CPSC 1030 Web Development 1
Lab 5 – Raster Images [30 marks]

Objectives

At the end of this of lab, you should be able to:

- convert a truecolor image to a grayscale or an indexed (paletted) image
- convert an image to GIF, JPEG, or PNG format
- select the most appropriate format for a given image or application

Demo

We will be using GIMP to scale images and changing the image types.

NOTE: If you are already familiar with Photoshop, feel free to use it instead of GIMP. Both are available in the lab. Whichever image editor you settle on, I ask that you stick to your choice for the duration of the course and do all of your problems and assignments using it.

For now: we will download gimp https://www.gimp.org/downloads/

A few of questions to ponder (no need to hand in):

1. If you convert an image to grayscale, and then convert back to RGB, why do you not get back a colored image?
2. Why is it better to use a scaled down image on your website, rather than using the width and height attribute of the <img> tag to control the image size?
3. Try out other image manipulation tools such as Crop, scale, rotate, and flip.

Actions

1. Start your photo editing software
2. **[17 marks]** For *each* of the following images
    i. chicken photo (https://pixabay.com/photos/animal-chicken-hen-poultry-beak-1851495/)
    ii. comic strip, (http://imgs.xkcd.com/comics/walmart.png)
    iii. cartoon chicken (https://www.clker.com/cliparts/6/e/4/e/1245696568353635238bloodsong_Chicken-RoundCartoon.svg.hi.png)

    (references: photo, comic cartoon):
    - download the original image to your **working folder**
    - scale the image so that it 300 pixels wide, save this scaled down image
    - reload the scaled image from the previous step and save the image 3 times as a 24-bit JPEG file format at quality levels 40, 60, and 80

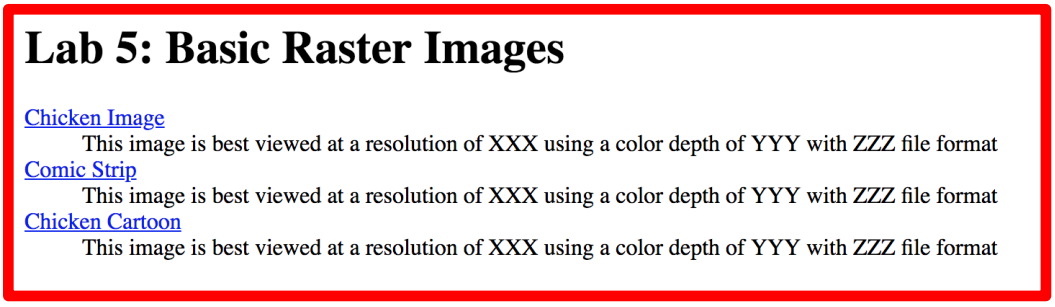
- reload the scaled image and convert the image to grayscale and save as a JPEG at quality level 20
- reload the scaled image and convert the full color image to 3 PNGs using indexed color mode with 16, 8, and 4 colors
- *move* the 8 processed images (not the original images) to the **product folder**
- in the **product folder**, create an HTML5 page for each image subject (three (3) pages total) with a table with two columns where the right-hand column displays the image and the left-hand column gives the file size in bytes, format, quality/compression level, and number of colours. At the top of the table write the name of the original file along with its file size. (Do not show the original file - it's too big!)

  Your final folder structure will look something like this:

```
.
├── product
│   ├── cartoon-300px.png
│   ├── cartoon.html
│   ├── cartoon04.png
│   ├── cartoon08.png
│   ├── cartoon16.png
│   ├── cartoon20-grayscale.jpg
│   ├── cartoon40.jpg
│   ├── cartoon60.jpg
│   ├── cartoon80.jpg
│   ├── comic-300px.png
│   ├── comic.html
│   ├── comic04.png
│   ├── comic08.png
│   ├── comic16.png
│   ├── comic20-grayscale.jpg
│   ├── comic40.jpg
│   ├── comic60.jpg
│   ├── comic80.jpg
│   ├── index.html
│   ├── photo-300px.jpg
│   ├── photo.html
│   ├── photo04.png
│   ├── photo08.png
│   ├── photo16.png
│   ├── photo20-grayscale.jpg
│   ├── photo40.jpg
│   ├── photo60.jpg
│   └── photo80.jpg
└── working
    ├── cartoon.png
    ├── comic.png
    └── photo.jpg
```

3. [2 mark] In your **product folder**, create an index page, index.html, with links to each of the web pages created for this lab.

The index.html page will simply have 3 links, each to the individual image page, something like this (without the red border):



4. [2 marks] In the index.html page, indicate which file format and colour depth is best suited for each image.
5. [2 mark] Make sure that every page for this lab exercise validates as HTML5.
6. [2 mark] Looking at the product folder, the large amount of files is very overwhelming. This is where we can use sub-folders to organize our structure in a much better way. Try to re-organize your product folder to look like the following:

```
.
├── cartoon.html
├── comic.html
├── images
│   ├── cartoons
│   │   ├── cartoon
│   │   ├── cartoon-300px.png
│   │   ├── cartoon04.png
│   │   ├── cartoon08.png
│   │   ├── cartoon16.png
│   │   ├── cartoon20-grayscale.jpg
│   │   ├── cartoon40.jpg
│   │   ├── cartoon60.jpg
│   │   └── cartoon80.jpg
│   ├── comics
│   │   ├── comic
│   │   ├── comic-300px.png
│   │   ├── comic04.png
│   │   ├── comic08.png
│   │   ├── comic16.png
│   │   ├── comic20-grayscale.jpg
│   │   ├── comic40.jpg
│   │   ├── comic60.jpg
│   │   └── comic80.jpg
│   └── photos
│       ├── photo-300px.jpg
│       ├── photo04.png
│       ├── photo08.png
│       ├── photo16.png
│       ├── photo20-grayscale.jpg
│       ├── photo40.jpg
│       ├── photo60.jpg
│       └── photo80.jpg
├── index.html
└── photo.html
```

Deliverables

1. The **product folder** should contain 4 HTML5 pages (the index page and three (3) image pages) and 24 images (3 images x 8 variations.)
2. Create a .zip file containing the contents of the **product folder**.
3. [5 marks] In addition, upload your **product folder** to the instructional webserver. Try viewing your web pages. Do any of your images take "too" long to view?
4. Submit it to BrightSpace - in the comment section, write the URL to your webpage from step 3.

Useful Links

- The GIMP User Manual