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Question 1

```
mypath = "megray.tif";

[me,melut] = imread(mypath);
figure;
subplot(1,1,1);
imshow(me);
```

```
me_info = imfinfo(mypath);
me_info
```

```
me_info = struct with fields:
                    Filename: 'C:\Users\LENOVO\Desktop\PSUT\1st sem - Y4\Digital Image processing\images\megray.tif'
                FileModDate: '13-Nov-2023 10:39:17'
                    FileSize: 66250
                      Format: 'tif'
               FormatVersion: []
                       Width: 256
                      Height: 256
                    BitDepth: 8
                   ColorType: 'grayscale'
             FormatSignature: [73 73 42 0]
                   ByteOrder: 'little-endian'
              NewSubFileType: 0
               BitsPerSample: 8
                 Compression: 'PackBits'
   PhotometricInterpretation: 'BlackIsZero'
                StripOffsets: [8 8274 16534 24799 33059 41326 49532 57792]
             SamplesPerPixel: 1
                RowsPerStrip: 32
             StripByteCounts: [8266 8260 8265 8260 8267 8206 8260 8204]
                 XResolution: 72
```

```
          YResolution: 72
       ResolutionUnit: 'Inch'
             Colormap: []
  PlanarConfiguration: 'Chunky'
            TileWidth: []
           TileLength: []
          TileOffsets: []
       TileByteCounts: []
          Orientation: 1
            FillOrder: 1
     GrayResponseUnit: 0.0100
       MaxSampleValue: 255
       MinSampleValue: 0
         Thresholding: 1
               Offset: 65996
```

Question 2

```
handxray_path = "handxray.tif";

handxray = imread(handxray_path);
figure;
subplot(1,1,1);
imshow(handxray);
```

```
hand_info = imfinfo(handxray_path);
```

```
hand_info
```

```
hand_info = struct with fields:
                    Filename: 'C:\Users\LENOVO\Desktop\PSUT\1st sem - Y4\Digital Image processing\images\handxray.t
                FileModDate: '13-Nov-2023 10:40:19'
                    FileSize: 154210
                      Format: 'tif'
                FormatVersion: []
                       Width: 390
                      Height: 476
                    BitDepth: 8
                   ColorType: 'grayscale'
             FormatSignature: [73 73 42 0]
                   ByteOrder: 'little-endian'
              NewSubFileType: 0
               BitsPerSample: 8
                 Compression: 'PackBits'
    PhotometricInterpretation: 'BlackIsZero'
                StripOffsets: [8 6715 12298 18149 24969 32065 39496 46288 53188 60393 67735 75353 82680 90157 97933
             SamplesPerPixel: 1
                RowsPerStrip: 21
             StripByteCounts: [6707 5583 5851 6820 7096 7431 6792 6900 7205 7342 7618 7327 7477 7776 7776 6563 6412
                 XResolution: 72
                 YResolution: 72
              ResolutionUnit: 'Inch'
                    Colormap: []
          PlanarConfiguration: 'Chunky'
                   TileWidth: []
                  TileLength: []
                 TileOffsets: []
              TileByteCounts: []
                 Orientation: 1
                   FillOrder: 1
            GrayResponseUnit: 0.0100
              MaxSampleValue: 255
              MinSampleValue: 0
                Thresholding: 1
                      Offset: 153836
```

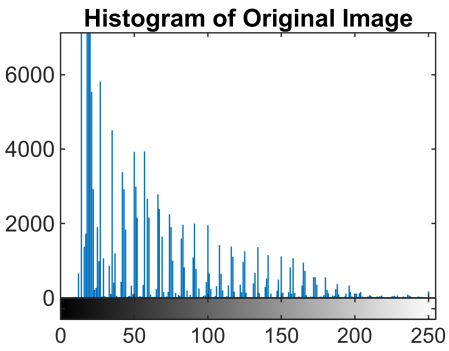
Show a better contrast image

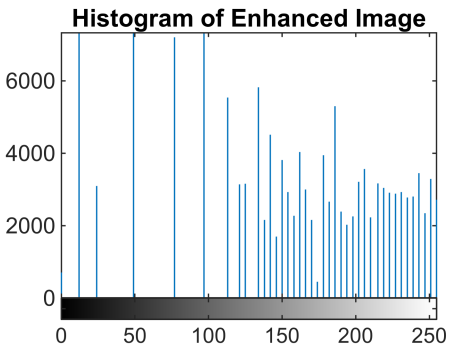
```
enhancedImg = histeq(handxray);
```

Displaying the difference in the image

```
figure;
subplot(2, 2, 1);
imshow(handxray);
title('Original X-ray Image');

subplot(2, 2, 2);
imshow(enhancedImg);
title('Contrast Enhanced X-ray Image');

subplot(2, 2, 3);
imhist(handxray);
title('Histogram of Original Image');

subplot(2, 2, 4);
```

```
imhist(enhancedImg);
title('Histogram of Enhanced Image');
```





We can see that the original image is a normal xray image with no enhancment , after applying histeq() function , which shift the pixel values to be more uniform , since the original image has a lot of values consentrated between 0 and 200 , after adjusting , the values are shifted from 100 to 255 which resulted in a brighter image with more details and now we can see the edges of the hand and more defined bones.