In [10]:
```
import numpy as np
```

In [14]:
```
ones_arr = np.ones((3, 3))
ones_arr
```

Out[14]:
```
array([[1., 1., 1.],
       [1., 1., 1.],
       [1., 1., 1.]])
```

In [15]:
```
ones_arr*255
```

Out[15]:
```
array([[255., 255., 255.],
       [255., 255., 255.],
       [255., 255., 255.]])
```

In [16]:
```
ones_arr
```

Out[16]:
```
array([[1., 1., 1.],
       [1., 1., 1.],
       [1., 1., 1.]])
```

In [17]:
```
import matplotlib.pyplot as plt
```

In [18]:
```
%matplotlib inline
```

In [21]:
```
from PIL import Image
```

In [22]:
```
cat=Image.open( r'C:\Users\saniy\Downloads\cattt.jpg')
```

In [23]:
```
cat
```

Out[23]:

In [24]:
```
type(cat)
```

Out[24]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [25]:
```
cat_arr=np.asarray(cat)
cat_arr
```

Out[25]:
```
array([[[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       ...,

       [[250, 226, 240],
        [250, 226, 240],
        [250, 226, 242],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[249, 225, 239],
        [248, 224, 238],
        [248, 224, 240],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[246, 222, 236],
        [246, 222, 236],
        [245, 221, 237],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]]], dtype=uint8)
```

In [26]:
```
cat_arr.shape
```

Out[26]:
```
(1670, 1670, 3)
```

In [31]:
```
plt.show(cat)
```

In [32]:
```
cat_arr.shape
```

Out[32]:
```
(1670, 1670, 3)
```

In [33]:
```
cat_arr=np.asarray(cat)
cat_arr
```

Out[33]:
```
array([[[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       ...,

       [[250, 226, 240],
        [250, 226, 240],
        [250, 226, 242],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[249, 225, 239],
        [248, 224, 238],
        [248, 224, 240],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[246, 222, 236],
        [246, 222, 236],
        [245, 221, 237],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]]], dtype=uint8)
```

In [34]:
```
type(cat_arr)
```

Out[34]:
```
numpy.ndarray
```

In [35]:
```
cat_red=cat_arr.copy()
```

In [36]:
```
cat_red
```

Out[36]:
```
array([[[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       ...,

       [[250, 226, 240],
        [250, 226, 240],
        [250, 226, 242],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[249, 225, 239],
        [248, 224, 238],
        [248, 224, 240],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[246, 222, 236],
        [246, 222, 236],
        [245, 221, 237],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]]], dtype=uint8)
```

In [37]:
```
cat_arr==cat_red
```

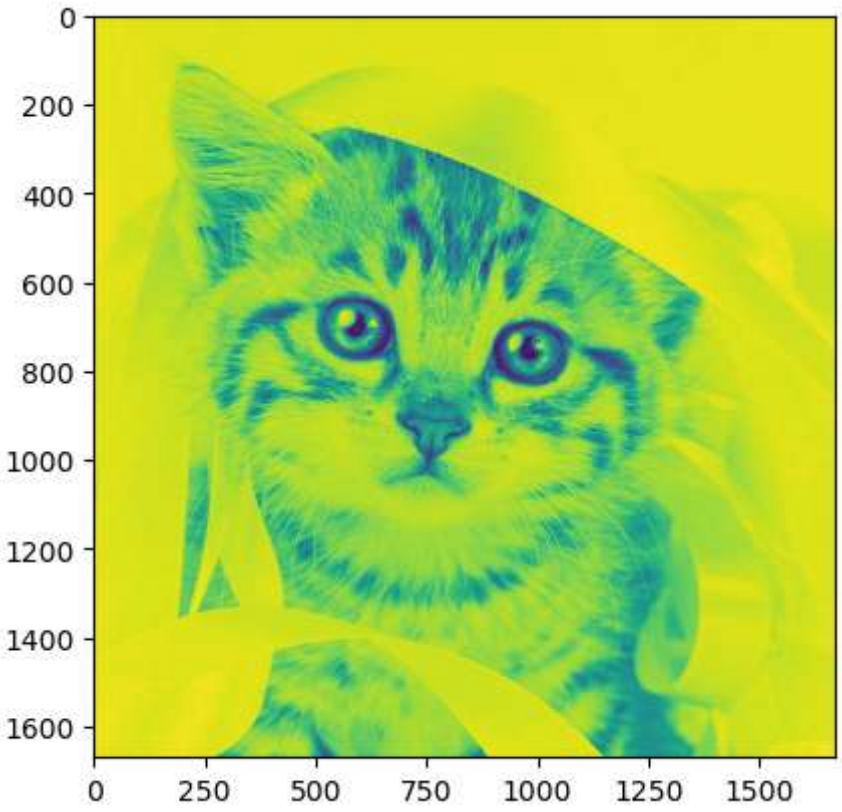
Out[37]:
```
array([[[ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True],
        ...,
        [ True,  True,  True],
        [ True,  True,  True],
        [ True,  True,  True]],

       [[ 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 [65]:
```
plt.imshow(cat_red)
plt.show()
```

In [42]:
```
cat_red.shape
```

Out[42]:
```
(1670, 1670, 3)
```

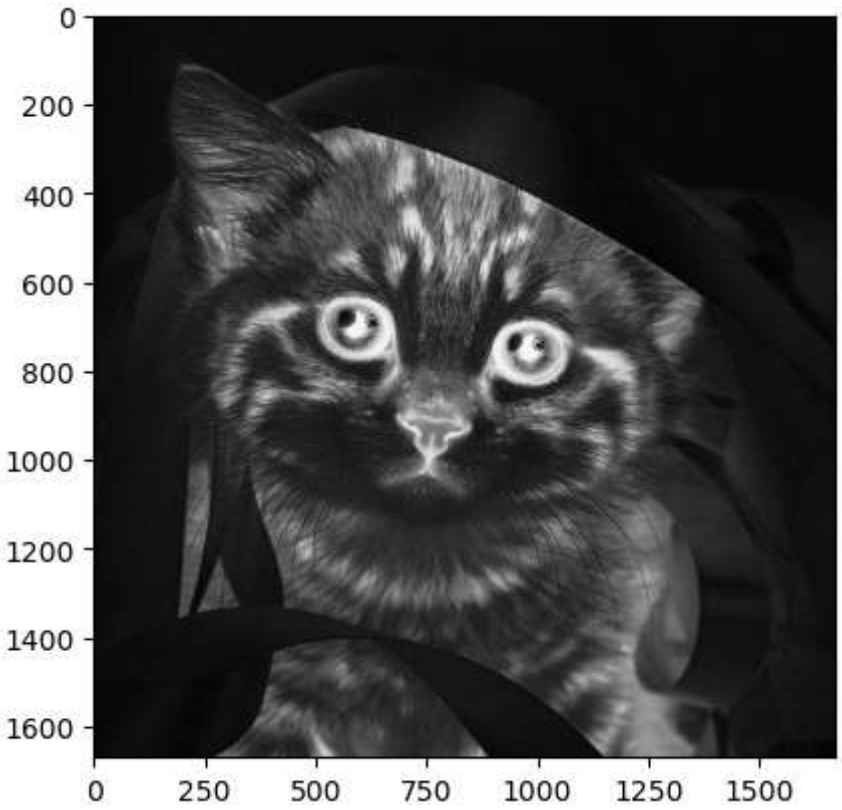
In [64]:
```
plt.imshow(cat_red[:,:,0])
plt.show()
```



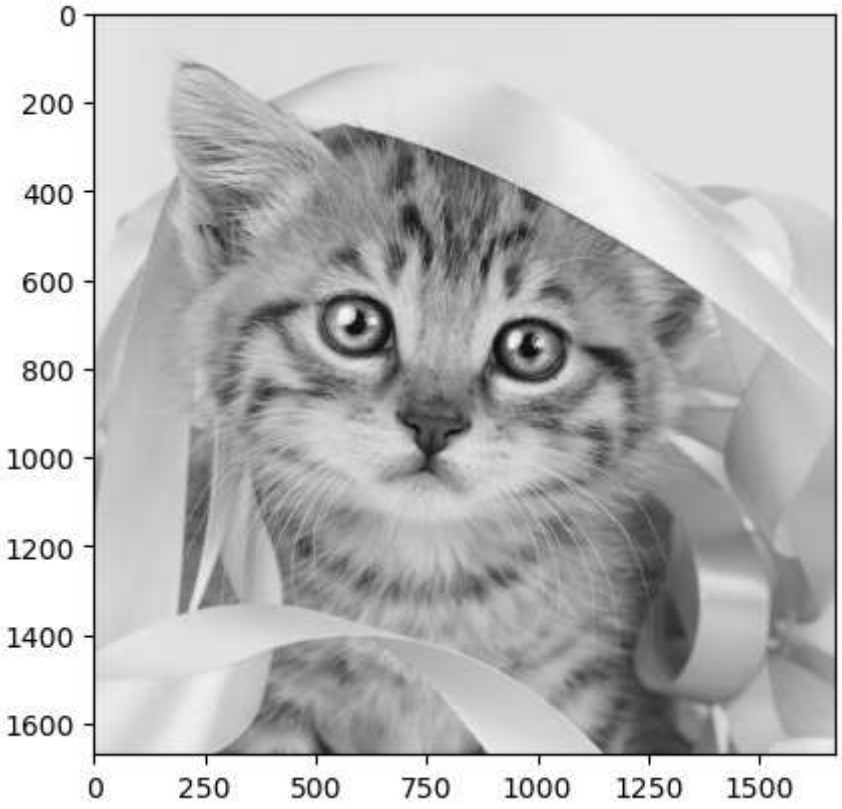
In [49]:
```
cat_red[:,:,0]
```

Out[49]:
```
array([[246, 246, 246, ..., 246, 246, 246],
       [246, 246, 246, ..., 246, 246, 246],
       [246, 246, 246, ..., 246, 246, 246],
       ...,
       [250, 250, 250, ..., 247, 247, 247],
       [249, 248, 248, ..., 247, 247, 247],
       [246, 246, 245, ..., 247, 247, 247]], dtype=uint8)
```

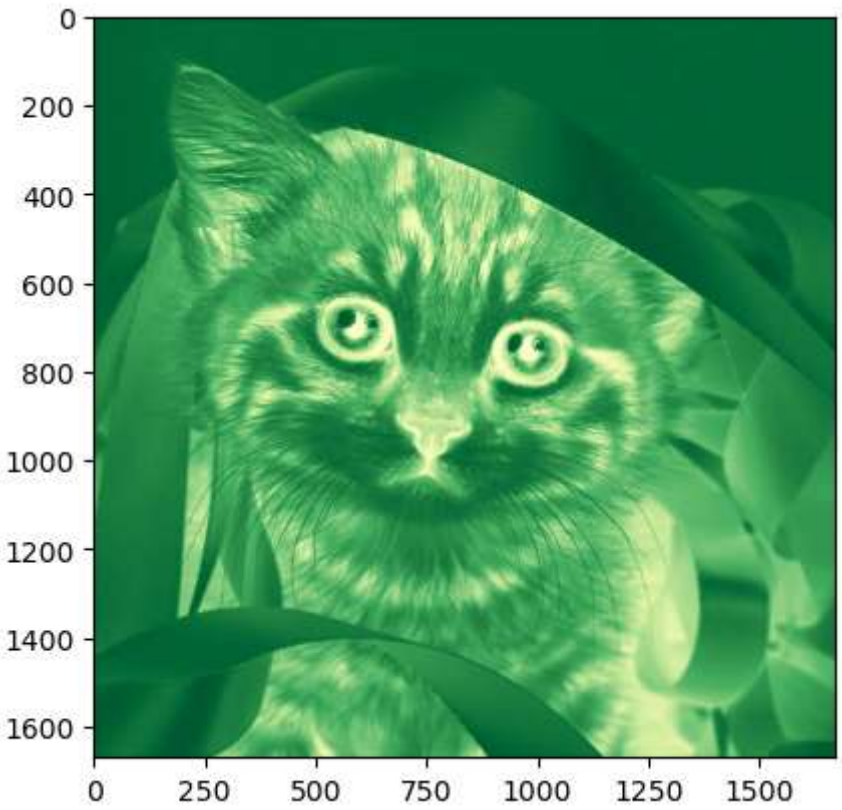
In [54]:
```
plt.imshow(cat_red[:, :, 0], cmap='Greys')  # Use cmap here
plt.show()
```



In [67]:
```
plt.imshow(cat_red[:,:,1], cmap='grey')
plt.show()
```



In [78]:
```
plt.imshow(cat_red[:,:,1], cmap='YlGn')
plt.show()
```



In [79]:
```
cat_red[:,:,0]
```

Out[79]:
```
array([[246, 246, 246, ..., 246, 246, 246],
       [246, 246, 246, ..., 246, 246, 246],
       [246, 246, 246, ..., 246, 246, 246],
       ...,
       [250, 250, 250, ..., 247, 247, 247],
       [249, 248, 248, ..., 247, 247, 247],
       [246, 246, 245, ..., 247, 247, 247]], dtype=uint8)
```

In [80]:
```
cat_red[:,:,1]
```

Out[80]:
```
array([[228, 228, 228, ..., 225, 225, 225],
       [228, 228, 228, ..., 225, 225, 225],
       [228, 228, 228, ..., 225, 225, 225],
       ...,
       [226, 226, 226, ..., 230, 230, 230],
       [225, 224, 224, ..., 230, 230, 230],
       [222, 222, 221, ..., 230, 230, 230]], dtype=uint8)
```

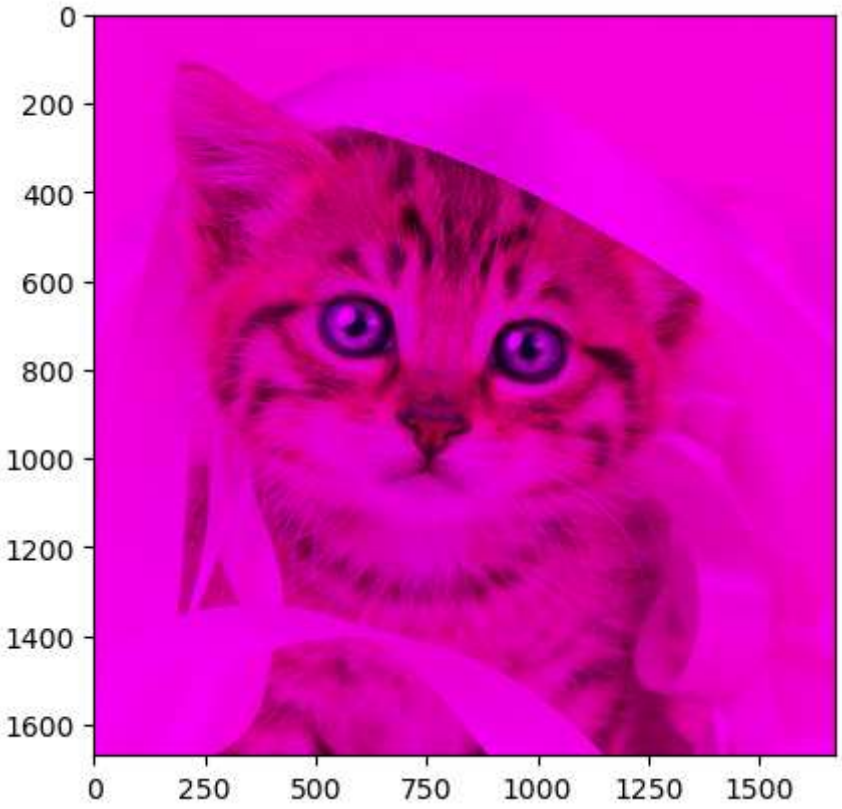
In [81]:
```
cat_red[:,:,2]
```

Out[81]:
```
array([[224, 224, 224, ..., 220, 220, 220],
       [224, 224, 224, ..., 220, 220, 220],
       [224, 224, 224, ..., 220, 220, 220],
       ...,
       [240, 240, 242, ..., 240, 240, 240],
       [239, 238, 240, ..., 240, 240, 240],
       [236, 236, 237, ..., 240, 240, 240]], dtype=uint8)
```

In [82]:
```
cat_red[:,:,1]=0
```

cat_red[:,:,1]

In [83]:
```
plt.imshow(cat_red)
plt.show()
```



In [84]:
```
cat_red[:,:,2]
```

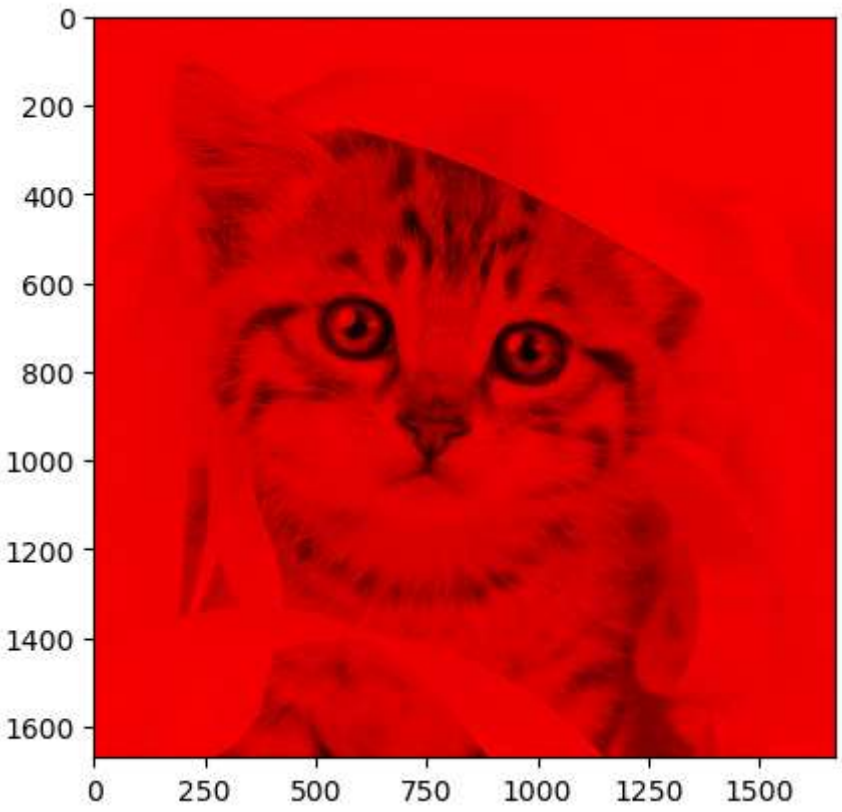
Out[84]:
```
array([[224, 224, 224, ..., 220, 220, 220],
       [224, 224, 224, ..., 220, 220, 220],
       [224, 224, 224, ..., 220, 220, 220],
       ...,
       [240, 240, 242, ..., 240, 240, 240],
       [239, 238, 240, ..., 240, 240, 240],
       [236, 236, 237, ..., 240, 240, 240]], dtype=uint8)
```

In [85]:
```
cat_red[:,:,2]=0
```

In [86]:
```
cat_red[:,:,2]
```

Out[86]:
```
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 [87]:
```
plt.imshow(cat_red)
plt.show()
```



In [88]:
```
cat_arr
```

Out[88]:
```
array([[[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       [[246, 228, 224],
        [246, 228, 224],
        [246, 228, 224],
        ...,
        [246, 225, 220],
        [246, 225, 220],
        [246, 225, 220]],

       ...,

       [[250, 226, 240],
        [250, 226, 240],
        [250, 226, 242],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[249, 225, 239],
        [248, 224, 238],
        [248, 224, 240],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]],

       [[246, 222, 236],
        [246, 222, 236],
        [245, 221, 237],
        ...,
        [247, 230, 240],
        [247, 230, 240],
        [247, 230, 240]]], dtype=uint8)
```

In [89]:
```
cat_red
```

Out[89]:
```
array([[[246,   0,   0],
        [246,   0,   0],
        [246,   0,   0],
        ...,
        [246,   0,   0],
        [246,   0,   0],
        [246,   0,   0]],

       [[246,   0,   0],
        [246,   0,   0],
        [246,   0,   0],
        ...,
        [246,   0,   0],
        [246,   0,   0],
        [246,   0,   0]],

       [[246,   0,   0],
        [246,   0,   0],
        [246,   0,   0],
        ...,
        [246,   0,   0],
        [246,   0,   0],
        [246,   0,   0]],

       ...,

       [[250,   0,   0],
        [250,   0,   0],
        [250,   0,   0],
        ...,
        [247,   0,   0],
        [247,   0,   0],
        [247,   0,   0]],

       [[249,   0,   0],
        [248,   0,   0],
        [248,   0,   0],
        ...,
        [247,   0,   0],
        [247,   0,   0],
        [247,   0,   0]],

       [[246,   0,   0],
        [246,   0,   0],
        [245,   0,   0],
        ...,
        [247,   0,   0],
        [247,   0,   0],
        [247,   0,   0]]], dtype=uint8)
```

In [91]:
```
cat
```

Out[91]:

In [95]:
```
arr1 = np.asarray(cat)
```

In [96]:
```
type(arr1)
```

Out[96]:
```
numpy.ndarray
```

In [97]:
```
arr1.shape
```

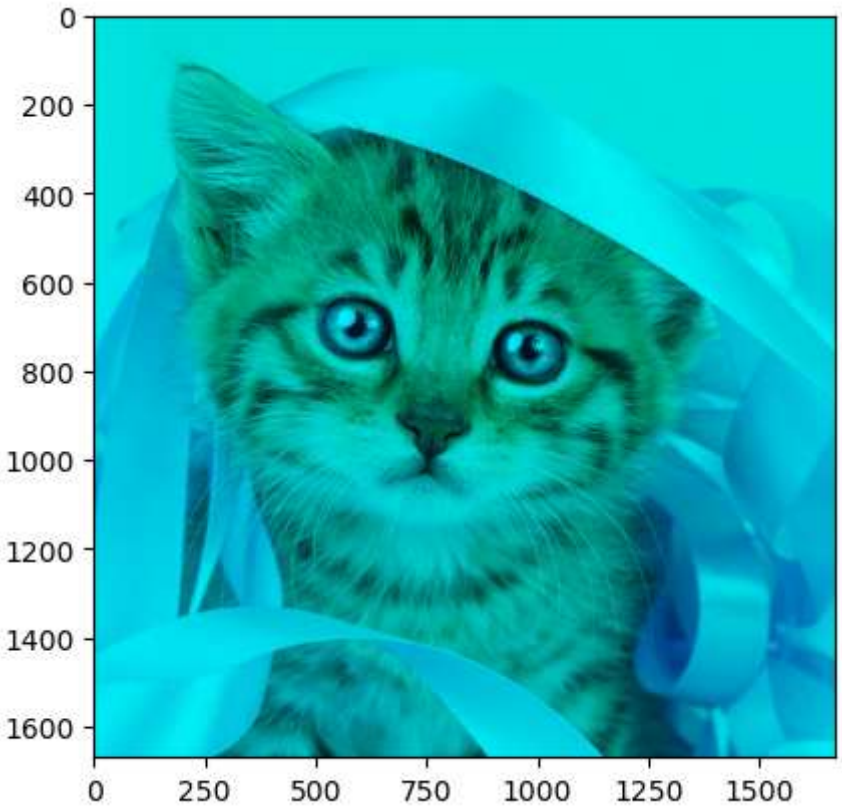
Out[97]:
```
(1670, 1670, 3)
```

In [100…
```
plt.imshow(arr1)
plt.show()
```

In [101…
```
cat_img1=arr1.copy()
```

In [102…
```
cat_img1[:,:,0]=0
```

In [105…
```
plt.imshow(cat_img1)
plt.show()
```

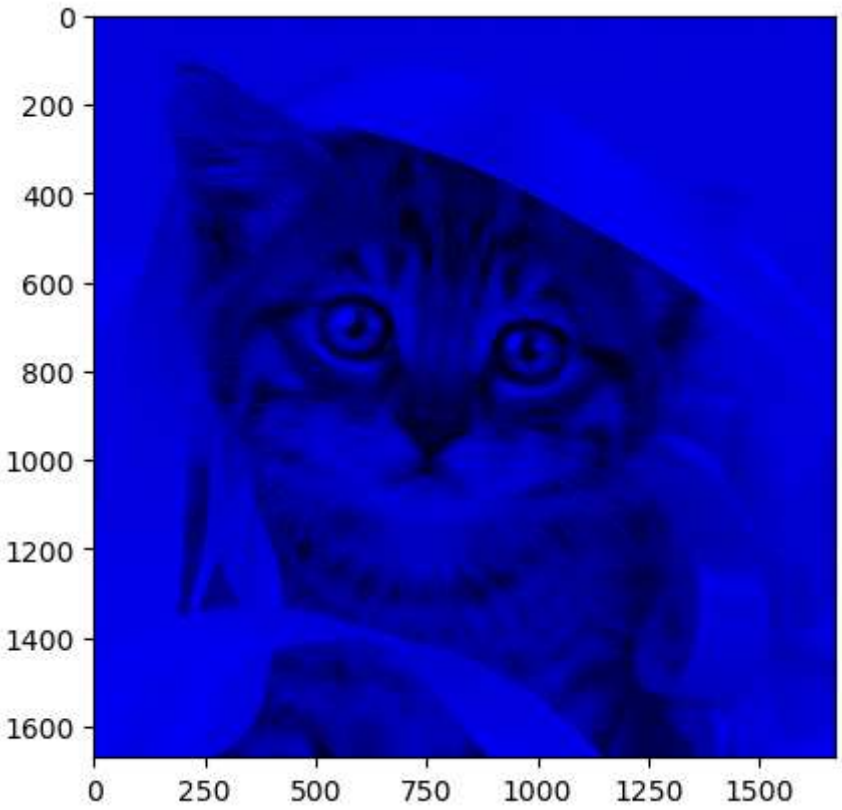


In [106…
```
cat_img1[:,:,1]
```

Out[106…
```
array([[228, 228, 228, ..., 225, 225, 225],
       [228, 228, 228, ..., 225, 225, 225],
       [228, 228, 228, ..., 225, 225, 225],
       ...,
       [226, 226, 226, ..., 230, 230, 230],
       [225, 224, 224, ..., 230, 230, 230],
       [222, 222, 221, ..., 230, 230, 230]], dtype=uint8)
```

In [107…
```
cat_img1[:,:,1]=0
```

In [110…
```
plt.imshow(cat_img1)
plt.show()
```



practicle 1 is completed!!!

In [ ]: