

This is a short tutorial to get you started with using Paint.Net to produce IntyColor compatible bitmaps for use in IntyBasic Intellivision programs.

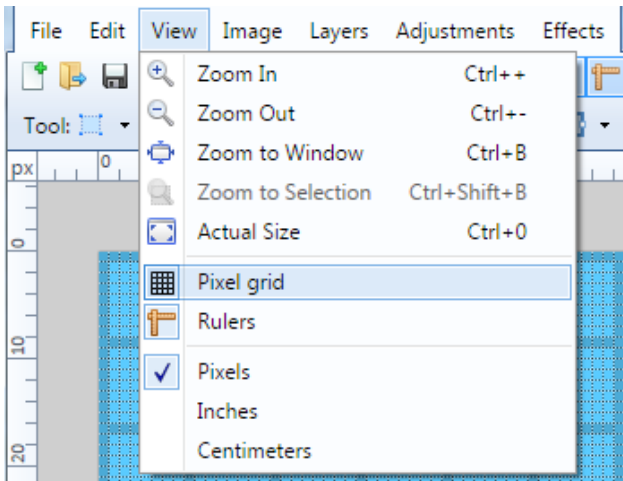
I use Paint.Net on a Windows computer. You could use Gimp or Photoshop, but I have Paint.Net setup in a way that makes Intellivision screens a blast (at least for me) to create. While the console has three screen modes, I've had the best luck with Foreground/Background mode. It allows 2 colors per card, 64 unique cards total.

Get Paint.Net, a free paint program from <http://www.getpaint.net/>

Download the attached zip. It contains 3 files.

- INTYTemplate.PDN This is the layered template for Paint.Net
- INTVpalette.png This is the Intellivision Palette file.
- 1Ttitle.bmp The final bitmap file from this exercise

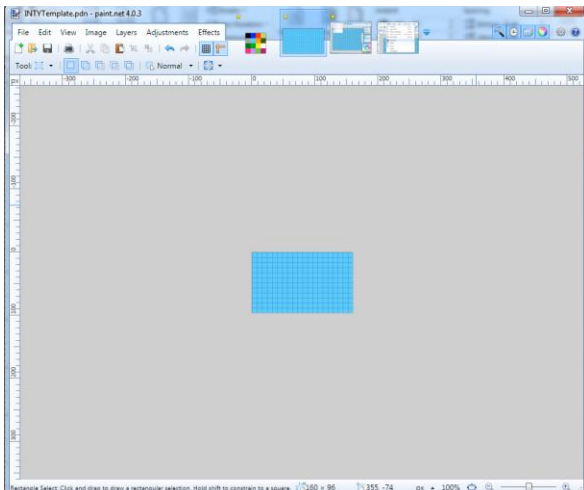
Open the first two in Paint.Net. Make sure a couple of settings are set as below:



Pixel Grid should be turned on

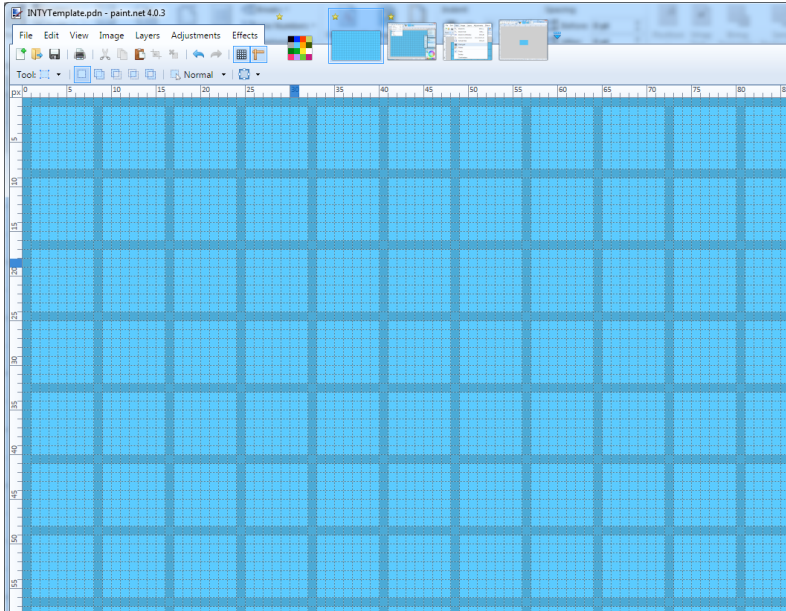
Pixels should be the unit of measurement

I also turn Rulers on, you should see something like this:

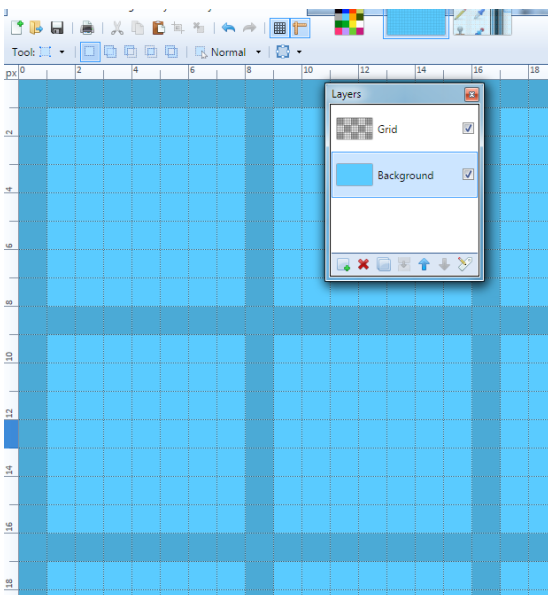


What you should see is a 160x96 image; it is too small to work with so zoom in on it. I use the **Ctrl +** keyboard command or you can use the View menu.

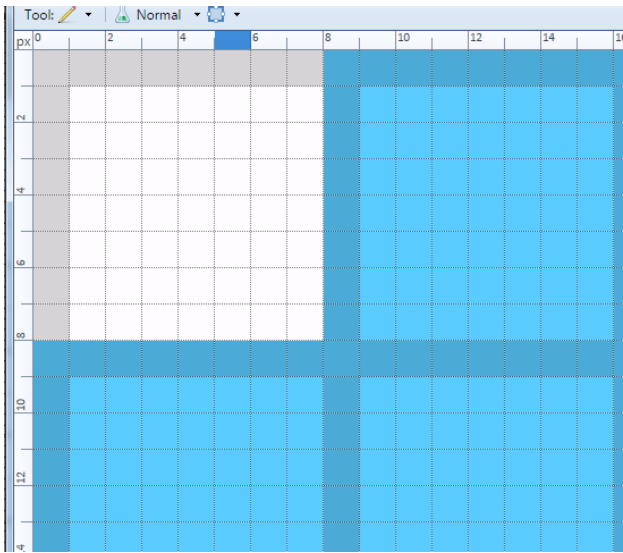
Zoom in until you can see the pixel grid.



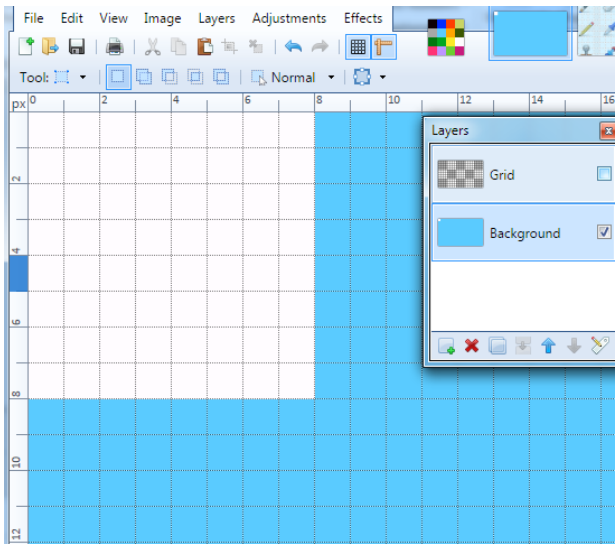
Save the file under a new name so you have the raw template untouched. "Title.pdn" is what I use for this tutorial. Switch to the Palette image and using the Color Picker tool select the color white. Switch back to the main image. Zoom in until you see an image similar to this one, it is the top left corner of the image.



Notice the Layers menu. Make sure the Background is selected by clicking on it. You now have a grid of 8x8 tiles to work with. Pixels 0 thru 7 are the actual card tile so using the pencil tool start clicking.

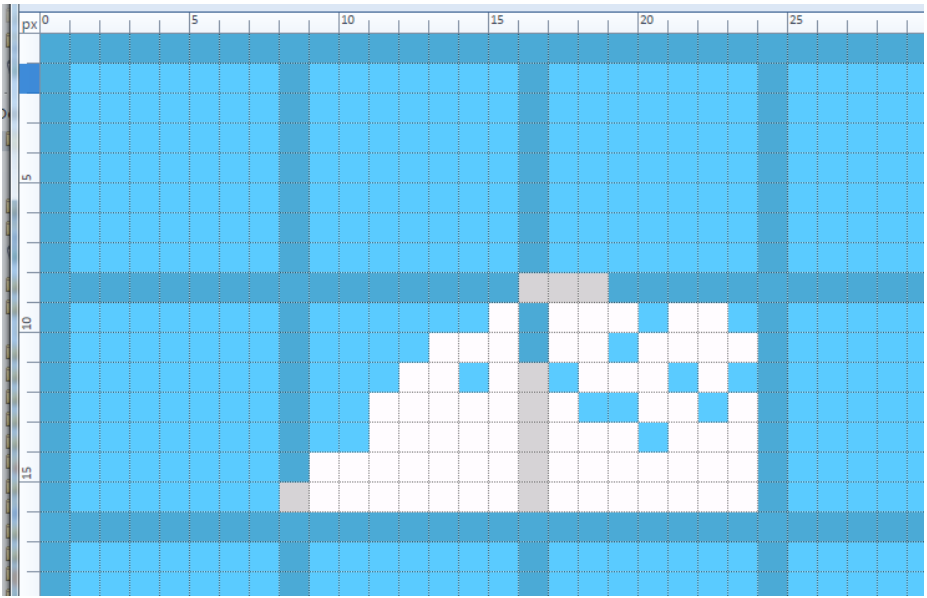


This is one card tile. Click on the checkmark on the layers popup to turn the grid layer on and off to get a true picture of the image. Here I've made the first 8x8 card all white.

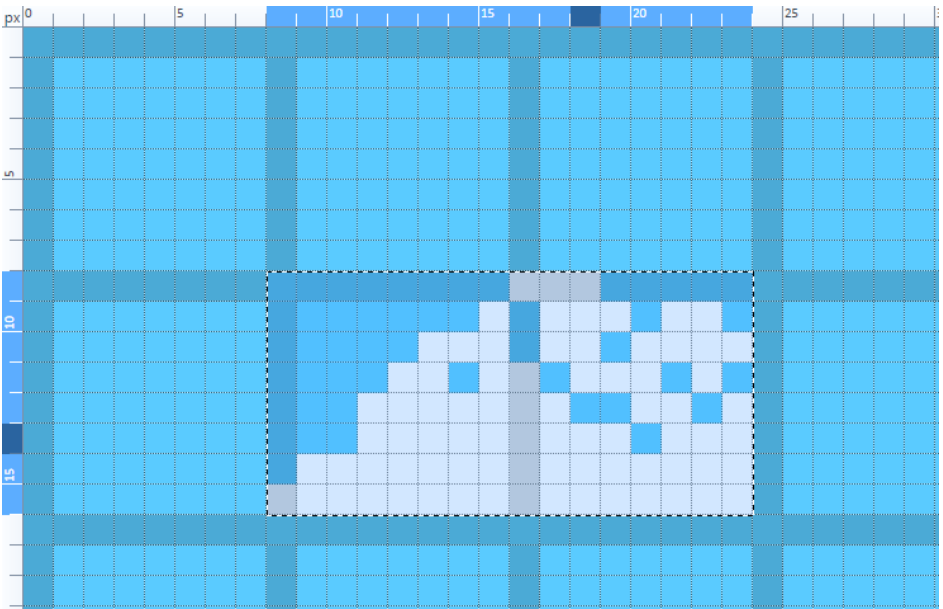


Undo the white square so we can do something more useful.

Switch back to the palette image and Color Pick from the white square.



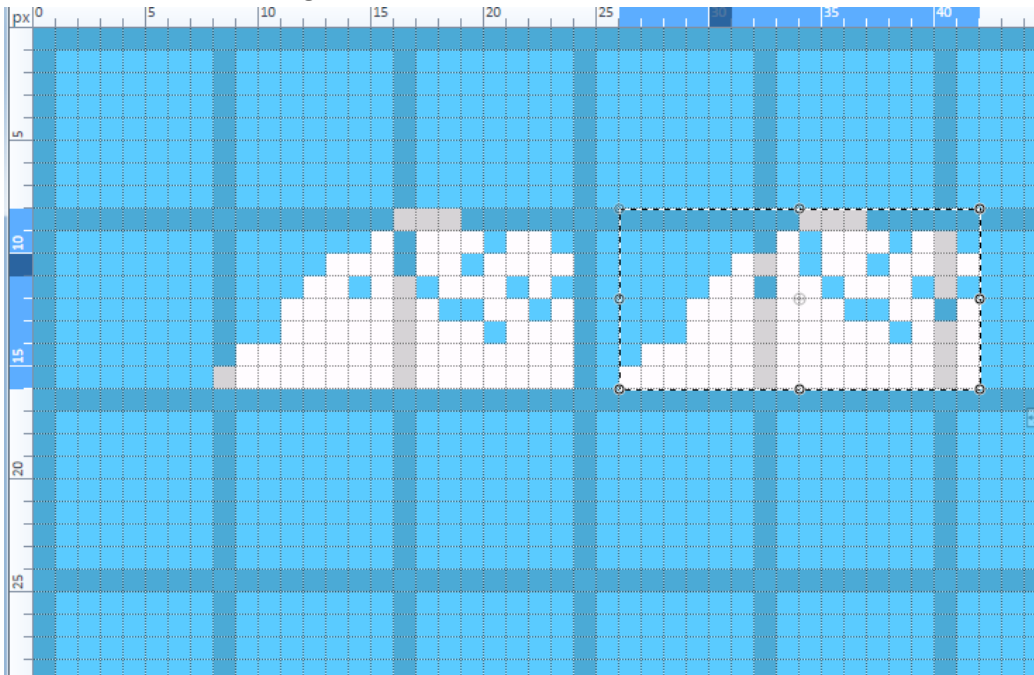
Here I drew a cloud (sorta) across two tiles (of the 64 available for GRAM) using only two colors. Switch the Grid Layer on and off to see what it looks like. Remember, and I'll be repeating this several times, F/B mode allows only 2 colors per tile.



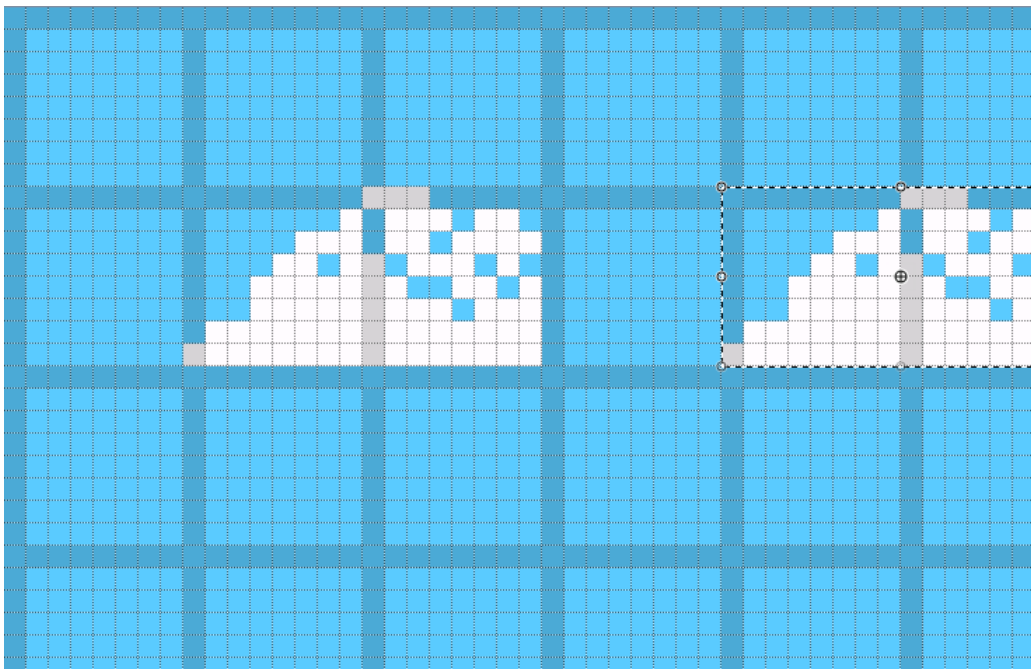
Using the Rectangular Select tool, lasso as above so we can clone these two tiles a few times. Click Edit→Copy, or Ctrl-C to copy the two tiles. Zoom out a bit with CTRL – and paste them back in with Edit→Paste or CTRL-V. The pasted box will be in the same spot. Use the arrow keys to move it around pixel by pixel.

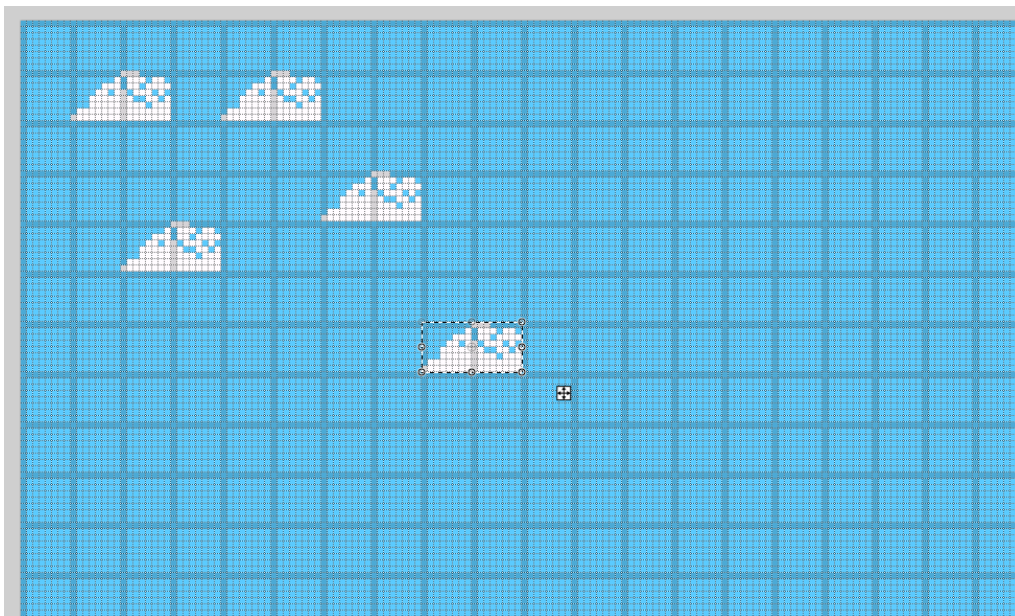
You must remember to paste on the 8x8 boundaries

For instance, this is **wrong**:



The dotted bounding box needs to be on the top and left edges of the Grid like this:



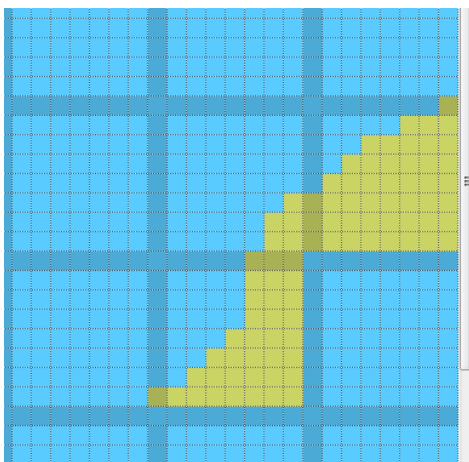


Paste and move a few times and you'll have this crappy cloudy sky at cost of only two GRAM cards.

Now let's pick the brownish color from the palette and add mountain.

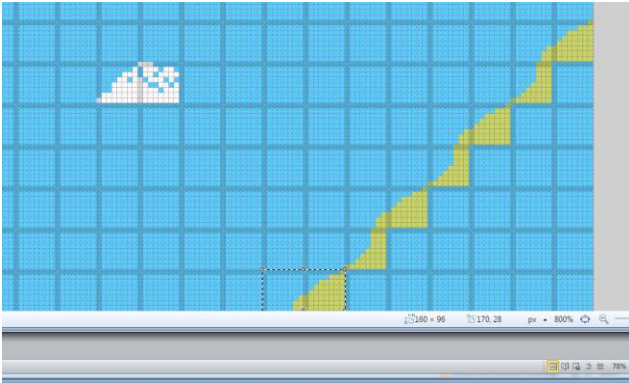
In the lower right corner we could just draw a free hand jaggy diagonal line to represent the mountain but it could cost 10+ unique cards if you have too much unique detail.

I'll start with 3 like this:



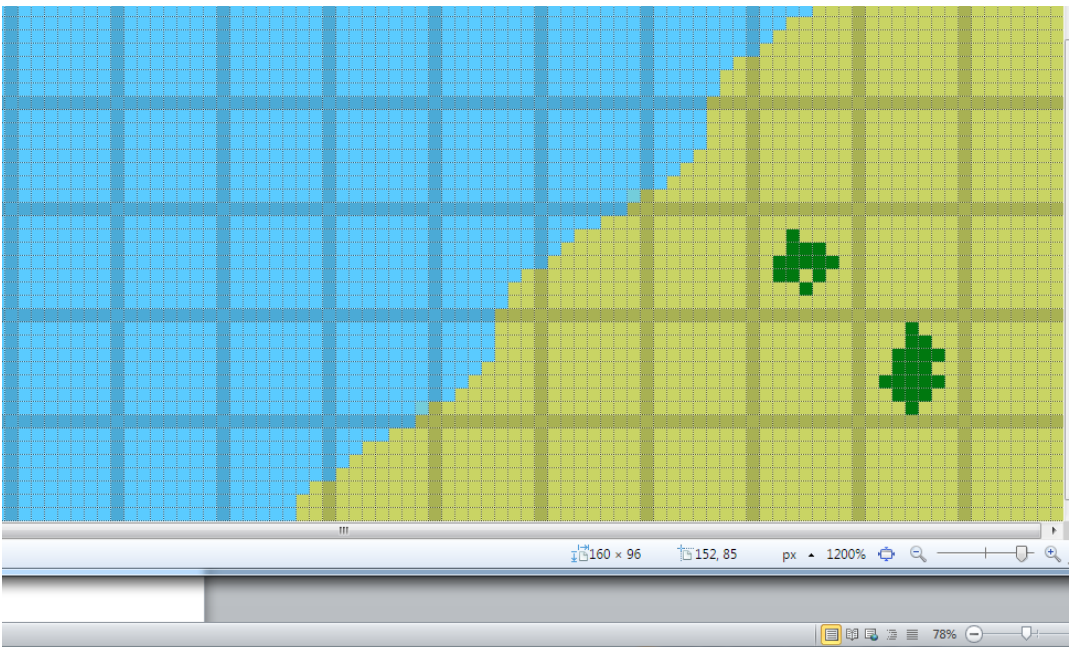


Then copy and paste them to make this:

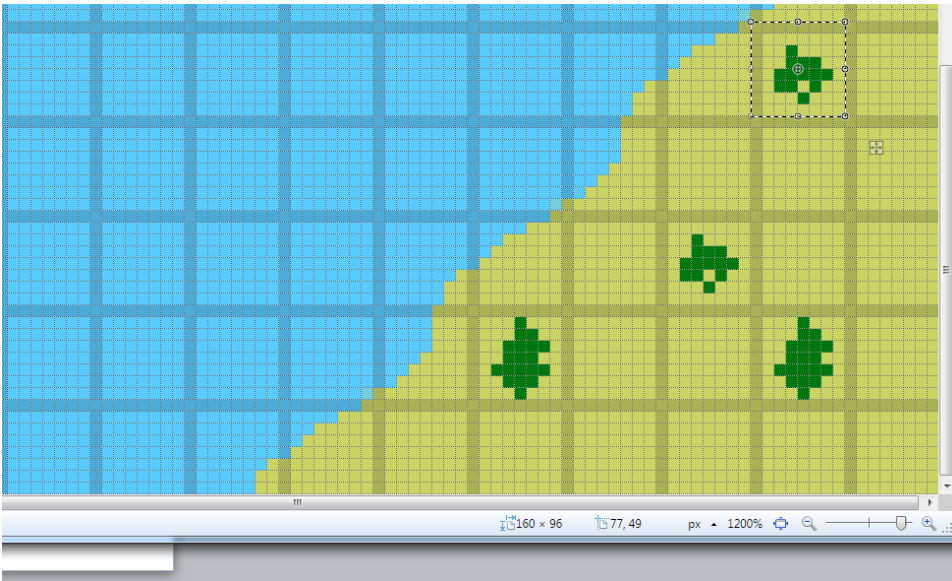


Fill in the rest of the mountain with the pencil tool (don't flood fill) and let's add some detail.

Grab dark green and draw a couple of bushy things

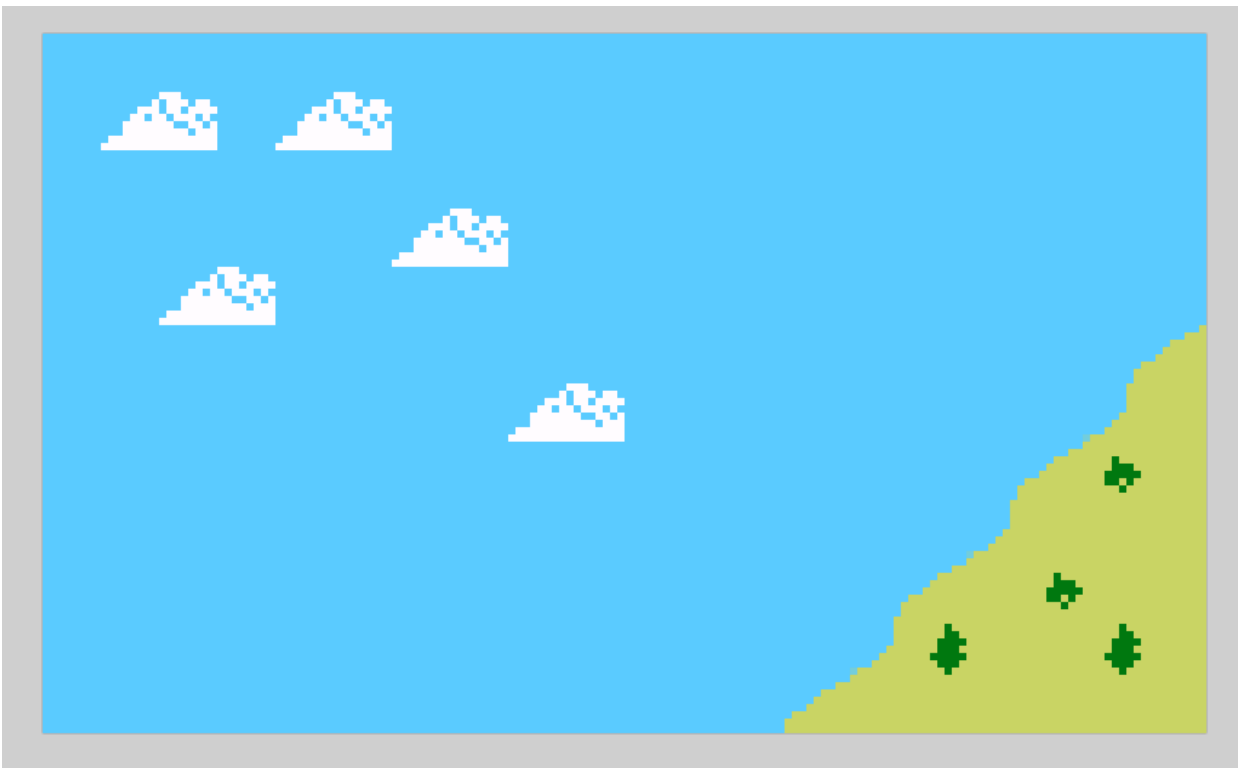


Then copy them around the mountain. Remember, two colors only per card



Remember to pay attention to the top and left edges of the grid like above.

Hide the Grid Layer and the Pixel Grid and you should see this.



Now that we have this, save the layered PDN file format.

Before we get to carried away, let's run it thru IntyColor. First, make sure the Grid layer is off. Then choose File-→Save As-→Change File Type to BMP, call it Title.bmp and choose 24bit when prompted and choose Flatten to complete the saving.

Once saved **immediately** press Ctrl Z or choose Undo from the Edit menu to bring back the flattened Grid layer.



Now let's convert the BMP file to a .bas file in order to see if we followed the two colors per card rule and see how many cards of the 64 we have used.

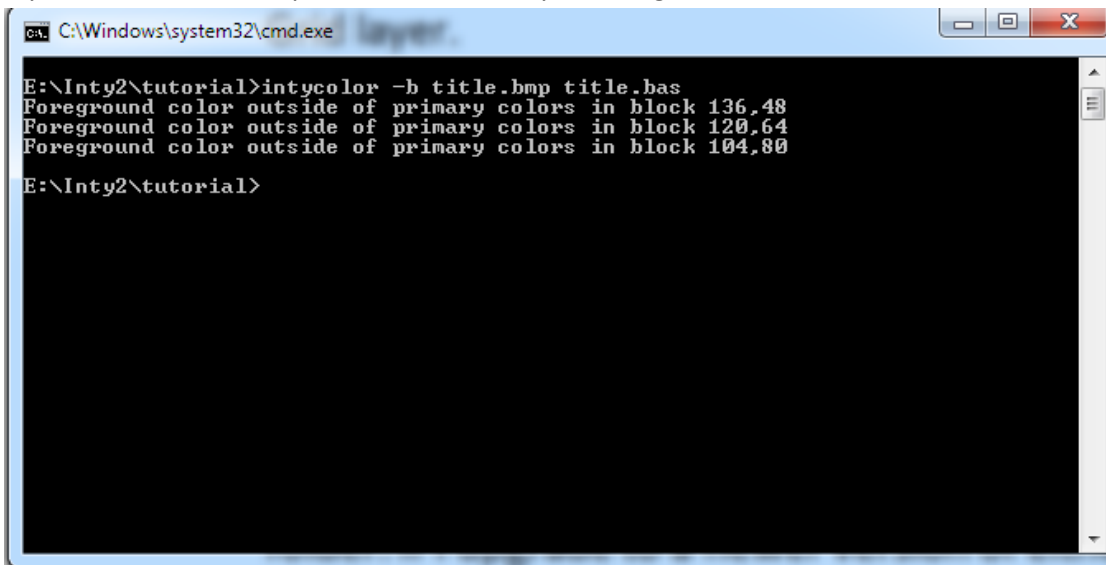
Other may disagree on this next part, but it works for me.

I create one folder per project. I copy all files from IntyBasic and all files from JZINTV into the same folder. If I upgrade to a newer version of either I clone the folder and update the clone, leaving the previous one in case a version update clobbers something.

From the command prompt type

```
IntyColor -b title.bmp title.bas
```

If you don't use the sample BMP included IntyColor might throw some errors:



```
C:\Windows\system32\cmd.exe IntyColor
E:\Inty2\tutorial>intycolor -b title.bmp title.bas
Foreground color outside of primary colors in block 136,48
Foreground color outside of primary colors in block 120,64
Foreground color outside of primary colors in block 104,80
E:\Inty2\tutorial>
```

This means you have a color outside the allowed palette, it can happen if you use the flood fill tool with anti-aliasing turned on which is why I try to stick to the pencil tool.

You will now have a file called title.bas. Open it in notepad.

```
REM stub for showing image
MODE 1
WAIT
DEFINE 0,7,screen_bitmaps_0
WAIT
SCREEN screen_cards
loop:
GOTO loop

' 7 bitmaps
screen_bitmaps_0:
DATA $0100,$0D07,$1F1F,$FF7F
DATA $76E0,$BA6F,$F7CD,$FFFF
DATA $0000,$0000,$0100,$0303
DATA $0701,$3F1F,$FF7F,$FFFF
DATA $0707,$0707,$1F0F,$FF3F
```

## IntyColor Tutorial 1.0 September 24, 2014 by Tarzilla on AtariAge

```
DATA $FFFF,$E3EF,$CBC1,$FFF7
DATA $F7FF,$E1F3,$C1E3,$F7E3
```

screen\_cards:

```
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1A07,$1A0F,$1200,$1A07,$1A0F,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1A07,$1A0F,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1A16,$1A1E,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1A07,$1A0F,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1A26,$2400,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1A16,$1A1E,$282E,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1A26,$2400,$2400,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1A16,$1A1E,$2400,$282E,$2400,$2400,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1200,$1200,$1A26,$2836,$2400,$2400,$2836,$2400,$2400
DATA $1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200,$1200
DATA $1200,$1200,$1A16,$1A1E,$2400,$2400,$2400,$2400,$2400,$2400,$2400
```

Now let's run it.

In that folder create a c.bat file. If you don't know how then create a c.txt and rename it later.

In that file put:

```
IntyBasic title.bas title.asm
as1600 -o title.bin -l title.lst title.asm
pause
jzintv -z1 title.bin
```

Executing the batch file (or typing the commands manually) should reward you with your first Intellivision screen!



Now you are all set to add a Title logo, characters or anything else. You can also use up to eight sprites to add additional color where two isn't enough. You can stretch and animate the sprites as well, just keep your total number of cards to be 64 minus the number of sprites you'll use or use sprite data from the GROM data. After some practice you'll start to naturally draw to the 8x8 grid and with proper placement of the boundaries do some amazing title screens.