EC1011: COMPUTING

LAB 08: Domain Specific Programming Languages

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REGISTRATION NO. : **2021/E/121**

DATE ASSIGNED : **18 AUGUST 2022**

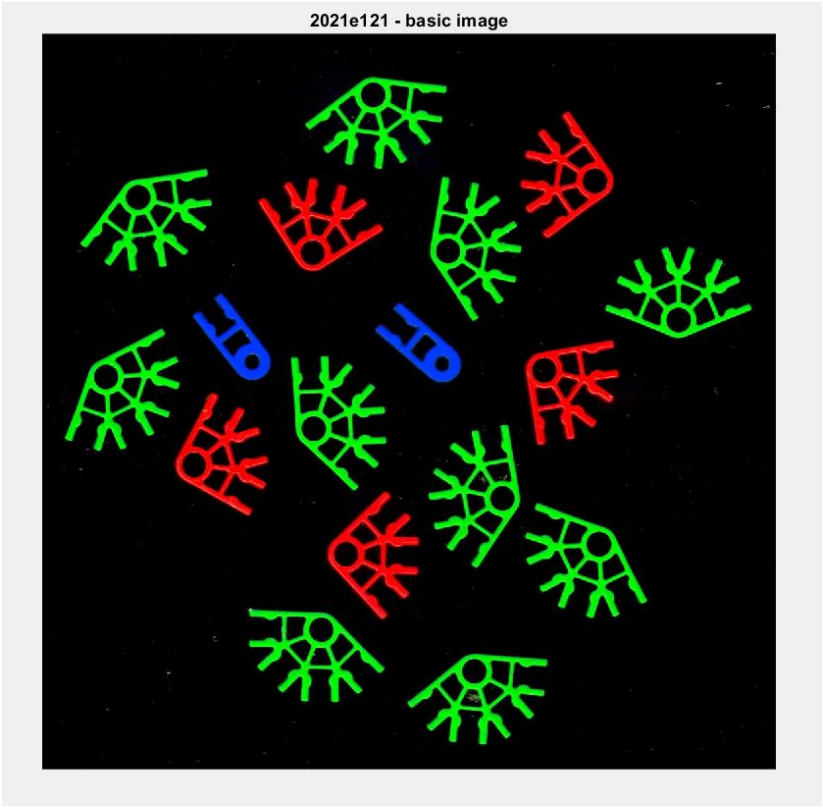
01. Code

```
%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

setPrompt.m | 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')
```



c.

```
 9       % c
10 -     size(A)
```

```
2021e121>>q1

ans =

        1123        1121           3
```

d.

setPrompt.m | q1.m

```
%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)
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title('2021e121 - Red')
subplot(2,2,3)
imshow(G)
title('2021e121 - Green')
subplot(2,2,4)
imshow(B)
title('2021e121 - Blue')
```
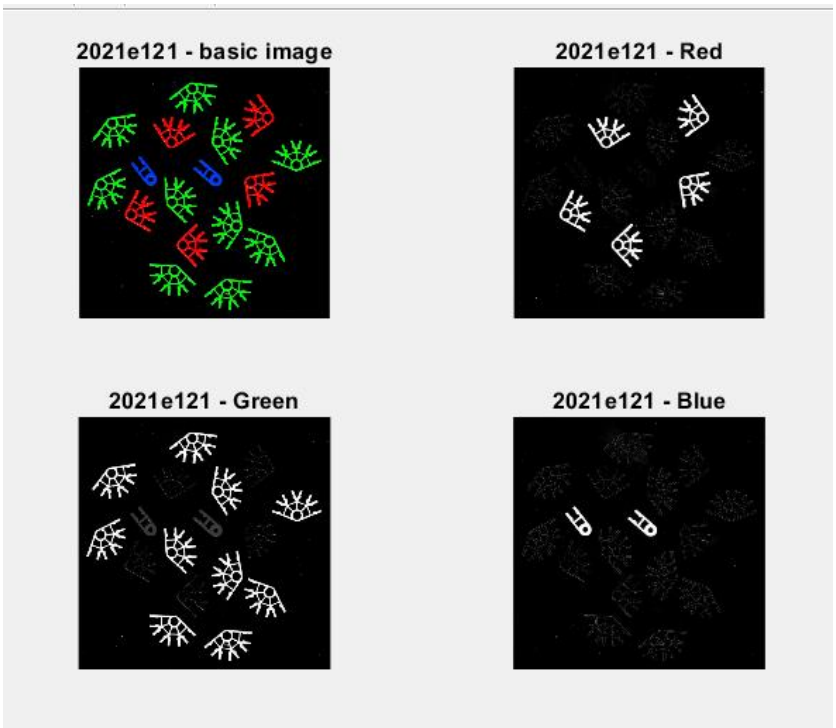
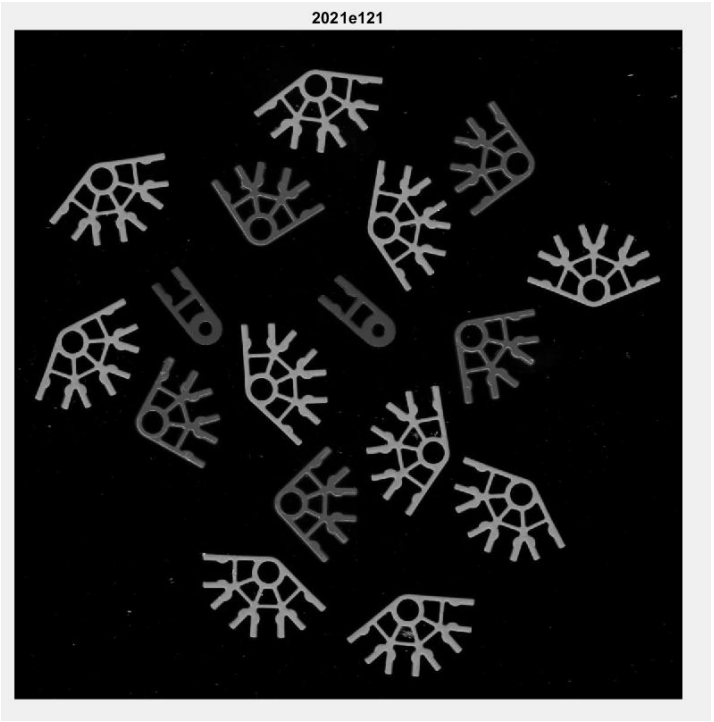



e.

```
% e
figure
BW = rgb2gray(A);
imshow(BW)
title('2021e121')
```

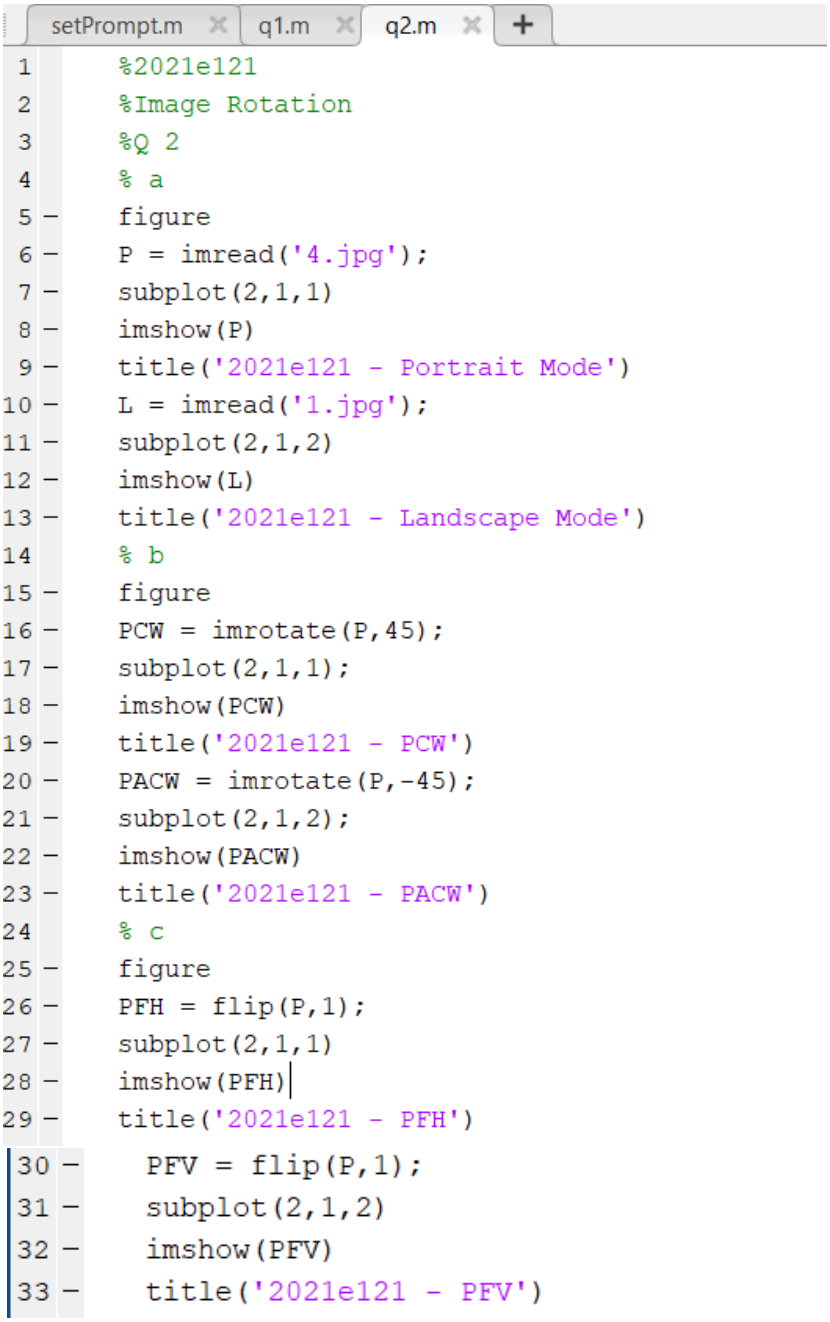


02. Code

```
%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')
```

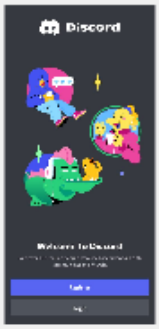
code screenshot



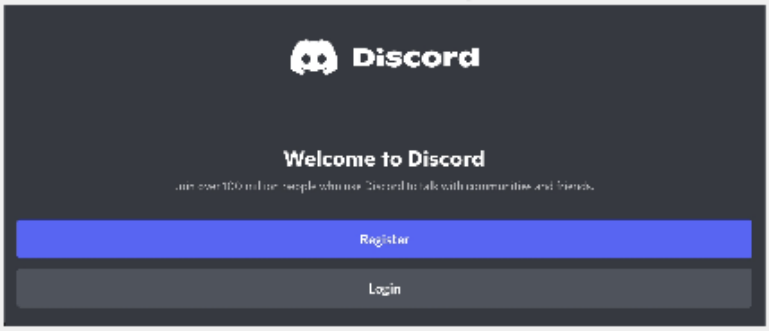
Figures screenshot

a.

2021e121 - Portrait Mode



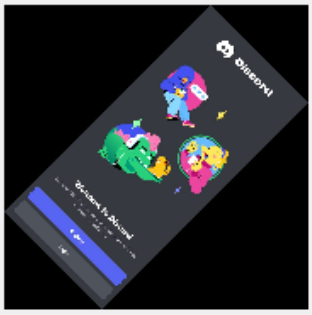
2021e121 - Landscape Mode



b.

2021e121 - PCW

2021e121 - PACW



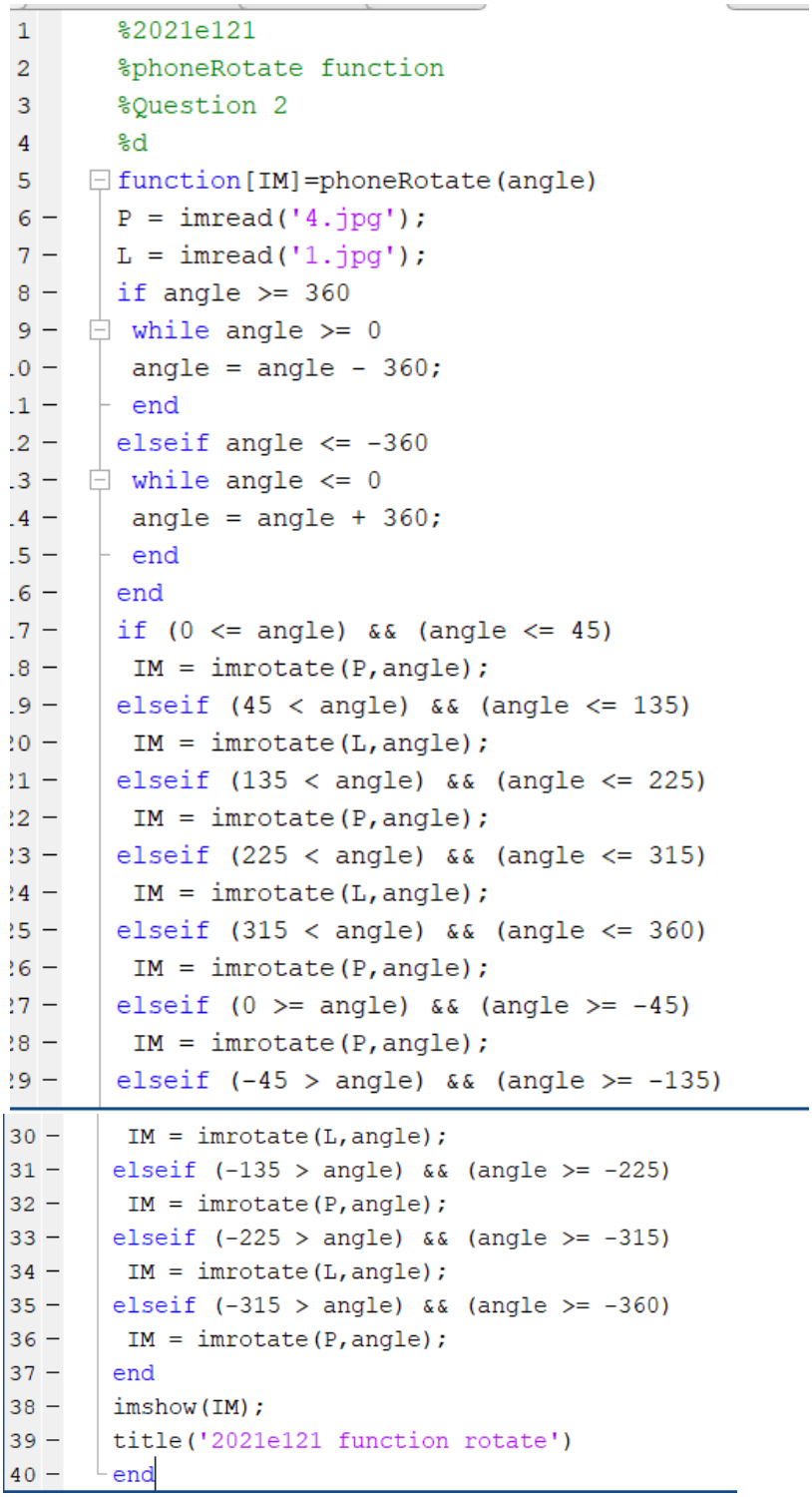
c.

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
```

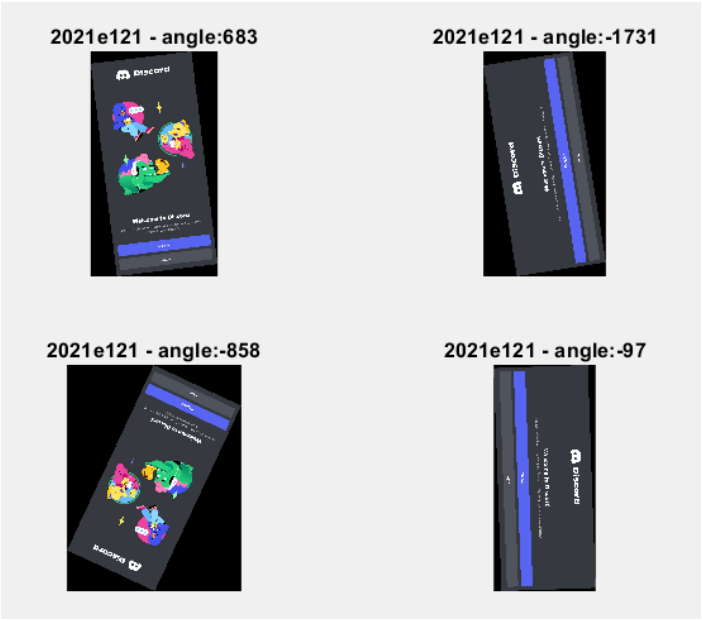
screenshot



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')
```



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

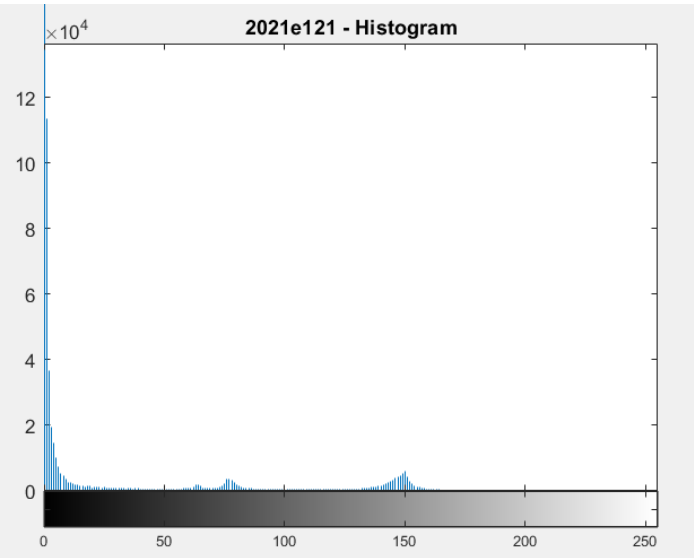
```
%2021e121
%Image_histogram
%Question 4
% a
figure
A = imread('2.jpg');
BW = rgb2gray(A);
imhist(BW);
title('2021e121 - Histogram')
% b
threshold = 57;
% c
T = 255 * graythresh(BW);
% d
figure
R = imbinarize(BW,graythresh(BW));
imshow(R)
title('2021e121 - Binarized image')
% e
figure
k = ones(25);
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

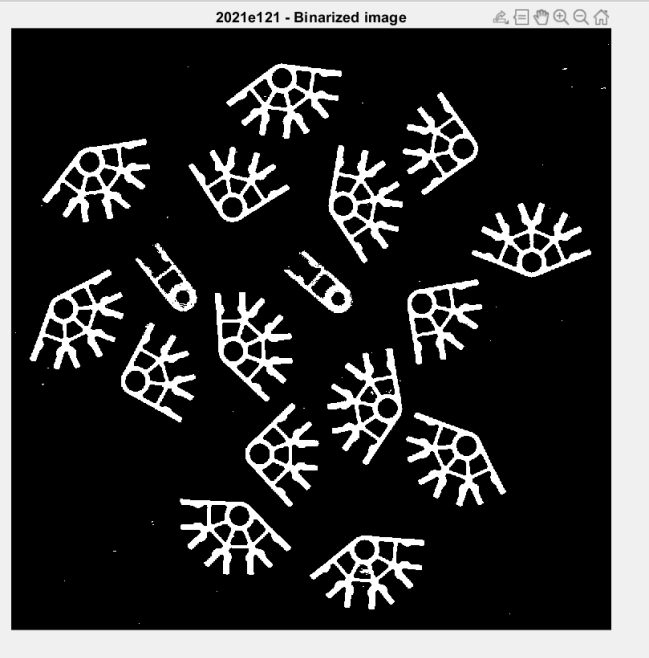
a.



b/c.

```
2021e121>>IMAGE_histogram

n =

    16
```

d.



e.