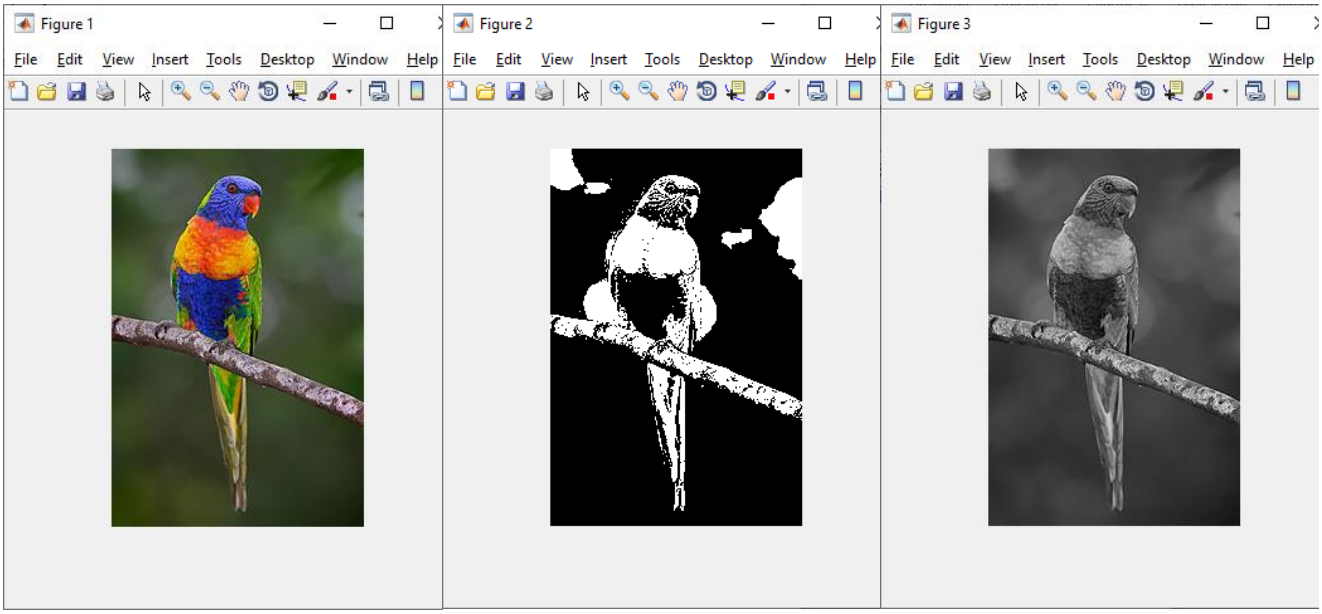
Classes 10 - Noise in Digital Image Processing

Example 1.

Types of digital images:

```
L=imread('lorikeet.jpg');
figure; imshow(L);
L1 = im2bw(L, 0.35);
figure; imshow(L1);
L2=rgb2gray(L);
figure; imshow(L2);
```



Exercise 1

Write a program for different types of digital images: color, gray and binary. Use the binarization threshold according to the table 10.1 according to the option:

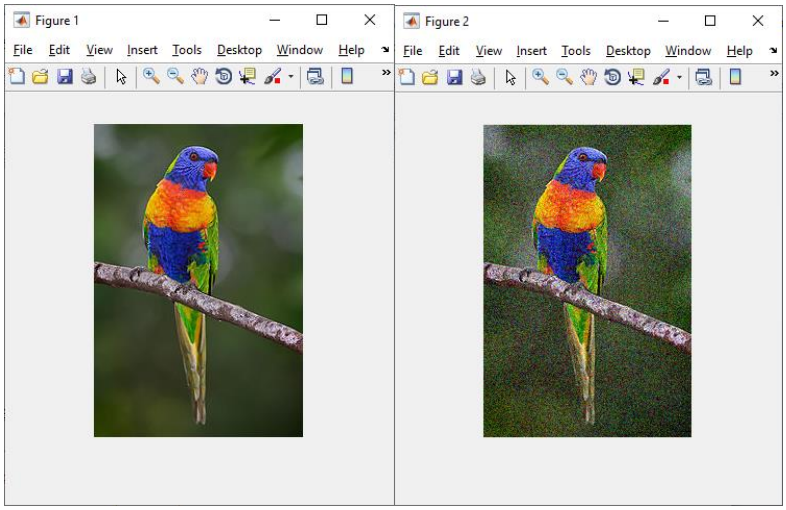
Table 10.1

Variant number	Threshold
1	0.1
2	0.15
3	0.2
4	0.25
5	0.3
6	0.35
7	0.4
8	0.45
9	0.5
10	0.55
11	0.6
12	0.65
13	0.7
14	0.75
15	0.8
16	0.85
17	0.09
18	0.095
19	0.01
20	0.015

Example 2.

Gaussian Noise in Matlab.

```
L=imread('lorikeet.jpg');
figure; imshow(L);
NoiseImage = imnoise(L,'gaussian', 0.01);
figure; imshow(NoiseImage);
```



Exercise 2

Write a program to add Gaussian noise. Noise dispersion according to the table 10.2 according to the variant:

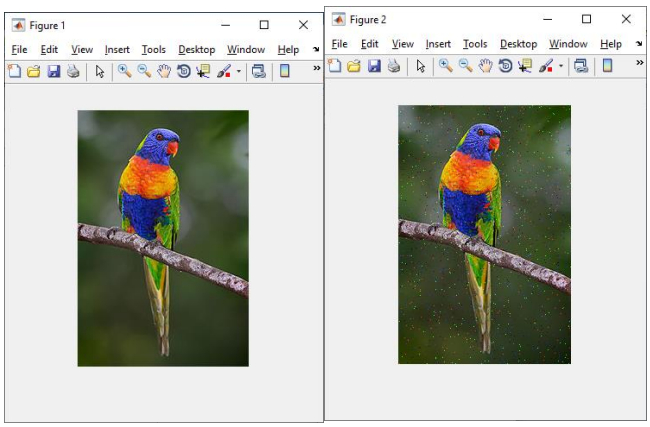
Table 10.2

Variant number	Dispersion
1	0.01
2	0.015
3	0.02
4	0.025
5	0.03
6	0.035
7	0.04
8	0.045
9	0.05
10	0.055
11	0.06
12	0.065
13	0.07
14	0.075
15	0.08
16	0.085
17	0.09
18	0.095
19	0.1
20	0.15

Example 3.

Salt & pepper noise in Matlab.

```
L=imread('lorikeet.jpg');
figure; imshow(L);
NoiseImage = imnoise(L,'salt & pepper', 0.01);
figure; imshow(NoiseImage);
```



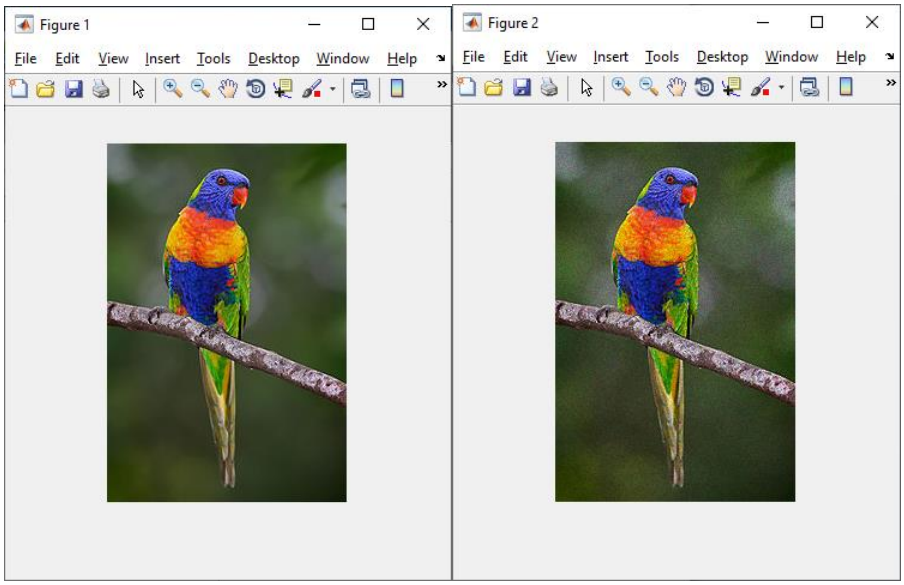
Exercise 3

Write a program to add Salt & pepper *noise. Noise dispersion according to the table 10.2 according to the variant.*

Example 4

Speckle noise in Matlab.

```
L=imread('lorikeet.jpg');
figure; imshow(L);
NoiseImage = imnoise(L,'speckle', 0.01);
figure; imshow(NoiseImage);
```



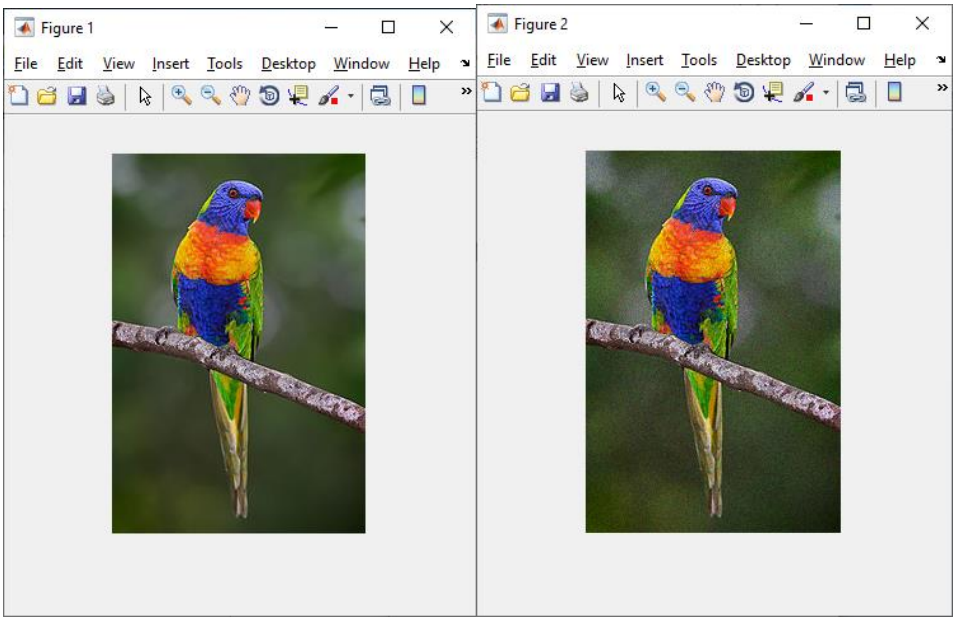
Exercise 4

Write a program to add Speckle *noise. Noise dispersion according to the table 10.2 according to the variant.*

Example 5

Poisson noise in Matlab.

```
L=imread('lorikeet.jpg');
figure; imshow(L);
NoiseImage = imnoise(L,'poisson');
figure; imshow(NoiseImage);
```



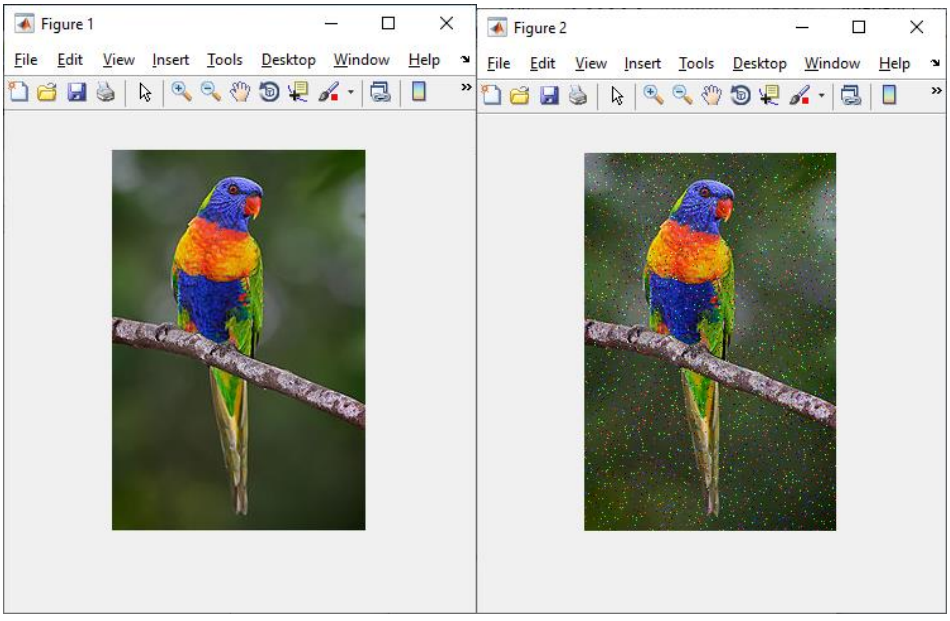
Exercise 5

Write a program to add Poisson *noise.*

Example 6

Different noise: salt & pepper + poisson.

```
L=imread('lorikeet.jpg');
figure; imshow(L);
NoiseImage = imnoise(L,'salt & pepper', 0.03);
NoiseImage1 = imnoise(NoiseImage,'poisson');
figure; imshow(NoiseImage);
```



Exercise 6

Write a program for different noises. Noise combination options in the table 10.3 according to your option:

Table 10.3

Variant number	Noise
1	salt & pepper, speckle
2	salt & pepper, gaussian
3	poisson, salt & pepper
4	gaussian,salt & pepper
5	speckle, gaussian
6	speckle, poisson
7	gaussian, speckle
8	speckle, poisson, gaussian
9	gaussian, poisson
10	gaussian, poisson, Speckle
11	gaussian, Speckle, poisson
12	speckle, poisson, gaussian
13	speckle, salt & pepper
14	speckle, poisson, salt & pepper
15	poisson, gaussian
16	poisson, speckle, gaussian
17	poisson, gaussian, salt & pepper
18	poisson, gaussian, speckle
19	poisson, salt & pepper, speckle
20	poisson, speckle, salt & pepper