Homework 1

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1 First Answer

Matlab Code

```
clear all;
clc;

% to read lena.bin image
fidLena = fopen('lena.bin','r');
[Lena,~] = fread(fidLena,[256,256],'uchar');

% to read peppers.bin image
fidpeppers = fopen('peppers.bin','r');
[peppers,~] = fread(fidpeppers,[256,256],'uchar');

% to display lena image
Lena = Lena' ;% for trasnpose of the image
figure(1);colormap(gray(256));
image(Lena);
axis('image');
axis off;
title('Original Lena Image');

% to display peppers image
peppers = peppers' ;% for transpose of the image
figure(2);colormap(gray(256));
image(peppers);
axis('image');
axis off;
title('Original Peppers Image');

% defining new image J
J(1:256,1:128)=Lena(1:256,1:128);
```

```
J(1:256,129:256)=peppers(1:256,129:256);
figure(3);colormap(gray(256));
image(J);
axis('image');
axis off;
title('Image J');


% defining new image K by swapping
K(1:256,1:128)=J(1:256,129:256);
K(1:256,129:256)=J(1:256,1:128);
figure(4);colormap(gray(256));
image(K);
axis('image');
axis off;
title('Image K');

%to wriye out the Image J and K
print (figure(3),'LenaLeft','-dpng');
print (figure(4),'LenaRight','-dpng');

% to write lena image
print (figure(1),'LenaOut','-dpng'); % write figure as png
fidOut = fopen('Outfile.bin','w+');
LenaOut = Lena';
fwrite(fidOut,LenaOut,'uchar'); % write raw image data
fclose(fidLena);fclose(fidOut);

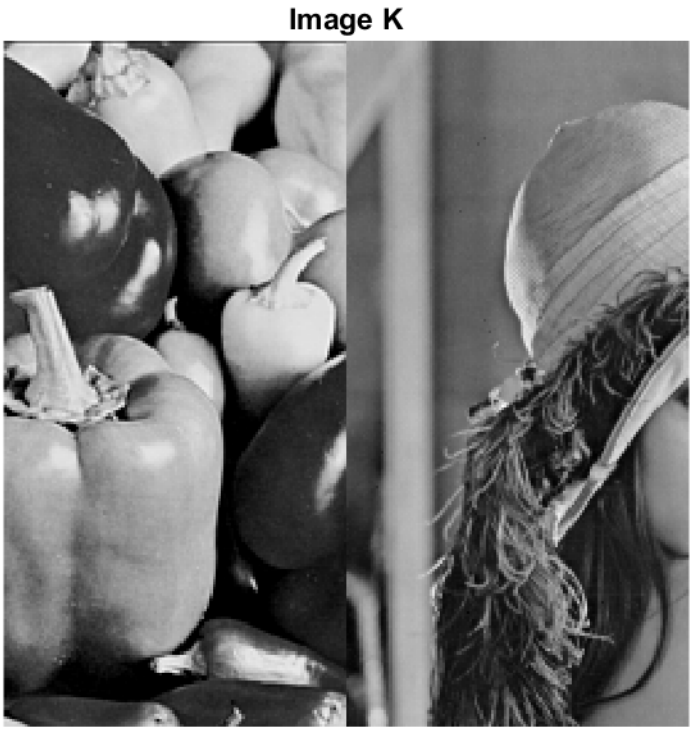
% to write peppers image
print (figure(2),'PeppersOut','-dpng'); % write figure as png
fidOut = fopen('Outfile.bin','w+');
peppersOut = peppers';
fwrite(fidOut,peppersOut,'uchar'); % write raw image data
fclose(fidpeppers);fclose(fidOut);
```

Output Images:

Original Lena Image

Original Peppers Image

Image J



2 Second Answer

Matlab Code

```
clear all;
clc;

% using imread to call image J1
J1=imread('lenagray.jpg');

%display image J1
figure(1);
imshow(J1);
title('Image J1');

%display image J2
figure(2);
J2=255-J1;% condition to convert to photographic negative
imshow(J2);
title('Image J2');
```

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18 % to write J1 & J2 as PNG file
19 print (figure(1),'LenaGray','-dpng');
20 print (figure(2),'LenaNegative','-dpng');
```

Output Images:

3 Third Answer

Matlab Code

```
%to read JPEG file
J1=imread('lena512color.jpg');

%to display image J1
figure(1);
imshow(J1);
title('Color Image J1');

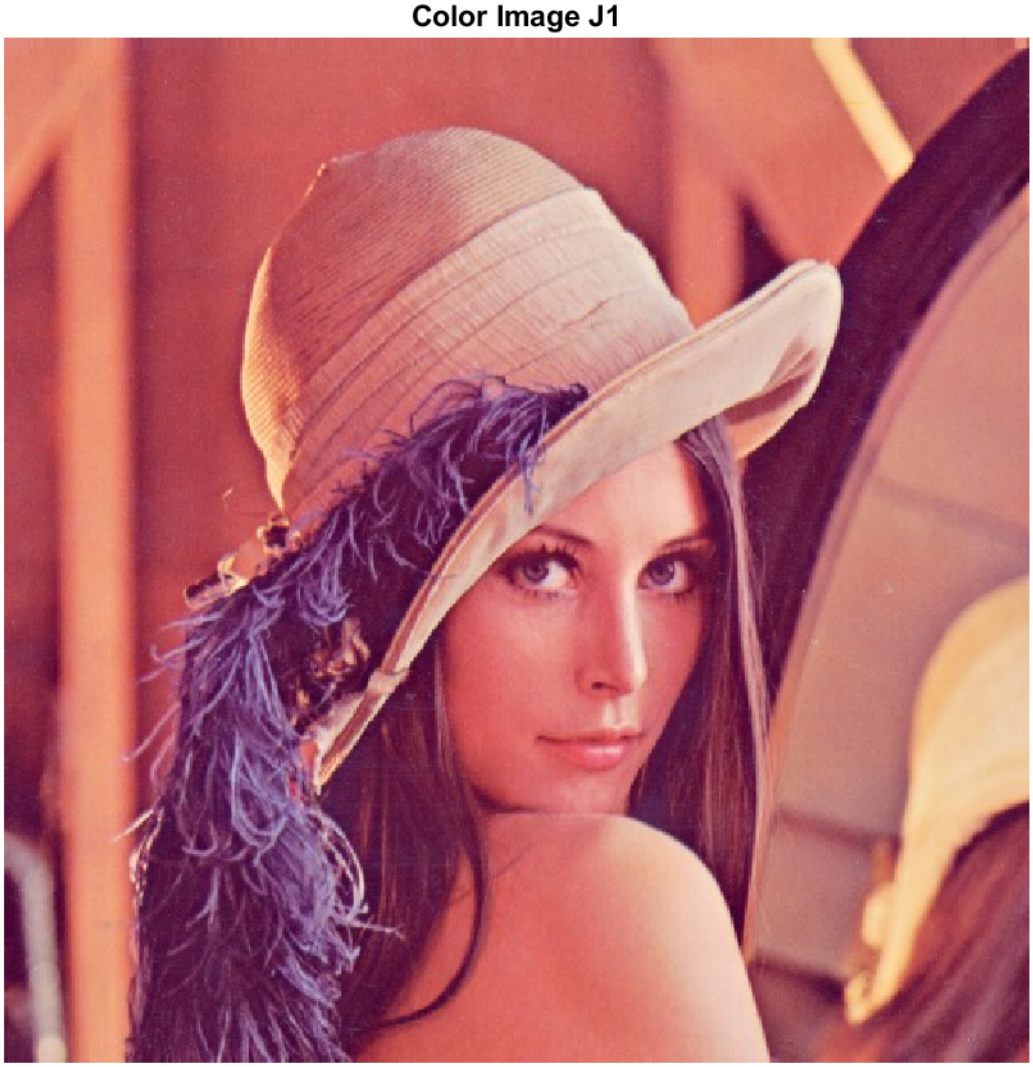
J2=J1;%condition for right size
J2(:,:,1)= J1(:,:,3);%Red band of J2= Blue band of J1
J2(:,:,2)= J1(:,:,1);%Green band of J2= Red band of J1
J2(:,:,3)= J1(:,:,2);%Blue band of J2= Green band of J1

%to display image J2
figure(2);
imshow(J2);
title('Different Bands of J1');

%to write it out input and output files as PNG file
print (figure(1),'Lena512Color','-dpng');
```

```
21 print (figure(2),'DiffColors','-dpng');
```

Output Images:



Different Bands of J1