TA Lecture Notes
February 11, 2015

1. Loops: example: Print the order (begin from 0) and letters in the word “Illinois”.

```
1  var s = "Illinois";
2  for (var i = 0; i < s.length; i++) {
3    console.log(i);
4    console.log(s.charAt(i));
5  }
```

```
Native Chrome JavaScript.
Copyright (c) 2013 Google Inc
:
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i
7
s
:
```
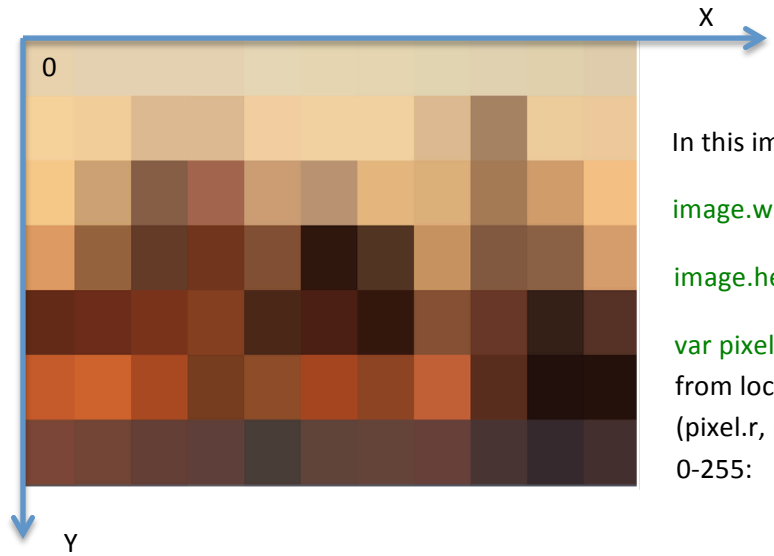

2. SimpleImage: A new data type created for CS105, helping us to get or set pixel data about the image.

Pixel: A single dot on computer screen with a single color and location. Its color is represented by primary colors of light(R, G, B).

Image: A rectangle grid of pixels. Example:

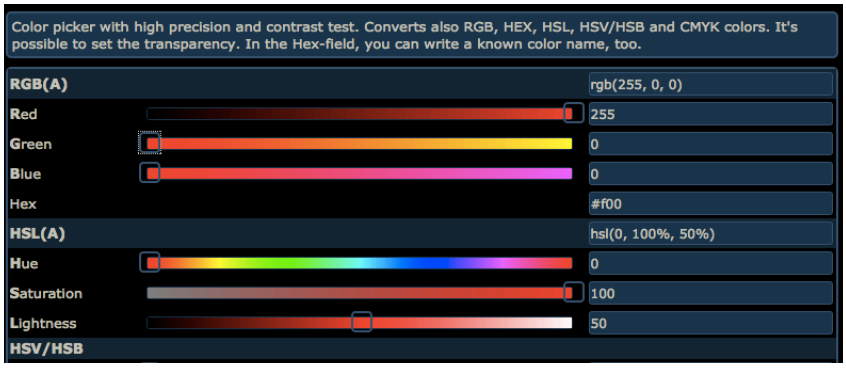


In this image we have 7*11 pixels.

image.width=11

image.height=7

var pixel=img.getRGB(x,y), returns an RGB pixel from location (x,y). And it has 3 properties (pixel.r, pixel.g and pixel.b) with a value between 0-255:



You can find RGB and HSL with the following color picker: http://colorizer.org/

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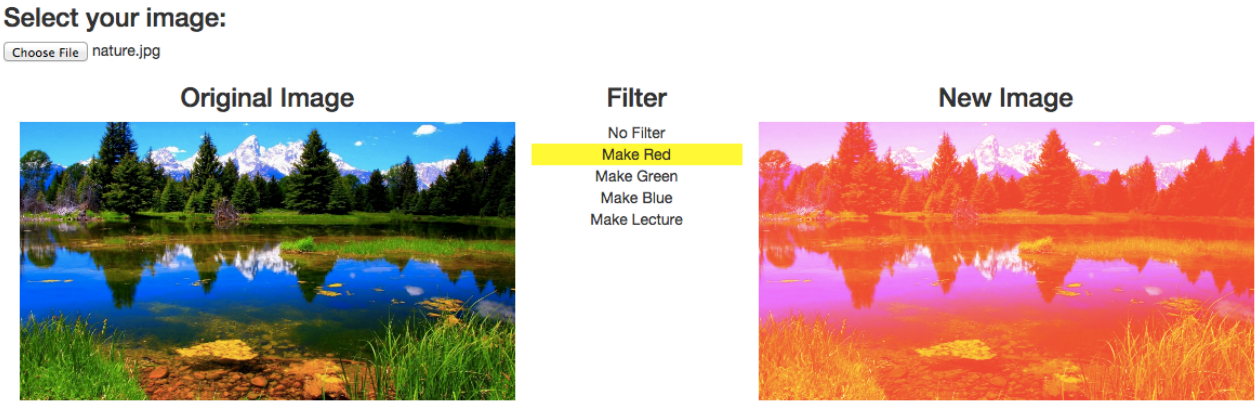
Lecture example 1:

Make Red filter: Set pixel.r to 255, which is pure red, for every pixel in the image. Similarly, by setting pixel.g and pixel.b to 255 we can get Make Green and Make Blue filter.

```
var filter_red = function(origImg, newImg) {
    for (var x = 0; x <origImg.width; x++) {
            for (var y = 0; y <origImg.height; y++) {
            var pixel = origImg.getRGB(x,y);
            pixel.r = 255;
            newImg.setRGB(x,y,pixel);
        }
    }
};
```

Set the RGB color given a RGB pixel.



Lecture example 2:

Make Lecture filter: Analogically, we have img.getHSL(x,y), img.setHSL(x,y,pixel), pixel.s, pixel.h, pixel.l.

```
var filter_lecture = function(origImg, newImg) {
    for (var x = 0; x <origImg.width; x++){
        for (var y = 0; y <origImg.height; y++){
            var pixel = origImg.getHSL(x,y);
            pixel.h=27;
            newImg.setHSL(x,y,pixel);
        }
    }
};

var filters = [
    { name: "Make Red", func: filter_red },
    { name: "Make Green", func: filter_green },
    { name: "Make Blue", func: filter_blue },
    { name: "Make Lecture", func: filter_lecture },
];
```

Don't forget to add a new filter.

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Select your image:

Choose File nature.jpg

Original Image

Filter

No Filter
Make Red
Make Green
Make Blue
Make Lecture

New Image