

Changing Prince of Persia 1 Images

using GIMP, PR and gpl2jascpal

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Preamble

This document describes how Prince of Persia 1 resources can be modified to make the game different visually; that is, how bitmap images (.bmp) and JASC palettes (.pal) can be exported, altered and then imported to change the looks of the game. The three programs that are used to make the modifications are GIMP¹, PR² and gpl2jascpal³.

This is only the first version of this document, so there is a lot of room for improvement. In case you find a mistake or have a suggestion, please let us know.⁴ So far, the most effort went into trying to create illustrations that by themselves tell the story.

License

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1 <http://www.gimp.org/>

2 http://www.popot.org/other_useful_tools.php?tool=PR

3 <http://www.norbertdejonge.nl/gpl2jascpal/>

4 <http://forum.princied.org/viewtopic.php?f=70&t=2937>

1. What We'll Change



Let's assume we want to change both the copyright text and the background image of the title screen.

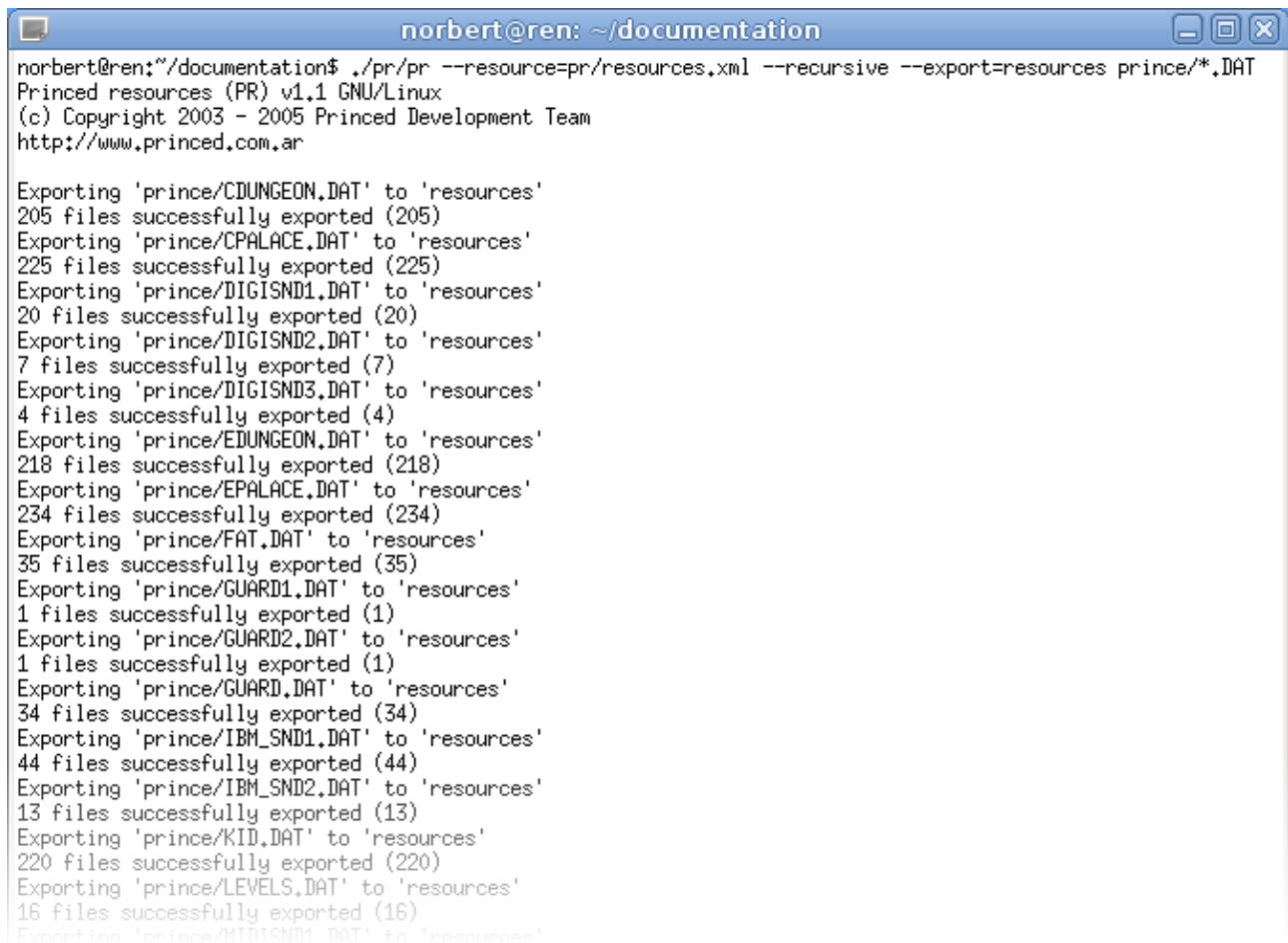
2. File Locations

```
norbert@ren: ~/documentation
norbert@ren:~/documentation$ tree
├── pr
│   └── resources.xml
└── prince
    ├── CDUNGEON.DAT
    ├── CPALACE.DAT
    ├── DIGISND1.DAT
    ├── DIGISND2.DAT
    ├── DIGISND3.DAT
    ├── EDUNGEON.DAT
    ├── EPALACE.DAT
    ├── FAT.DAT
    ├── GUARD1.DAT
    ├── GUARD2.DAT
    ├── GUARD.DAT
    ├── IBM_SND1.DAT
    ├── IBM_SND2.DAT
    ├── KID.DAT
    ├── LEVELS.DAT
    ├── MIDISND1.DAT
    ├── MIDISND2.DAT
    ├── PRINCE.DAT
    ├── PRINCE.EXE
    ├── PV.DAT
    ├── SHADOW.DAT
    ├── SKEL.DAT
    ├── TITLE.DAT
    ├── VDUNGEON.DAT
    ├── VIZIER.DAT
    └── VPALACE.DAT

2 directories, 28 files
norbert@ren:~/documentation$
```

It is important to know where *exactly* the Prince of Persia 1 data files (.DAT) are located, and where the PR executable and its resources.xml file reside.

3. Exporting Resources

A terminal window titled 'norbert@ren: ~/documentation' showing the execution of the 'pr' command. The command is './pr/pr --resource=pr/resources.xml --recursive --export=resources prince/*.DAT'. The output shows the version 'Princed resources (PR) v1.1 GNU/Linux', copyright information '(c) Copyright 2003 - 2005 Princed Development Team', and a URL 'http://www.princed.com.ar'. A list of resources is then exported to a 'resources' directory, with the number of files successfully exported for each resource listed. The resources include CDUNGEON.DAT (205 files), CPALACE.DAT (225 files), DIGISND1.DAT (20 files), DIGISND2.DAT (7 files), DIGISND3.DAT (4 files), EDUNGEON.DAT (218 files), EPALACE.DAT (234 files), FAT.DAT (35 files), GUARD1.DAT (1 file), GUARD2.DAT (1 file), GUARD.DAT (34 files), IBM_SND1.DAT (44 files), IBM_SND2.DAT (13 files), KID.DAT (220 files), LEVELS.DAT (16 files), and MIDISND1.DAT (partially visible).

To make things as easy as possible, we export *all* the available resources:

```
./pr/pr --resource=pr/resources.xml --recursive --export=resources prince/*.DAT
```

Using `--resource=pr/resources.xml` is optional. However, it must be supplied if you start PR from a directory that does not contain the resources.xml file. If you refrain from doing so, this error message will appear:

Result: -13 (-13)

If you do not use `--export=resources`, the resource directories will be created inside the directory you start PR from.

4. What Palettes Are Used

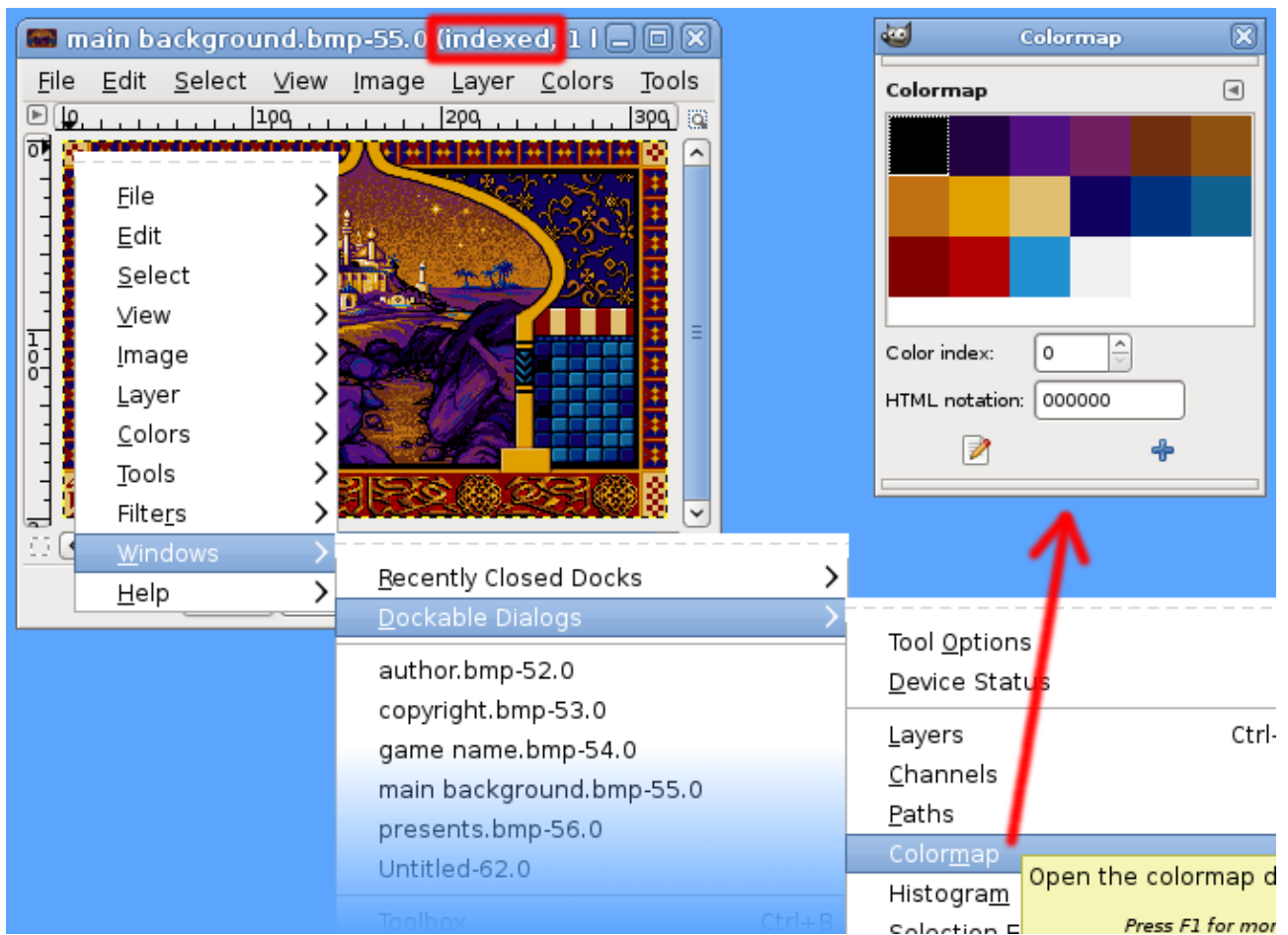
```
norbert@ren: ~/doc
<item value="44" path="the tyrant.bmp">Text the tyra
<item value="45" path="credits.bmp">Text credits (45
</folder>
<folder type="image" path="main titles">
  <item value="40" path="text background.pal" type="pa
  <item value="41" path="text background.bmp" palette=
  <item value="50" path="titles.pal" type="palette">Un
  <folder palette="50">
    <item value="51" path="main background.bmp">Image m
    <item value="52" path="presents.bmp">Image presents
    <item value="53" path="author.bmp">Image author (53
    <item value="54" path="game name.bmp">Image game na
    <item value="55" path="copyright.bmp">Image copyrig
  </folder>
</folder>
</folder>
```

resources.xml

The title screen we want to change is - in the screenshot - made up of three images: the background image, the game name, and the copyright message. To figure out what palette file(s) the game uses when displaying these images, we look up the image names inside resources.xml.

In our example, all images reside inside the same folder (<folder ...></folder>). That folder uses palette 50, which is titles.pal.

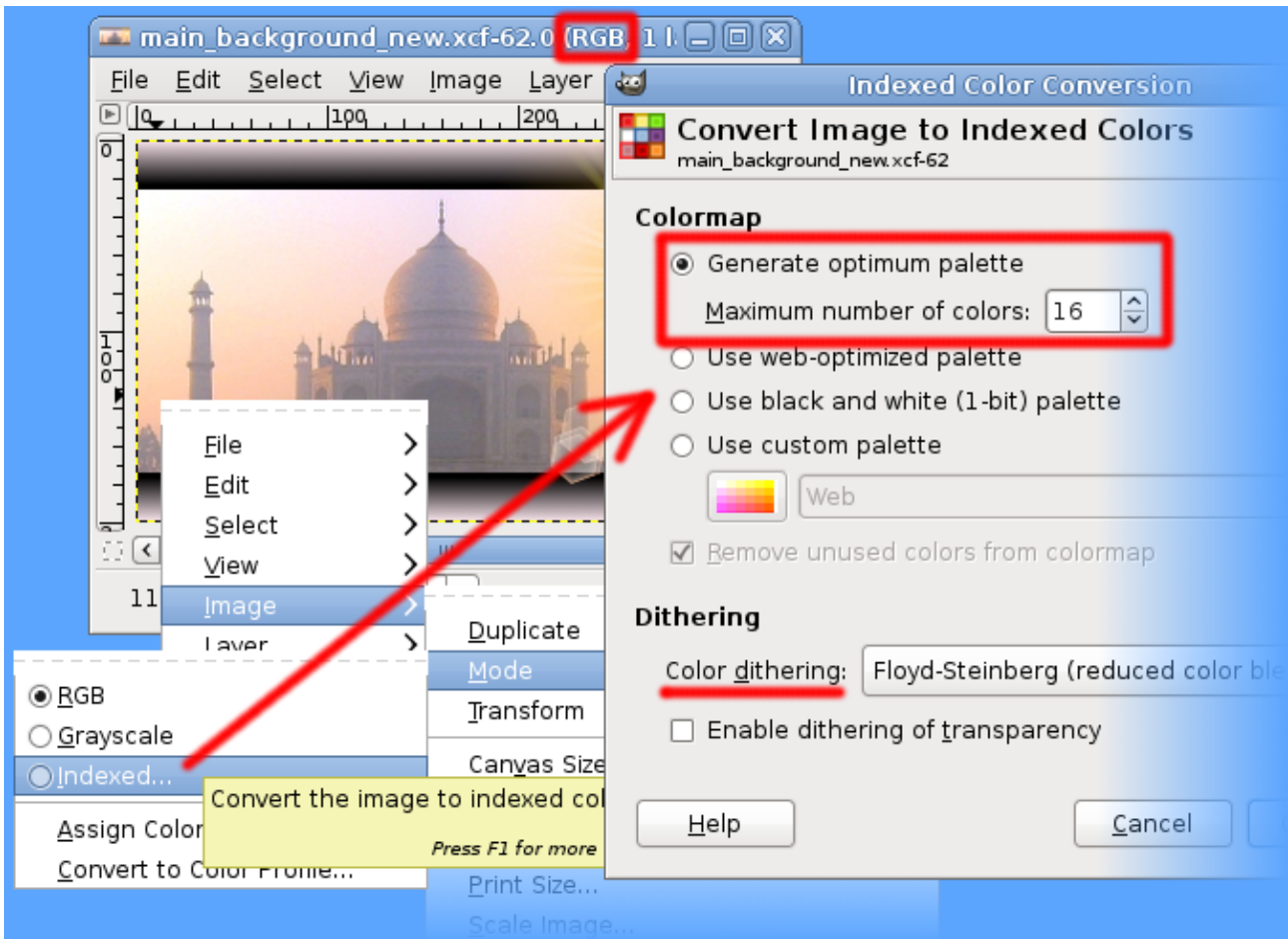
5. Using The Colormap



The easiest way to change an image is by keeping its palette intact. This means we can simply open its colormap. While manipulating the image, we use only the colors that are readily available from the Colormap window.

If you choose this method of altering images, there is no need to create new palettes, and you may skip all other steps in this document, with the exception of the chapter that goes into importing resources.

6. Converting to Indexed Colors

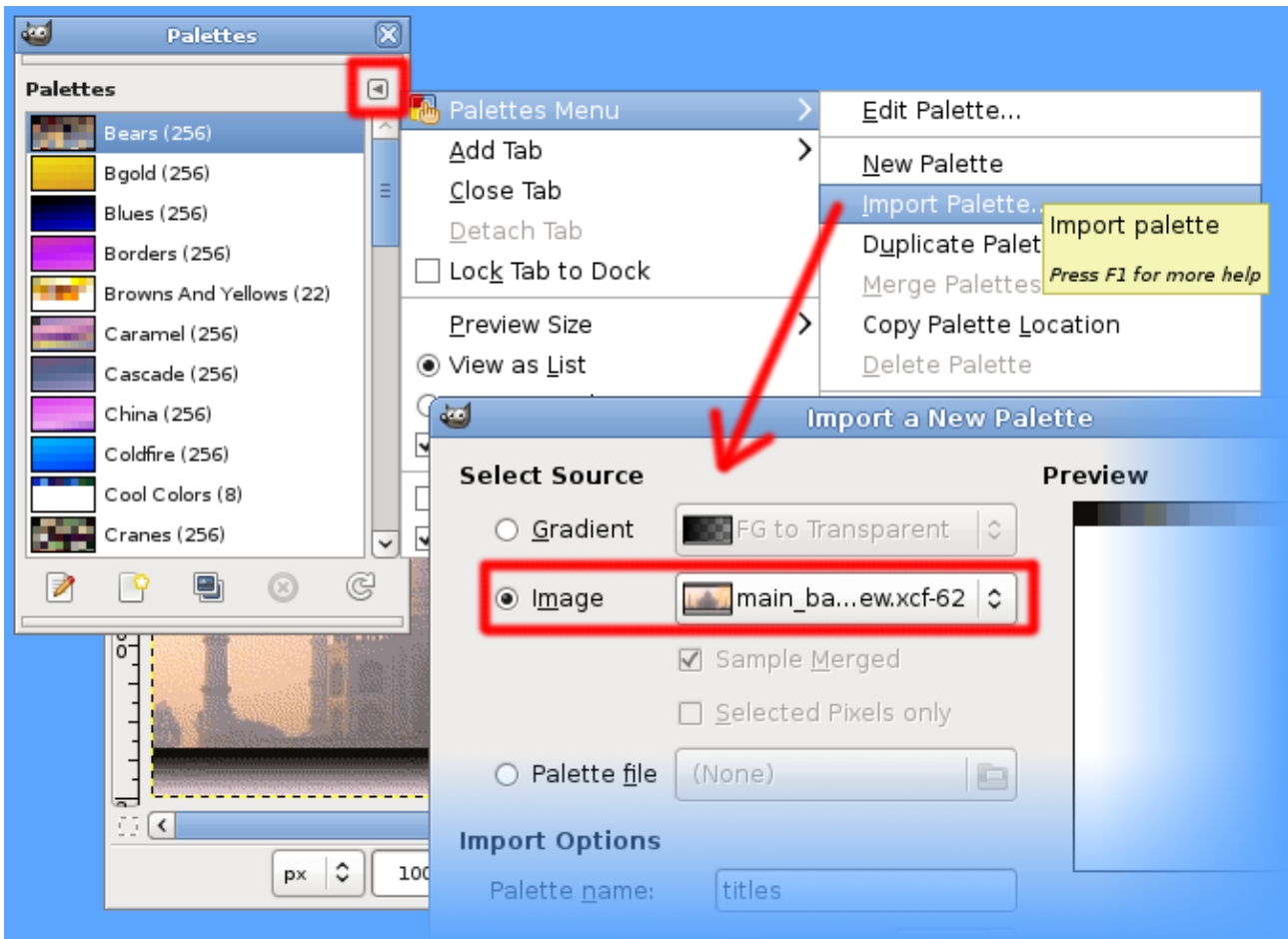


Let's assume you've created your own background image,⁵ which contains various colors that are not yet available in the corresponding palette file (titles.pal).

First, you have to make sure that your image is made up of only 16 colors. This will make it possible to extract a usable palette from the image during the next step. That new palette will eventually become our new titles.pal.

⁵ The photo of the Taj Mahal is available under the CC-BY-2.0 license.
http://commons.wikimedia.org/wiki/File:Taj_Mahal_reflection_on_Yamuna_river,_Agra.jpg

7. Importing a Palette

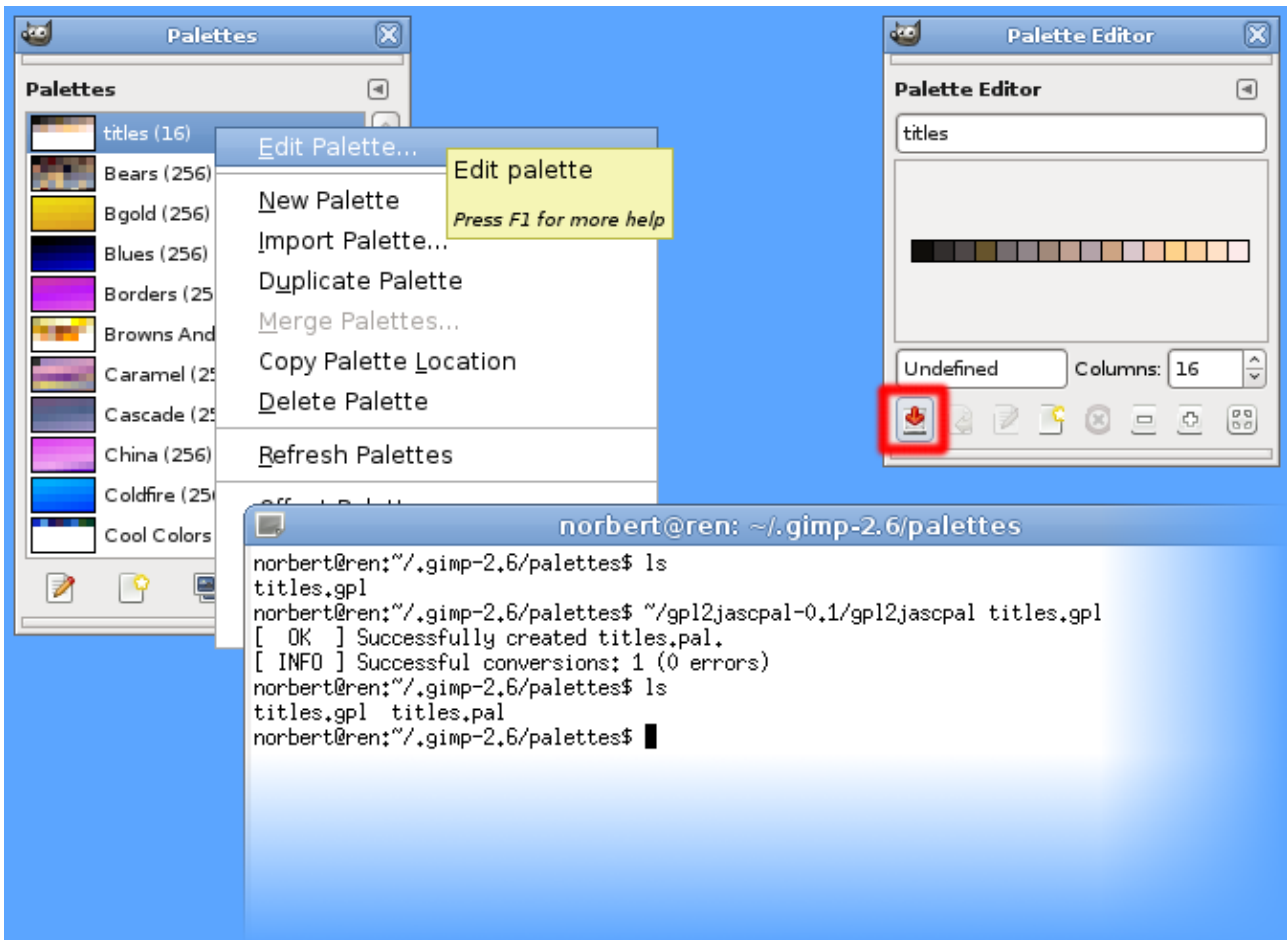


Before we can save the new 16 color palette of our new background image, we have to import the palette into our palettes list.

Bring up the palettes list via the top menu:
Windows -> Dockable Dialogs -> Palettes

Then, import the palette. (See the above image.)

8. Saving and Converting a Palette



8.1 Saving a Palette

Edit the new palette.

On the pop-up window, press the save button.

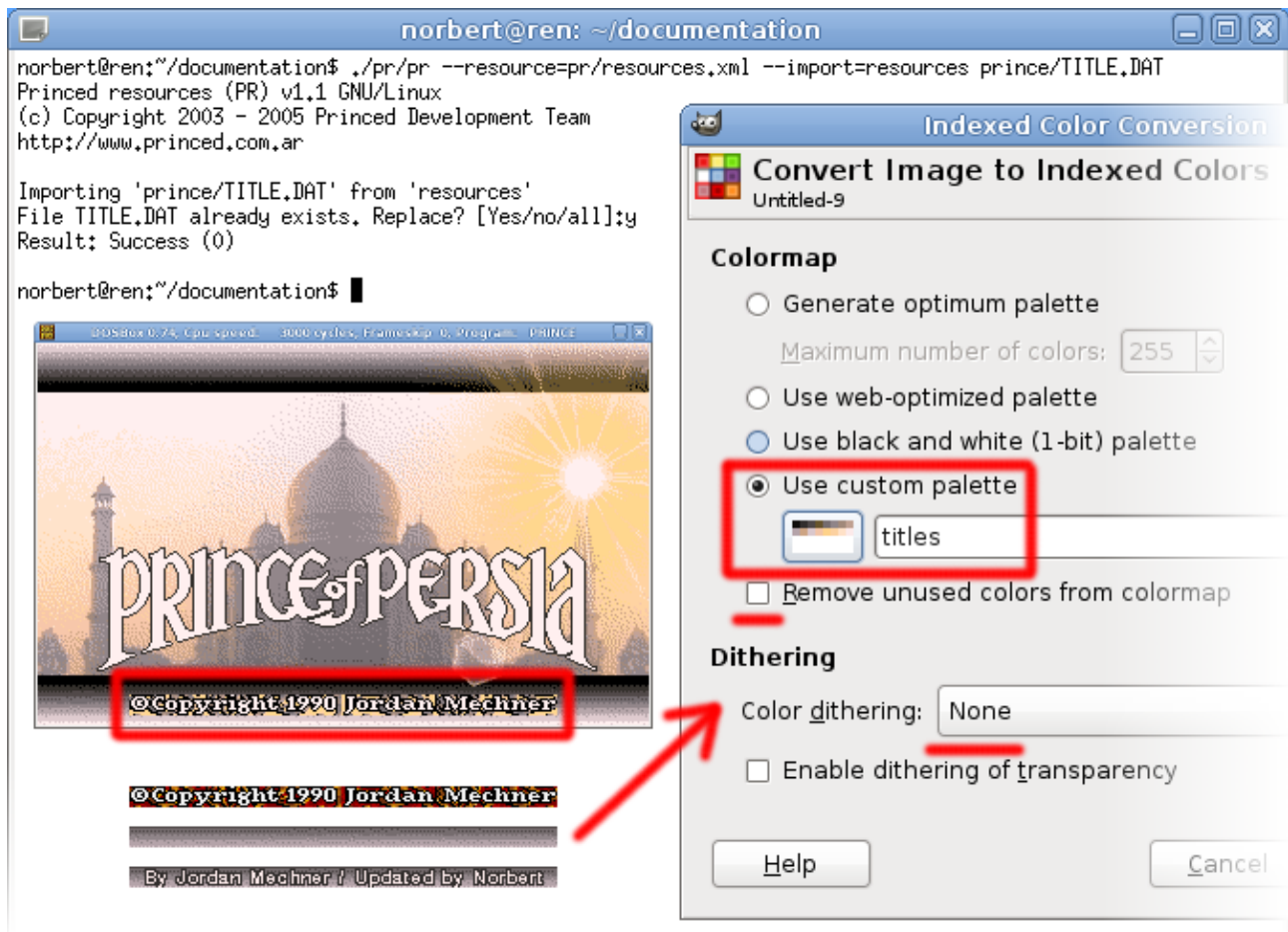
8.2 Converting a Palette

Use `gp12jascpal` to convert the new palette from GIMP `gpl` to JASC `pal` format.

Important:

Unfortunately, certain versions of PR incorrectly round up the color values 254 and 255 to 256 (which is outside the allowed 0-255 range). If your palette contains either of these values anywhere, change them to 252.

9. Importing Resources and Using Palettes



9.1 Importing Resources

We only need to import the changes related to the title screen:

```
./pr/pr --resource=pr/resources.xml --import=resources prince/TITLE.DAT
```

This command is similar to that we used to export the resources. We use `--import=resources` to make sure PR understands where the resource directories are and tell it to only look for data related to `prince/TITLE.DAT`.

Important:

Do not use `--import=resources/title/`, because that will result in this error message:
Result: 12 files with errors (12)

You instructed PR to look for data related to `prince/TITLE.DAT`, so it already knows what subdirectory to access.

9.2 Using Palettes

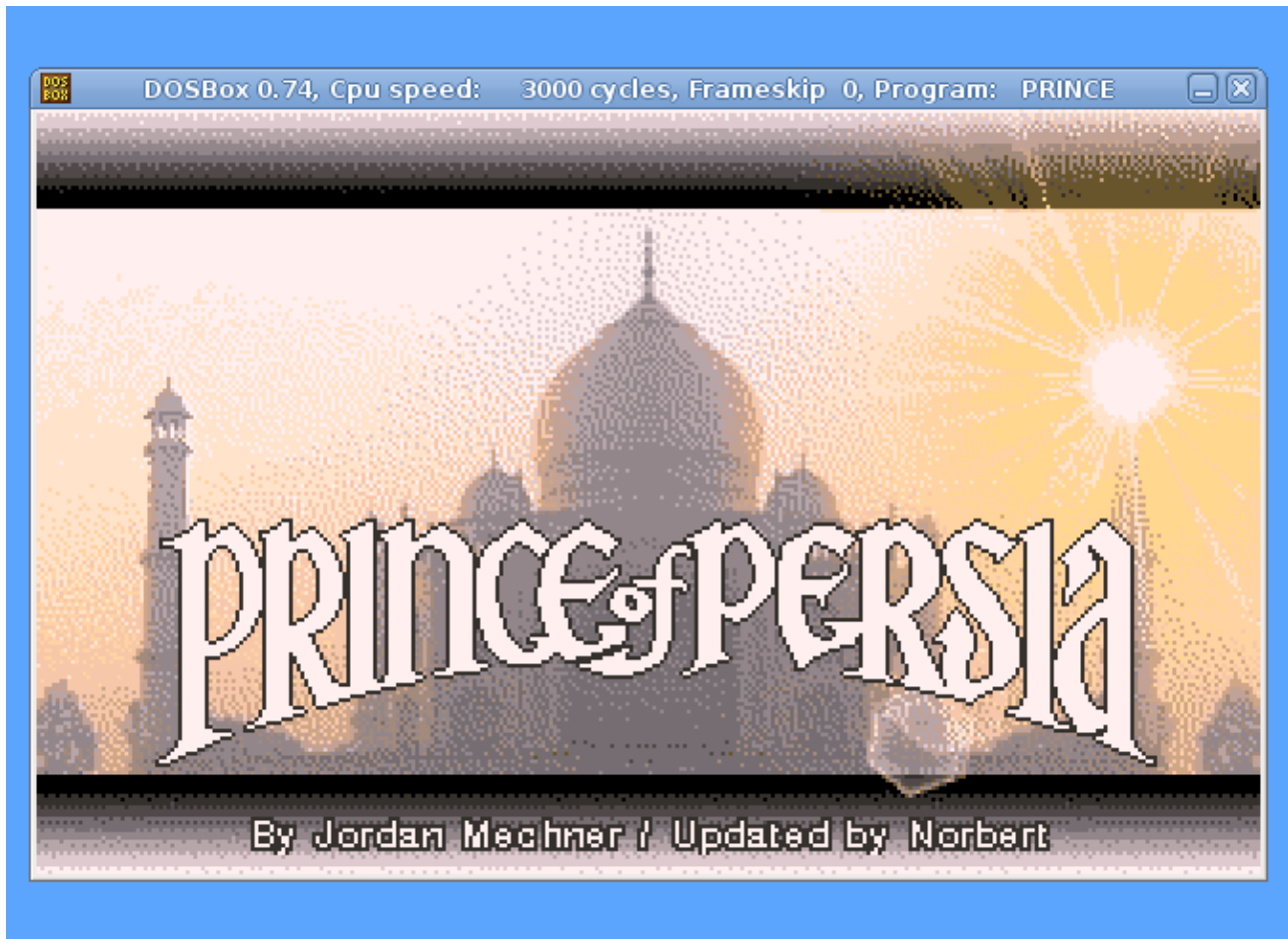
As you can see in the last image, the new palette is also used for the other images that, according to resources.xml, use palette 50 (titles.pal).

Important:

The game ignores the palettes inside the images themselves.

In other words, the only way to see what the copyright message will look like, is by converting it to our new palette first. Better yet, just copy the right 224x11 pixels from the background image (5 pixels from the bottom, 48 from the left), convert that small image to use the right palette, and go from there.

10. Final Result



Nice, old school, pixelated graphics.

Afterword

If you have any suggestions to further improve this document, please let us know in this forum thread: <http://forum.princed.org/viewtopic.php?f=70&t=2937>

Credits

May 22, 2011: Initial version, by Norbert