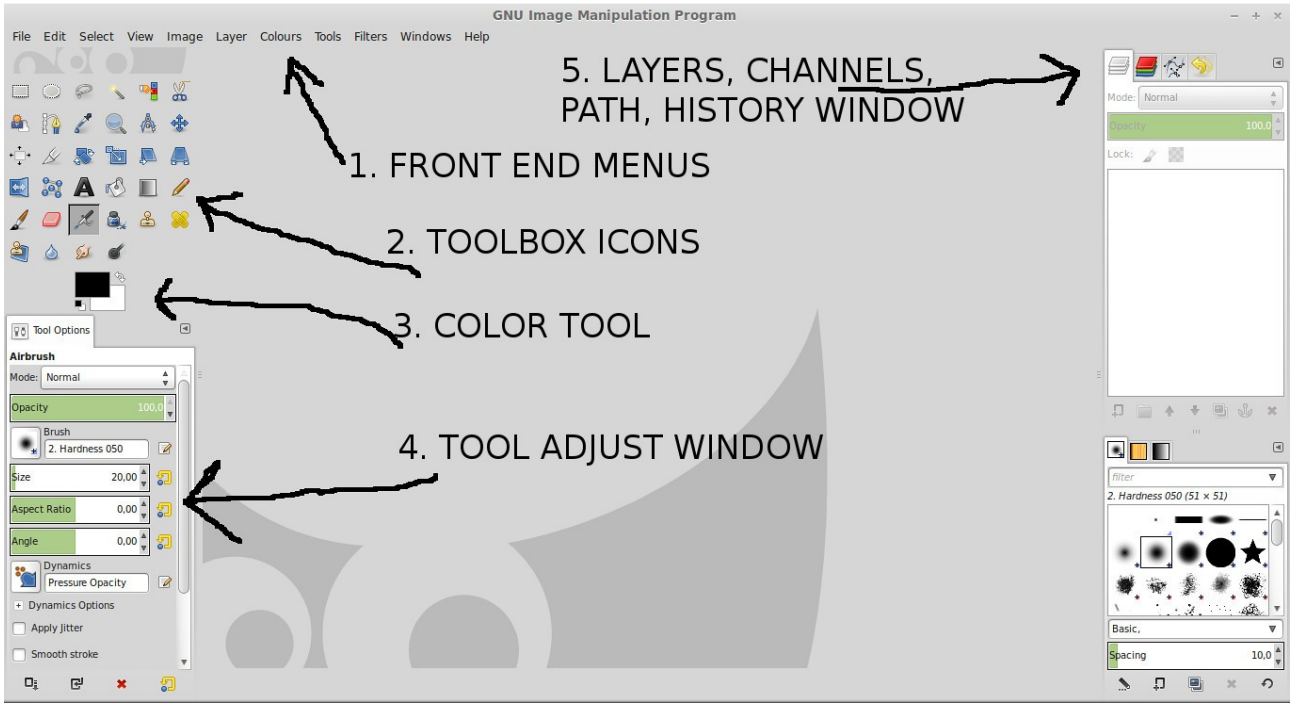
Launch Gimp from the program menu or the desktop. On the left you can see the Toolbox and on the right possibly another tool window. At the centre you have the canvas, where you can open new images. Enlarge the canvas to fill the whole screen. You can choose between the original Gimp layout which is floating windows and a 'Photoshop style' fixed layout, you'll find the function in the front end menus in 'Windows – Single-Window Mode'. If the other tool window at right is closed you can reopen it in 'Windows – Recently Closed Docks – Layers, Channels, Paths, Undo-Brushes...'. In 'Windows – Dockable Dialogues' you can also find many other tool windows.

In Gimp you can choose a tool and start an operation usually by three different ways:

1. By clicking a tool icon in the Toolbox window on the left

2. By choosing the tool in the front end menus

3. By keyboard short cuts



When you choose a tool an appropriate tool adjustment window is opened below the Toolbox window. If that window is missing you can do as follows: From the front end menus choose 'Edit – Preferences – Window Management' and click on the 'Reset Saved Windows Positions on the Default Values', confirm it by 'OK' and restart Gimp.

2.2. Opening a picture

Open a picture by choosing 'File – Open' from the front end menu. How could you do the same with a keyboard short cut?

If you'd need a picture you have recently used you could choose '**Open Recent**' and you would see it on the list. If it was not on the list you could also browse document history in **'File – Open Recent- Document History'** or in the right side 'Layers, Channels, Path, History' -window by choosing 'History' -tab.

2.3. Zooming

At the bottom of the front end you can see the image size in percentages from the original size, i.e. if it is zoomed out or in, the original size is 100%.

You can zoom the picture in many ways:

- by changing the percentage in the front end bottom
- by zooming in 'View – Zoom' at the front end menus
- by pressing plus or minus key on the keyboard
- by pressing shift on the keyboard and scrolling with the mouse in the same time

And if you press number one key ('1') on the keyboard you'll have the original size (100%) at once. Remember, the real size of the picture will not change when you zoom.

2.4. Saving the picture

You should save the picture you are manipulating very often. If you make a mistake you don't then loose the previous versions and have to start it all again. When you start it is a good habit to make a copy from the original picture to avoid ruining it. When you save a new version or a copy of the original picture choose 'File – Save as' and give it a new name. But if you just want to save the changes into the image choose '**File -Save' or just press 'Ctrl – s'** on the keyboard. Then you'll loose the previous version but you can still reverse to that from the right tool window at the 'History' -tab if you haven't quit from the Gimp.

Gimp saves the image in its default xcf-format. That is a good choice for an image that is going to be manipulated further. But if the picture is ready and you want to publish it or send it to someone then save it in the jpg, gif or png -format. Those formats require less space in the hard disk and everyone who gets them can get them opened. But if you manipulate and save the image several times in jpg -format the quality of the picture gets lower, so don't use it unless your picture is ready! **To save an image in another format than xcf you have to choose 'File – Export'.**

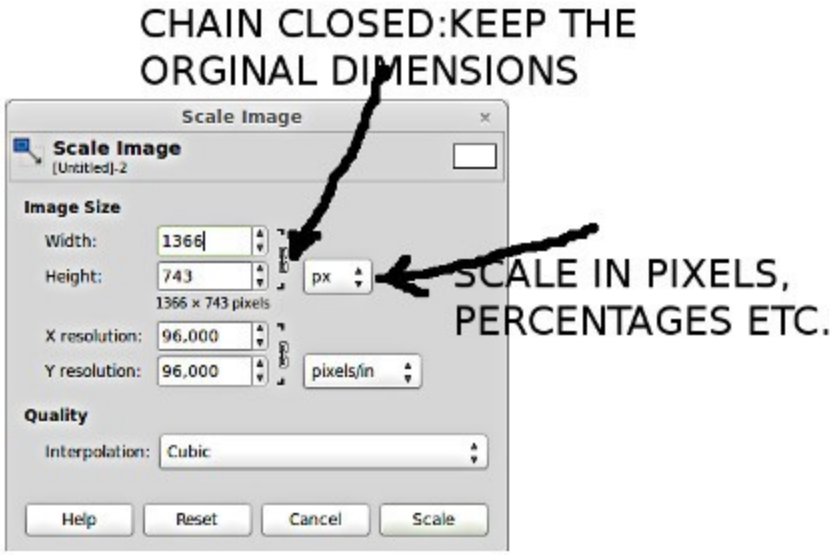
Now save the image in xcf and jpg -format to your hard disk. To save in jpg -format you must choose 'File – Export' and change the format to jpg, you can erase 'xcf' and replace it with 'jpg'.

3. Basic manipulation

3.1. Changing image size

'Image size' can be measured in two ways, in pixels and in bytes. The size in pixels is the physical size of the image, i.e. its dimensions on the screen. Size in bytes means how much space it reserves on the hard disk, email or web page etc. You can see the size in pixels at the top of the Gimp front end and in bytes in 'Image -Image Properties -File Size' in the menus.

You can change the image size by scaling it in 'Image -Scale Image'. Just choose the width or height you need in pixels or in percentages and click 'OK'. The original dimensions are preserved automatically, so if you'll change either one of the height or width, the other one will be changed equally. If you want for some reason change the dimensions you have to 'cut' the chain symbol on scaling tool.



You can zoom the image to seek the appropriate size for your purpose. **If you are unhappy with the result, just press 'Ctrl – z' on the keyboard or choose 'Edit -Undo Scale Image'** from the menus and try again!

3.2. Cropping

Sometimes you may need to crop a part of an image and make as a new image. For that purpose Gimp has a cropping tool, which you can start from the menus in **'Tools -Transform Tools – Crop'** or by clicking the Crop -tool in the Toolbox or by pressing 'Shift - c' on the keyboard.

Start cropping by clicking with the mouse on the upper left corner of the new image and stretch it to cover the area you want to crop. You can fine tune the result with mouse on each side by pointing the border and then dragging it or by keyboard: point the border you want to adjust and press the

arrow, it moves pixel by pixel and you'll get a very accurate result. If you want to cancel current cropping and do a new one, just click outside the cropped area, but if you want to save it click inside of it. If you have already accepted the cropping, you can cancel it with '**Ctrl-z' or 'Edit -Undo Crop Image'.** Finally save the cropped image with another name, unless you are very sure you don't want to have the original image any more.

If you need a fixed size cropping you can set suitable values for that in the the cropping tool adjust window. Before that you may have to scale the image to fit something in the cropped area.

3.3. Rotating images

If the image is upside down or on its side, it is very simple to rotate it with **Image -Transform -Rotate.** In the same place you find also tools to mirror image (Flip). After rotating save the image.

3.4 Correcting the horizon 

Sometimes you need more exact rotating, for example if you have taken a picture with the camera in a wrong position so that the horizon is tilted. To correct that you need the Rotate tool which you can find in the Toolbox (look at the icon above) or in **Tools -Transform tools - Rotate or in the keyboard with Shift – R.**

As you start the Rotate tool, you'll see its toolbox window below the Toolbox. In it, **set the Direction to Corrective and Clipping to Crop to result or Crop with aspect**. That will make the picture to save its rectangle shape, everything extra is cut away. Guides should have value Number of lines to show a grid.

After these preparations, click on the image. You'll see a grid, grip on it with the mouse and **turn the grid according the horizon.** Look at the vertical and horizontal lines in the picture, like the edge between the sky and the earth or building walls and roofs. You may not get all the lines to fit with the grid; in that case, choose the most important lines. Then click Rotate in the tool window.

If you are satisfied with the result, finally cut of the extra background with Image – Fit Canvas with Layers and save the result.

If you want to rotate the image for artistic impression, set the Direction to Normal.

3.5 Perspective tool 

Sometimes when you take pictures of high buildings the result may be like if the buildings were falling. You may want to fix the result and in Gimp it is possible with the Perspective tool. Start it from the **Toolbox (look at the icon above) or with Tools – Transform tools -Perspective or on the keyboard with Shift -P.** Adjust the Perspective tool in its tool window by setting **Clipping to Crop to Result or Crop with aspect and Guides to No guides.** To see the horizontal and vertical lines add a grid in **View -Show grid**. To adjust the grid select **Image – Configure grid.**

Then just grip the adequate corner on the image and stretch it so that the perspective comes more in line with the grid. **Don't flatten the image and don't exaggerate!**

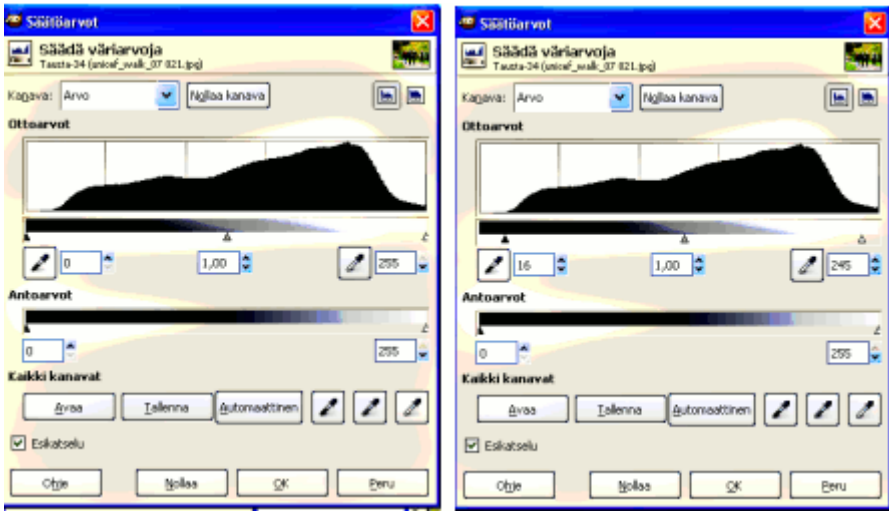
3.6. Fixing the brightness

If the exposure has not been sufficient there are many ways in Gimp to fix it. You can find tools for that in **Colours or Tools – Colour tools.**

In **Colours -Brightness – Contrast** you can add brightness and appropriate contrast with it. That is a simple tool to make it quickly, but for a better result you should use Levels and Curves, because they give you the chance to adjust bright and dark colours differently.

Start the Levels tool in **Colours -Levels.** You'll see the Levels tool window. In it there is a black, maybe “mountain like” figure. That is the histogram, that shows the levels of each colour. The higher the histogram goes, the more there is that colour in the picture. On the right side there are bright colours and on the left the dark.

There are sliders below the histogram (Input Levels). If the sliders are not at the edges of the histogram, then all the bright and /or dark colours are not in use. **Move the sliders at the edges**. If the picture gets then too dark, you can move the middle slider very cautiously left.



You can see the colour levels in histogram. On the left picture, some dark colours are missing (left side) and bright colours on the right side are on a low level. Therefore the sliders below the histogram are moved a bit to center (the picture on the right) to get all the colours back to the picture. With the middle slider you can add a little brightness or darkness to the picture, but be careful with that, or you get a discoloured result!

Curves -tool is much like the Levels tool. Start it in **Colours -Curves**. In the Curves toolbox you the see the histogram and a straight, linear line. By stretching that line up and down you can adjust any single bright or dark colour in the picture. If you click on the image, you'll see on the line where that colour is on the histogram. **Usually to make some deepness to the colours in the picture it is good to add a little bright colours by stretching the line near the upper right corner cautiously and to lower the dark colours a little by stretching the line down near the lower left corner. That makes an "S" with gently sloping curves.**

There is also a Dodge/Burn tool in the toolbox to fix the exposure in a small area.

3.7. Sharpening

A little sharpening usually makes the picture clearer, but exaggerating in that is not a good thing, either.

You can find the sharpening tools in **Filters- Enhance - Sharpen and -Unsharp mask**. With default values, Unsharp mask does more sharpening and that is often too much. In that case, undo

Unsharp mask and try Sharpen. By trying both tools and possibly adjusting them you'll find the adequate level of sharpening.

In **Toolbox there is also the Blur / Sharpen tool** to sharpen or blur small areas.

3.8. Red eye removal

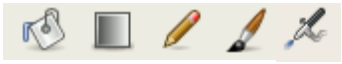
To remove red eyes it is necessary to remove the red colour from the eyes. To not to remove the red colour from other parts, like lips, you have to first select the eyes to target the removal only to them.

For that purpose, choose **Free Select or Ellipse select from the Toolbox or on the keyboard with E**. To be able to select both eyes in the same time, **press Shift before selecting the other eye.**

After selection, choose **Filters – Enhance – Red eye removal -tool** and by using the preview, remove the red colour from the eyes. **Try to achieve a natural look**, too much removal may result to “dog eyes”.

4. Drawing

4.1. Drawing tools



You can paint in Gimp with many tools like **Pencil, Airbrush, Paintbrush, Bucket fill and Blend tool,** which you find in the Toolbox. **You can choose the colour for the drawing tool in the Toolbox by clicking the foreground or background colour** and selecting first the main colour in the thin bar and then the exact colour in the colour field on the left. You can also adjust the tool qualities, like its size, in many ways in its tool window below the Toolbox.

4.2. Drawing regular figures

To practise drawing regular figures we draw a smiley.

1. First get a new background canvas in File – New or on the keyboard with **Ctrl - N**.

2. Choose the **Ellipse selection -tool** and draw an ellipse.

3. Change the selection to a drawing by choosing **Edit -Stroke selection** and then **Select – None** or clicking on the background.

4. Draw the eyes with the Paintbrush.

5. To draw the mouth choose the **Path tool in the Toolbox or by pressing B on the keyboard**.

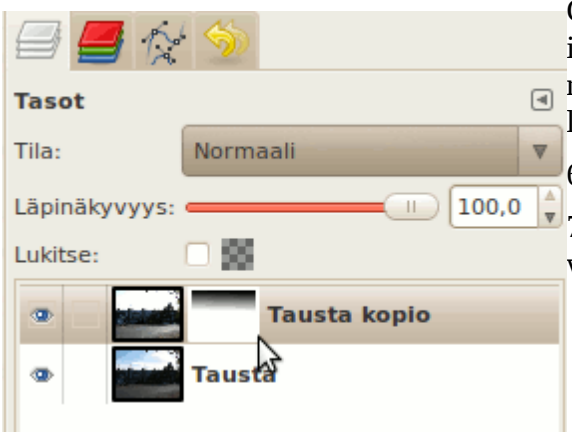


Illustration 1: Layers tool window, in this window you can see all the layers and layermasks and activate then. You can also make new layers or layermasks by right clicking with the mouse on this window and choosing them on the list menu.

Choose the left starting point of the mouth and click on it. Then loose the mouse button and click again in the right end of the mouth. Then grip on the middle of the line and stretch it downwords to get the smile.

6. Choose **Edit – Stroke path** to draw the mouth.

7. Finally, choose the colour for the smiley and paint it with the **Bucket fill -tool** (on the keyboard Shift - B)

5. Advanced level: using layers

5.1. What are layers

Layers are images on each other and put together they can form a new image. **By using transparent backgrounds it is possible to add new objects to an image** and by using a layer mask it is possible to add transparency to an image when needed. The result then is a combination of all the images on each other. The **Layers window is at the right side of the Gimp front end, but if it is not visible, you can get it back at the Windows – Recently closed docks – Layers...** Also check, that the Layers tab is open in that window. In that tool you see all the layers and layermask and can activate them by clicking on them. The eye symbol means the visibility of that layer and with that you can make the layer to be seen or disappear.

5.2. Adding an object from an image to another image

To add an object from an image to another image you first need to remove the object. For that, **select the object with appropriate selecting tool.** At first you can make a very harsh selection because it is then possible to fine tune the selection with the Quick Mask.

Start the **Quick Mask at the lower left corner of the canvas or by pressing Shift -Q** on the keyboard. **Zoom** the object close enough and choose some painting tool from the Toolbox, like the Paintbrush. **Check, that the foreground colour is black**. Now you can add the red shadowed part in the image and in the same time move the edge of the selection to the border of the object. If you make a mistake and move the selection too far, on the image, **you can erase the red area by changing the painting colour to white.** To get more natural edges for your selection, **use Paintbrush or Airbrush as you get close to them, because they leave the edges a bit blurred**. If you use Pencil, you can work fast, but the edges will be unnaturally sharp.

When you are ready with the selection, click the **Quick Mask off and copy the selection**. Then open a new canvas with a transparent background in **File – New – Advanced options – Fill with -Transparency.** Transparent background looks like a chessboard. Then, **paste** the object you copied on that background and save the image with a proper name.

Then open that image where you want to add that new object. Add the object to that background image by opening it with **File – Open as layers**. If you need to scale the object, select the **Scale tool in the Toolbox or on the keyboard with Shift – T**. To keep the dimensions while scaling, **connect the chain** in the Scale tool's tool window before scaling. You can then scale the image just by dragging it with the mouse.

To move the object choose the **Move tool in the Toolbox or on the keyboard with M**. In the Move tool's tool window select Move the active layer. Now you can move easily the layer when it is activated in the Layers window.

Save the final result as a jpg -image for showing it and as an xcf -image for further manipulation.

5.3. Making a panorama picture

For a panorama picture you need at least two sequential pictures. First you have to create a background for the new image in **File – New. The background should be as high as the images are and as wide as the images are together.** You can see those values in the pictures you want to put together when you open them with Gimp or right clicking on the images and choosing “Properties”.

After creating the background open the images on it with **File – Open as layers.** They will be opened on each other so select the **Move tool (M) and in its tool window Move the active layer and move them a bit to see what you have there. Choose the image that is on the other image, so above it, and add a layer mask for it.** You can do that in the Layers window by right clicking on the image and choosing Add layer mask. Default values for the layer mask are ok when you create it.

After that, **make sure that the layer mask is activated** by clicking on it in the Layers window. Then choose the **Blend tool** in the Toolbox or on the keyboard with L. Check, that you have **black** and white as foreground and background colours.

Now paint on the layer mask with the Blend tool by clicking at the edge of the upper image and dragging the line shortly on the image. **Don't paint too far,** just a bit on that part that you think is on the other image. **The upper image comes now a little transparent and you can see the through it the image under it.** Next, **select the upper image in the Layers window and move it** to fit to the lower image. If you accidentally move the layer mask, undo the moves with Ctrl – Z or Edit – Undo. You may not be able to fit the images yet perfectly, but set them as well as you can. Then, **select the layer mask again and choose Paintbrush**. On those places where the result is not yet sharp, paint with the Paintbrush and you'll see it sharpening.

Finally, **cut of the extra pieces out** of the picture and save it as an xcf or a jpg -image.

5.4. Making a simple animation

1. Open new background.

2. Draw the basic figure.

3. **Dublicate** the background as a new layer.

4. **Draw the new lines** for the next frame and **cover or erase those lines that must not be seen in it**. You can lower the opacity, if you want to see which lines are new and which are in the previous picture, but remember to put the opacity back to 100% after drawing the new lines.

5. Dublicate the new layer, draw new lines and cover the unnecessary lines, do this for each frame. Adjust the opacity if needed but remember to set it back to 100% each time.

6. Export the image as an **animated gif**, adjust the interval between the frames in milliseconds while saving or afterwards by writing it after each frame in brackets (ms).