LOSSLESS IMAGE COMPRESSION

SUBMITTED TO PROF TWINKLE BHAVSAR

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CODE

```
function varargout = ImageCompression(varargin)

%GUI formation
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                   'gui_Singleton',  gui_Singleton, ...
                   'gui_OpeningFcn',
@ImageCompression_OpeningFcn, ...
                   'gui_OutputFcn',
@ImageCompression_OutputFcn, ...
                   'gui_LayoutFcn',  [] , ...
                   'gui_Callback',   []);

if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State,
varargin{:});
else
    gui_mainfcn(gui_State, varargin{:});
end


function ImageCompression_OpeningFcn(hobj, event, handle,
varargin)

handle.output = hobj;

guidata(hobj, handle);
guidata(hobj, handle);

set(handle.axes3,'visible','off')
set(handle.axes4,'visible','off')

axis off
axis off
```

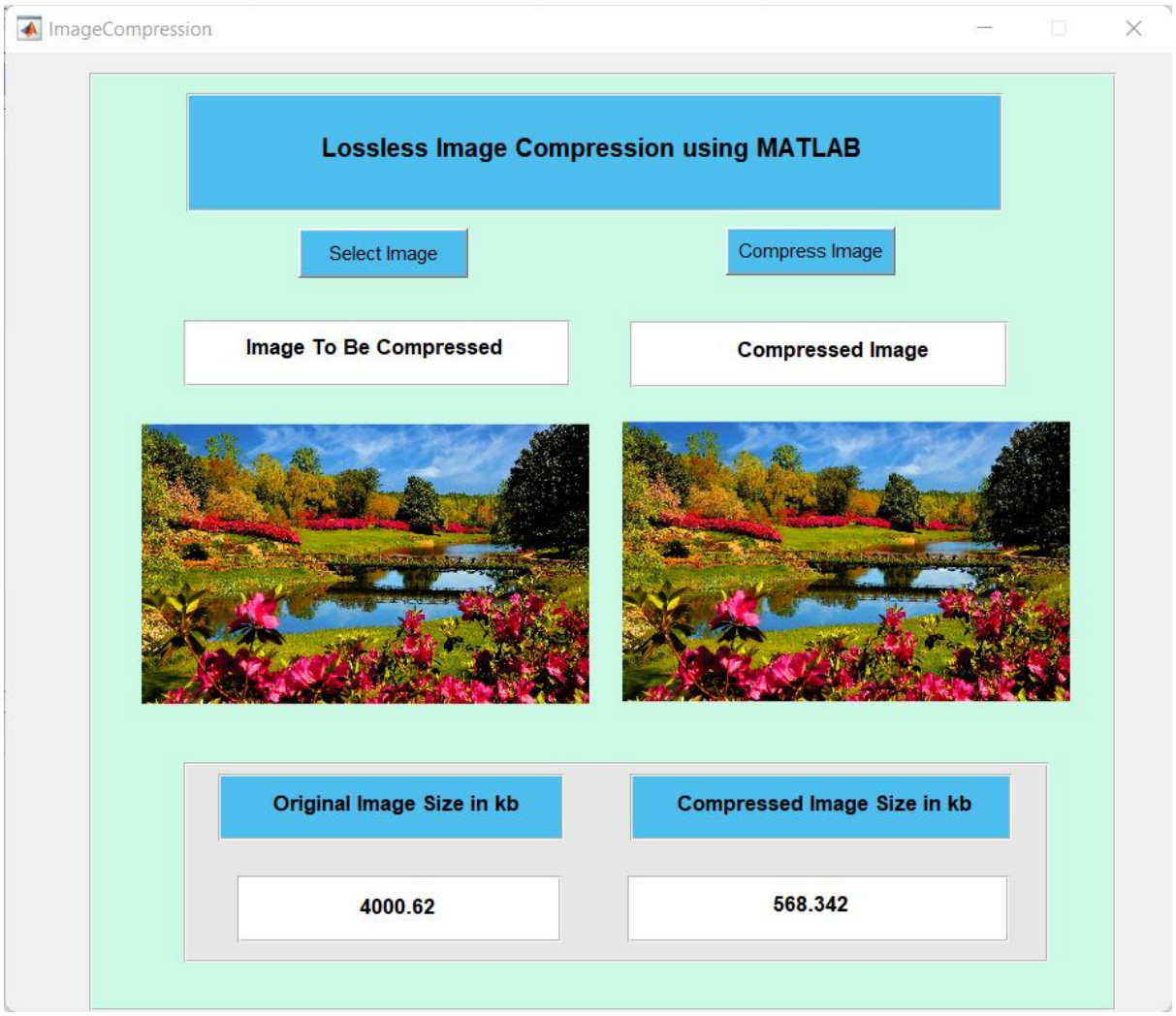
```
function varargout = ImageCompression_OutputFcn(hobj,
event, handle)

varargout{1} = handle.output;


function pushbutton1_Callback(hobj, event, handle)

global file_name;

%the program is sufficient to work with all types of
extension
file_name=uigetfile({'*.bmp;*.jpg;*.png;*.tiff;';'*.*'},'S
elect an Image File');
fileinfo = dir(file_name);
SIZE = fileinfo.bytes;
Size = SIZE/1024;

%displaying current size in the GUI
set(handle.text7,'string',Size);

imshow(file_name,'Parent', handle.axes3)


function pushbutton2_Callback(hobj, event, handle)

global file_name;
if(~ischar(file_name))
   errordlg('Please select Images first');
else
    I1 = imread(file_name);

    %masking the 1st frame
    I = I1(:,:,1);
    I = im2double(I);
    %Discrete cosine transform matrix
    T = dctmtx(8);
    B = blkproc(I,[8 8],'P1*x*P2',T,T');
    mask = [1   1   1   1   0   0   0   0
            1   1   1   0   0   0   0   0
            1   1   0   0   0   0   0   0
```

```
        1   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0];
B2 = blkproc(B,[8 8],'P1.*x',mask);
I2 = blkproc(B2,[8 8],'P1*x*P2',T',T);

%masking the 2nd frame
I = I1(:,:,2);
I = im2double(I);
T = dctmtx(8);
B = blkproc(I,[8 8],'P1*x*P2',T,T');
mask = [1   1   1   1   0   0   0   0
        1   1   1   0   0   0   0   0
        1   1   0   0   0   0   0   0
        1   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0];
B2 = blkproc(B,[8 8],'P1.*x',mask);
I3 = blkproc(B2,[8 8],'P1*x*P2',T',T);

%masking the 3rd frame
I = I1(:,:,3);
I = im2double(I);
T = dctmtx(8);
B = blkproc(I,[8 8],'P1*x*P2',T,T');
mask = [1   1   1   1   0   0   0   0
        1   1   1   0   0   0   0   0
        1   1   0   0   0   0   0   0
        1   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0
        0   0   0   0   0   0   0   0];
B2 = blkproc(B,[8 8],'P1.*x',mask);
I4 = blkproc(B2,[8 8],'P1*x*P2',T',T);

%concatinating all 3 frames
L(:,:,:)=cat(3,I2, I3, I4);
```

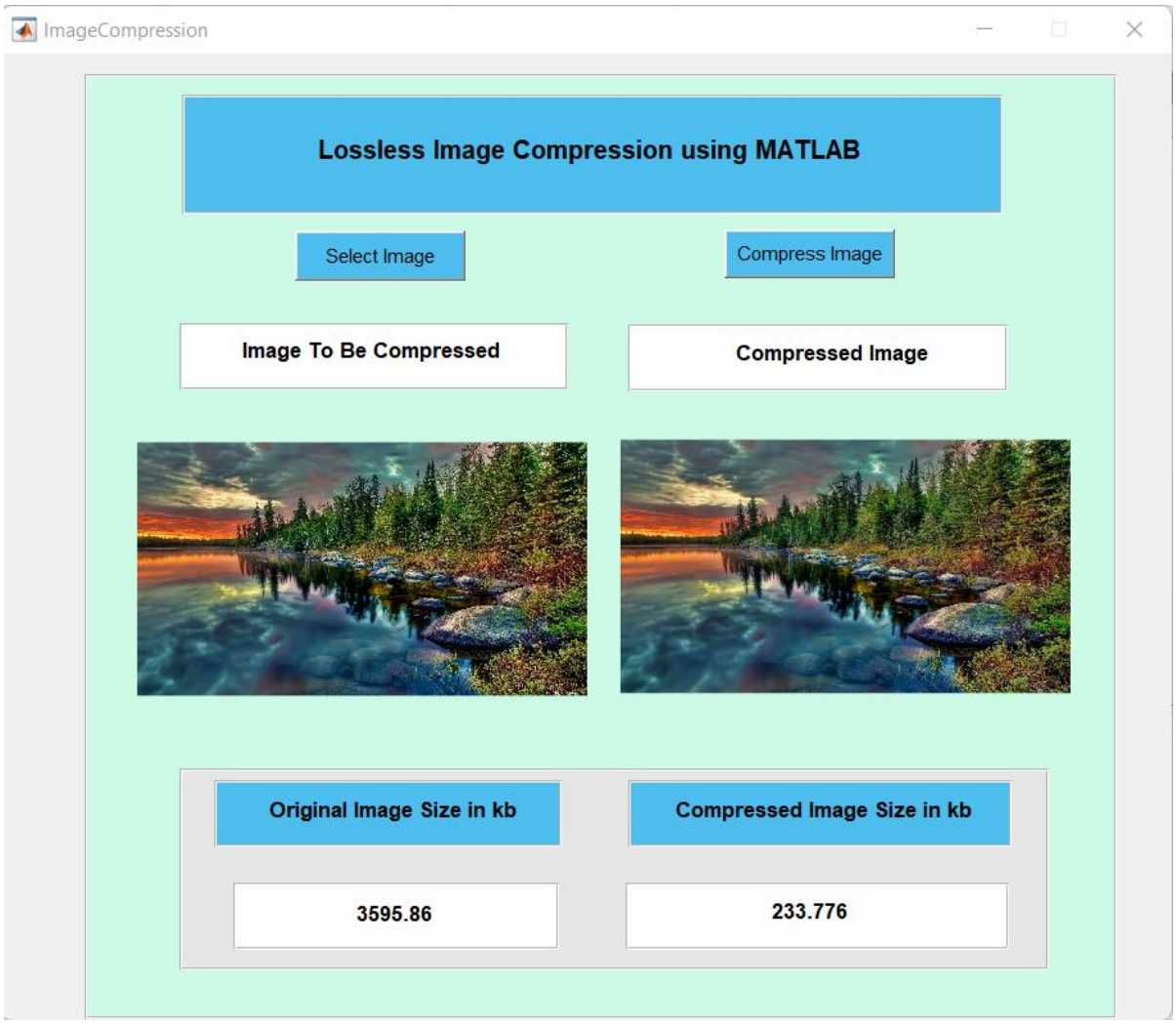
```
    %writing into the file
    imwrite(L,'CompressedColourImage.jpg');

    fileinfo = dir('CompressedColourImage.jpg');

    SIZE = fileinfo.bytes;
    Size = SIZE/1024;

    %displaying in the gui

    set(handle.text8,'string',Size);
    imshow(L,'Parent', handle.axes4)
end
```

OUTUT

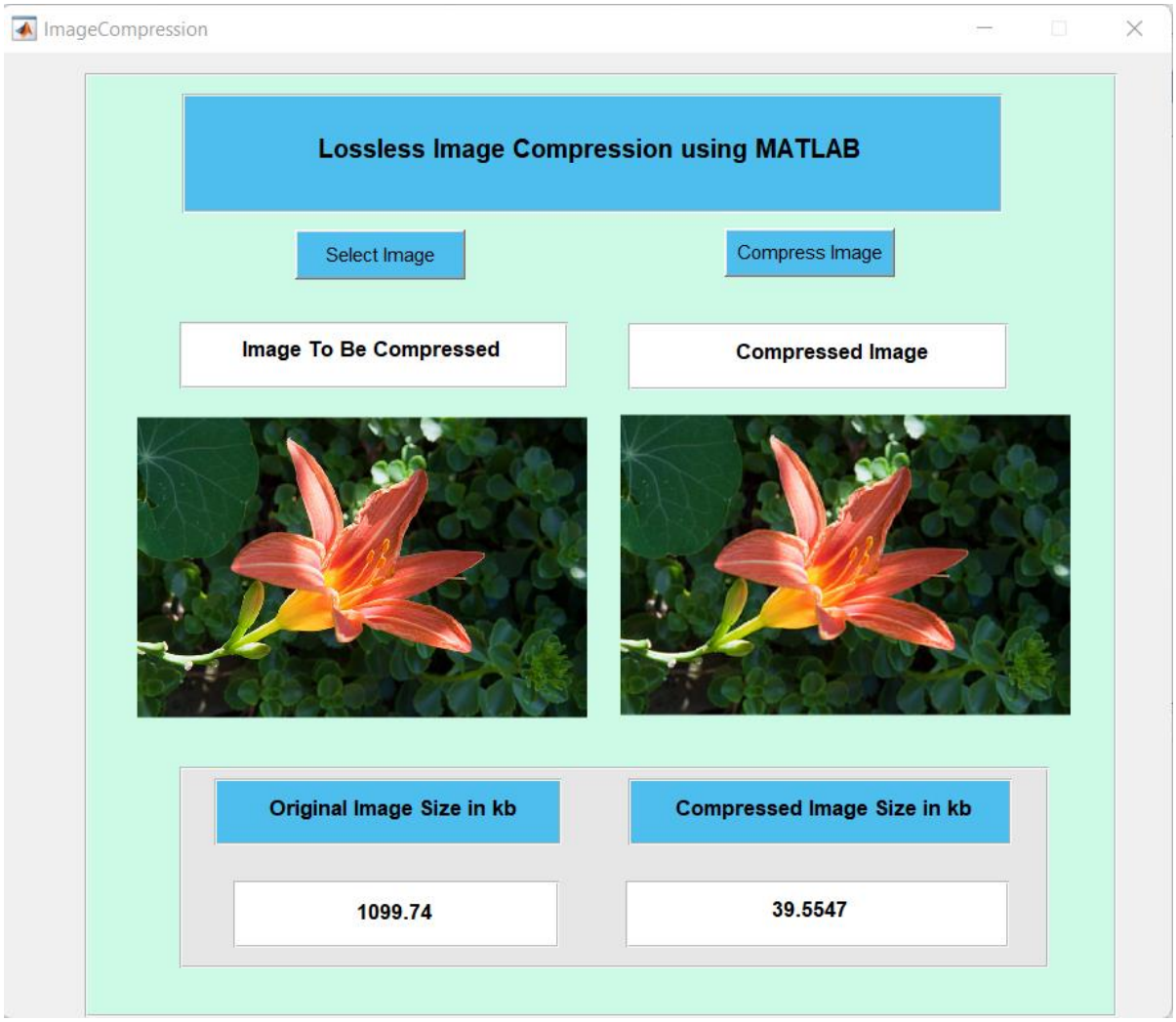
JPG


ImageCompression
Lossless Image Compression using MATLAB
Select Image
Compress Image
Image To Be Compressed
Compressed Image
Original Image Size in kb
Compressed Image Size in kb
4000.62
568.342

PNG


ImageCompression
Lossless Image Compression using MATLAB
Select Image
Compress Image
Image To Be Compressed
Compressed Image
Original Image Size in kb
Compressed Image Size in kb
3595.86
233.776

BMP


ImageCompression
Lossless Image Compression using MATLAB
Select Image
Compress Image
Image To Be Compressed
Compressed Image
Original Image Size in kb
Compressed Image Size in kb
1099.74
39.5547

TIFF

Original:

Compressed: