

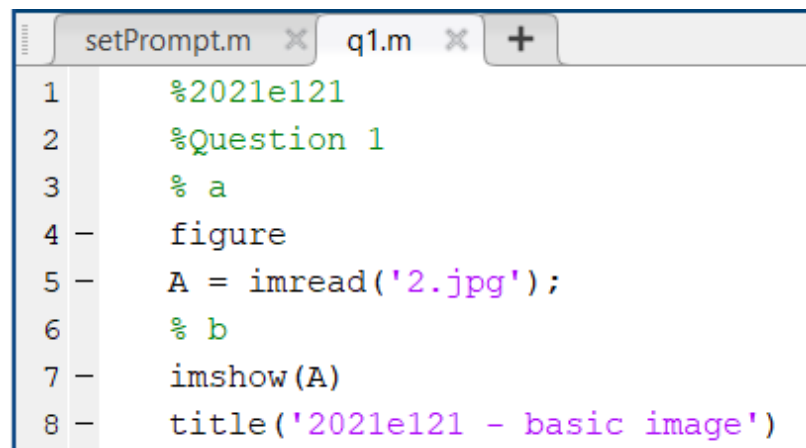
EC1011: COMPUTING
LAB 08: Domain Specific
Programming Languages

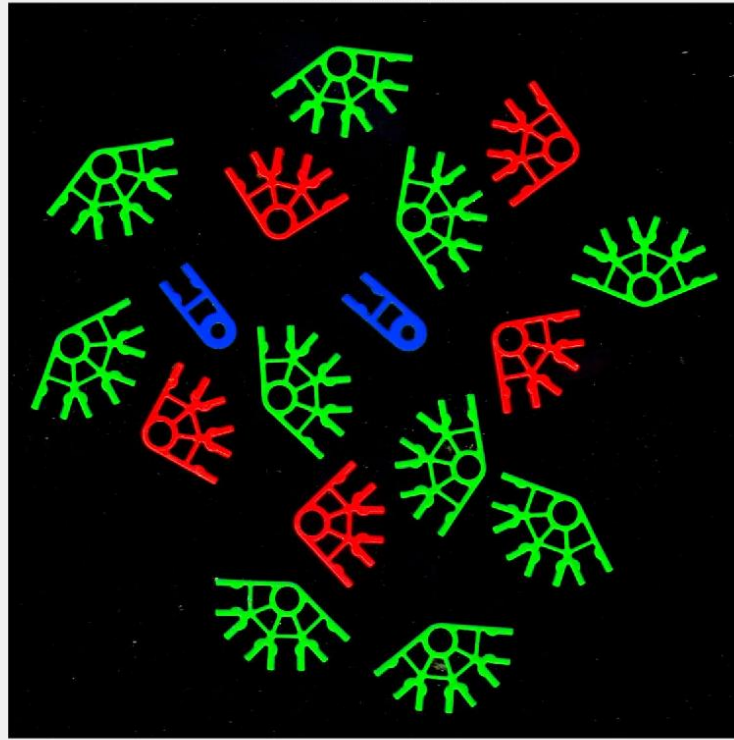
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REGISTRATION NO. : 2021/E/121
DATE ASSIGNED : 18 AUGUST 2022

01. Code

```
%2021e121
%Question 1
% a
figure
A = imread('2.jpg');
% b
imshow(A)
title('2021e121 - basic image')
% c
size(A)
% d
R = A(:,:,1);
G = A(:,:,2);
B = A(:,:,3);
figure
subplot(2,2,1)
imshow(A)
title('2021e121 - basic image')
subplot(2,2,2)
imshow(R)
title('2021e121 - Red')
subplot(2,2,3)
imshow(G)
title('2021e121 - Green')
subplot(2,2,4)
imshow(B)
title('2021e121 - Blue')
% e
figure
BW = rgb2gray(A);
imshow(BW)
title('2021e121')
```

1.a,b





c.

```

9      % c
10 -   size(A)

```

```

2021e121>>q1

```

```

ans =

```

```

1123

```

```

1121

```

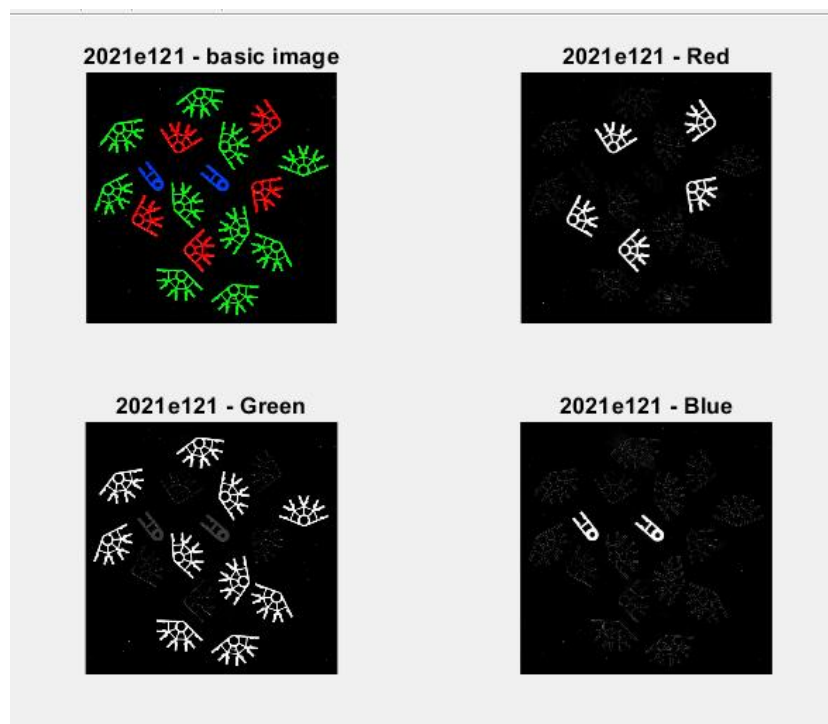
```

3

```

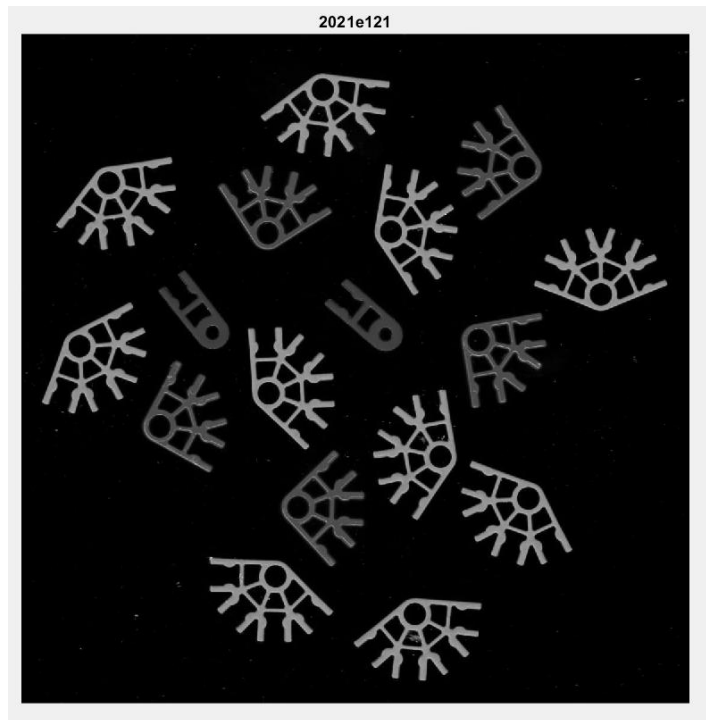
d.

```
setPrompt.m x q1.m +
1 %2021e121
2 %Question 1
3 % a
4 - figure
5 - A = imread('2.jpg');
6 % b
7 - imshow(A)
8 - title('2021e121 - basic image')
9 % c
10 - size(A)
11 % d
12 - R = A(:,:,1);
13 - G = A(:,:,2);
14 - B = A(:,:,3);
15 - figure
16 - subplot(2,2,1)
17 - imshow(A)
18 - title('2021e121 - basic image')
19 - subplot(2,2,2)
20 - imshow(R)
21 - title('2021e121 - Red')
22 - subplot(2,2,3)
23 - imshow(G)
24 - title('2021e121 - Green')
25 - subplot(2,2,4)
26 - imshow(B)
27 - title('2021e121 - Blue')
```



e.

```
28 % e
29 - figure
30 - BW = rgb2gray(A);
31 - imshow(BW)
32 - title('2021e121')
33
```



02. Code

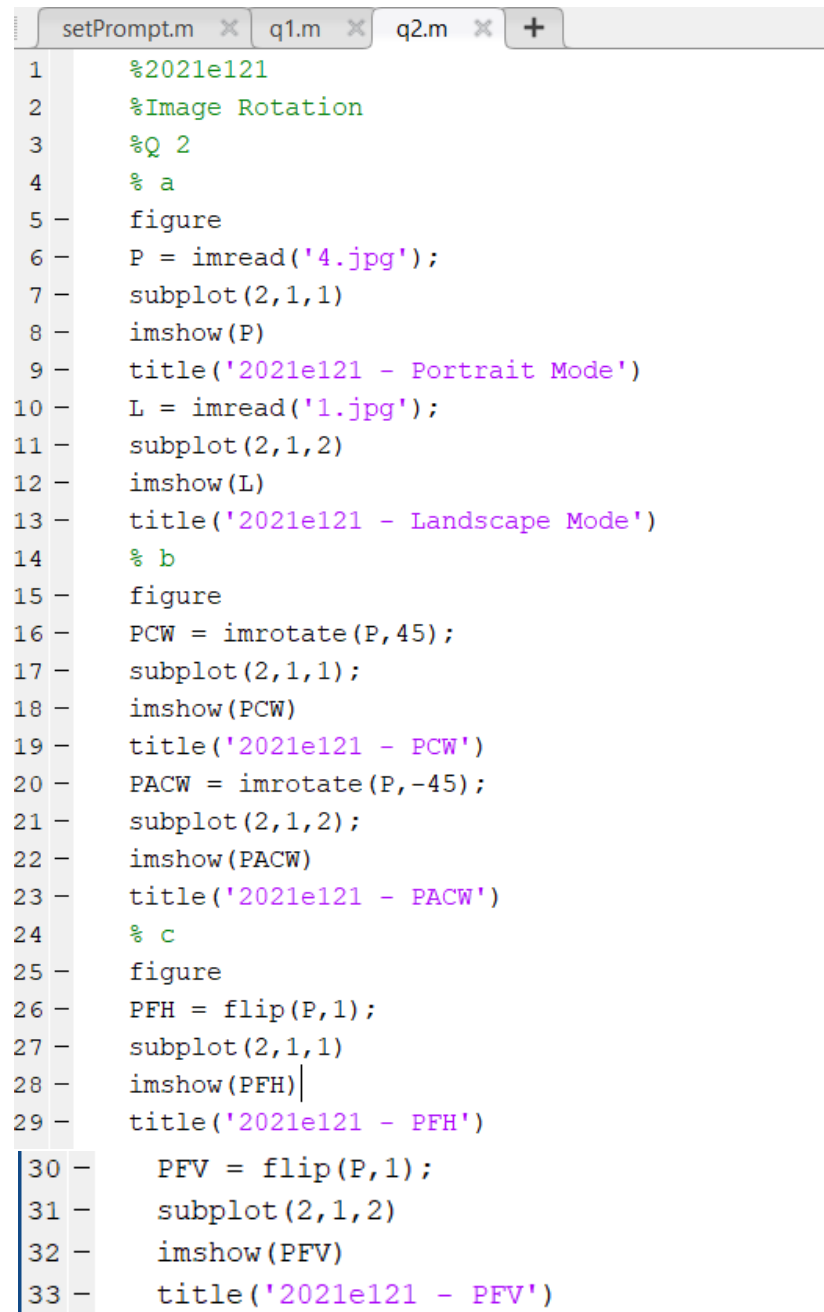
```
%2021e121
%Image Rotation
%Q 2
% a
figure
P = imread('4.jpg');
subplot(2,1,1)
imshow(P)
title('2021e121 - Portrait Mode')
L = imread('1.jpg');
subplot(2,1,2)
imshow(L)
title('2021e121 - Landscape Mode')
% b
figure
PCW = imrotate(P,45);
subplot(2,1,1);
imshow(PCW)
title('2021e121 - PCW')
PACW = imrotate(P,-45);
subplot(2,1,2);
imshow(PACW)
title('2021e121 - PACW')
```

```

% c
figure
PFH = flip(P,1);
subplot(2,1,1)
imshow(PFH)
title('2021e121 - PFH')
PFV = flip(P,1);
subplot(2,1,2)
imshow(PFV)
title('2021e121 - PFV')

```

code screenshot



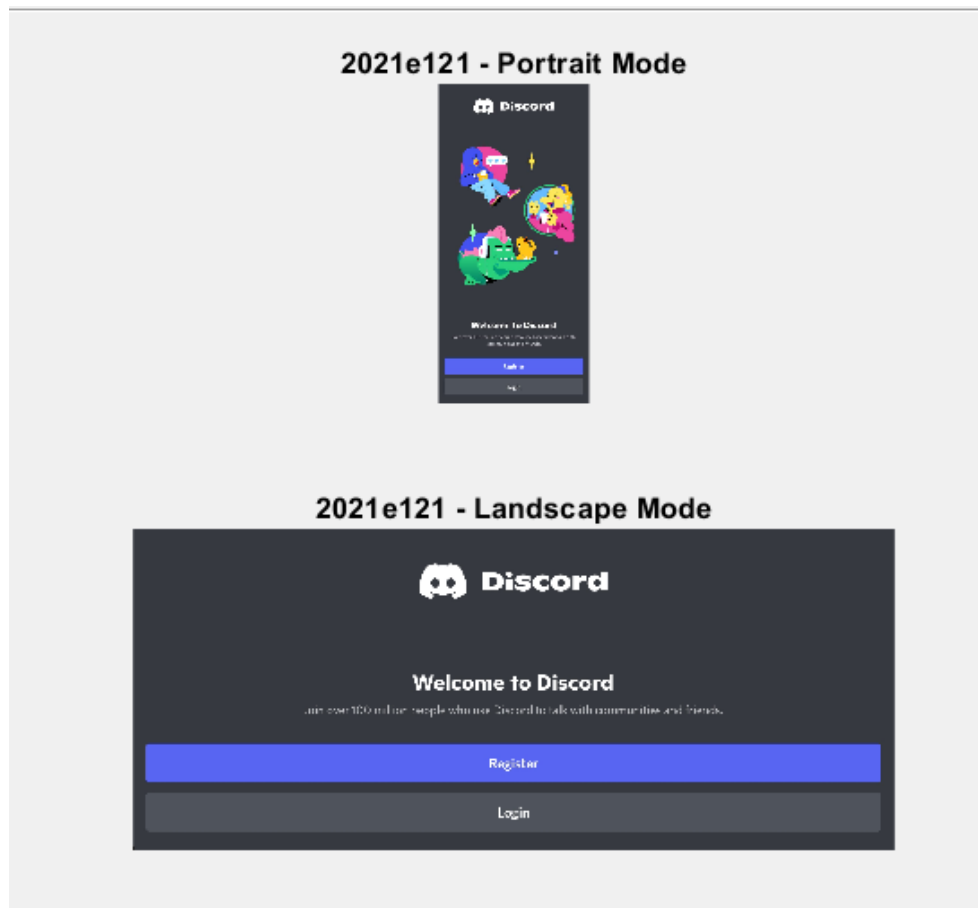
```

setPrompt.m x q1.m x q2.m x +
1      %2021e121
2      %Image Rotation
3      %Q 2
4      % a
5 -    figure
6 -    P = imread('4.jpg');
7 -    subplot(2,1,1)
8 -    imshow(P)
9 -    title('2021e121 - Portrait Mode')
10 -    L = imread('1.jpg');
11 -    subplot(2,1,2)
12 -    imshow(L)
13 -    title('2021e121 - Landscape Mode')
14     % b
15 -    figure
16 -    PCW = imrotate(P,45);
17 -    subplot(2,1,1);
18 -    imshow(PCW)
19 -    title('2021e121 - PCW')
20 -    PACW = imrotate(P,-45);
21 -    subplot(2,1,2);
22 -    imshow(PACW)
23 -    title('2021e121 - PACW')
24     % c
25 -    figure
26 -    PFH = flip(P,1);
27 -    subplot(2,1,1)
28 -    imshow(PFH)
29 -    title('2021e121 - PFH')
30 -    PFV = flip(P,1);
31 -    subplot(2,1,2)
32 -    imshow(PFV)
33 -    title('2021e121 - PFV')

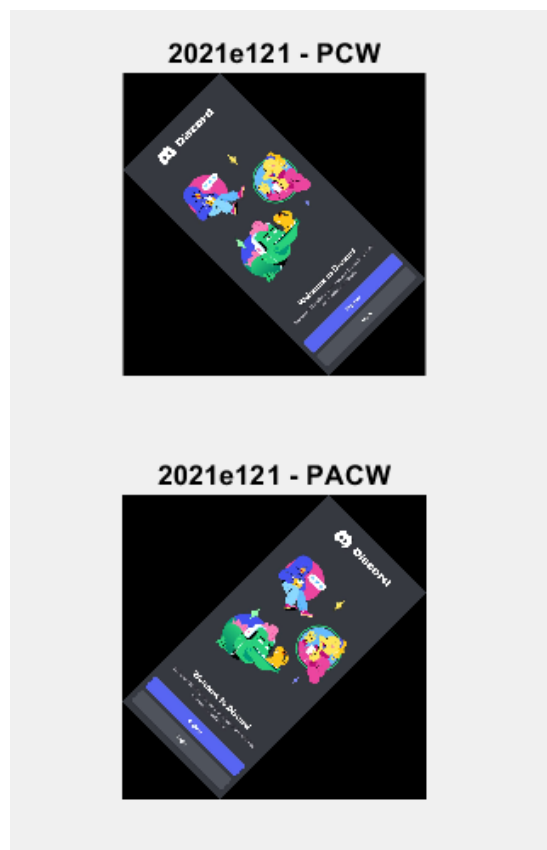
```

Figures screenshot

a.



b.



C.



d. function code

```
%2021e121
%phoneRotate function
%Question 2
%d
function [IM]=phoneRotate(angle)
P = imread('4.jpg');
L = imread('1.jpg');
if angle >= 360
    while angle >= 0
        angle = angle - 360;
    end
elseif angle <= -360
    while angle <= 0
        angle = angle + 360;
    end
end
if (0 <= angle) && (angle <= 45)
    IM = imrotate(P,angle);
elseif (45 < angle) && (angle <= 135)
    IM = imrotate(L,angle);
elseif (135 < angle) && (angle <= 225)
    IM = imrotate(P,angle);
elseif (225 < angle) && (angle <= 315)
    IM = imrotate(L,angle);
elseif (315 < angle) && (angle <= 360)
    IM = imrotate(P,angle);
elseif (0 >= angle) && (angle >= -45)
    IM = imrotate(P,angle);
elseif (-45 > angle) && (angle >= -135)
```

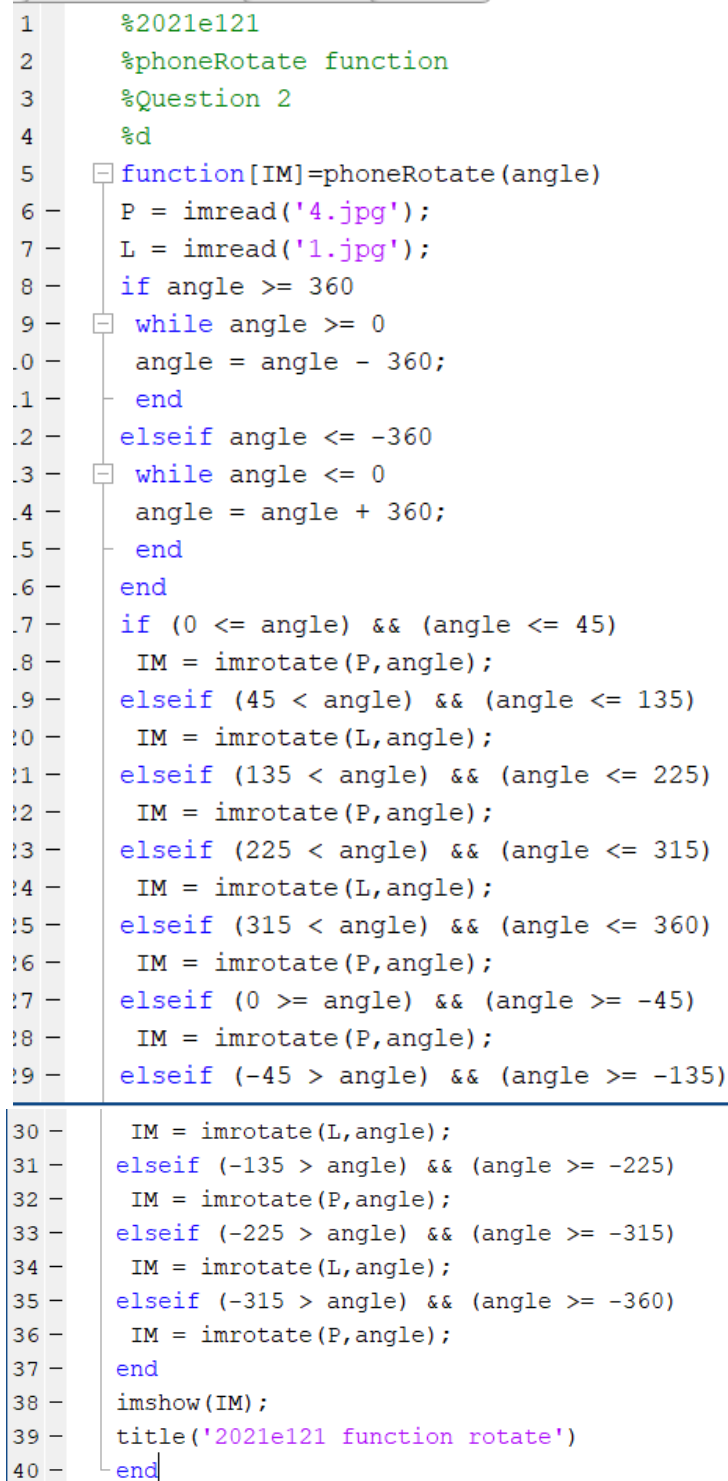


```

    IM = imrotate(L,angle);
elseif (-135 > angle) && (angle >= -225)
    IM = imrotate(P,angle);
elseif (-225 > angle) && (angle >= -315)
    IM = imrotate(L,angle);
elseif (-315 > angle) && (angle >= -360)
    IM = imrotate(P,angle);
end
imshow(IM);
title('2021e121 function rotate')
end

```

screenshot



```

1      %2021e121
2      %phoneRotate function
3      %Question 2
4      %d
5      function [IM]=phoneRotate(angle)
6      -   P = imread('4.jpg');
7      -   L = imread('1.jpg');
8      -   if angle >= 360
9      -   -   while angle >= 0
10      -   -   -   angle = angle - 360;
11      -   -   end
12      -   elseif angle <= -360
13      -   -   while angle <= 0
14      -   -   -   angle = angle + 360;
15      -   -   end
16      -   end
17      -   if (0 <= angle) && (angle <= 45)
18      -   -   IM = imrotate(P,angle);
19      -   elseif (45 < angle) && (angle <= 135)
20      -   -   IM = imrotate(L,angle);
21      -   elseif (135 < angle) && (angle <= 225)
22      -   -   IM = imrotate(P,angle);
23      -   elseif (225 < angle) && (angle <= 315)
24      -   -   IM = imrotate(L,angle);
25      -   elseif (315 < angle) && (angle <= 360)
26      -   -   IM = imrotate(P,angle);
27      -   elseif (0 >= angle) && (angle >= -45)
28      -   -   IM = imrotate(P,angle);
29      -   elseif (-45 > angle) && (angle >= -135)
30      -   -   IM = imrotate(L,angle);
31      -   elseif (-135 > angle) && (angle >= -225)
32      -   -   IM = imrotate(P,angle);
33      -   elseif (-225 > angle) && (angle >= -315)
34      -   -   IM = imrotate(L,angle);
35      -   elseif (-315 > angle) && (angle >= -360)
36      -   -   IM = imrotate(P,angle);
37      -   end
38      -   imshow(IM);
39      -   title('2021e121 function rotate')
40      -   end

```

e. code

```
%2021e121
%phoneRotate function
%Question 2
%e
subplot(2,2,1)
phoneRotate(367)
title('2021e121 - angle:683')
subplot(2,2,2)
phoneRotate(819)
title('2021e121 - angle:-1731')
subplot(2,2,3)
phoneRotate(-1645)
title('2021e121 - angle:-858')
subplot(2,2,4)
phoneRotate(-448)
title('2021e121 - angle:-97')
```

```
1 %2021e121
2 %phoneRotate function
3 %Question 2
4 %e
5 - subplot(2,2,1)
6 - phoneRotate(367)
7 - title('2021e121 - angle:683')
8 - subplot(2,2,2)
9 - phoneRotate(819)
10 - title('2021e121 - angle:-1731')
11 - subplot(2,2,3)
12 - phoneRotate(-1645)
13 - title('2021e121 - angle:-858')
14 - subplot(2,2,4)
15 - phoneRotate(-448)
16 - title('2021e121 - angle:-97')
|
```

2021e121 - angle:683



2021e121 - angle:-1731



2021e121 - angle:-858



2021e121 - angle:-97



03. Code

```
%2021e121
%Images filters
%Question 3
k = ones(21);
k = k / sum(sum(k));
A = imread('3.jpg');
blur = imfilter(A,k);
imshow(blur)
title('2021e121')
```

code screenshot

```
1      %2021e121
2      %Images filters
3      %Question 3
4 -    k = ones(21);
5 -    k = k / sum(sum(k));
6 -    A = imread('3.jpg');
7 -    blur = imfilter(A,k);
8 -    imshow(blur)
9 -    title('2021e121')
```

Figure Screenshots



04. Code

```
%2021e121
%Image_histogram
%Question 4
% a
figure
A = imread('2.jpg');
BW = rgb2gray(A);
imhist(BW);
title('2021e121 - Histogram')
% b
threshold = 57;
% c
T = 255 * graythresh(BW);
% d
figure
R = imbinarize(BW,graythresh(BW));
imshow(R)
title('2021e121 - Binarized image')
% e
figure
k = ones(25);
k = k / sum(sum(k));
blur = imfilter(BW,k);
T2 = 255 * graythresh(blur);
R2 = imbinarize(blur,graythresh(blur));
imshow(R2)
title('2021e121 - Blured image')
% f
[~,n] = bwlabel(R2);
% g
T = A(:,:,1);
R3 = imbinarize(T,graythresh(T));
[~,n] = bwlabel(R3)
```

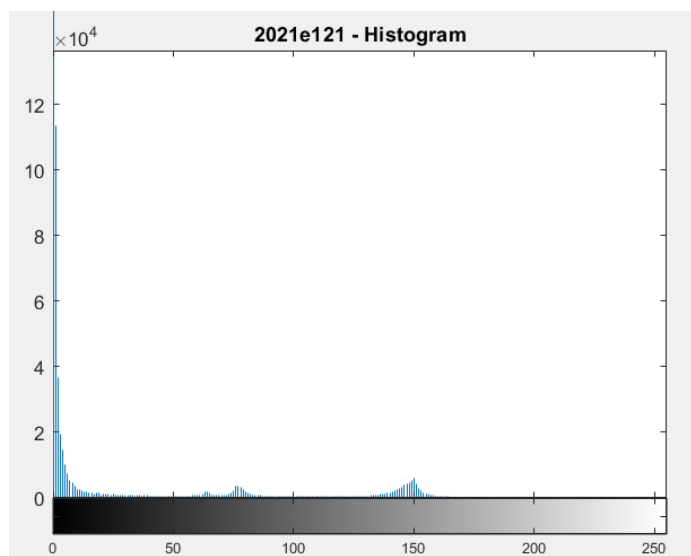
Code screenshot

```
%2021e121
%Image_histogram
%Question 4
% a
figure
A = imread('2.jpg');
BW = rgb2gray(A);
imhist(BW);
title('2021e121 - Histogram')
% b
threshold = 57;
% c
T = 255 * graythresh(BW);
% d
figure
R = imbinarize(BW,graythresh(BW));
imshow(R)
title('2021e121 - Binarized image')
% e
figure
k = ones(25);
k = k / sum(sum(k));
blur = imfilter(BW,k);
T2 = 255 * graythresh(blur);
R2 = imbinarize(blur,graythresh(blur));
imshow(R2)
title('2021e121 - Blured image')
% f
[~,n] = bwlabel(R2);

% g
T = A(:,:,1);
R3 = imbinarize(T,graythresh(T));
[~,n] = bwlabel(R3);
```

Figures screenshots

a.



b/c.

```
2021e121>>IMAGE_histogram
```

```
n =
```

```
16
```

d.



e.

