practise

Image Analysis using NP, PLT, PIL

In [1]:
```
import numpy as np
```

In [4]:
```
a=np.ones((5,5))
a
```

Out[4]:
```
array([[1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.],
       [1., 1., 1., 1., 1.]])
```

In [5]:
```
a=np.ones((5,5),dtype=int)
a
```

Out[5]:
```
array([[1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1]])
```

In [6]:
```
b=np.zeros((5,5),dtype=int)
b
```

Out[6]:
```
array([[0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0]])
```

In [7]:
```
a
```

Out[7]:
```
array([[1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1]])
```

In [8]:
```
b
```

Out[8]:
```
array([[0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0],
       [0, 0, 0, 0, 0]])
```

In [9]:
```
a*255
```

Out[9]:
```
array([[255, 255, 255, 255, 255],
       [255, 255, 255, 255, 255],
       [255, 255, 255, 255, 255],
       [255, 255, 255, 255, 255],
       [255, 255, 255, 255, 255]])
```

In [10]:
```
a
```

Out[10]:
```
array([[1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1],
       [1, 1, 1, 1, 1]])
```

In [11]:
```
import matplotlib.pyplot as plt
```

In [12]:
```
%matplotlib inline
```

In [13]:
```
from PIL import Image
```

In [15]:
```
bird_img=Image.open(r'C:\Users\DELL\Downloads\Birds.jpeg')
bird_img
```

Out[15]:

In [16]:
```
type(bird_img)
```

Out[16]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [17]:
```
bird_arr=np.asarray(bird_img)
bird_arr
```

Out[17]:
```
array([[[174, 181, 104],
        [173, 179, 105],
        [171, 177, 103],
        ...,
        [205, 214,  89],
        [206, 214,  92],
        [206, 214,  92]],

       [[179, 186, 109],
        [178, 185, 108],
        [176, 182, 108],
        ...,
        [205, 214,  87],
        [206, 215,  90],
        [206, 214,  92]],

       [[186, 193, 115],
        [185, 192, 114],
        [183, 190, 113],
        ...,
        [205, 214,  87],
        [205, 214,  89],
        [205, 214,  89]],

       ...,

       [[124, 135,  67],
        [123, 134,  66],
        [123, 132,  65],
        ...,
        [ 61,  49,  33],
        [ 66,  54,  38],
        [ 68,  56,  40]],

       [[124, 135,  67],
        [123, 134,  66],
        [122, 133,  65],
        ...,
        [ 63,  51,  35],
        [ 66,  54,  38],
        [ 67,  55,  39]],

       [[124, 135,  69],
        [123, 134,  68],
        [122, 133,  67],
        ...,
        [ 65,  53,  37],
        [ 67,  55,  39],
        [ 66,  54,  38]]], dtype=uint8)
```

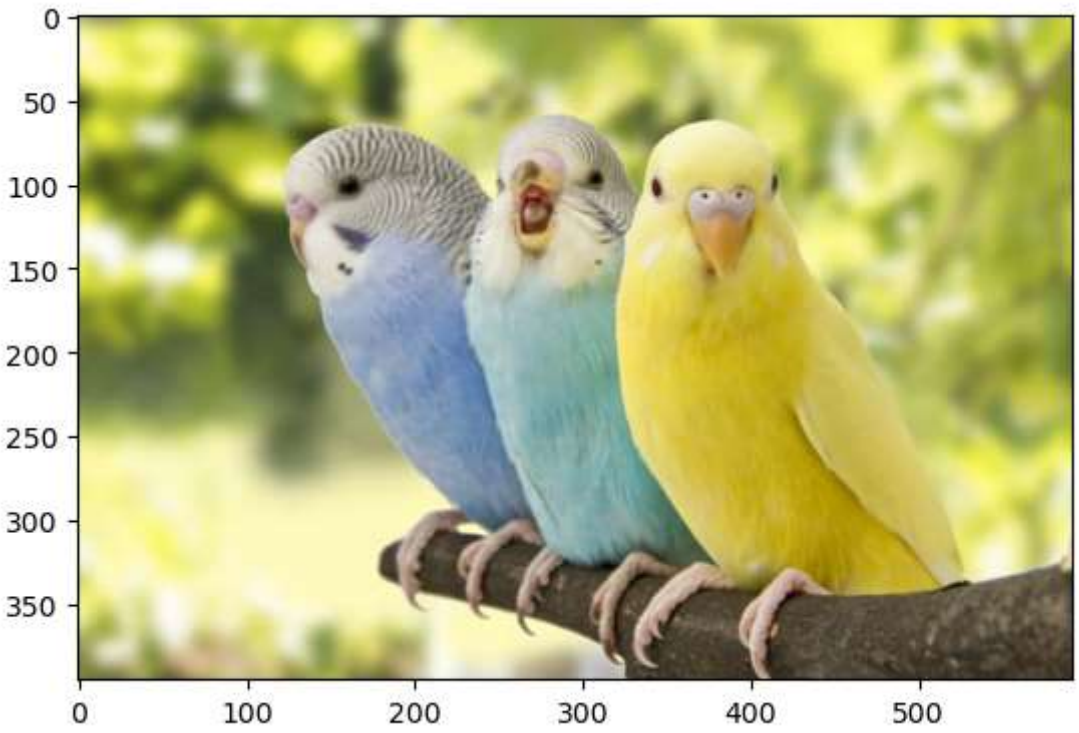
In [18]:
```
type(bird_arr)
```

Out[18]:
```
numpy.ndarray
```

In [19]:
```
bird_arr.shape
```

Out[19]: (395, 592, 3)

In [23]:
```
plt.imshow(bird_arr)
plt.show()
```



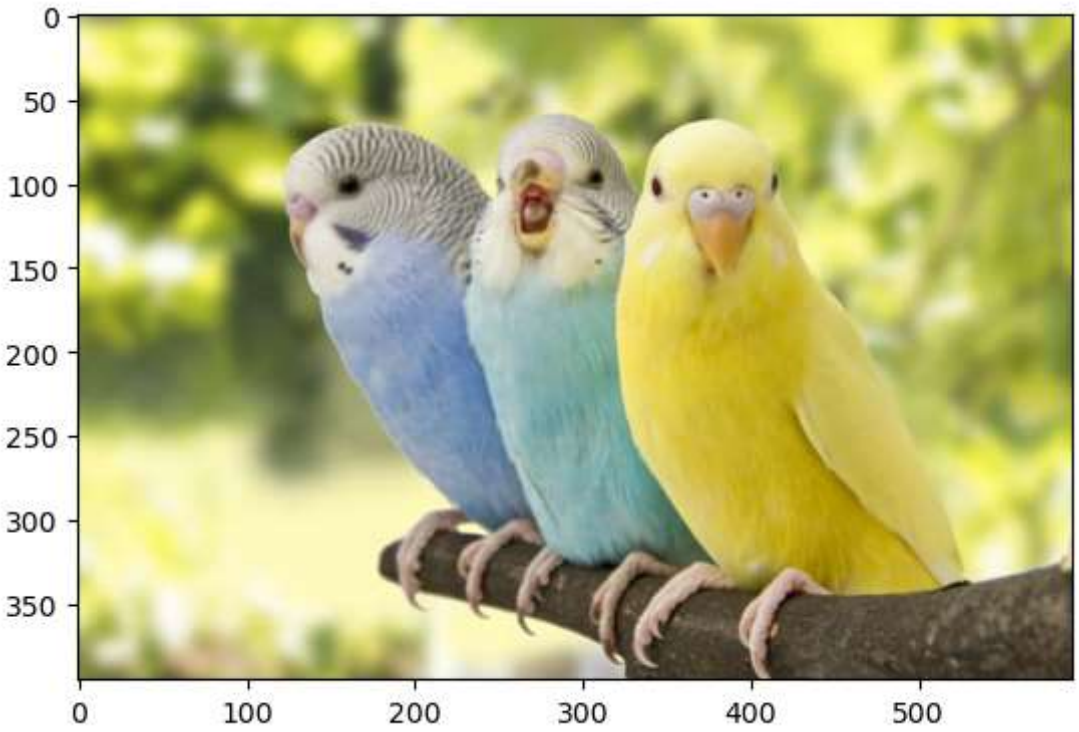
In [25]:
```
bird_red=bird_arr.copy()
bird_red
```

Out[25]:
```
array([[[174, 181, 104],
        [173, 179, 105],
        [171, 177, 103],
        ...,
        [205, 214,  89],
        [206, 214,  92],
        [206, 214,  92]],

       [[179, 186, 109],
        [178, 185, 108],
        [176, 182, 108],
        ...,
        [205, 214,  87],
        [206, 215,  90],
        [206, 214,  92]],

       [[186, 193, 115],
        [185, 192, 114],
        [183, 190, 113],
        ...,
        [205, 214,  87],
        [205, 214,  89],
        [205, 214,  89]],

       ...,

       [[124, 135,  67],
        [123, 134,  66],
        [123, 132,  65],
        ...,
        [ 61,  49,  33],
        [ 66,  54,  38],
        [ 68,  56,  40]],

       [[124, 135,  67],
        [123, 134,  66],
        [122, 133,  65],
        ...,
        [ 63,  51,  35],
        [ 66,  54,  38],
        [ 67,  55,  39]],

       [[124, 135,  69],
        [123, 134,  68],
        [122, 133,  67],
        ...,
        [ 65,  53,  37],
        [ 67,  55,  39],
        [ 66,  54,  38]]], dtype=uint8)
```

In [26]:
```
bird_red==bird_arr
```

Out[26]:
```
array([[[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       ...,

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]]])
```

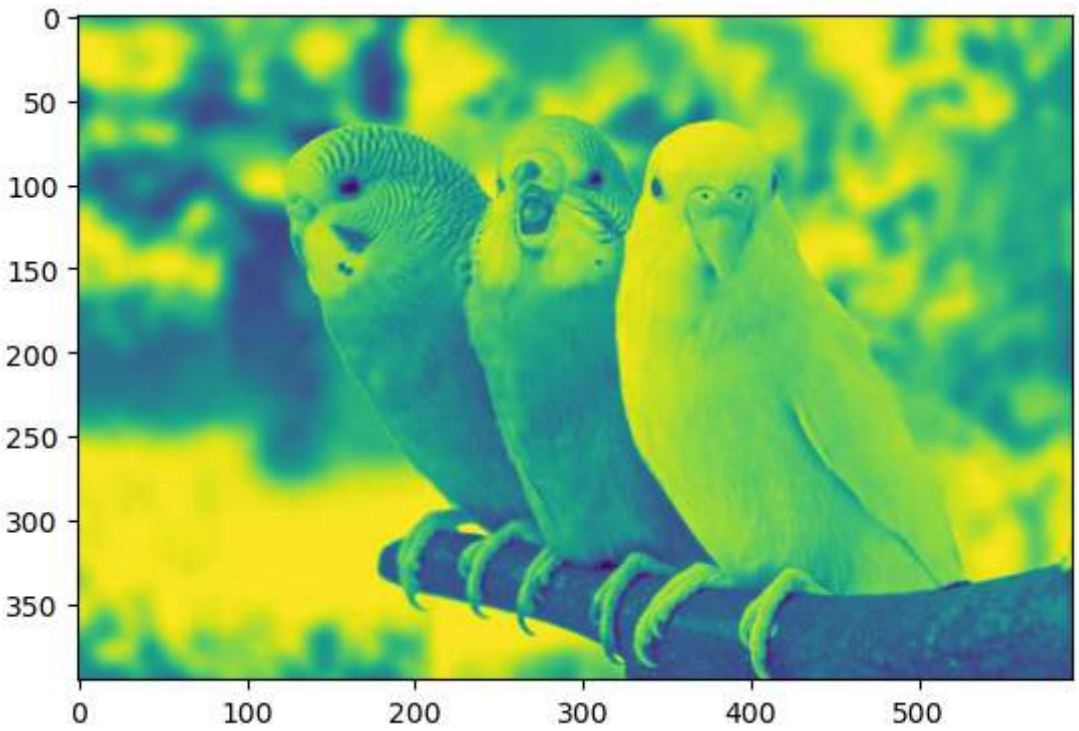
In [28]:
```
plt.imshow(bird_red)
plt.show()
```



In [30]:
```
bird_red.shape
```

Out[30]: (395, 592, 3)

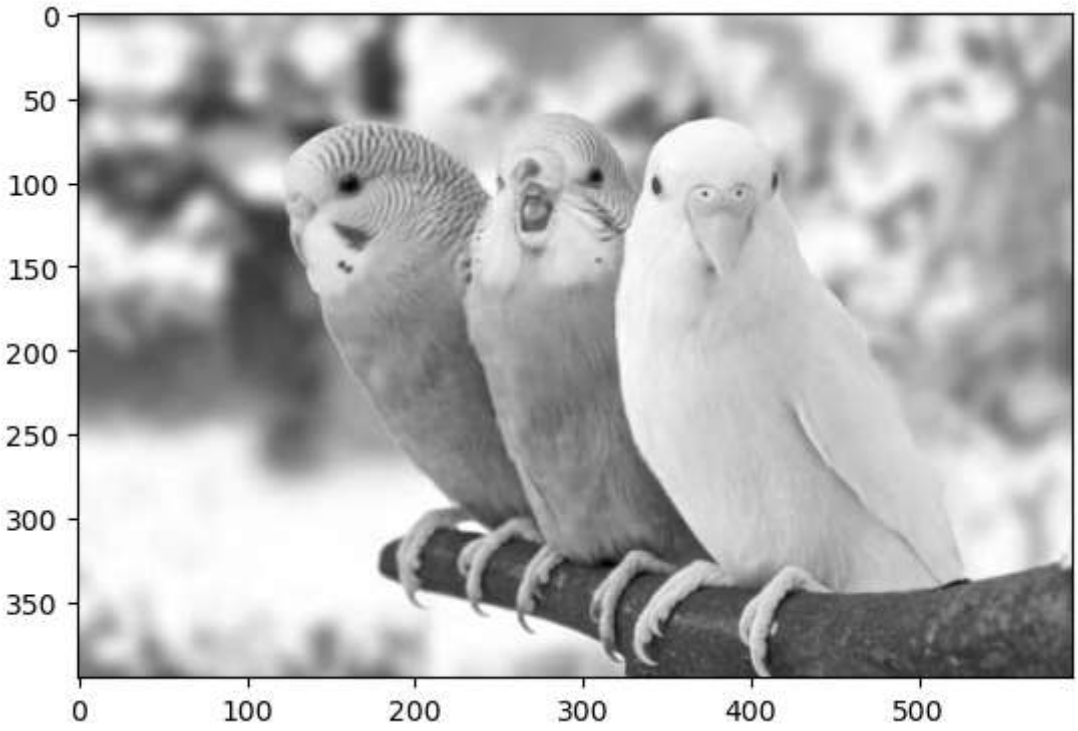
In [31]:
```
plt.imshow(bird_red[:,:,0])
plt.show()
```



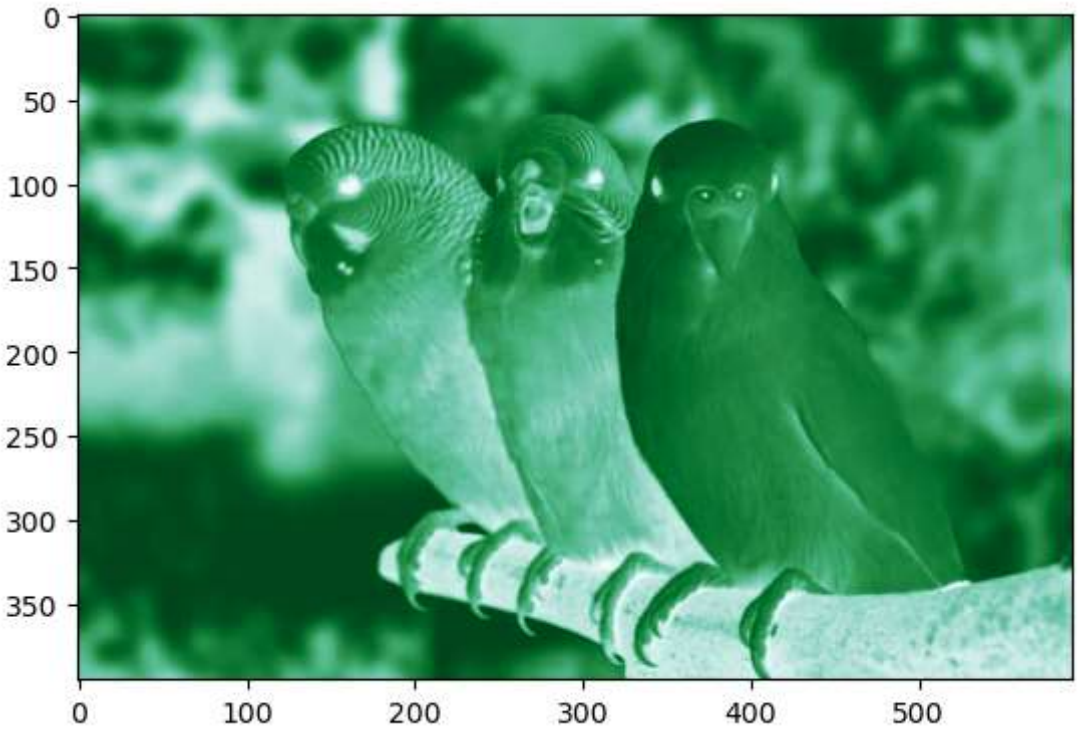
In [32]:
```
bird_red[:,:,0]
```

Out[32]:
```
array([[174, 173, 171, ..., 205, 206, 206],
       [179, 178, 176, ..., 205, 206, 206],
       [186, 185, 183, ..., 205, 205, 205],
       ...,
       [124, 123, 123, ...,  61,  66,  68],
       [124, 123, 122, ...,  63,  66,  67],
       [124, 123, 122, ...,  65,  67,  66]], dtype=uint8)
```

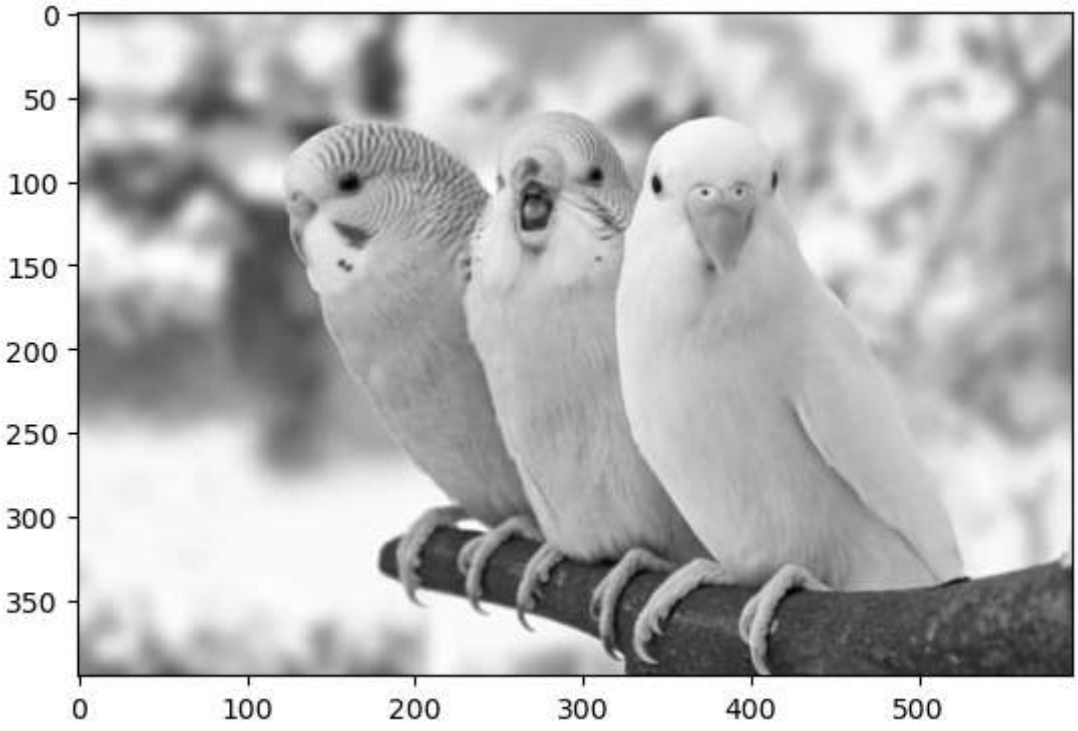
In [33]:
```
plt.imshow(bird_red[:,:,0],cmap='grey')
plt.show()
```



In [37]:
```
plt.imshow(bird_red[:,:,0],cmap='BuGn')
plt.show()
```



In [39]:
```
plt.imshow(bird_red[:,:,1],cmap='grey')
plt.show()
```



In [40]:
```
plt.imshow(bird_red[:,:,2],cmap='grey')
plt.show()
```

In [42]:
```
bird_red[:,:,0]
```

Out[42]:
```
array([[174, 173, 171, ..., 205, 206, 206],
       [179, 178, 176, ..., 205, 206, 206],
       [186, 185, 183, ..., 205, 205, 205],
       ...,
       [124, 123, 123, ...,  61,  66,  68],
       [124, 123, 122, ...,  63,  66,  67],
       [124, 123, 122, ...,  65,  67,  66]], dtype=uint8)
```

In [43]:
```
bird_red[:,:,1]
```

Out[43]:
```
array([[181, 179, 177, ..., 214, 214, 214],
       [186, 185, 182, ..., 214, 215, 214],
       [193, 192, 190, ..., 214, 214, 214],
       ...,
       [135, 134, 132, ...,  49,  54,  56],
       [135, 134, 133, ...,  51,  54,  55],
       [135, 134, 133, ...,  53,  55,  54]], dtype=uint8)
```

In [44]:
```
bird_red[:,:,2]
```

Out[44]:
```
array([[104, 105, 103, ...,  89,  92,  92],
       [109, 108, 108, ...,  87,  90,  92],
       [115, 114, 113, ...,  87,  89,  89],
       ...,
       [ 67,  66,  65, ...,  33,  38,  40],
       [ 67,  66,  65, ...,  35,  38,  39],
       [ 69,  68,  67, ...,  37,  39,  38]], dtype=uint8)
```

In [47]:
```
bird_red[:,:,1] = 0
```

In [48]:
```
bird_red[:,:,1]
```

Out[48]:
```
array([[0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       ...,
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

In [49]:
```
plt.imshow(bird_red)
plt.show()
```

In [50]:
```
bird_red[:,:,2] =0
```

In [51]:
```
bird_red[:,:,2]
```

Out[51]:
```
array([[0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       ...,
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0],
       [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

In [52]:
```
plt.imshow(bird_red)
plt.show()
```

In [53]:
```
bird_arr
```

Out[53]:
```
array([[[174, 181, 104],
        [173, 179, 105],
        [171, 177, 103],
        ...,
        [205, 214,  89],
        [206, 214,  92],
        [206, 214,  92]],

       [[179, 186, 109],
        [178, 185, 108],
        [176, 182, 108],
        ...,
        [205, 214,  87],
        [206, 215,  90],
        [206, 214,  92]],

       [[186, 193, 115],
        [185, 192, 114],
        [183, 190, 113],
        ...,
        [205, 214,  87],
        [205, 214,  89],
        [205, 214,  89]],

       ...,

       [[124, 135,  67],
        [123, 134,  66],
        [123, 132,  65],
        ...,
        [ 61,  49,  33],
        [ 66,  54,  38],
        [ 68,  56,  40]],

       [[124, 135,  67],
        [123, 134,  66],
        [122, 133,  65],
        ...,
        [ 63,  51,  35],
        [ 66,  54,  38],
        [ 67,  55,  39]],

       [[124, 135,  69],
        [123, 134,  68],
        [122, 133,  67],
        ...,
        [ 65,  53,  37],
        [ 67,  55,  39],
        [ 66,  54,  38]]], dtype=uint8)
```

In [54]:
```
bird_red
```

Out[54]:
```
array([[[174,   0,   0],
        [173,   0,   0],
        [171,   0,   0],
        ...,
        [205,   0,   0],
        [206,   0,   0],
        [206,   0,   0]],

       [[179,   0,   0],
        [178,   0,   0],
        [176,   0,   0],
        ...,
        [205,   0,   0],
        [206,   0,   0],
        [206,   0,   0]],

       [[186,   0,   0],
        [185,   0,   0],
        [183,   0,   0],
        ...,
        [205,   0,   0],
        [205,   0,   0],
        [205,   0,   0]],

       ...,

       [[124,   0,   0],
        [123,   0,   0],
        [123,   0,   0],
        ...,
        [ 61,   0,   0],
        [ 66,   0,   0],
        [ 68,   0,   0]],

       [[124,   0,   0],
        [123,   0,   0],
        [122,   0,   0],
        ...,
        [ 63,   0,   0],
        [ 66,   0,   0],
        [ 67,   0,   0]],

       [[124,   0,   0],
        [123,   0,   0],
        [122,   0,   0],
        ...,
        [ 65,   0,   0],
        [ 67,   0,   0],
        [ 66,   0,   0]]], dtype=uint8)
```

In [55]:
```
bird_img
```

Out[55]:

In [56]:
```
arr1=np.asarray(bird_img)
arr1
```

Out[56]:
```
array([[[174, 181, 104],
        [173, 179, 105],
        [171, 177, 103],
        ...,
        [205, 214,  89],
        [206, 214,  92],
        [206, 214,  92]],

       [[179, 186, 109],
        [178, 185, 108],
        [176, 182, 108],
        ...,
        [205, 214,  87],
        [206, 215,  90],
        [206, 214,  92]],

       [[186, 193, 115],
        [185, 192, 114],
        [183, 190, 113],
        ...,
        [205, 214,  87],
        [205, 214,  89],
        [205, 214,  89]],

       ...,

       [[124, 135,  67],
        [123, 134,  66],
        [123, 132,  65],
        ...,
        [ 61,  49,  33],
        [ 66,  54,  38],
        [ 68,  56,  40]],

       [[124, 135,  67],
        [123, 134,  66],
        [122, 133,  65],
        ...,
        [ 63,  51,  35],
        [ 66,  54,  38],
        [ 67,  55,  39]],

       [[124, 135,  69],
        [123, 134,  68],
        [122, 133,  67],
        ...,
        [ 65,  53,  37],
        [ 67,  55,  39],
        [ 66,  54,  38]]], dtype=uint8)
```

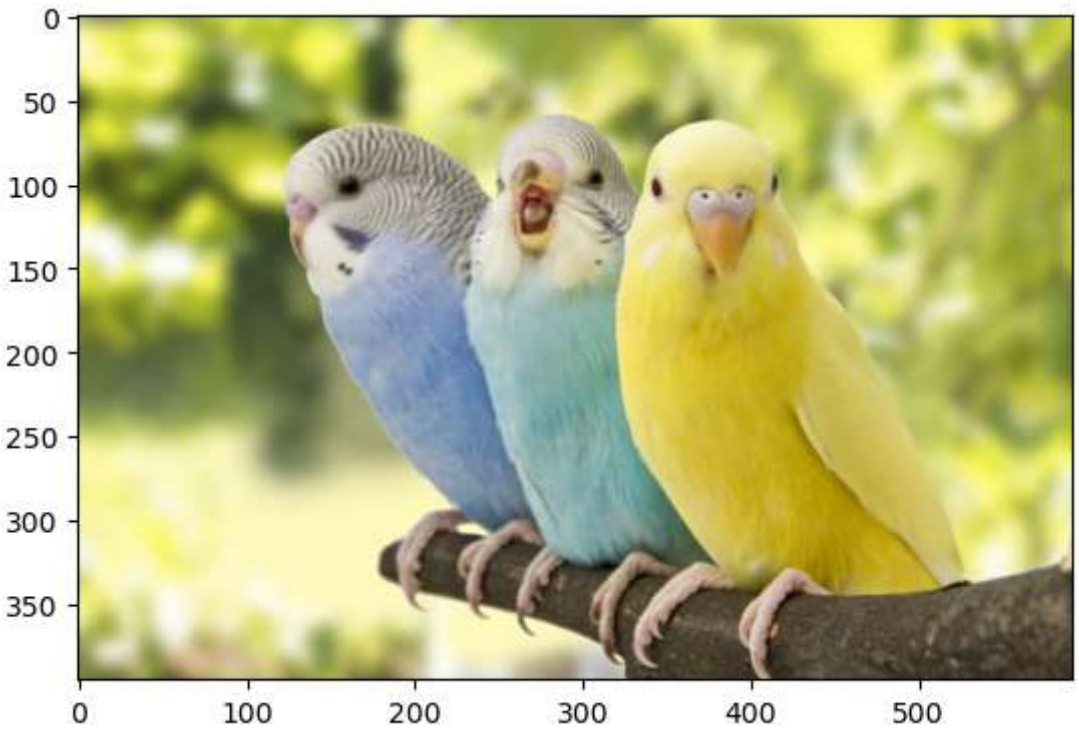
In [58]:
```
type(arr1)
```

Out[58]:
```
numpy.ndarray
```

In [59]:
```
arr1.shape
```

Out[59]: (395, 592, 3)

In [60]:
```
plt.imshow(arr1)
plt.show()
```



In [62]:
```
bird_img1=arr1.copy()
```

In [63]:
```
bird_img1[:,:,0]=0
```

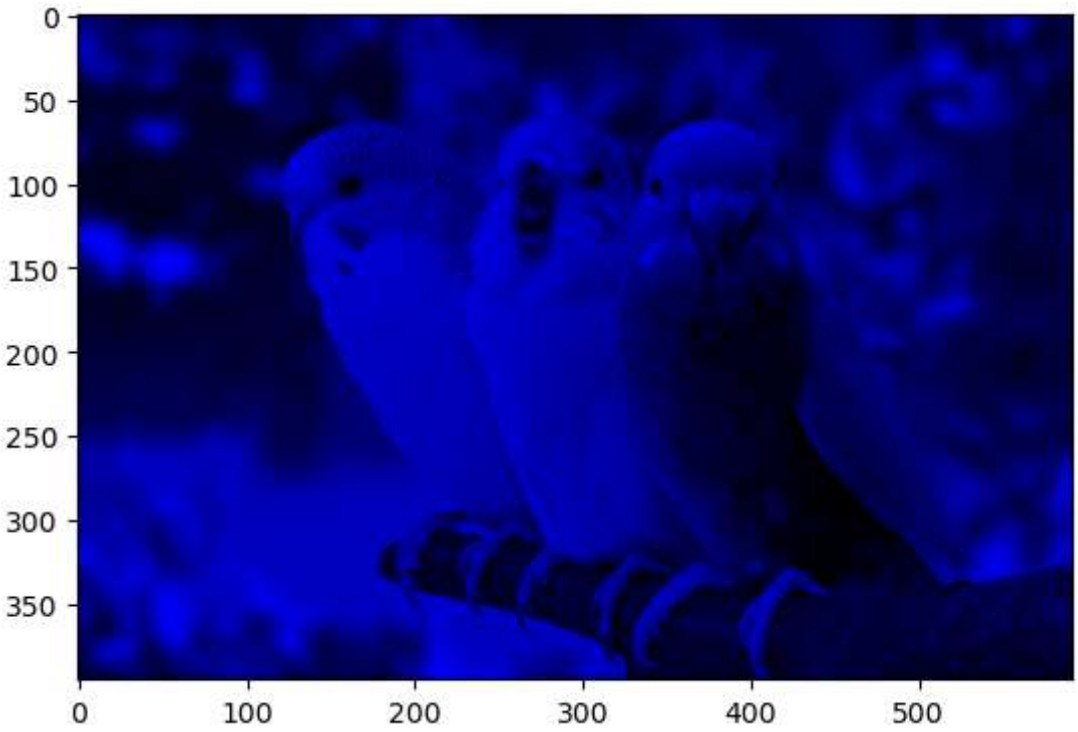
In [64]:
```
plt.imshow(bird_img1)
plt.show()
```

In [65]:
```
bird_img1[:,:,1]
```

Out[65]:
```
array([[181, 179, 177, ..., 214, 214, 214],
       [186, 185, 182, ..., 214, 215, 214],
       [193, 192, 190, ..., 214, 214, 214],
       ...,
       [135, 134, 132, ...,  49,  54,  56],
       [135, 134, 133, ...,  51,  54,  55],
       [135, 134, 133, ...,  53,  55,  54]], dtype=uint8)
```

In [66]:
```
bird_img1[:,:,1]=0
```

In [67]:
```
plt.imshow(bird_img1)
plt.show()
```



In [ ]: