

# State Filters

The darken and blue filters were both **process** filters: they applied the same rule to all of the pixels that they encountered. A **state** filter is one that looks for changes in the state of a pixel, such as its location.

If we want to keep track of **where a pixel is located** in the image, you need to keep track of its position and perform an action when the state changes. Here's a filter that puts a white stripe on all of the even-numbered columns in a picture.

```
int x = 0;
while (beg != end)
{
    x++;           // go to the next column
    if (x % 2) {   // on odd columns
        *beg = 255; // turn on red
        beg++;     // go to next color
        *beg = 255; // turn on green
        beg++;     // go to next color
        *beg = 255; // turn on blue
        beg++;
    }
    else { beg += 3; } // don't do anything
}
```

Here's what the vertical-stripes filter looks like:



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