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

In [3]:
```
ones_arr = np.ones((5,5),dtype=int)
```

In [4]:
```
ones_arr
```

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]:
```
ones_arr * 255
```

Out[5]:
```
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 [20]:
```
import matplotlib.pyplot as plt
```

In [ ]:
```
#!matplotlib inline # all the graph should keep inside the line
```

In [7]:
```
from PIL import Image # python imaging library
```

In [8]:
```
horse_img = Image.open(r'C:\Users\Mukesh\Downloads\horse.jpg')
```

In [9]:
```
horse_img
```

Out[9]:

In [10]:
```
type(horse_img)
```

Out[10]:
```
PIL.JpegImagePlugin.JpegImageFile
```

In [11]:
```
horse_arr = np.asarray(horse_img)
horse_arr
```

Out[11]:
```
array([[[  9,  36,  27],
        [ 17,  45,  33],
        [ 25,  51,  40],
        ...,
        [ 15,  25,  24],
        [ 14,  24,  23],
        [ 13,  23,  22]],

       [[ 12,  39,  30],
        [ 17,  45,  33],
        [ 23,  49,  38],
        ...,
        [ 16,  26,  25],
        [ 15,  25,  24],
        [ 12,  22,  21]],

       [[ 17,  44,  35],
        [ 18,  46,  34],
        [ 20,  46,  35],
        ...,
        [ 17,  26,  25],
        [ 16,  25,  24],
        [ 13,  22,  21]],

       ...,

       [[ 52,  47,  41],
        [ 47,  42,  36],
        [ 44,  41,  34],
        ...,
        [127,  76,  47],
        [110,  61,  31],
        [114,  64,  37]],

       [[ 57,  52,  46],
        [ 52,  47,  41],
        [ 47,  44,  37],
        ...,
        [129,  78,  49],
        [111,  62,  32],
        [105,  55,  28]],

       [[ 59,  49,  40],
        [ 51,  42,  33],
        [ 51,  44,  36],
        ...,
        [129,  78,  47],
        [148,  98,  65],
        [129,  79,  46]]], dtype=uint8)
```

In [12]:
```
type(horse_arr)
```

Out[12]:
```
numpy.ndarray
```

In [21]:
```
plt.imshow(horse_arr)
#plt.show(horse_arr) new os
```

Out[21]:
```
<matplotlib.figure.AxesImage at 0x1f6b3b9b800>
```

In [22]:
```
horse_arr.shape
```

Out[22]:
```
(2673, 4009, 3)
```

In [23]:
```
horse_red = horse_arr.copy()
```

In [24]:
```
horse_red
```

Out[24]:
```
array([[[  9,  36,  27],
        [ 17,  45,  33],
        [ 25,  51,  40],
        ...,
        [ 15,  25,  24],
        [ 14,  24,  23],
        [ 13,  23,  22]],

       [[ 12,  39,  30],
        [ 17,  45,  33],
        [ 23,  49,  38],
        ...,
        [ 16,  26,  25],
        [ 15,  25,  24],
        [ 12,  22,  21]],

       [[ 17,  44,  35],
        [ 18,  46,  34],
        [ 20,  46,  35],
        ...,
        [ 17,  26,  25],
        [ 16,  25,  24],
        [ 13,  22,  21]],

       ...,

       [[ 52,  47,  41],
        [ 47,  42,  36],
        [ 44,  41,  34],
        ...,
        [127,  76,  47],
        [110,  61,  31],
        [114,  64,  37]],

       [[ 57,  52,  46],
        [ 52,  47,  41],
        [ 47,  44,  37],
        ...,
        [129,  78,  49],
        [111,  62,  32],
        [105,  55,  28]],

       [[ 59,  49,  40],
        [ 51,  42,  33],
        [ 51,  44,  36],
        ...,
        [129,  78,  47],
        [148,  98,  65],
        [129,  79,  46]]], dtype=uint8)
```

In [25]:
```
horse_arr == horse_red
```

Out[25]:
```
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 [26]:
```
plt.imshow(horse_red)
```

Out[26]:
```
<matplotlib.image.AxesImage at 0x1f6b5c02d50>
```

In [27]:
```
horse_red.shape
```

Out[27]:
```
(2673, 4009, 3)
```

In [28]:
```
# R G B
plt.imshow(horse_red[:,:,0])
```

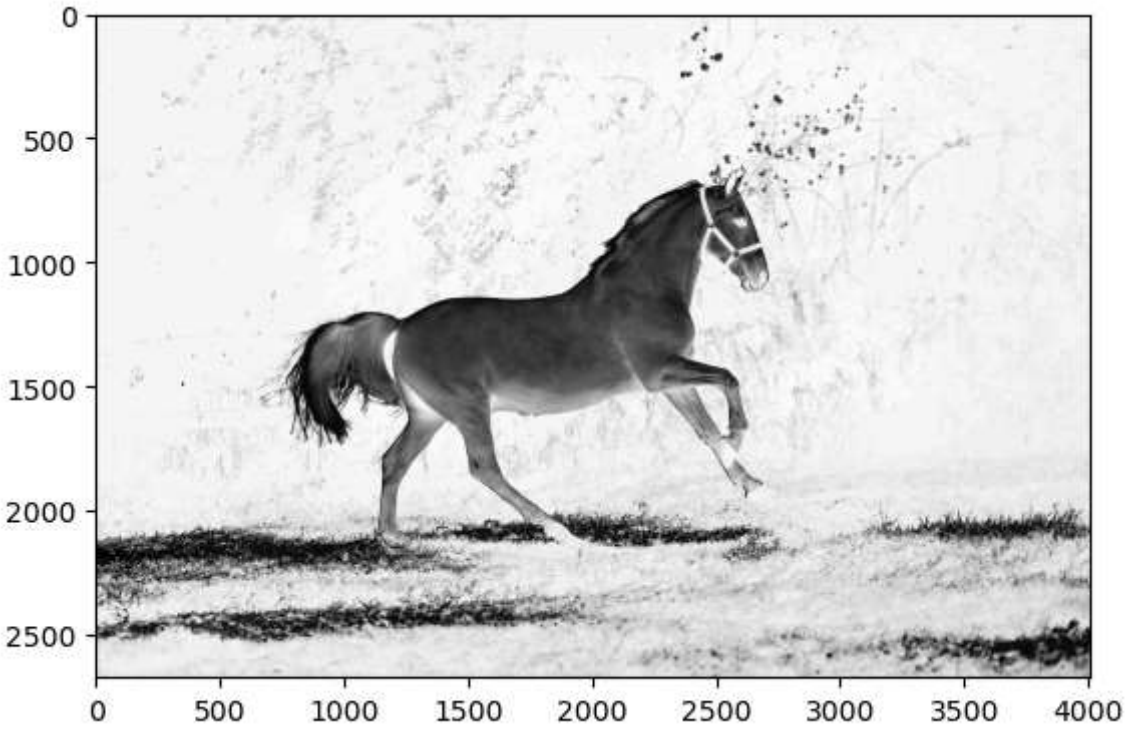
Out[28]:
```
<matplotlib.image.AxesImage at 0x1f6b5c79730>
```

In [29]:
```
horse_red[:,:,0]
```

Out[29]:
```
array([[  9,  17,  25, ...,  15,  14,  13],
       [ 12,  17,  23, ...,  16,  15,  12],
       [ 17,  18,  20, ...,  17,  16,  13],
       ...,
       [ 52,  47,  44, ..., 127, 110, 114],
       [ 57,  52,  47, ..., 129, 111, 105],
       [ 59,  51,  51, ..., 129, 148, 129]], dtype=uint8)
```

In [30]:
```
plt.imshow(horse_red[:,:,0], cmap='Greys')
```

Out[30]:
```
<matplotlib.image.AxesImage at 0x1f6b5c09730>
```



In [31]:
```
plt.imshow(horse_red[:,:,1], cmap='grey')
```

Out[31]:
```
<matplotlib.image.AxesImage at 0x1f6b5b3b0e0>
```

In [32]:
```
plt.imshow(horse_red[:,:,1], cmap='YlGn')
#plt.show()
```

Out[32]: <matplotlib.image.AxesImage at 0x1f6b38f42f0>

In [33]:
```
horse_red[:,:,0]
```

Out[33]:
```
array([[  9,  17,  25, ...,  15,  14,  13],
       [ 12,  17,  23, ...,  16,  15,  12],
       [ 17,  18,  20, ...,  17,  16,  13],
       ...,
       [ 52,  47,  44, ..., 127, 110, 114],
       [ 57,  52,  47, ..., 129, 111, 105],
       [ 59,  51,  51, ..., 129, 148, 129]], dtype=uint8)
```

In [34]:
```
horse_red[:,:,1]
```

Out[34]:
```
array([[36, 45, 51, ..., 25, 24, 23],
       [39, 45, 49, ..., 26, 25, 22],
       [44, 46, 46, ..., 26, 25, 22],
       ...,
       [47, 42, 41, ..., 76, 61, 64],
       [52, 47, 44, ..., 78, 62, 55],
       [49, 42, 44, ..., 78, 98, 79]], dtype=uint8)
```

In [35]:
```
horse_red[:,:,2]
```

Out[35]:
```
array([[27, 33, 40, ..., 24, 23, 22],
       [30, 33, 38, ..., 25, 24, 21],
       [35, 34, 35, ..., 25, 24, 21],
       ...,
       [41, 36, 34, ..., 47, 31, 37],
       [46, 41, 37, ..., 49, 32, 28],
       [40, 33, 36, ..., 47, 65, 46]], dtype=uint8)
```

In [38]:
```
horse_red[:,:,1] = 0
```

In [39]:
```
horse_red[:,:,1]
```

Out[39]:
```
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 [40]:
```
plt.imshow(horse_red)
```

Out[40]:
```
<matplotlib.image.AxesImage at 0x1f6b5b1f890>
```

In [41]:
```
horse_red[:,:,2]
```

Out[41]:
```
array([[27, 33, 40, ..., 24, 23, 22],
       [30, 33, 38, ..., 25, 24, 21],
       [35, 34, 35, ..., 25, 24, 21],
       ...,
       [41, 36, 34, ..., 47, 31, 37],
       [46, 41, 37, ..., 49, 32, 28],
       [40, 33, 36, ..., 47, 65, 46]], dtype=uint8)
```

In [42]:
```
horse_red[:,:,2]=0
```

In [43]:
```
horse_red[:,:,2]
```

Out[43]:
```
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 [44]:
```
plt.imshow(horse_red)
```

Out[44]:
```
<matplotlib.image.AxesImage at 0x1f6bd80e030>
```

In [45]:
```
horse_arr
```

Out[45]:
```
array([[[  9,  36,  27],
        [ 17,  45,  33],
        [ 25,  51,  40],
        ...,
        [ 15,  25,  24],
        [ 14,  24,  23],
        [ 13,  23,  22]],

       [[ 12,  39,  30],
        [ 17,  45,  33],
        [ 23,  49,  38],
        ...,
        [ 16,  26,  25],
        [ 15,  25,  24],
        [ 12,  22,  21]],

       [[ 17,  44,  35],
        [ 18,  46,  34],
        [ 20,  46,  35],
        ...,
        [ 17,  26,  25],
        [ 16,  25,  24],
        [ 13,  22,  21]],

       ...,

       [[ 52,  47,  41],
        [ 47,  42,  36],
        [ 44,  41,  34],
        ...,
        [127,  76,  47],
        [110,  61,  31],
        [114,  64,  37]],

       [[ 57,  52,  46],
        [ 52,  47,  41],
        [ 47,  44,  37],
        ...,
        [129,  78,  49],
        [111,  62,  32],
        [105,  55,  28]],

       [[ 59,  49,  40],
        [ 51,  42,  33],
        [ 51,  44,  36],
        ...,
        [129,  78,  47],
        [148,  98,  65],
        [129,  79,  46]]], dtype=uint8)
```

In [46]:
```
horse_red
```

Out[46]:
```
array([[[  9,   0,   0],
        [ 17,   0,   0],
        [ 25,   0,   0],
        ...,
        [ 15,   0,   0],
        [ 14,   0,   0],
        [ 13,   0,   0]],

       [[ 12,   0,   0],
        [ 17,   0,   0],
        [ 23,   0,   0],
        ...,
        [ 16,   0,   0],
        [ 15,   0,   0],
        [ 12,   0,   0]],

       [[ 17,   0,   0],
        [ 18,   0,   0],
        [ 20,   0,   0],
        ...,
        [ 17,   0,   0],
        [ 16,   0,   0],
        [ 13,   0,   0]],

       ...,

       [[ 52,   0,   0],
        [ 47,   0,   0],
        [ 44,   0,   0],
        ...,
        [127,   0,   0],
        [110,   0,   0],
        [114,   0,   0]],

       [[ 57,   0,   0],
        [ 52,   0,   0],
        [ 47,   0,   0],
        ...,
        [129,   0,   0],
        [111,   0,   0],
        [105,   0,   0]],

       [[ 59,   0,   0],
        [ 51,   0,   0],
        [ 51,   0,   0],
        ...,
        [129,   0,   0],
        [148,   0,   0],
        [129,   0,   0]]], dtype=uint8)
```

In [47]:
```
horse_img
```

Out[47]:

In [49]:
```
arr1 = np.asarray(horse_img)
```

In [50]:
```
type(arr1)
```

Out[50]:
```
numpy.ndarray
```

In [51]:
```
arr1.shape
```

Out[51]:
```
(2673, 4009, 3)
```

In [52]:
```
plt.imshow(arr1)
```

Out[52]:
```
<matplotlib.image.AxesImage at 0x1f6c024c0e0>
```

In [53]:
```
horse_img1 = arr1.copy()
```

In [54]:
```
horse_img1[:,:,0] = 0
```

In [55]:
```
plt.imshow(horse_img1)
```

Out[55]: <matplotlib.image.AxesImage at 0x1f6c02bbe60>

In [56]:
```
horse_img1[:,:,1]
```

Out[56]:
```
array([[36, 45, 51, ..., 25, 24, 23],
       [39, 45, 49, ..., 26, 25, 22],
       [44, 46, 46, ..., 26, 25, 22],
       ...,
       [47, 42, 41, ..., 76, 61, 64],
       [52, 47, 44, ..., 78, 62, 55],
       [49, 42, 44, ..., 78, 98, 79]], dtype=uint8)
```

In [57]:
```
horse_img1[:,:,1] = 0
```

In [58]:
```
plt.imshow(horse_img1)
```

Out[58]:
```
<matplotlib.image.AxesImage at 0x1f6cadbdd00>
```

In [ ]:

In [ ]: