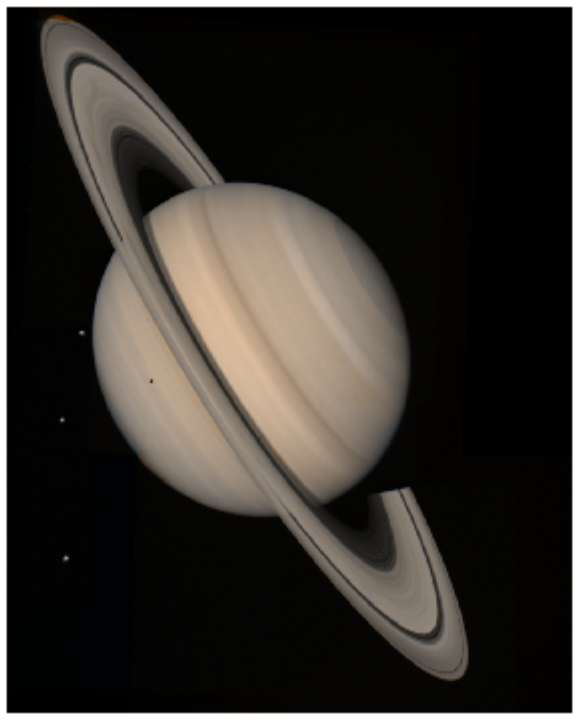
Contents

Image Rotation & Resize

Exploring Rotation & Resize Build-in functions in Matworks

```
Original = imread('saturn.png');
imshow(Original);

% Dynamic Scale.

scale = 0.1;
image = imresize(Original, scale);


% Dynamic angle, theta.

theta = 45;
Rotation = imrotate(image,theta);

figure,
imshow(Rotation)
```

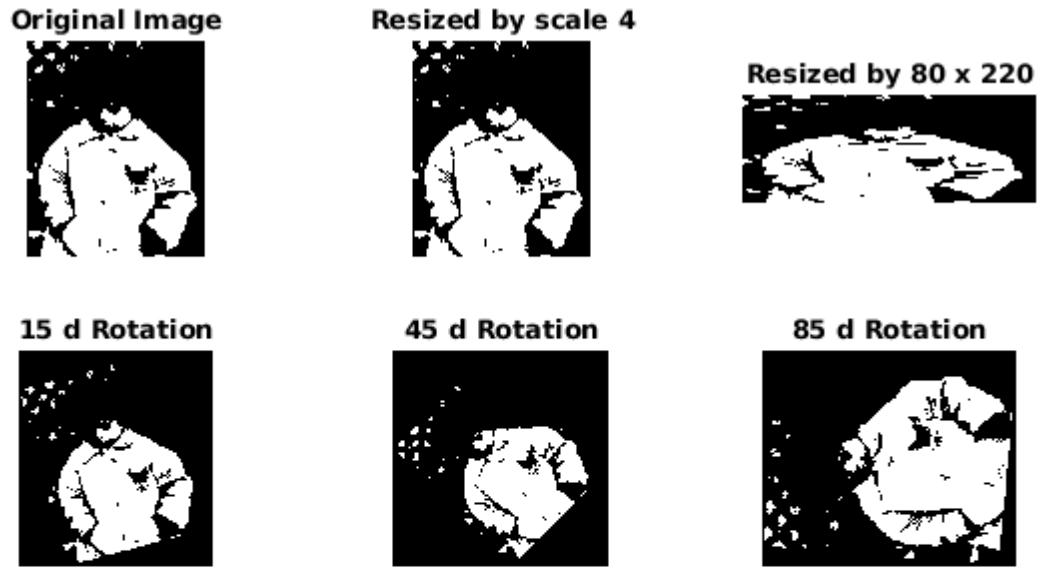


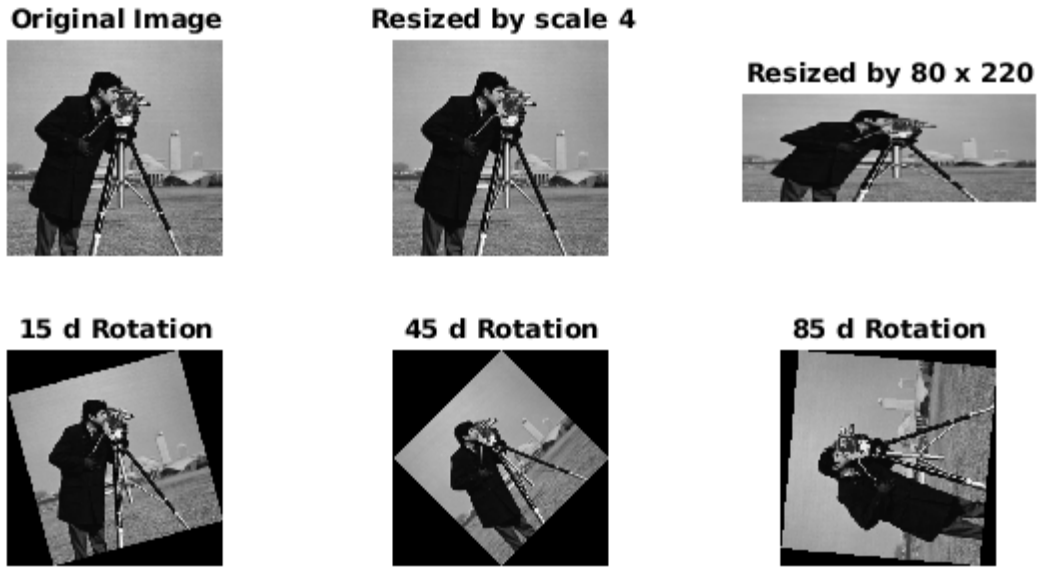
Write a Matlab program to perform Resize, Rotation of binary images using various methods.

Exploring Rotation & Resize using Binary image file

```
image =imread('pout.tif');

% binary images
mainimage=imbinarize(image);

% resize
rz_1=imresize(mainimage,4);
rz_2=imresize(mainimage,[80,220]);

% rotate
% Methods Used :- nearest, bilinear and bicubic

%For nearest neighbor interpolation, the block uses the value of nearby translated pixel values for the output pixel values.
%For bilinear interpolation, the block uses the weighted average of two translated pixel values for each output pixel value.
%For bicubic interpolation, the block uses the weighted average of four translated pixel values for each output pixel value.


rotation_image_1 = imrotate(mainimage,15,"bicubic");
rotation_image_2 = imrotate(mainimage,45,"bilinear");
rotation_image_3 = imrotate(mainimage,85,"nearest");

% plotting
subplot(3,3,1),imshow(mainimage),title("Original Image");
subplot(3,3,2),imshow(rz_1),title("Resized by scale 4");
subplot(3,3,3),imshow(rz_2),title("Resized by 80 x 220");
subplot(3,3,4),imshow(rotation_image_1),title("15 d Rotation");
```

```
subplot(3,3,5),imshow(rotation_image_2),title("45 d Rotation");
subplot(3,3,6),imshow(rotation_image_3),title("85 d Rotation");
```



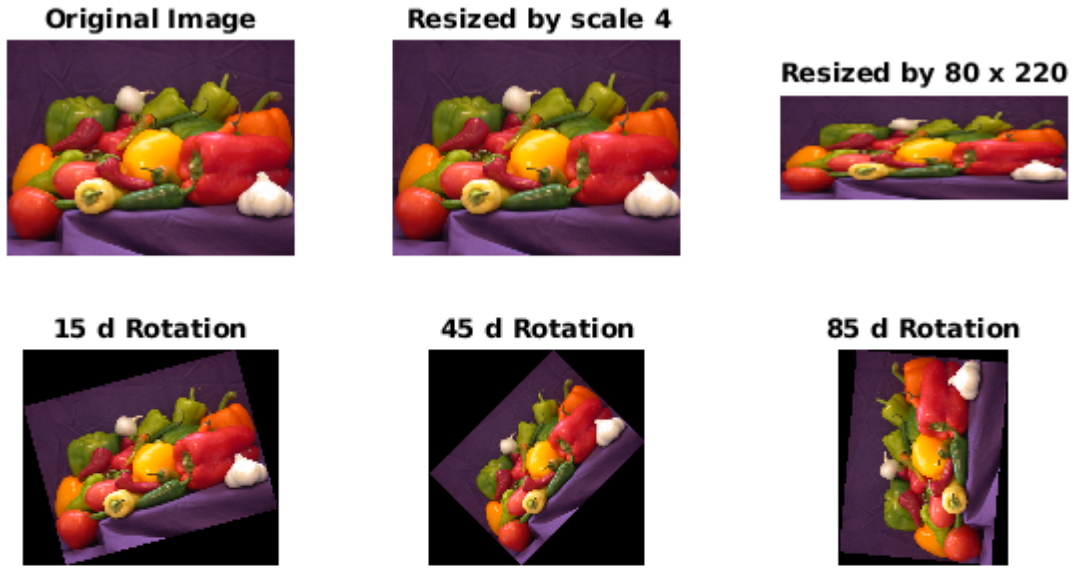


Write a Matlab program to perform Resize, Rotation of Gray-scale images using various methods.

Exploring Rotation & Resize using Gray-scale image file

```
% Gray-scale
mainimage = imread('cameraman.tif');

% resize
rz_1=imresize(mainimage,4);
rz_2=imresize(mainimage,[80,220]);

% rotate
% Methods Used :- nearest, bilinear and bicubic

rotation_image_1 = imrotate(mainimage,15,"bicubic");
rotation_image_2 = imrotate(mainimage,45,"bilinear");
rotation_image_3 = imrotate(mainimage,85,"nearest");

% plotting
subplot(3,3,1),imshow(mainimage),title("Original Image");
subplot(3,3,2),imshow(rz_1),title("Resized by scale 4");
subplot(3,3,3),imshow(rz_2),title("Resized by 80 x 220");
```

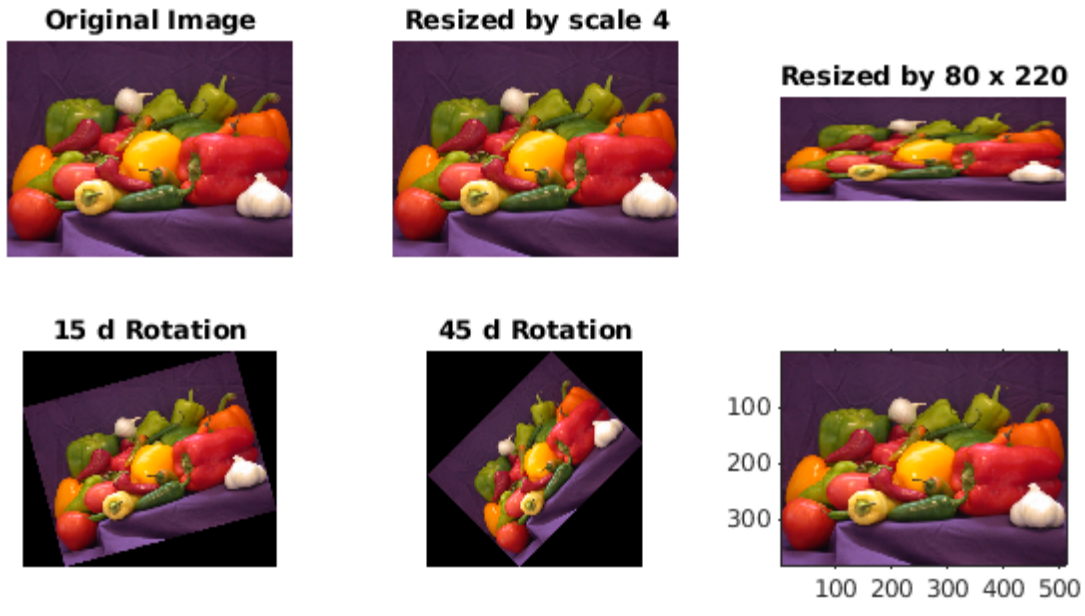
```
subplot(3,3,4),imshow(rotation_image_1),title("15 d Rotation");
subplot(3,3,5),imshow(rotation_image_2),title("45 d Rotation");
subplot(3,3,6),imshow(rotation_image_3),title("85 d Rotation");
```



Write a Matlab program to perform Resize, Rotation of color images using various methods.

Exploring Rotation & Resize using Color image file

```
% Color
mainimage = imread('peppers.png');

% resize
rz_1=imresize(mainimage,4);
rz_2=imresize(mainimage,[80,220]);

% rotate
% Methods Used :- nearest, bilinear and bicubic

rotation_image_1 = imrotate(mainimage,15,"bicubic");
rotation_image_2 = imrotate(mainimage,45,"bilinear");
rotation_image_3 = imrotate(mainimage,85,"nearest");

% plotting
subplot(3,3,1),imshow(mainimage),title("Original Image");
subplot(3,3,2),imshow(rz_1),title("Resized by scale 4");
subplot(3,3,3),imshow(rz_2),title("Resized by 80 x 220");
subplot(3,3,4),imshow(rotation_image_1),title("15 d Rotation");
subplot(3,3,5),imshow(rotation_image_2),title("45 d Rotation");
subplot(3,3,6),imshow(rotation_image_3),title("85 d Rotation");
```

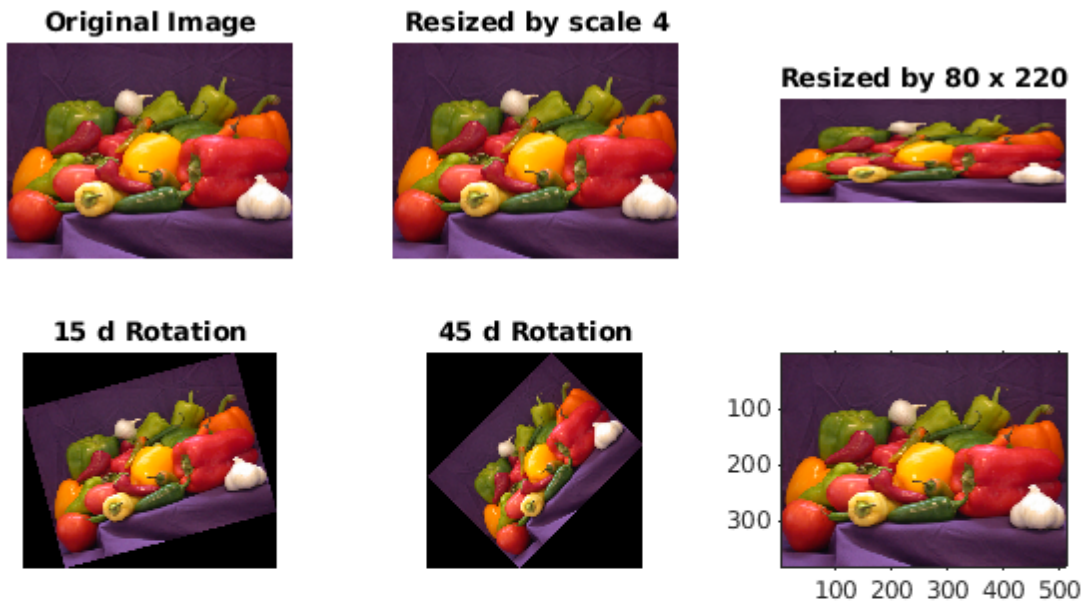


Matlab program to perform Resize

```
a=imread('peppers.png');
[rows,columns,layers]=size(a)
i=1;j=1;k=1;
c=zeros(rows/2,columns/2,layers);
c=uint8(c);

imshow(a)

a = double(a);
for x=1:2:rows-1;
  for y=1:2:columns-1;
    for z=1:layers;
      c(i,j,k)=1/4*(a(x,y,z)+a(x,y+1,z)+a(x+1,y,z)+a(x+1,y+1,z));
      k=k+1;
    end
    j=j+1;
    k=1;
  end
  i=i+1;
  j=1;
  k=1;
end

axis on;
```

```
figure,
imshow(c)
axis on;
```

```
rows =

   384


columns =

   512


layers =

     3
```



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