SOURCE CODE FOR IMAGE COMPRESSION USING DCT:

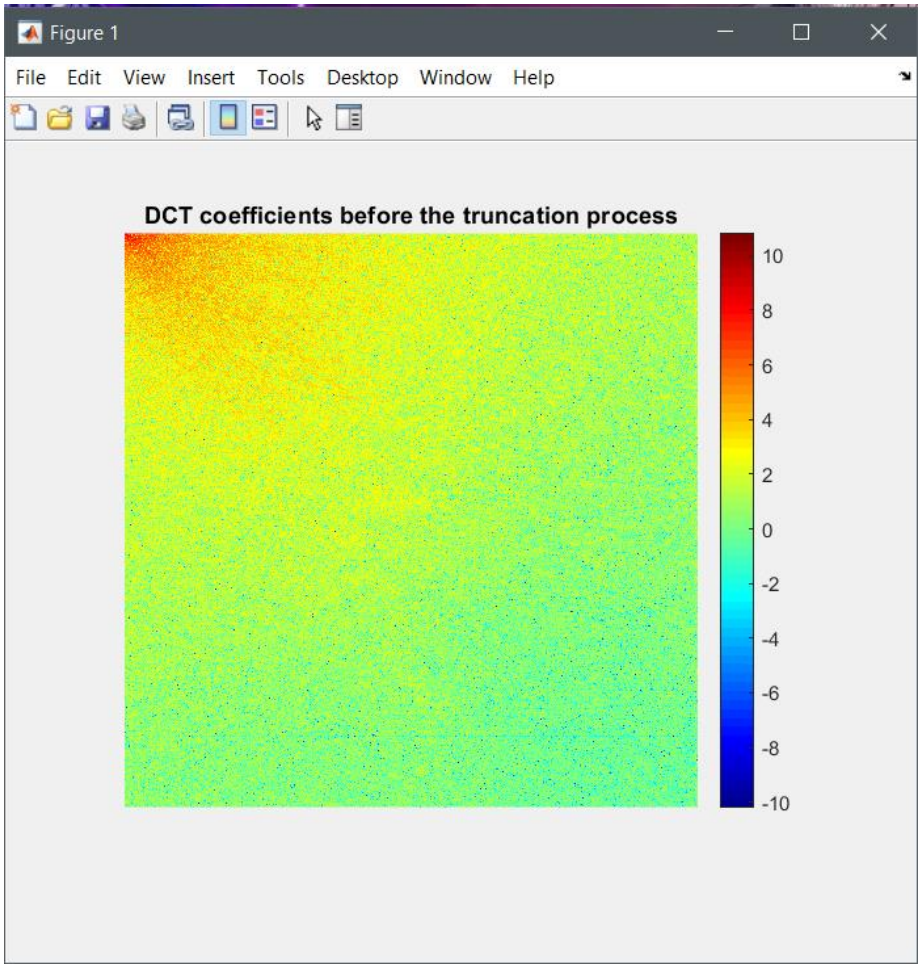
```
%MATLAB code for image compression using FFT based DCT approach

[filename,pathname] = uigetfile('*.*','Select the image');

filewithpath = strcat(pathname, filename);


img = imread(filewithpath); %reading Image

C = dct2(double(img)); %finding the DCT


figure

imshow(log(abs(C)) ,[]); %displaying DCT coeffficents

title('DCT coefficients before the truncation process');

colormap(gca,jet(64))

colorbar
```

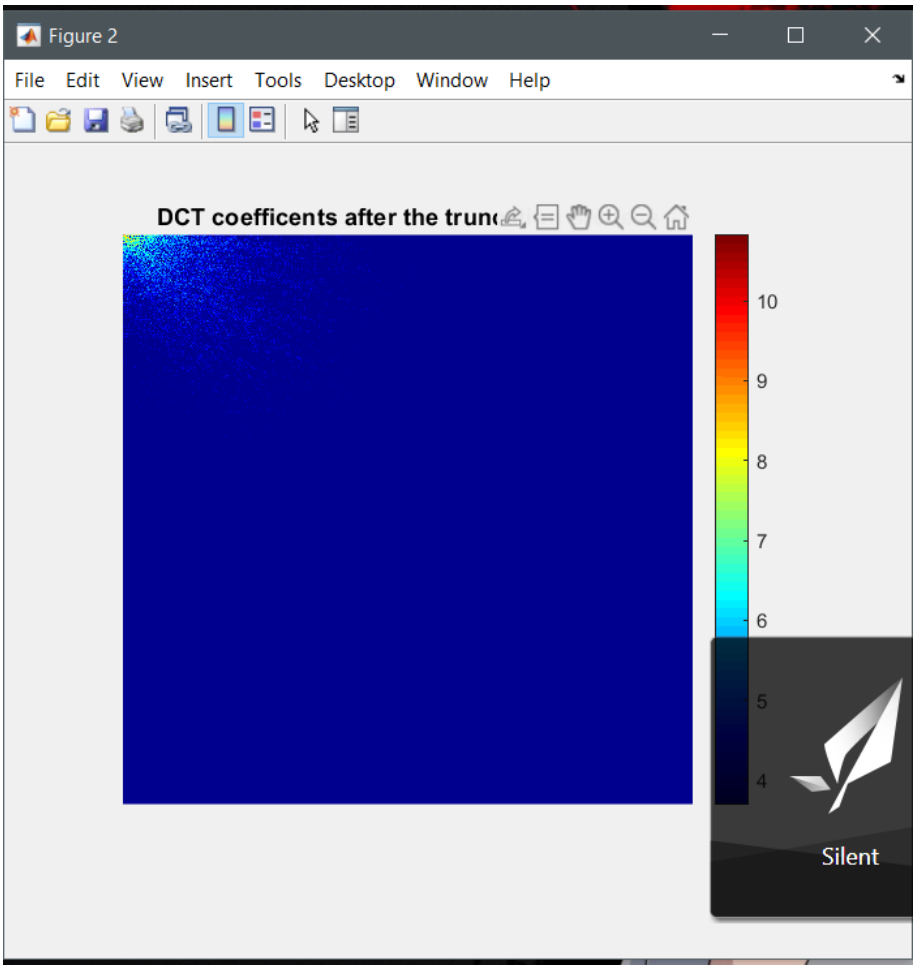
```
C(abs(C) < 40) = 0 ; %coefficients truncation


figure
imshow(log(abs(C)) , [] ) %displaying DCT
coefficents
title('DCT coefficents after the truncation
process');
colormap(gca, jet(64))
colorbar


Ct = idct2(C); %taking the inverse DCT


%writing the images for size comparison
imwrite(img,'C:\Users\rahul\OneDrive\Documents
\MATLAB\Original_Image.jpg','quality',100) ;
imwrite(uint8(Ct),'C:\Users\rahul\OneDrive\Docu
ments\MATLAB\DCT_Compressed_Image.jpg','qua
lity',100);


figure
```

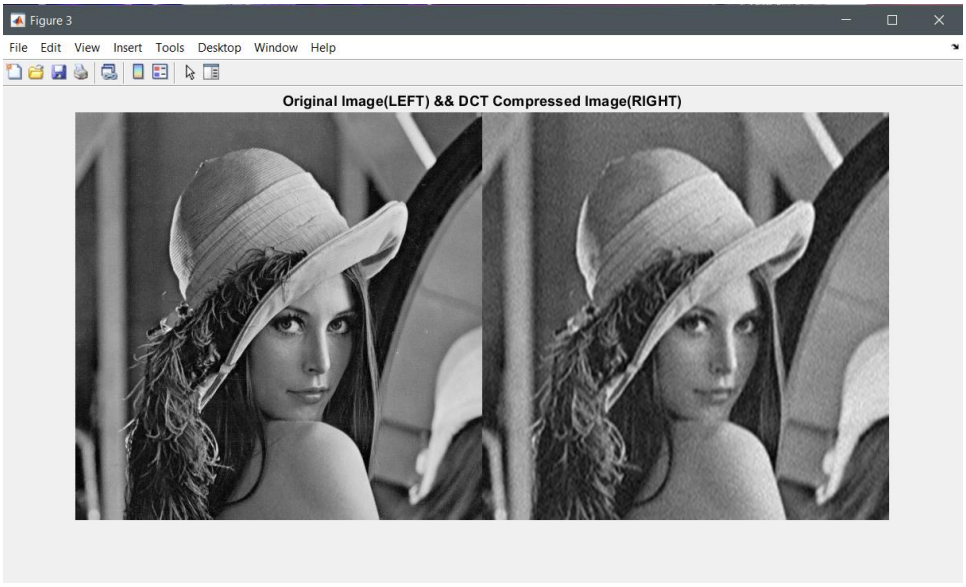
```
imshowpair(img ,Ct ,'montage') %displaying the image

title('Original Image(LEFT) && DCT Compressed Image(RIGHT)');
```

OBSERVATIONS:

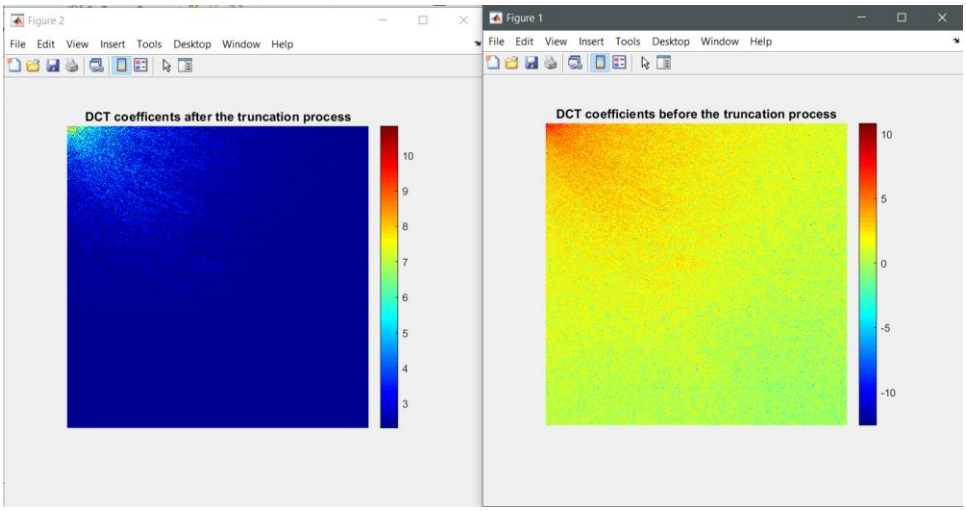
A) MEDIUM QUALITY

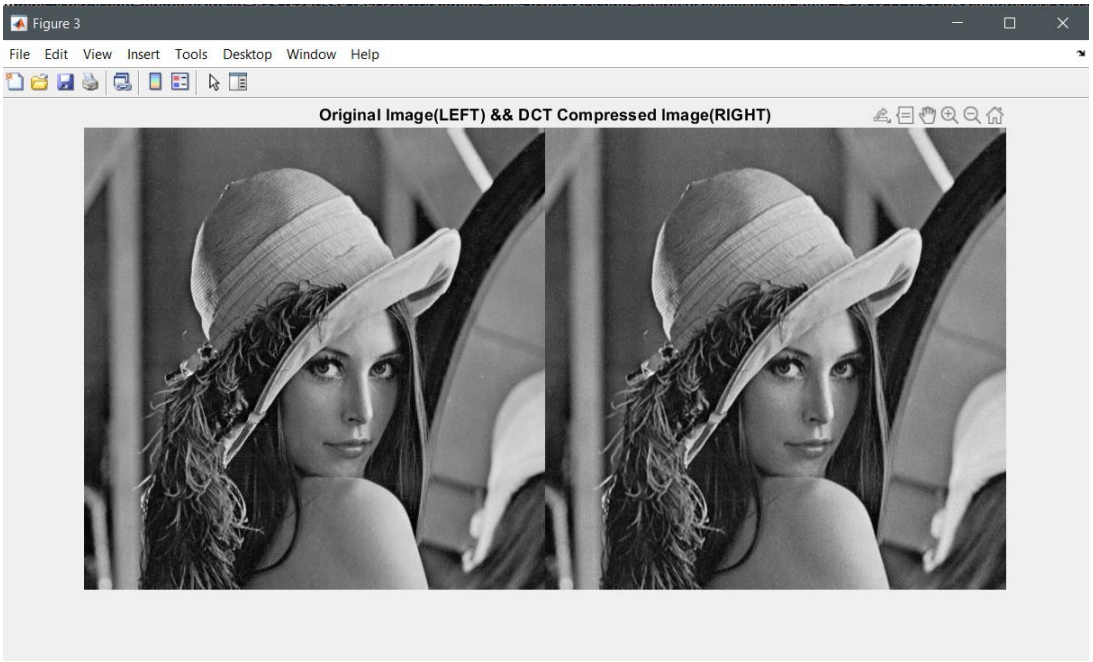




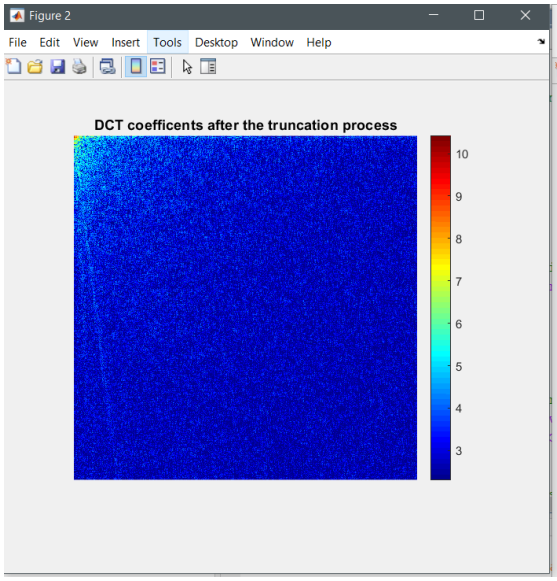


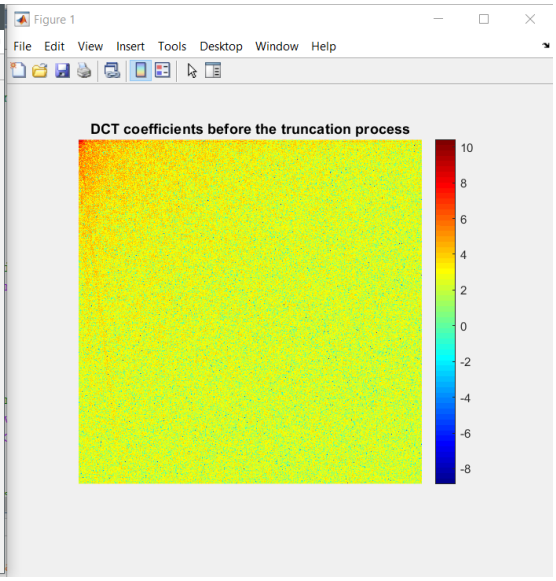
B) HIGH QUALITY





C)LOW QUALITY





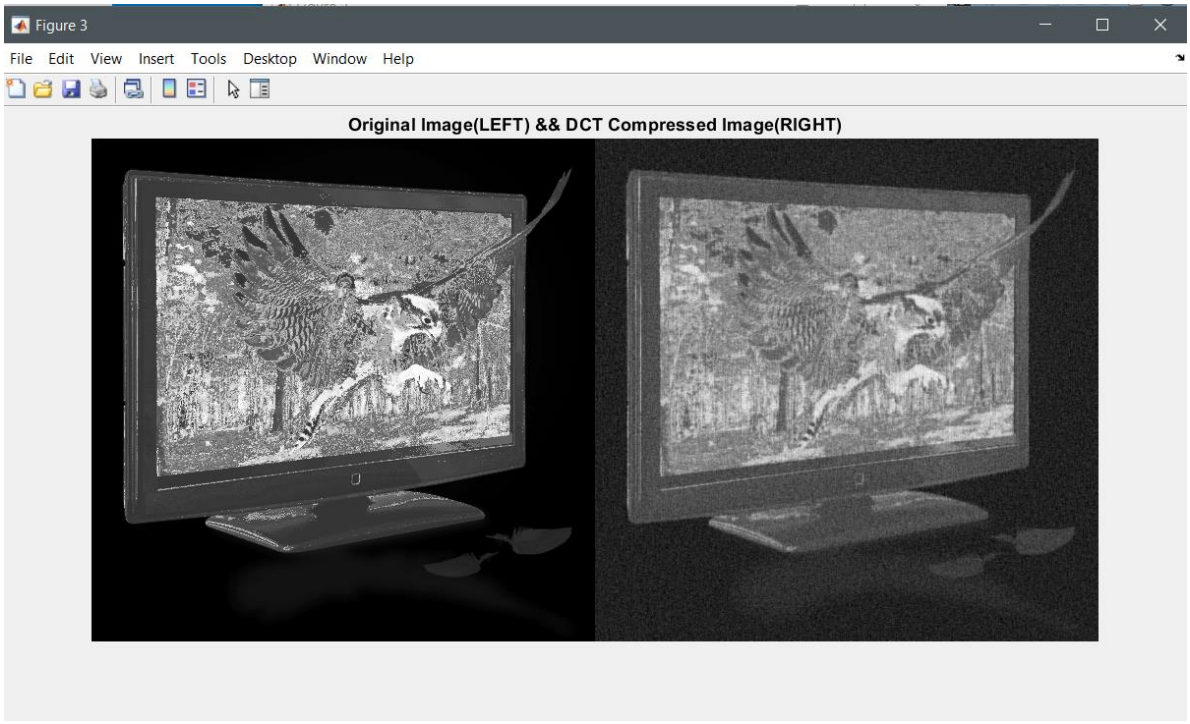


IMAGE COMPRESSION USING WAVELETS:

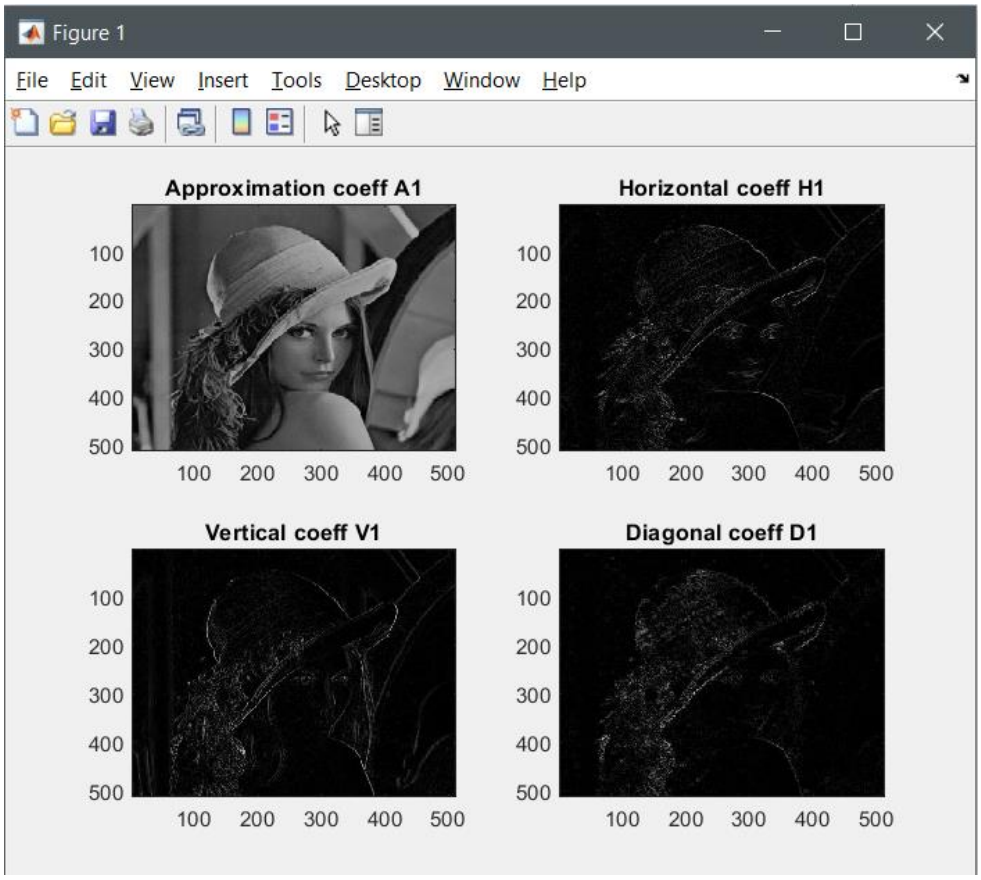
```
clc;

close all;

X=imread('Original_Image.jpg');
```

```
i=imresize(X,[512 512]);
wv='haar';
%wavelet transformation
[cA1,cH1,cV1,cD1] = dwt2(X,wv);
sx = size(X);
[C,S] = wavedec2(X,1,'haar');
%coefficient
A1 = wrcoef2('a',C,S,'haar',1);
H1 = wrcoef2('h',C,S,'haar',1);
V1 = wrcoef2('v',C,S,'haar',1);
D1 = wrcoef2('d',C,S,'haar',1);
figure
subplot(2,2,1)
image(wcodemat(A1,192))
title('Approximation coeff A1')
subplot(2,2,2)
image(wcodemat(H1,192))
title('Horizontal coeff H1')
subplot(2,2,3)
```

```
image(wcodemat(V1,192))
title('Vertical coeff V1')
subplot(2,2,4)
image(wcodemat(D1,192))
title('Diagonal coeff D1')
colormap gray
%inverse wavelet transformation
re_ima1 = idwt2(cA1,cH1,cV1,cD1,'haar');
re_ima=uint8(re_ima1);
figure;
subplot(2,1,1);
imshow(uint8(X));
title('Input image');
subplot(2,1,2);
imshow(re_ima);
title('1-level reconstructed image')
[thr,sorh,keepapp] = ddencmp('cmp','wv',X);
[Xcomp,CXC,LXC,PERF0,PERFL2]
=wdencmp('gbl',X,wv,1,thr,sorh,keepapp);
figure
```

```
subplot(1,2,1)
image(X)
title('Original Image')
subplot(1,2,2)
image(Xcomp)
title('Compressed Image')
colormap bone
```

OBERVATIONS:



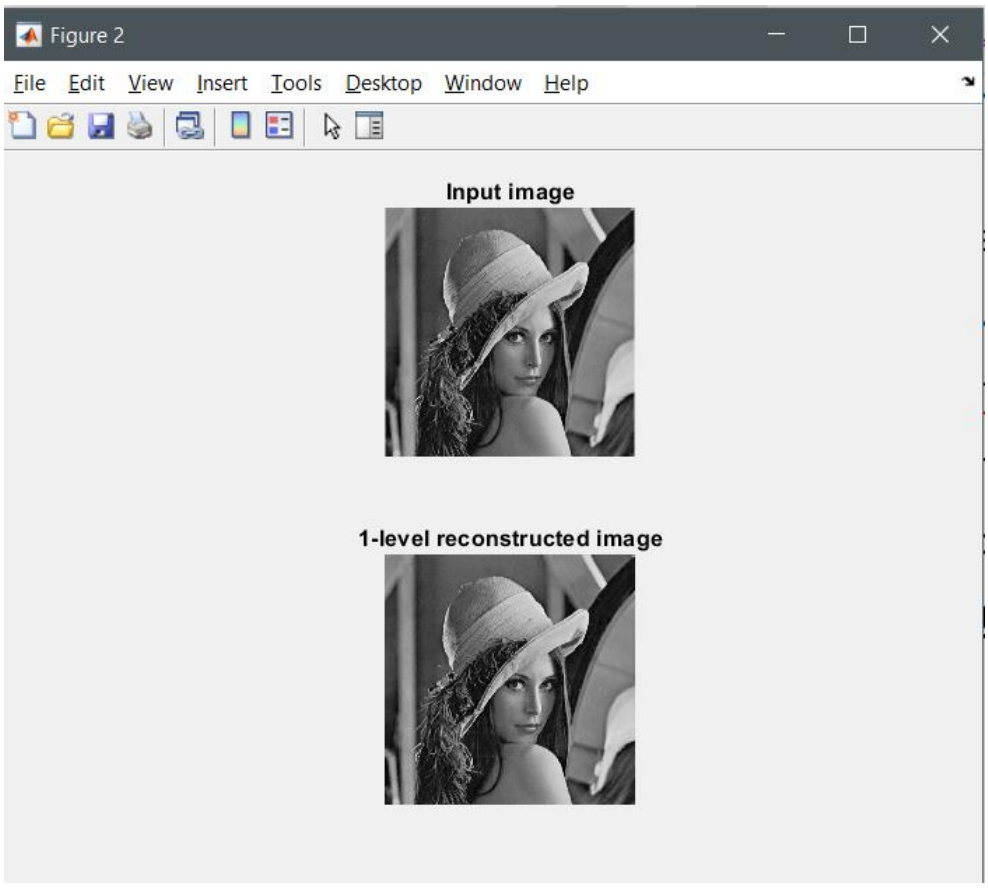


Figure 2
File Edit View Insert Tools Desktop Window Help
Input image
1-level reconstructed image

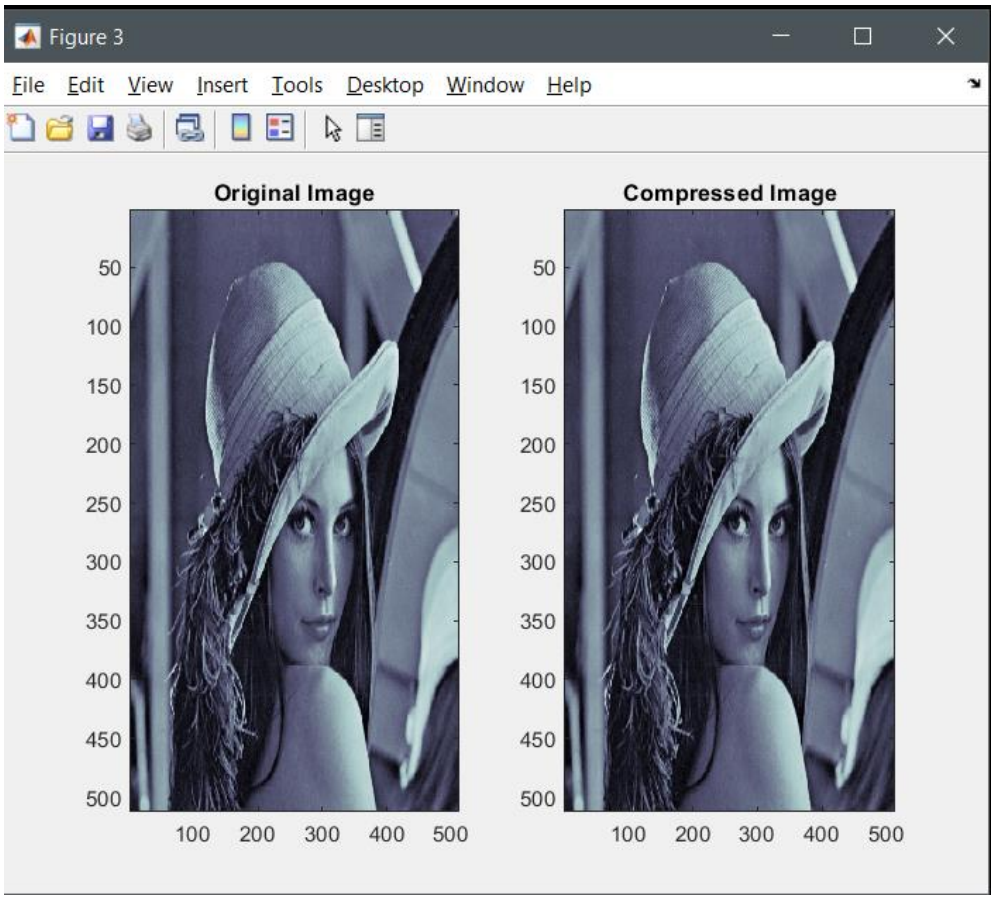
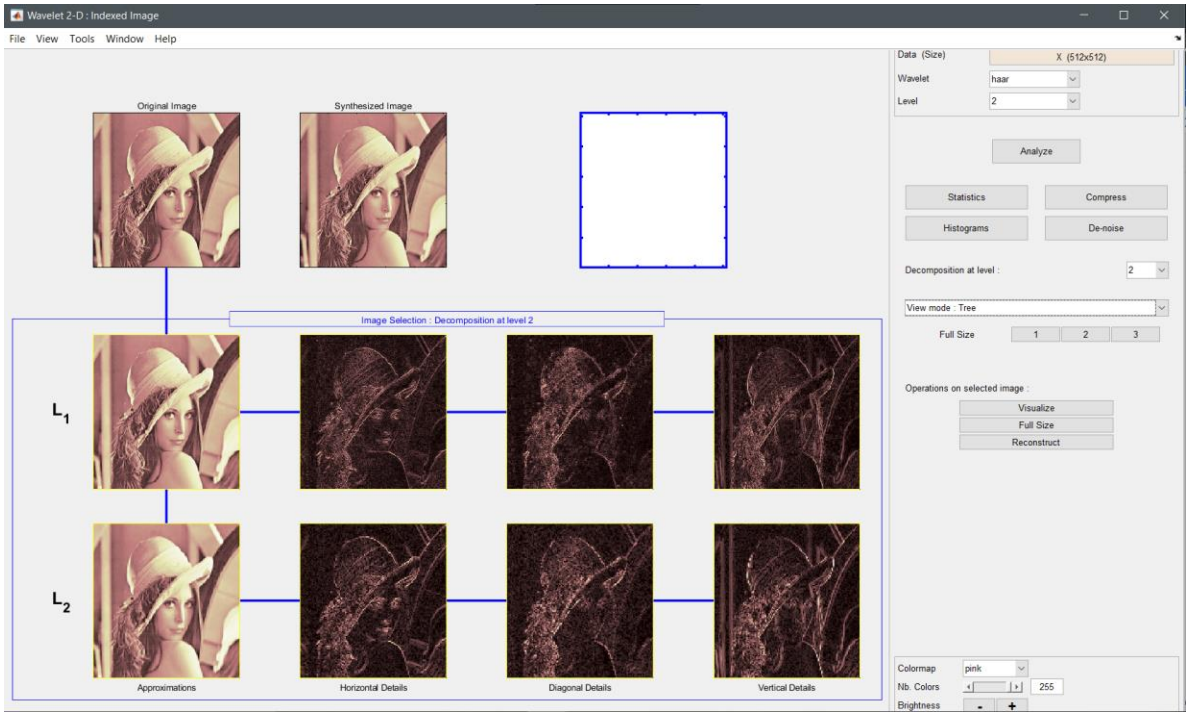
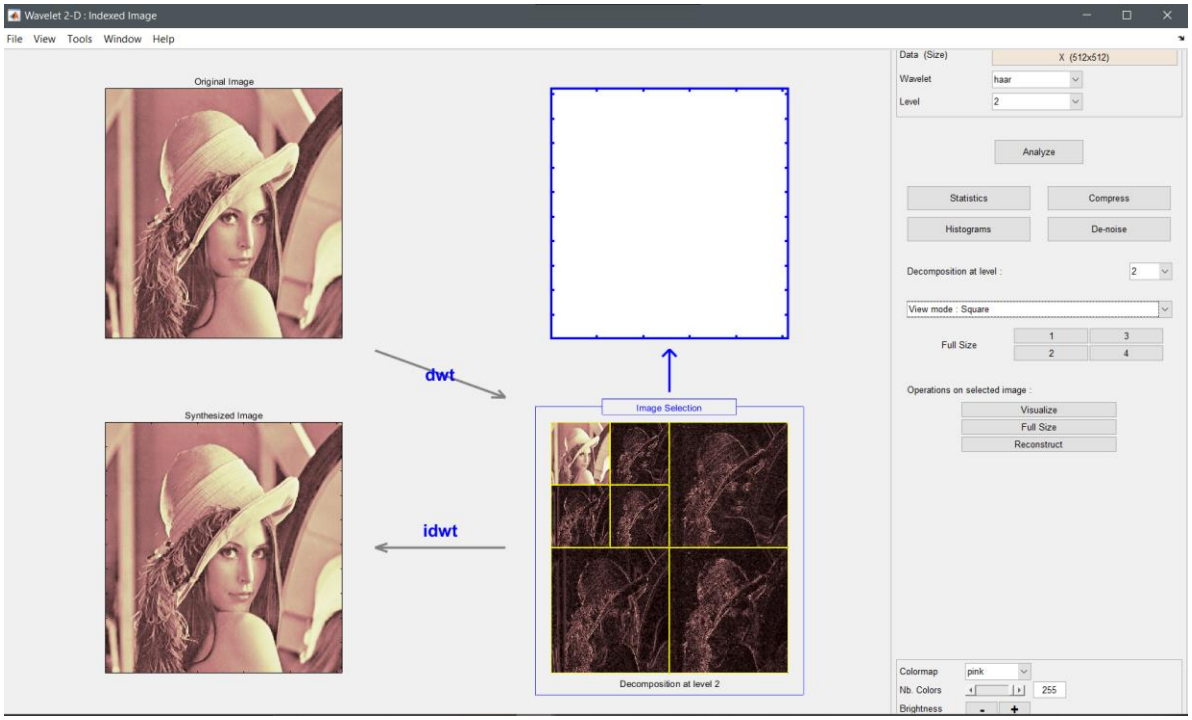


IMAGE COMPRESSION USING WAVELET TOOLBOX:

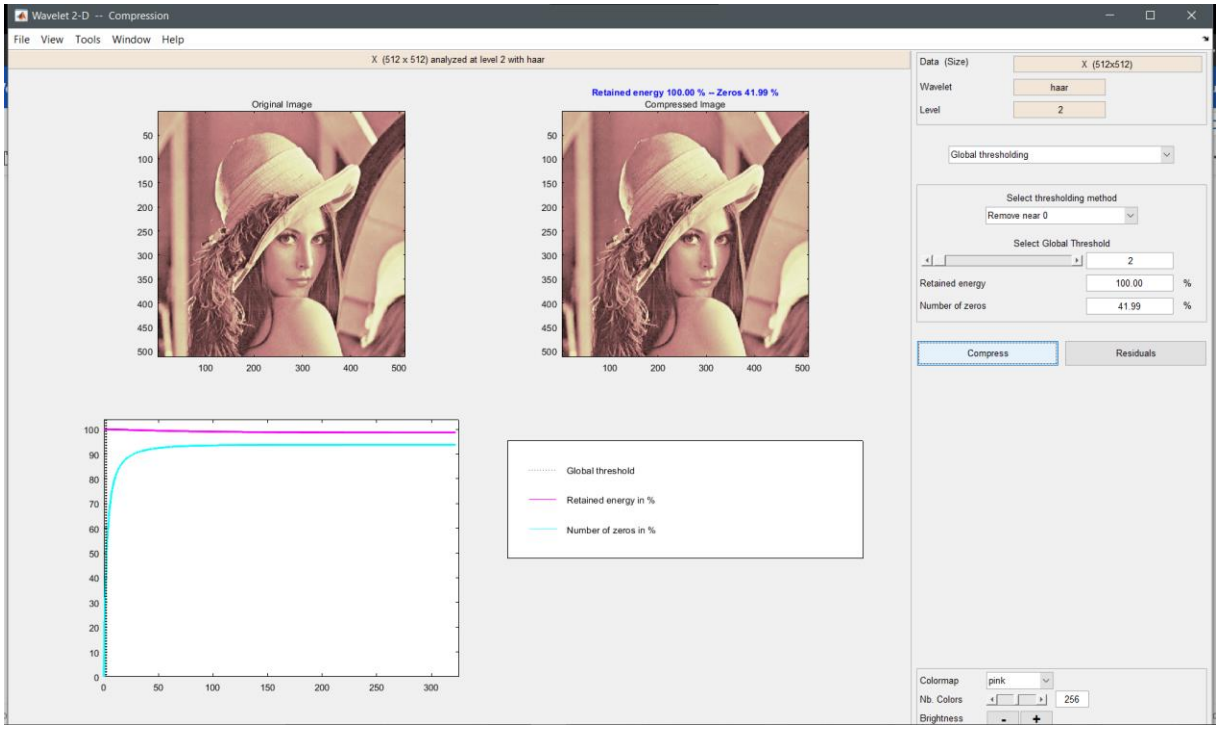
TREE VIEW



SQUARE VIEW



COMPRESSED IMAGE


Wavelet 2-D -- Compression
File View Tools Window Help
X (512 x 512) analyzed at level 2 with haar
Original Image
Retained energy 100.00 % -- Zeros 41.99 %
Compressed Image
Global threshold
Retained energy in %
Number of zeros in %
Data (Size)
X (512x512)
Wavelet
haar
Level
2
Global thresholding
Select thresholding method
Remove near 0
Select Global Threshold
2
Retained energy
100.00
%
Number of zeros
41.99
%
Compress
Residuals
Colormap
pink
Nb. Colors
256
Brightness