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**Course Information**

Course Title: Digital Image Processing

Section: 2

Course Instructor: Dr. Ahmed Wasif Reza

Professor

Department of Computer Science & Engineering

**Lab-02**

**Student’s Information**

**Name:** Md. Redwan Ahmed

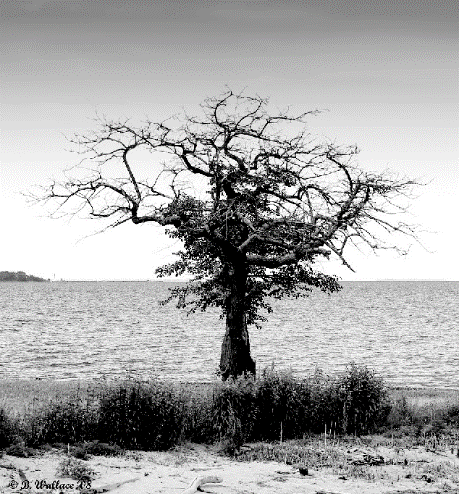
**ID:** 2019-1-60-249

**Department:** Computer Science & Engineering

**Date of Submission: 28 February 2022**

**Lab 2**

1. Adjust the histogram of the following image to match the reference image using histogram matching. Show the histogram of original, reference, and output images.

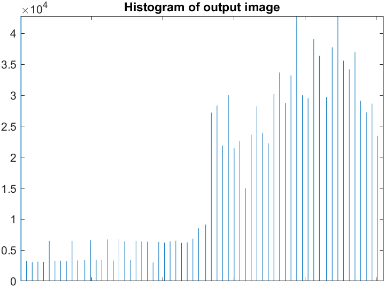
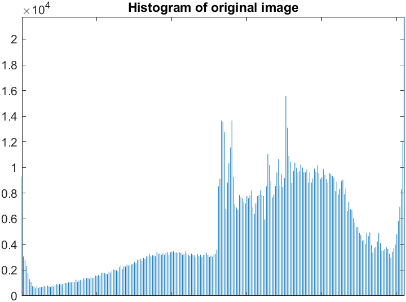
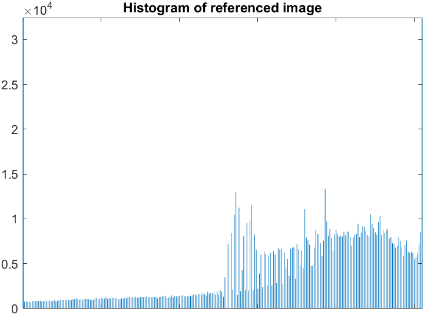
 

Code:

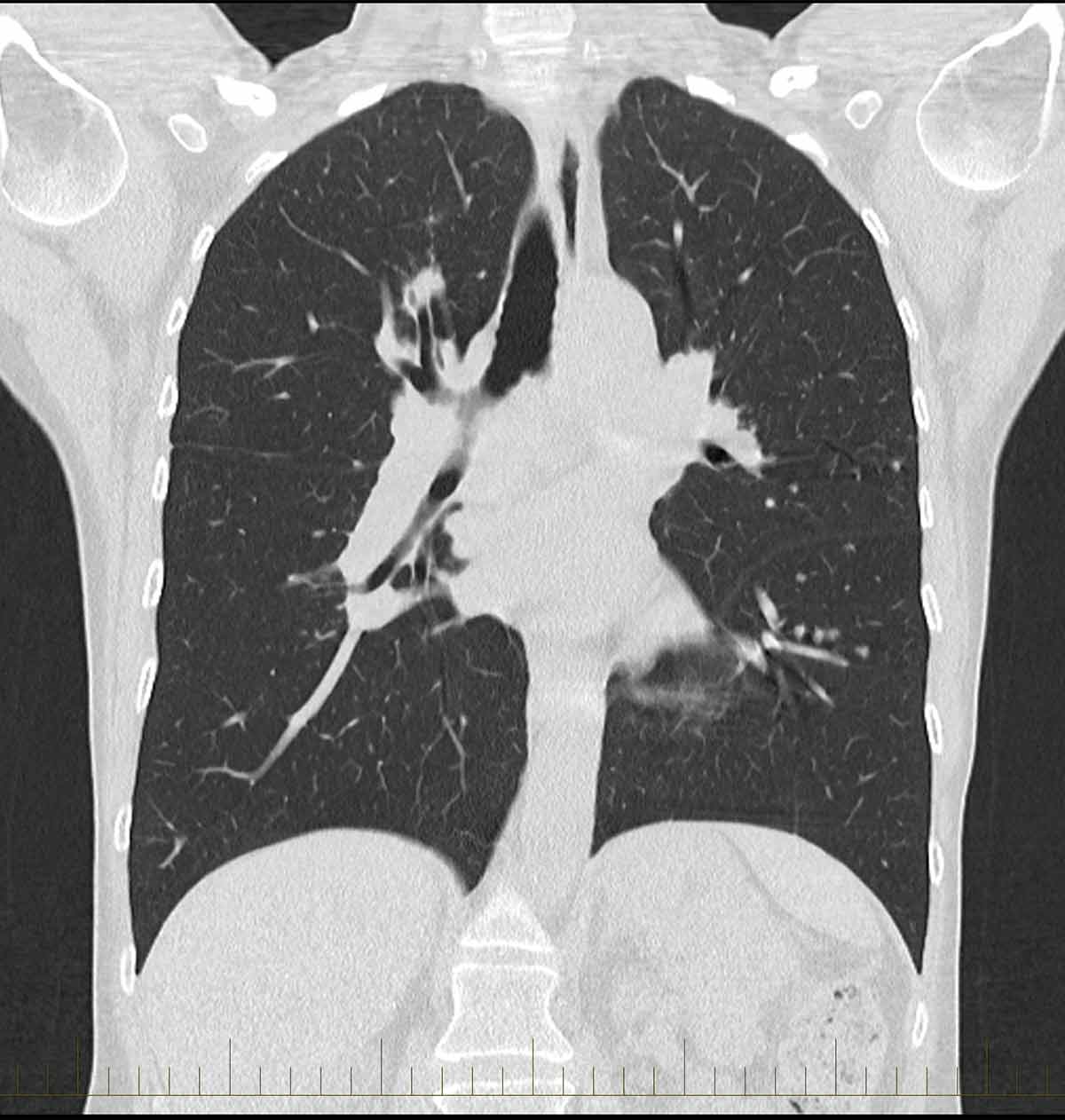
Text

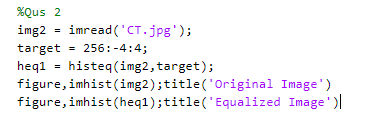
Description automatically generated

Output:

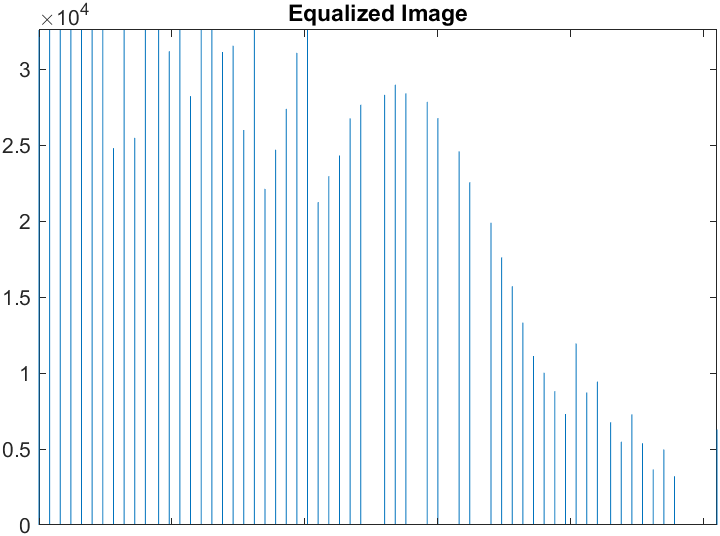
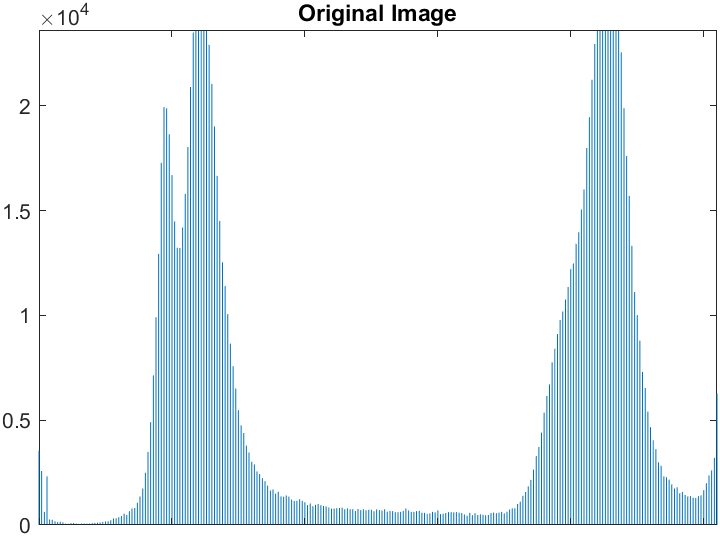


1. Change the contrast of the image using histogram equalization. Show the histogram of both input and output images.

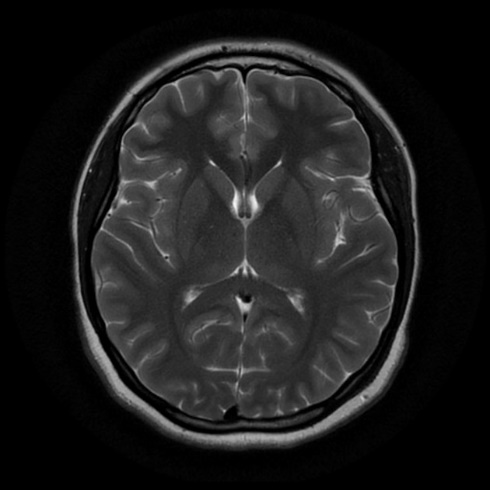


Code: 

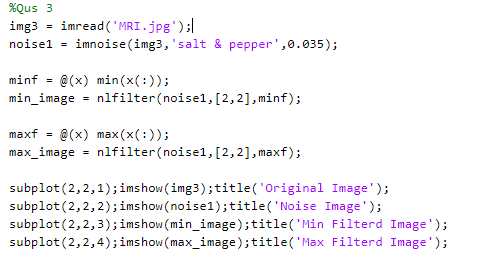
Output:

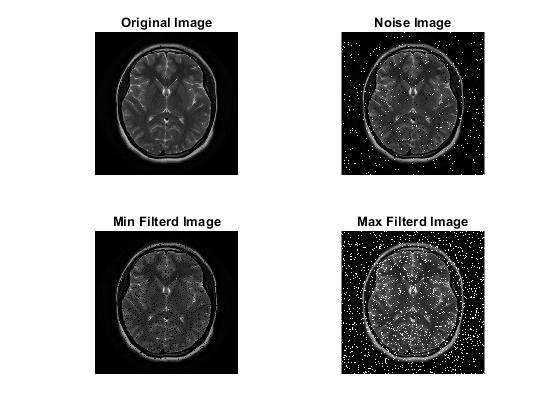


1. Apply salt and pepper noise to the following image and remove the noise using min and max filtering technique. Show input and output side by side.

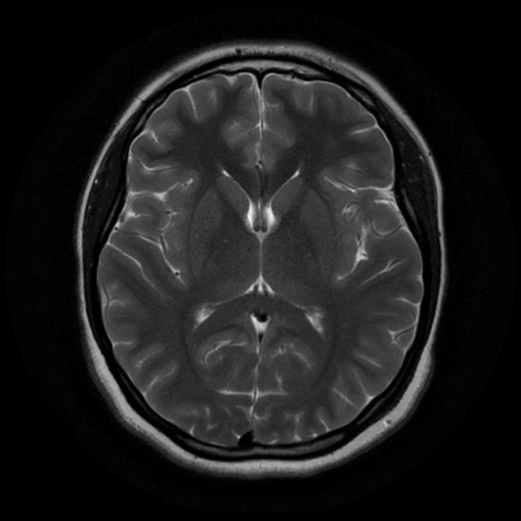


Code:





1. Apply Gaussian noise to the following image and remove the noise using Gaussian filtering. Show input and output side by side.

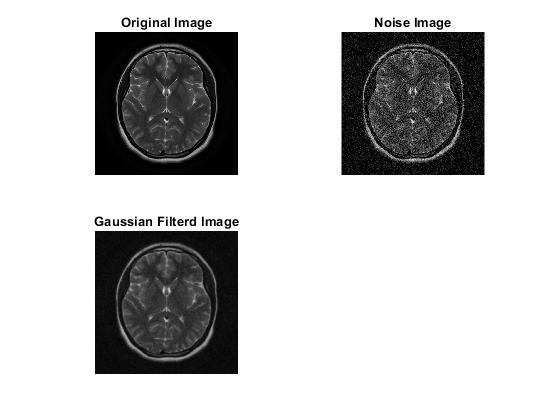


Code:

Text, letter

Description automatically generated

Output:



1. Apply any noise to the following image and restore it using:
2. Box filtering
3. Average filtering
4. Median filtering

Show input and output side by side. Also show the comparison between the 3 techniques. Mention which method works better than others.

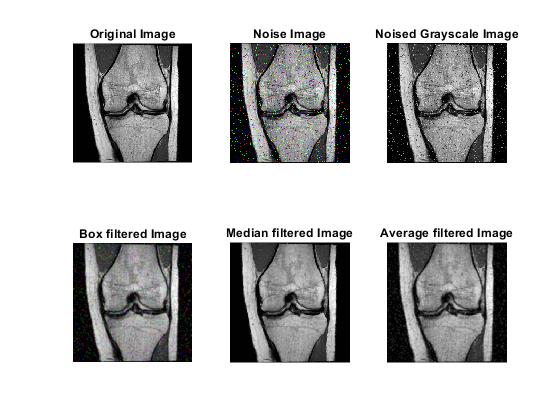


Code:

Text, letter

Description automatically generated

Output:



6. Adjust the contrast of the following image.



Code:

Graphical user interface, text

Description automatically generated

Output:





7. Brighten the following image

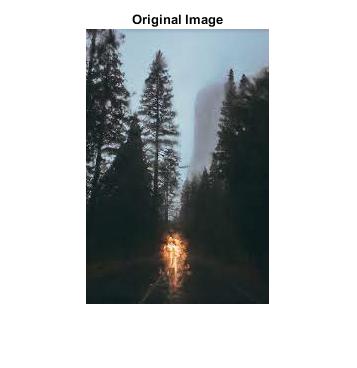


Code

Text

Description automatically generated

Output



8. Quantize the Grayscale image by 8 levels.

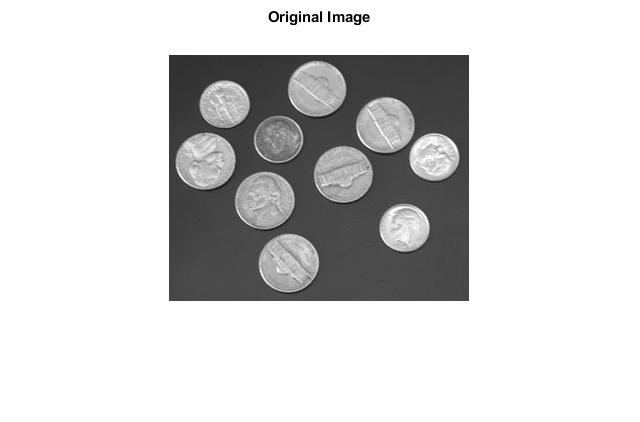
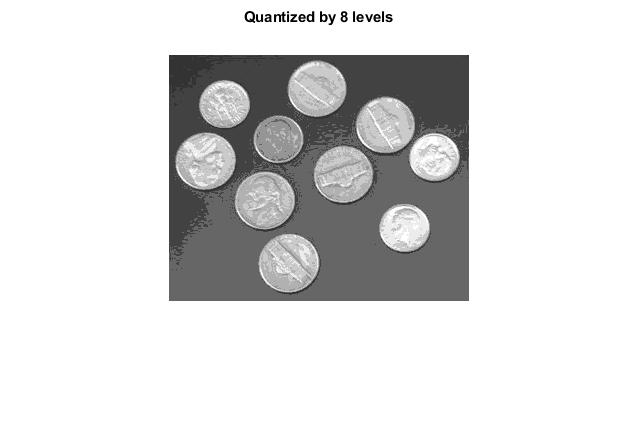


Code:

Text, letter

Description automatically generated

Output:



9. Using the following image, solve questions a - f.

A group of stars in space

Description automatically generated with low confidence

1. Read and show the image.
2. Show the matrix form of the image.
3. Show the pixel information by hovering the cursor on the image.
4. Find the value of the pixel (10, 78).
5. Show the size of the image.
6. Show the all the information of the image.

Codes:

Graphical user interface, text, application, email

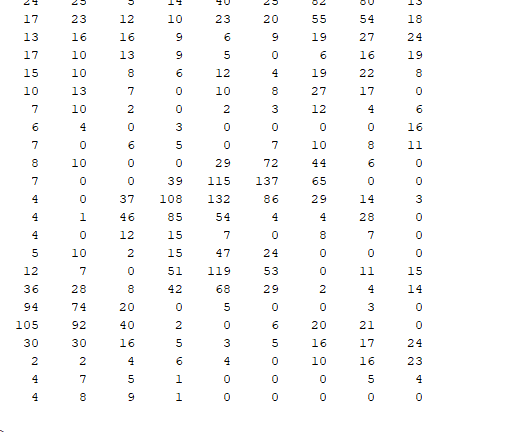
Description automatically generated

Output:

a)

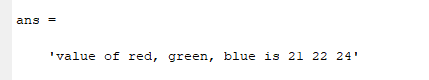


B)



c)

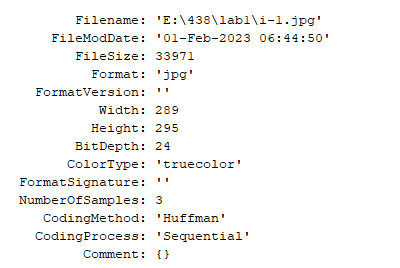
d)



e)



f)



10. Using the following images, solve questions a - i.



RGB Image

A white flower with a black background

Description automatically generated

Grayscale Image



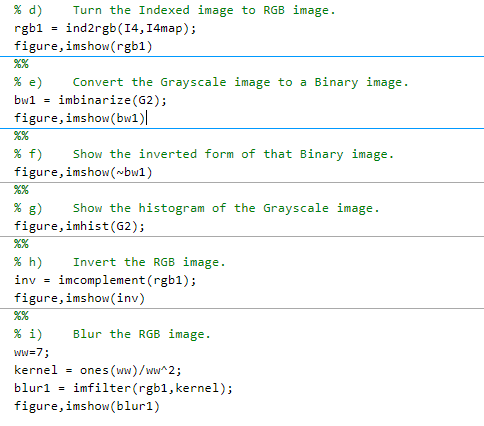
Indexed Image

* 1. Read and show all three types of images (RGB, Grayscale, and Indexed).
  2. Turn the RGB image to Grayscale image.
  3. Turn the Indexed image to Grayscale image.
  4. Turn the Indexed image to RGB image.
  5. Convert the Grayscale image to a Binary image.
  6. Show the inverted form of that Binary image.
  7. Show the histogram of the Grayscale image.
  8. Invert the RGB image.
  9. Blur the RGB image.

Codes:

Graphical user interface, text, application, chat or text message

Description automatically generated



**Output**:

a)

A hot air balloon in the sky

Description automatically generatedA white flower with a black background

Description automatically generated

b)



c)

A picture containing text, bird, outdoor, standing

Description automatically generated

d)



e)



f)

A black and white photo of a tree

Description automatically generated with low confidence

g)

Chart, histogram

Description automatically generated

h)

A picture containing text

Description automatically generated

i) 