HW 3 Histogram Equalization

Histogram Equalization

Source code

Please refer to the file “main.cpp” within the same folder as this report document.
There are two important utility function that I wrote in my source code:

Mat drawHistogram(Mat src, String displayName, String fileName);
- **Purpose:** Help me draw a histogram image corresponding to a given image.
- **Parameters** (a.k.a. arguments)
  - src: the source image to draw histogram image for.
  - displayName: if a non-empty string is given, the histogram image will be shown in a window.
  - fileName: if a non-empty string is given, the histogram image will be saved with that name.
- **Return value:** the variable of type “Mat” storing the histogram image.

void HistoEqualize(Mat src, Mat& dst);
- **Purpose:** Do histogram equalization to a given image.
- **Parameters** (a.k.a. arguments)
  - src: the source image to impose histogram equalization.
  - dst: the result of histogram equalization will be stored in this variable.
- **Return value:** none.

Steps That I Took

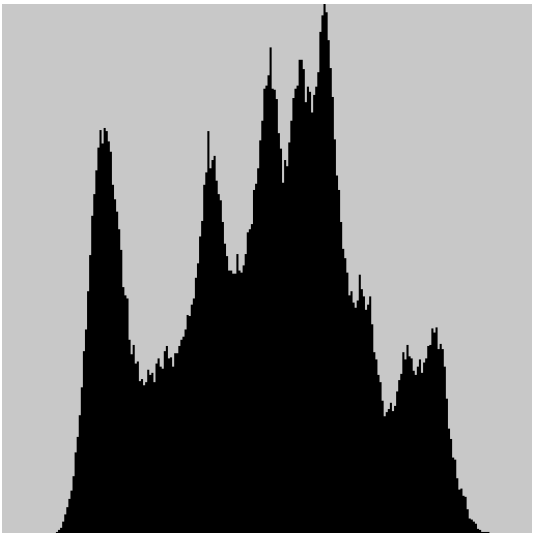
Step #1:
Read the original image and draw the histogram for it. (from line #20 to line #33.)
Step #2:
Worsen the image -> dividing the intensity of every pixel by 3. (from line #36 to line #48.)
Step #3:
Do the histogram equalization and draw the corresponding histogram. (from line #51 to line #59.)

Result

(the resulted images are saved properly within the same folder as well)

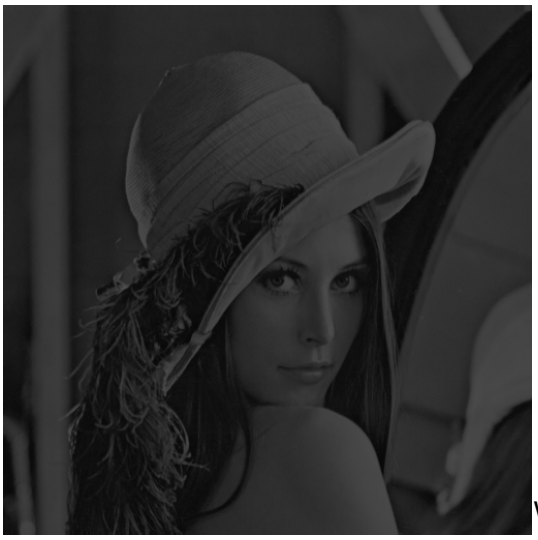
Original image and the corresponding histogram.

←
lena.bmp

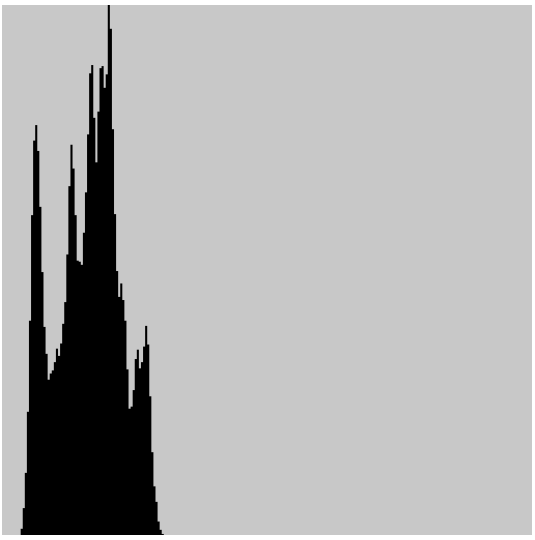


→
orig_histo.bmp

Worsened image and the corresponding histogram.



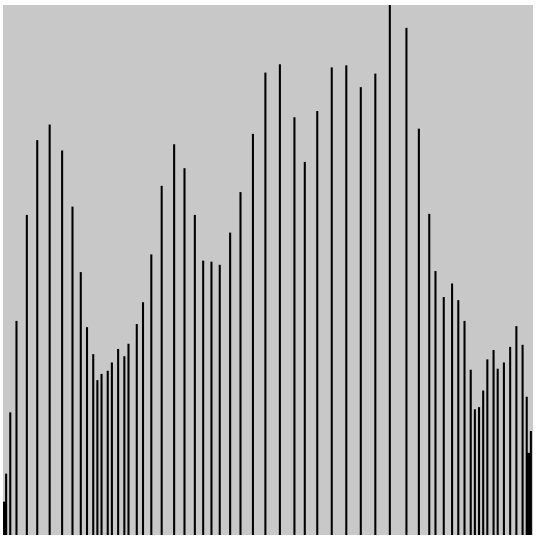
←
worsen.bmp



→
worse_histo.bmp

Histogram-equalized image and the corresponding histogram.

←
his_eq.bmp



→
his_eq_his.bmp