

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

```
In [2]: ones_arr=np.ones((5,5))
```

```
In [3]: ones_arr
```

```
Out[3]: 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 [56]: ones_arr=np.ones((5,5), dtype=int)
```

```
ones_arr
```

```
In [57]: zeros_arr = np.zeros((3,3),dtype=int)
```

```
In [6]: zeros_arr
```

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

```
In [7]: ones_arr
```

```
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]: ones_arr*255
```

```
Out[8]: 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 [9]: zeros_arr
```

```
Out[9]: array([[0, 0, 0],
   [0, 0, 0],
   [0, 0, 0]])
```

```
In [10]: ones_arr
```

```
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 #python imaging library
```

```
In [14]: horse_img = Image.open(r"C:\Users\Ramya\Downloads\horse.jpeg")
```

```
In [15]: horse_img
```

```
Out[15]:
```



```
In [16]: type(horse_img) #float datatype
```

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

```
In [17]: horse_arr = np.asarray(horse_img)
horse_arr #arr of image
```

```
Out[17]: array([[[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [25, 37, 35],  
                 [19, 34, 31],  
                 [14, 30, 27]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [26, 38, 36],  
                 [22, 37, 34],  
                 [20, 36, 33]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [28, 40, 38],  
                 [25, 40, 37],  
                 [24, 40, 37]],  
  
                ...,  
  
                [[49, 50, 44],  
                 [40, 41, 35],  
                 [35, 35, 27],  
                 ...,  
                 [14, 30, 29],  
                 [13, 25, 25],  
                 [12, 22, 23]],  
  
                [[45, 50, 44],  
                 [38, 43, 37],  
                 [31, 36, 30],  
                 ...,  
                 [11, 25, 25],  
                 [12, 24, 24],  
                 [16, 26, 27]],  
  
                [[31, 41, 33],  
                 [31, 41, 33],  
                 [32, 39, 32],  
                 ...,  
                 [14, 26, 26],  
                 [16, 26, 27],  
                 [23, 31, 33]]], dtype=uint8)
```

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

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

```
In [19]: horse_arr.shape #dimensions(width,height,3d channelrgb)
```

```
Out[19]: (2334, 3502, 3)
```

```
In [20]: plt.imshow(horse_arr)  
plt.show()
```



```
In [21]: horse_red = horse_arr.copy()
```

```
In [22]: horse_red
```

```
Out[22]: array([[[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [25, 37, 35],  
                 [19, 34, 31],  
                 [14, 30, 27]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [26, 38, 36],  
                 [22, 37, 34],  
                 [20, 36, 33]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [28, 40, 38],  
                 [25, 40, 37],  
                 [24, 40, 37]],  
  
                ...,  
  
                [[49, 50, 44],  
                 [40, 41, 35],  
                 [35, 35, 27],  
                 ...,  
                 [14, 30, 29],  
                 [13, 25, 25],  
                 [12, 22, 23]],  
  
                [[45, 50, 44],  
                 [38, 43, 37],  
                 [31, 36, 30],  
                 ...,  
                 [11, 25, 25],  
                 [12, 24, 24],  
                 [16, 26, 27]],  
  
                [[31, 41, 33],  
                 [31, 41, 33],  
                 [32, 39, 32],  
                 ...,  
                 [14, 26, 26],  
                 [16, 26, 27],  
                 [23, 31, 33]]], dtype=uint8)
```

```
In [23]: horse_arr == horse_red
```

```
Out[23]: 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]],

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

```
In [24]: plt.imshow(horse_red)
plt.show()
```



```
In [25]: horse_red.shape
```

```
Out[25]: (2334, 3502, 3)
```

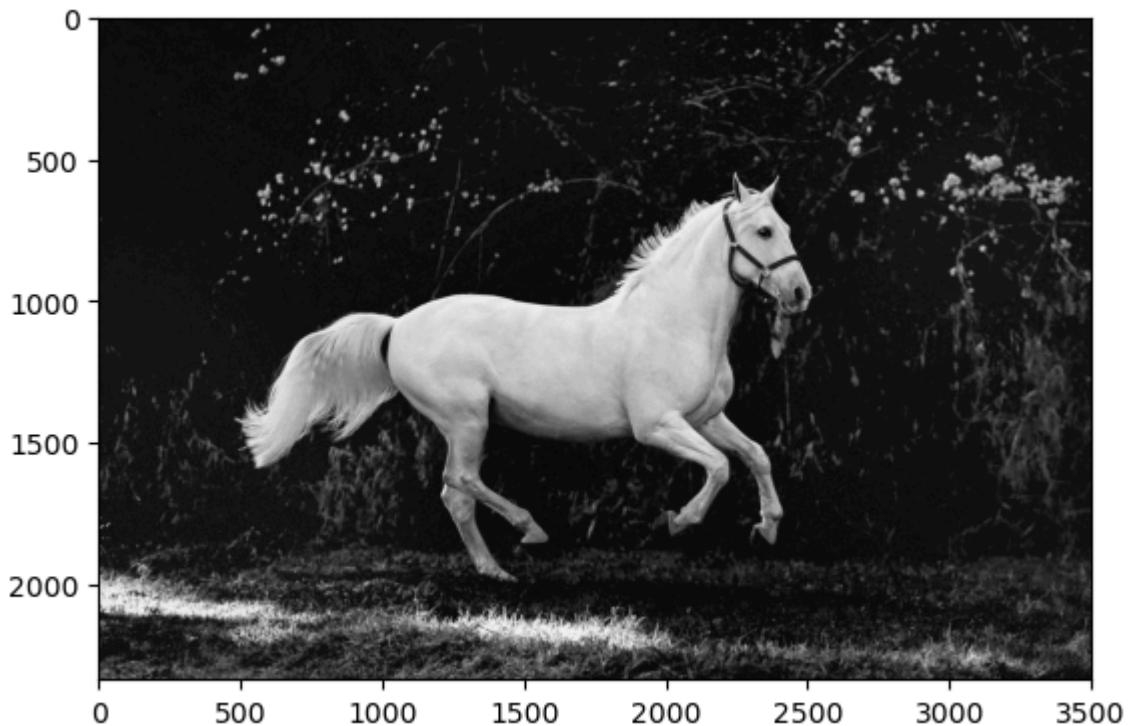
```
In [26]: plt.imshow(horse_red[:, :, 0]) #values changed  
plt.show() #RGB(red,green,blue)
```



```
In [27]: (horse_red[:, :, 0])
```

```
Out[27]: array([[15, 15, 15, ..., 25, 19, 14],  
                 [15, 15, 15, ..., 26, 22, 20],  
                 [15, 15, 15, ..., 28, 25, 24],  
                 ...,  
                 [49, 40, 35, ..., 14, 13, 12],  
                 [45, 38, 31, ..., 11, 12, 16],  
                 [31, 31, 32, ..., 14, 16, 23]], dtype=uint8)
```

```
In [28]: plt.imshow(horse_red[:, :, 0], cmap='gray')  
plt.show()
```



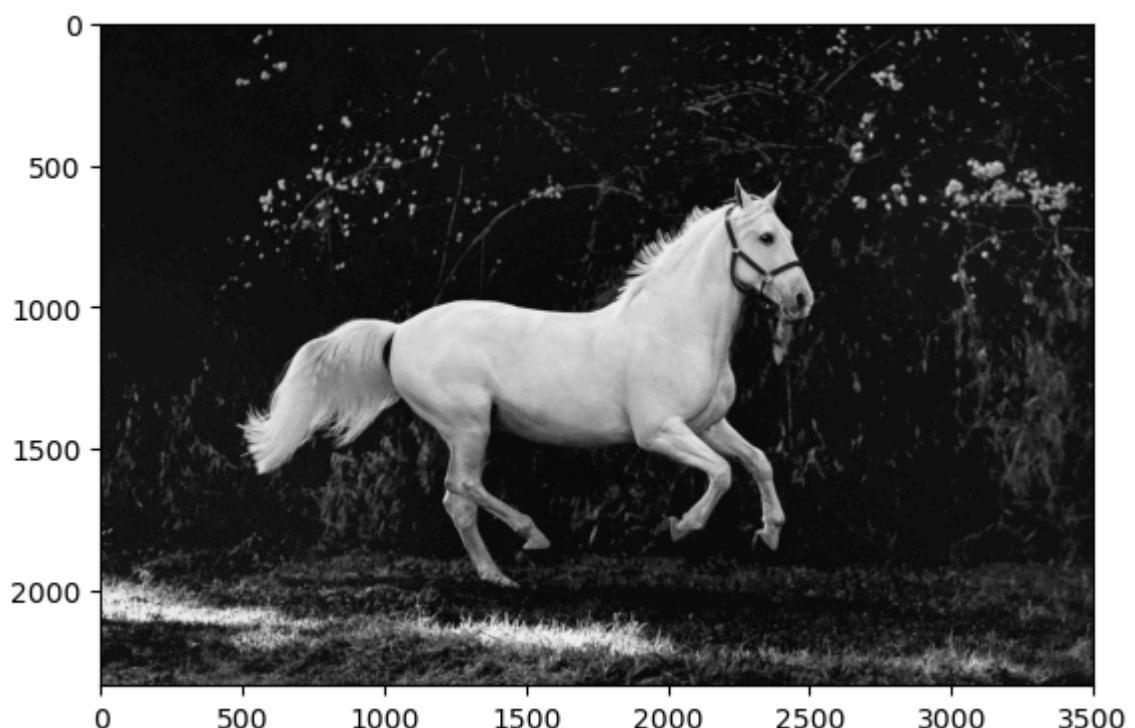
```
In [29]: plt.imshow(horse_red[:, :, 0], cmap='Greens')  
plt.show()
```



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



```
In [31]: plt.imshow(horse_red[:, :, 0], cmap='grey')
plt.show()
```



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



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

```
Out[33]: array([[15, 15, 15, ..., 25, 19, 14],  
                 [15, 15, 15, ..., 26, 22, 20],  
                 [15, 15, 15, ..., 28, 25, 24],  
                 ...,  
                 [49, 40, 35, ..., 14, 13, 12],  
                 [45, 38, 31, ..., 11, 12, 16],  
                 [31, 31, 32, ..., 14, 16, 23]], dtype=uint8)
```

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

```
Out[34]: array([[17, 17, 17, ..., 37, 34, 30],  
                 [17, 17, 17, ..., 38, 37, 36],  
                 [17, 17, 17, ..., 40, 40, 40],  
                 ...,  
                 [50, 41, 35, ..., 30, 25, 22],  
                 [50, 43, 36, ..., 25, 24, 26],  
                 [41, 41, 39, ..., 26, 26, 31]], dtype=uint8)
```

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

```
Out[35]: array([[29, 29, 29, ..., 35, 31, 27],  
                 [29, 29, 29, ..., 36, 34, 33],  
                 [29, 29, 29, ..., 38, 37, 37],  
                 ...,  
                 [44, 35, 27, ..., 29, 25, 23],  
                 [44, 37, 30, ..., 25, 24, 27],  
                 [33, 33, 32, ..., 26, 27, 33]], dtype=uint8)
```

```
In [36]: horse_red[:, :, 1]=0  
horse_red
```

```
Out[36]: array([[[15,  0, 29],
   [15,  0, 29],
   [15,  0, 29],
   ...,
   [25,  0, 35],
   [19,  0, 31],
   [14,  0, 27]],

   [[15,  0, 29],
   [15,  0, 29],
   [15,  0, 29],
   ...,
   [26,  0, 36],
   [22,  0, 34],
   [20,  0, 33]],

   [[15,  0, 29],
   [15,  0, 29],
   [15,  0, 29],
   ...,
   [28,  0, 38],
   [25,  0, 37],
   [24,  0, 37]],

   ...,

   [[49,  0, 44],
   [40,  0, 35],
   [35,  0, 27],
   ...,
   [14,  0, 29],
   [13,  0, 25],
   [12,  0, 23]],

   [[45,  0, 44],
   [38,  0, 37],
   [31,  0, 30],
   ...,
   [11,  0, 25],
   [12,  0, 24],
   [16,  0, 27]],

   [[31,  0, 33],
   [31,  0, 33],
   [32,  0, 32],
   ...,
   [14,  0, 26],
   [16,  0, 27],
   [23,  0, 33]]], dtype=uint8)
```

```
In [37]: plt.imshow(horse_red)
plt.show()
```



```
In [38]: horse_red[:, :, 2]
```

```
Out[38]: array([[29, 29, 29, ..., 35, 31, 27],  
 [29, 29, 29, ..., 36, 34, 33],  
 [29, 29, 29, ..., 38, 37, 37],  
 ...,  
 [44, 35, 27, ..., 29, 25, 23],  
 [44, 37, 30, ..., 25, 24, 27],  
 [33, 33, 32, ..., 26, 27, 33]], dtype=uint8)
```

```
In [39]: horse_red[:, :, 2]=0  
horse_red
```

```
Out[39]: array([[[15,  0,  0],
   [15,  0,  0],
   [15,  0,  0],
   ...,
   [25,  0,  0],
   [19,  0,  0],
   [14,  0,  0]],

   [[15,  0,  0],
   [15,  0,  0],
   [15,  0,  0],
   ...,
   [26,  0,  0],
   [22,  0,  0],
   [20,  0,  0]],

   [[15,  0,  0],
   [15,  0,  0],
   [15,  0,  0],
   ...,
   [28,  0,  0],
   [25,  0,  0],
   [24,  0,  0]],

   ...,

   [[49,  0,  0],
   [40,  0,  0],
   [35,  0,  0],
   ...,
   [14,  0,  0],
   [13,  0,  0],
   [12,  0,  0]],

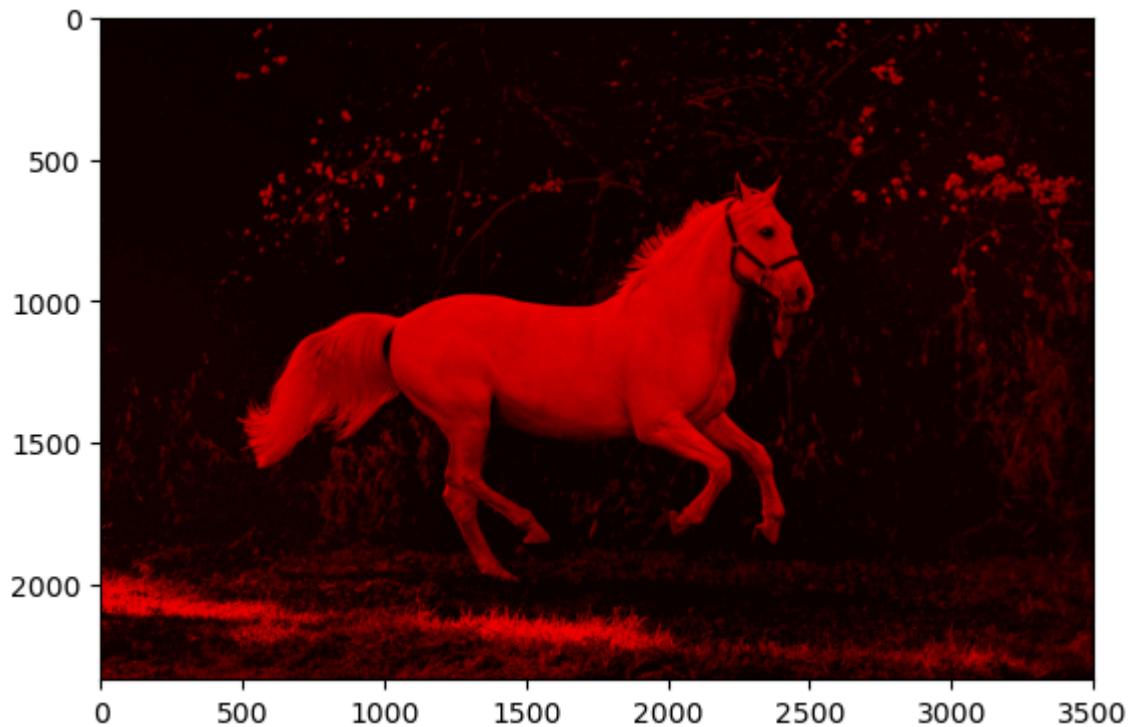
   [[45,  0,  0],
   [38,  0,  0],
   [31,  0,  0],
   ...,
   [11,  0,  0],
   [12,  0,  0],
   [16,  0,  0]],

   [[31,  0,  0],
   [31,  0,  0],
   [32,  0,  0],
   ...,
   [14,  0,  0],
   [16,  0,  0],
   [23,  0,  0]]], dtype=uint8)
```

```
In [40]: horse_red[:, :, 2]
```

```
Out[40]: 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 [41]: plt.imshow(horse_red)  
plt.show()
```



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

```
Out[42]: 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 [43]: horse_arr
```

```
Out[43]: array([[[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [25, 37, 35],  
                 [19, 34, 31],  
                 [14, 30, 27]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [26, 38, 36],  
                 [22, 37, 34],  
                 [20, 36, 33]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [28, 40, 38],  
                 [25, 40, 37],  
                 [24, 40, 37]],  
  
                ...,  
  
                [[49, 50, 44],  
                 [40, 41, 35],  
                 [35, 35, 27],  
                 ...,  
                 [14, 30, 29],  
                 [13, 25, 25],  
                 [12, 22, 23]],  
  
                [[45, 50, 44],  
                 [38, 43, 37],  
                 [31, 36, 30],  
                 ...,  
                 [11, 25, 25],  
                 [12, 24, 24],  
                 [16, 26, 27]],  
  
                [[31, 41, 33],  
                 [31, 41, 33],  
                 [32, 39, 32],  
                 ...,  
                 [14, 26, 26],  
                 [16, 26, 27],  
                 [23, 31, 33]]], dtype=uint8)
```

```
In [44]: horse_red
```

```
Out[44]: array([[[15,  0,  0],
   [15,  0,  0],
   [15,  0,  0],
   ...,
   [25,  0,  0],
   [19,  0,  0],
   [14,  0,  0]],

   [[15,  0,  0],
   [15,  0,  0],
   [15,  0,  0],
   ...,
   [26,  0,  0],
   [22,  0,  0],
   [20,  0,  0]],

   [[15,  0,  0],
   [15,  0,  0],
   [15,  0,  0],
   ...,
   [28,  0,  0],
   [25,  0,  0],
   [24,  0,  0]],

   ...,

   [[49,  0,  0],
   [40,  0,  0],
   [35,  0,  0],
   ...,
   [14,  0,  0],
   [13,  0,  0],
   [12,  0,  0]],

   [[45,  0,  0],
   [38,  0,  0],
   [31,  0,  0],
   ...,
   [11,  0,  0],
   [12,  0,  0],
   [16,  0,  0]],

   [[31,  0,  0],
   [31,  0,  0],
   [32,  0,  0],
   ...,
   [14,  0,  0],
   [16,  0,  0],
   [23,  0,  0]]], dtype=uint8)
```

```
In [45]: horse_img
```

Out[45]:



In [46]: arr1 = np.asarray(horse_img)

In [47]: arr1

```
Out[47]: array([[[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [25, 37, 35],  
                 [19, 34, 31],  
                 [14, 30, 27]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [26, 38, 36],  
                 [22, 37, 34],  
                 [20, 36, 33]],  
  
                [[15, 17, 29],  
                 [15, 17, 29],  
                 [15, 17, 29],  
                 ...,  
                 [28, 40, 38],  
                 [25, 40, 37],  
                 [24, 40, 37]],  
  
                ...,  
  
                [[49, 50, 44],  
                 [40, 41, 35],  
                 [35, 35, 27],  
                 ...,  
                 [14, 30, 29],  
                 [13, 25, 25],  
                 [12, 22, 23]],  
  
                [[45, 50, 44],  
                 [38, 43, 37],  
                 [31, 36, 30],  
                 ...,  
                 [11, 25, 25],  
                 [12, 24, 24],  
                 [16, 26, 27]],  
  
                [[31, 41, 33],  
                 [31, 41, 33],  
                 [32, 39, 32],  
                 ...,  
                 [14, 26, 26],  
                 [16, 26, 27],  
                 [23, 31, 33]]], dtype=uint8)
```

```
In [48]: type(arr1)
```

```
Out[48]: numpy.ndarray
```

```
In [49]: arr1.shape
```

```
Out[49]: (2334, 3502, 3)
```

```
In [50]: plt.imshow(arr1)  
plt.show()
```



```
In [51]: horse_img1 = arr1.copy()
```

```
In [52]: horse_img1[:, :, 0] = 0
```

```
In [53]: plt.imshow(horse_img1)  
plt.show()
```



```
In [54]: horse_img1[:, :, 1] = 0
```

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



```
In [ ]:
```