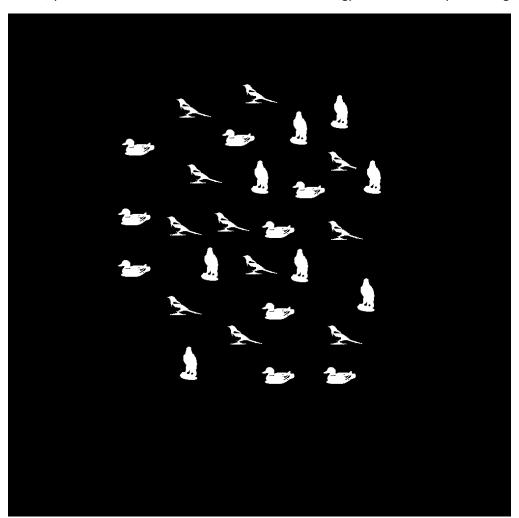
ASSIGNMENT 4

Magpie is a common bird found in parks, towns and forests in **temperate regions of Europe, Asia, and western North America.**



Please, provide a class that identifies and counts the magpies in the binary test image shown below:



You may use the reference binary image of a single magpie:



To this end, prepare the private method LoadImage that loads the image from the file, you may use the command img = ImageIO.read(new File("file name.tif"));

Print the error messages, if the file is not existing, or if it cannot be opened.

To access the pixel values, prepare the private method ImageToArray, that converts the img to the binary array. You may obtain the pixels values from the img in the following way:

```
//get pixel value
int p = img.getRGB(x,y);

//get alpha
int a = (p>>24) & 0xff;

//get red
int r = (p>>16) & 0xff;

//get green
int g = (p>>8) & 0xff;

//get blue
int a = p & 0xff;
```

The method should prepare the binary array which holds the image (with the array's element equal to 0 when the corresponding pixel is dark, 1 otherwise).

Use both methods LoadImage and ImageToArray in the class constructor, to load and store both the test image, and the reference image.

Prepare the public method GetMagpies, which counts the number of the magpies in the test image, and stores the coordinates of the magpies (for example as an ArrayList)

Prepare the public method ClearImage, which produces a new array holding an image with all the birds other than magpies removed. You can prepare the array representing the black image, and copy the magpies you found in previously created method (set the pixels to white).

Prepare the public method ${\tt DisplayImage}\$ that creates and saves an array as an image.

```
Create a new black image,
var image = new BufferedImage(100, 100, BufferedImage.TYPE_BYTE_GRAY);
Set the white pixels in the following way:
Color white = new Color(255, 255, 255);
int rgb = white.getRGB();
```

image.setRGB(x, y, rgb); where x,y are the coordinates of the pixel you want to save.

Invoke all the public methods in your code.