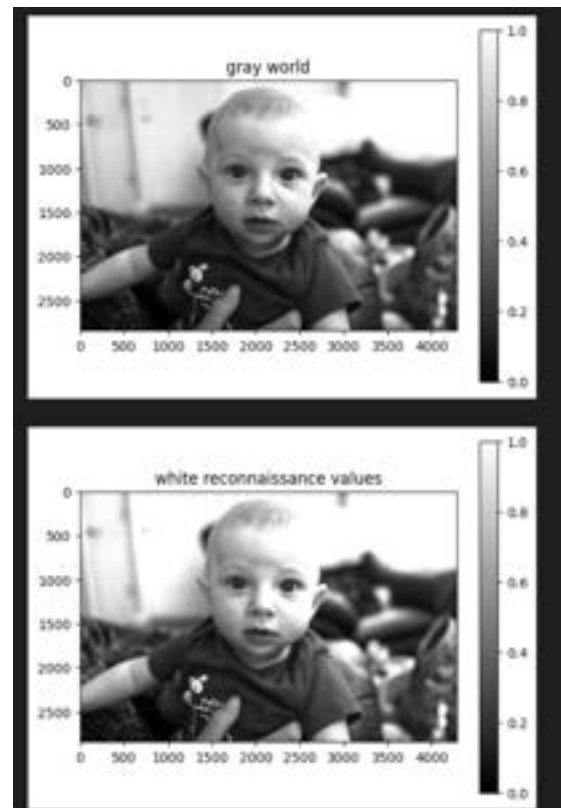
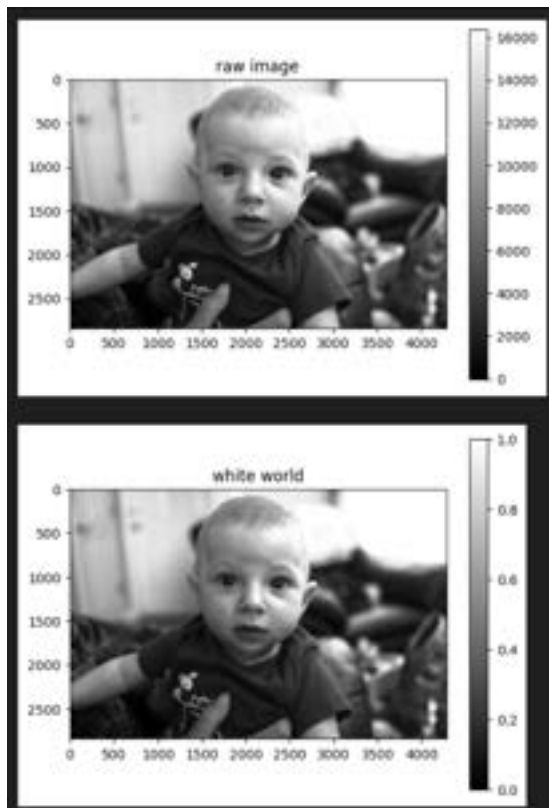


1.1 Implement a basic imaging processing pipeline

- RAW image conversions
 - Black scaling: 0
 - White scaling: 16383
 - Red scaling: 1.628906
 - Green scaling: 1.00000
 - Blue scaling: 1.386719
- `dcraw -4 -D -T <RAW_filename>`
 - -4: Linear 16-bit
 - -D: Document mode without scaling (totally raw)
 - -T: Write TIFF instead of PPM
- Bayer Pattern
 - “RGGB” and methodology is seen in the python notebook file
- White Balancing
 - I like the white reconnaissance values the best for white balancing and also all of the images below are much brighter than their actual values so the white reconnaissance values will do much better when we color map and add gamma correction



- Brightness Adjustment and Gamma Encoding
 - I tested multiple percentages but I found that 0.25 was the best for me
- Compression
 - I was not able to tell the difference between the png and the jpeg at quality level 0.95
 - But between the png and the quality level 0.75, the 0.75 seemed to have a red hue to them and was less sharp
 - The compression ratio between the png and the 0.95 quality jpeg is 4.49
 - It still looked fine at a quality level of 0.40 and the compression ratio was 33.14
 - Below the uncompressed image (png) is on the left and the compressed image (jpeg 0.4) is on the right
 - These images were done using the renaissance values for white balancing but the image under both of these was done using the white world white balancing
 - The one done using white world white balancing seemed to have a greenish hue to it



1.3 Learn to use *dcraw*

- Using the documentation and outside forums here is the command the will be run “`dcraw -4 -w -o 1 -f -g 2.222 4.5 baby.nef`”
 - -4: 16-bit linear output (instead of 8-bit)
 - -w: Use camera white balance, if possible
 - -o 1: Output colorspace is sRGB
 - -f: Interpolate RGGB as four colors
 - -g 2.222 4.5: set gamma values
- This picture was a bit darker than the one that I created and I prefer my png that I created vs the jpeg because my reds feel more realistic



- 2.1 Build the pinhole camera
 - The screen size was just the size of the box and the focal length was around 5 inches which was supported by my camera







