

Computing

Lesson 3: Collage

Data Representation

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Task 1 - Image Manipulation

Setup your **GIMP** environment:

These instructions will guide you through setting up your GIMP environment, as well as opening images and zooming in and out of them (which you'll need to do often).

Steps	Instructions
Run GIMP (GNU Image Manipulation Program).	
Make sure that the Toolbox has been activated.	Use the menus: Windows ▸ Toolbox or Use the keyboard shortcut: Ctrl ⊕ B



Task 1 - Image Manipulation

Setup your **GIMP** environment: Tool options and Layers

Steps	Instructions
Make sure that the Tool Options are visible.	Use the menus: Windows ▸ Dockable Dialogs ▸ Tool Options Tip: If the Toolbox and the Tool Options are two separate windows, drag the Tool Options tab (not the window) under the Toolbox . This should 'dock' the Tool Options under the Toolbox , which is very convenient.
Optional: Sometimes, you will need the Layers dialogue.	Use the menus: Windows ▸ Dockable Dialogs ▸ Layers



Task 1 - Image Manipulation

Setup your **GIMP** environment: Open and Zooming in and out of the image

Steps	Instructions
<p>Open any image file. Image file names typically have extensions such as jpg, png, or gif.</p>	<p>Use the menus: File ▸ Open</p> <p>Or Use the keyboard shortcut: Ctrl ⊕ O</p>
<p>Zoom in and out of the image. Zooming in and out is something that you will need to do very often when working with images.</p>	<p>Use the mouse wheel:</p> <p>Hold Ctrl and roll the wheel up (zoom in).</p> <p>Hold Ctrl and roll the wheel down (zoom out).</p> <p>or</p> <p>Use the Zoom tool:</p> <p>Click on the image (zoom in).</p> <p>Ctrl-click on the image (zoom out).</p>



Task 1 - Image Manipulation

Setup your **GIMP** environment: Open and Zooming in and out of the image

Steps	Instructions
<p>Move left, right, up, and down the image. When you are zoomed in, it's convenient to be able to move around the image without using the scroll bars.</p>	<p>Use the mouse wheel: Roll the wheel up (pan up). Roll the wheel down (pan down). Hold Shift and roll the wheel up (pan left). Hold Shift and roll the wheel down (pan right).</p>
<p>Experiment freely and always remember that you can't break anything! Unlike in real life, you can always Undo (and Redo) the effects of your actions.</p>	<p>Use the menus: Edit ▸ Undo and Edit ▸ Redo or Use the keyboard shortcut: Ctrl ⊕ Z (Undo) and Ctrl ⊕ Y (Redo)</p>



Task 1 - A Penguin in the Desert

In order to combine images and create **collages**, the first thing you need to do is cut them up and only keep the parts that you need. Sometimes, that involves making very **detailed selections** of the parts that you need to keep, and making some parts of the images **transparent**.

In this worksheet, you will use these techniques to place an image of an emperor penguin in an image of a desert.



Credit: Penguin image:Wikimedia
Desert:Pixabay



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
Open the image file penguin.jpg.	Use the menus: File ▷ Open or Use the keyboard shortcut: Ctrl ⊕ O
Add an Alpha channel .	Use the menus: Layer ▷ Transparency ▷ Add Alpha Channel The term 'Alpha' refers to transparency. Adding an Alpha channel means storing information on how transparent each pixel is (along with the colour channels).



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
<p>Select the rightmost emperor penguin. You will need to zoom in to work at the appropriate level of detail.</p>	<p>Use the Intelligent Scissors tool in GIMP: Create a selection boundary by clicking on points on the edges of the object. The tool should detect the edges and make an accurate selection. If it fails to do so, you can insert additional points or move existing ones. Note: In the Tool Options, make sure that you tick the Feather edges box. This will create a 'fuzzy' outline. Make sure that your last point coincides with the first one (create a closed loop) and press Enter, to turn your outline into a selection.</p>



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
<p>Challenge: To achieve better results, subtract the small triangular region between the penguin's legs from the selection.</p>	<p>Use the Intelligent Scissors tool:</p> <p>In the Tool Options, select Subtract from the current selection and this tool will be on the left hand side underneath scissors select mode .</p> <p>Create a selection boundary by clicking on points on the edges of the object.</p>
<p>Invert the selection.</p> <p>Now, everything except the penguin is selected.</p>	<p>Use the menus: Select ▸ Invert</p> <p>or</p> <p>Use the keyboard shortcut: Ctrl ⊕ I</p>



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
<p>Delete the selection.</p> <p>A checkered pattern where the selection was denotes a transparent background.</p>	<p>Use the menus: Edit ▸ Clear</p> <p>or</p> <p>Press the Delete key.</p>
<p>Invert the selection.</p> <p>Now, everything except the penguin is selected.</p>	<p>Use the menus: Select ▸ Invert</p> <p>or</p> <p>Use the keyboard shortcut: Ctrl ⊕ I</p>



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
Crop the image to contain only the part that remains.	Use the menus: Image ▸ Crop to Content
Export the image as penguin-select.png. You will need to export the image in a format that supports transparency, such as png.	Use the menus: File ▸ Export As... or Use the keyboard shortcut: Ctrl ⊕ Shift ⊕ E Specify the filename and extension. When you are asked to specify additional image properties, accept the default values.



Task 1 - Image Manipulation

A penguin in the desert

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Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
Open the image file desert.jpg, which contains an image of a desert.	Use the menus: File ▷ Open or Use the keyboard shortcut: Ctrl ⊕ O
Open the image file penguin-select.png as a new layer in the existing image.	Use the menus: File ▷ Open as Layers or Use the keyboard shortcut: Ctrl ⊕ Alt ⊕ O Note: Make sure that you activate the Layers dialogue, either using the menus Windows ▷ Dockable Dialogs ▷ Layers or the keyboard shortcut Ctrl ⊕ L.



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
Scale the penguin layer to an appropriate size.	<p>Use the Scale tool.</p> <p>Click-drag to scale the layer to the desired dimensions. Press Enter when you have finished.</p> <p>You can also manually specify the new Width or Height in the Scale dialogue that appears.</p> <p>Note: Press the Control key or connect the 'chain link' between Width and Height to maintain the image aspect ratio while scaling.</p>
Move the penguin layer to an appropriate position.	<p>Use the Move tool.</p> <p>Click-drag to move the layer to the desired position.</p>



Task 1 - Image Manipulation

A penguin in the desert

Steps	Instructions
<p>Export the image.</p> <p>You will need to export the image in a format that supports transparency, such as png.</p>	<p>Use the menus: File ▸ Export As...</p> <p>Or Use the keyboard shortcut: Ctrl ⊕ Shift ⊕ E</p> <p>Specify the file name and extension (such as png).</p> <p>If you are asked to specify additional image properties, accept the default values.</p>



Task 1 - Image Manipulation

Challenge Task 1: A penguin in the desert

Steps	Instructions
Add the penguin's shadow	<p>Activate the Layers dock (Ctrl ⊕ L) and use it to select the layer that you want to work on.</p> <p>Create another copy of the penguin on a separate layer:</p> <p>Edit ▸ Copy or Edit ▸ Paste as ▸ New Layer</p> <p>Move, scale, rotate, and change perspective, so that its shape resembles a shadow. Select the layer with the copy and reduce its opacity to 50% (use the Layers dock).</p> <p>Minimise brightness and maximise contrast:</p> <p>Colors ▸ Brightness-Contrast</p> <p>Apply a Blur filter:</p> <p>Filters ▸ Blur ▸ Gaussian Blur (15px radius)</p>



Task 1 - Image Manipulation

Challenge Task Part 2: A penguin in the desert

Steps	Instructions
Cover a portion of the penguin's feet with sand	<p>Use the Clone tool.</p> <p>Use the Layers dock to select the desert layer.</p> <p>Ctrl-click on the sand on the desert layer to set the source: this will be where your clone brush will copy from.</p> <p>Use the Layers dock to select the penguin layer.</p> <p>Click-drag to paint sand on the penguin's feet; you are effectively copying the image pixels from the source.</p> <p>Note: You can also use the Heal tool, which blends the source with the layer that you are painting over, rather than copying it.</p>



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