Experiment 1: Basics of Image Processing

Problem Objective:

Write C/C++ modular functions

- to read and print header information of a BMP color image,
- to flip diagonally the color image,
- to generate a grayscale version of the same color image which should be written into a new file,

Process flow:

a) Read an image (24 bit color image that is provided).

- Display the header information.
- Perform flipping.

b) Convert the color image to grayscale using each of the following operation

- Average of red, green and blue channel
- Maximum of red, green and blue channel
- Minimum of red, green and blue channel

c) Write each of the above 8-bit images into the same folder

Note:

1. Do not hardcode the filenames and/or image size into the code.
2. Take the input/output file names as command line arguments.
3. Image size should be read from the BMP file header and memory allocated dynamically.
4. Use proper code commenting and documentation.
5. Use self-explanatory identifiers for variables/functions etc.
6. Take care of color table while writing a grayscale Image.

References

[1] BMP file format wiki: http://en.wikipedia.org/wiki/BMP_file_format
[2] Digital Image Processing, Rafael C. Gonzalez and Richard Eugene Woods