**Dobincă Delia Dumitrița**

**1305B**

**Tema 2**

% Cod program:

img = imread('1305B\_1306A.png');

imshow(img);

title('Imaginea originală');

gray\_img = rgb2gray(img);

I=gray\_img>=255;

figure

imshow(I);

bw = imcomplement(I);

figure

imshow(bw);

title('Imagine binarizată');

stats = regionprops(bw, 'Area', 'Perimeter', 'BoundingBox', 'Centroid', 'Eccentricity', 'Extent', 'Solidity');

labeled = bwlabel(bw);

figure

imshow(RGB\_label);

title('Forme etichetate');

figure, imshow(img);

title('Forme detectate');

hold on

for k = 1:length(stats)

centroid = stats(k).Centroid;

area = stats(k).Area;

perimeter = stats(k).Perimeter;

metric = 4\*pi\*area/(perimeter^2); % circularitate

ecc = stats(k).Eccentricity;

extent = stats(k).Extent;

solidity = stats(k).Solidity;

shape = 'Necunoscut';

if metric > 0.85 && stats(k).Eccentricity < 0.6

shape = 'Cerc';

elseif metric > 0.85 && stats(k).Eccentricity >= 0.6

shape = 'Elipsă';

elseif solidity < 0.9 && extent < 0.7

shape = 'Stea';

elseif extent > 0.85

shape = 'Dreptunghi';

elseif extent < 0.75 && centroid(2) < size(bw,1)/2

shape = 'Triunghi';

elseif extent < 0.75 && centroid(2) > size(bw,1)/2

shape = 'Triunghi întors';

elseif extent > 0.65 && extent < 0.85 && solidity > 0.95

shape = 'Pătrat rotit';

elseif abs(ecc - 0.6) < 0.2

shape = 'Romb';

elseif extent < 0.7 && euler == 0 && solidity > 0.8

shape = 'Triunghi cu gaură';

end

text(centroid(1), centroid(2), shape, 'Color','k','FontSize',12, 'FontWeight', 'bold');

end

hold off