

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

```
In [2]: ones_arr = np.ones((3,3))
```

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

```
Out[3]: array([[1., 1., 1.],
               [1., 1., 1.],
               [1., 1., 1.]])
```

```
In [4]: ones_arr = np.ones((5,5),dtype=int)
```

```
In [5]: ones_arr
```

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

```
In [7]: zeros_arr
```

```
Out[7]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
In [8]: ones_arr
```

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

```
Out[10]: array([[0, 0, 0],
                [0, 0, 0],
                [0, 0, 0]])
```

```
In [11]: ones_arr
```

```
Out[11]: 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 [12]: import matplotlib.pyplot as plt
```

```
In [13]: %matplotlib inline
```

```
In [14]: from PIL import Image # python imaging library
```

```
In [15]: #horse_img = Image.open('C:\Users\A3MAX SOFTWARE TECH\Desktop\WORK\1. KODI WORK\1.
```

```
In [18]: horse_img = Image.open(r'C:\Users\DELL\Downloads\570338740312743337.jpeg')
```

```
In [19]: horse_img
```

```
Out[19]:
```



```
In [20]: #my_img = Image.open(r'C:\Users\A3MAX SOFTWARE TECH\Desktop\WORK\1. KODI WORK\1. NA
```

```
In [21]: #my_img
```

```
In [22]: type(horse_img)
```

```
Out[22]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [23]: horse_arr = np.asarray(horse_img)
         horse_arr
```

```

Out[23]: array([[[30, 26, 17],
                  [31, 27, 18],
                  [32, 28, 19],
                  ...,
                  [25, 21, 20],
                  [24, 23, 21],
                  [21, 20, 18]],

                [[37, 37, 29],
                  [29, 26, 19],
                  [23, 20, 13],
                  ...,
                  [28, 24, 23],
                  [25, 24, 22],
                  [21, 19, 20]],

                [[28, 29, 24],
                  [26, 27, 22],
                  [28, 29, 24],
                  ...,
                  [33, 29, 30],
                  [32, 31, 29],
                  [30, 28, 29]],

                ...,

                [[35, 30, 37],
                  [40, 33, 40],
                  [26, 15, 19],
                  ...,
                  [23, 22, 28],
                  [13, 10, 19],
                  [31, 25, 35]],

                [[33, 32, 38],
                  [36, 34, 39],
                  [21, 15, 17],
                  ...,
                  [25, 24, 29],
                  [14, 11, 18],
                  [31, 26, 33]],

                [[28, 31, 36],
                  [31, 32, 36],
                  [17, 15, 16],
                  ...,
                  [27, 27, 29],
                  [13, 11, 16],
                  [30, 25, 31]]], dtype=uint8)

```

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

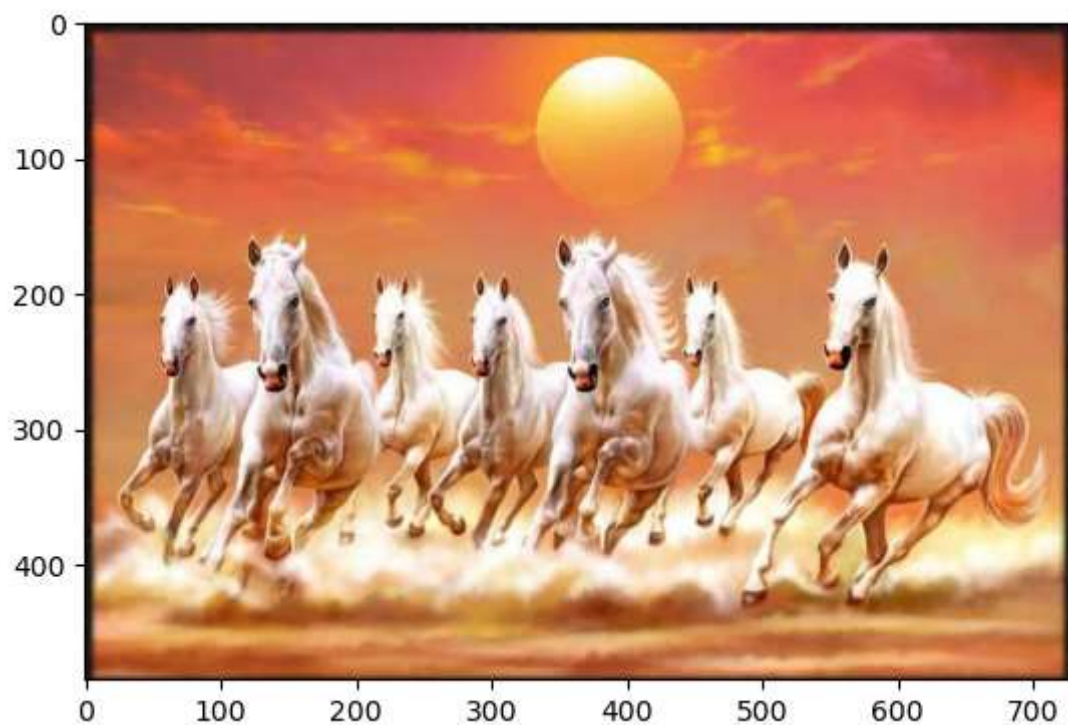
```
Out[24]: numpy.ndarray
```

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

Out[25]: (485, 735, 3)

```
In [26]: plt.imshow(horse_arr)
```

Out[26]: <matplotlib.image.AxesImage at 0x1851e10e750>



```
In [27]: horse_red = horse_arr.copy()
```

```
In [28]: horse_red
```

```

Out[28]: array([[[30, 26, 17],
                  [31, 27, 18],
                  [32, 28, 19],
                  ...,
                  [25, 21, 20],
                  [24, 23, 21],
                  [21, 20, 18]],

                [[37, 37, 29],
                  [29, 26, 19],
                  [23, 20, 13],
                  ...,
                  [28, 24, 23],
                  [25, 24, 22],
                  [21, 19, 20]],

                [[28, 29, 24],
                  [26, 27, 22],
                  [28, 29, 24],
                  ...,
                  [33, 29, 30],
                  [32, 31, 29],
                  [30, 28, 29]],

                ...,

                [[35, 30, 37],
                  [40, 33, 40],
                  [26, 15, 19],
                  ...,
                  [23, 22, 28],
                  [13, 10, 19],
                  [31, 25, 35]],

                [[33, 32, 38],
                  [36, 34, 39],
                  [21, 15, 17],
                  ...,
                  [25, 24, 29],
                  [14, 11, 18],
                  [31, 26, 33]],

                [[28, 31, 36],
                  [31, 32, 36],
                  [17, 15, 16],
                  ...,
                  [27, 27, 29],
                  [13, 11, 16],
                  [30, 25, 31]]], dtype=uint8)

```

```
In [29]: horse_arr == horse_red
```

```

Out[29]: 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]],

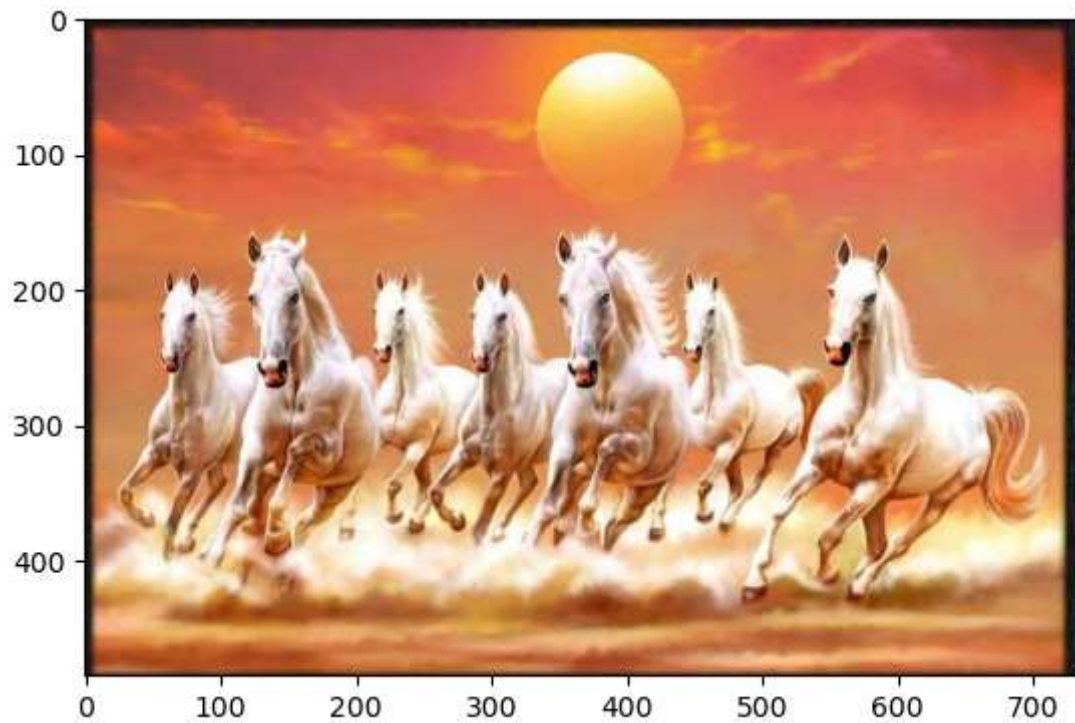
              [[ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True],
               ...,
               [ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True]],

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

```

```
In [30]: plt.imshow(horse_red)
```

```
Out[30]: <matplotlib.image.AxesImage at 0x1851e482300>
```

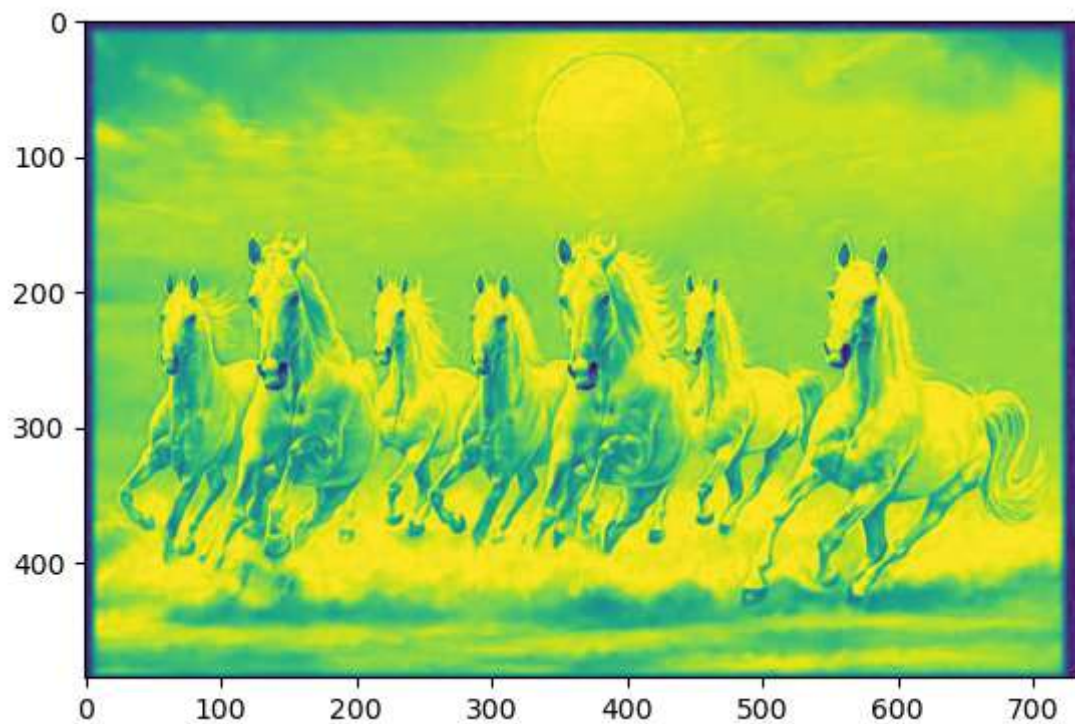



```
In [31]: horse_red.shape
```

```
Out[31]: (485, 735, 3)
```

```
In [32]: # R G B  
plt.imshow(horse_red[:, :, 0])
```

```
Out[32]: <matplotlib.image.AxesImage at 0x1851e4dcc20>
```



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

```
Out[33]: array([[30, 31, 32, ..., 25, 24, 21],  
               [37, 29, 23, ..., 28, 25, 21],  
               [28, 26, 28, ..., 33, 32, 30],  
               ...,  
               [35, 40, 26, ..., 23, 13, 31],  
               [33, 36, 21, ..., 25, 14, 31],  
               [28, 31, 17, ..., 27, 13, 30]], dtype=uint8)
```

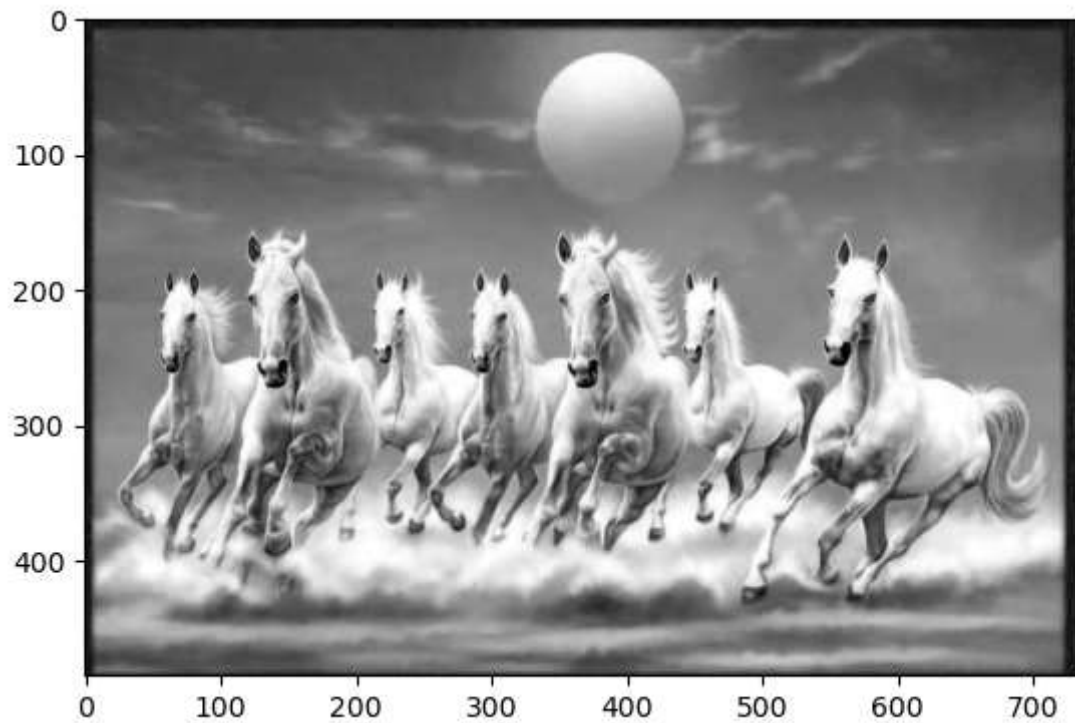
```
In [34]: plt.imshow(horse_red[:, :, 0], cmap='Greys')
```

```
Out[34]: <matplotlib.image.AxesImage at 0x1851f05bdd0>
```



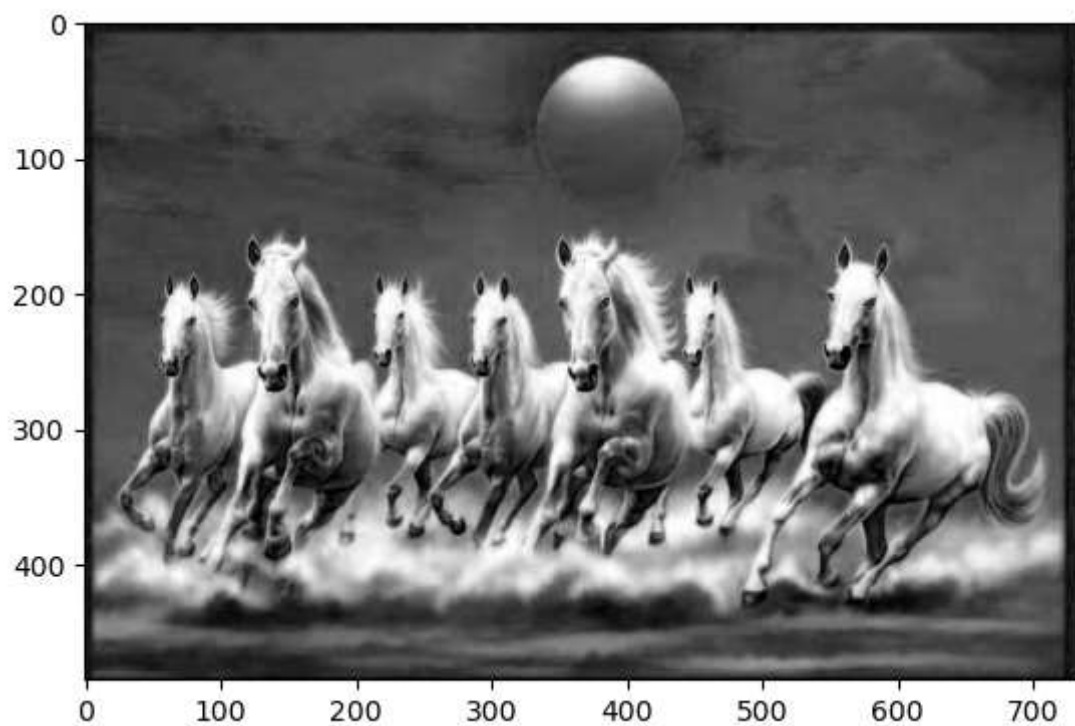
```
In [35]: plt.imshow(horse_red[:, :, 1], cmap='grey')
```

```
Out[35]: <matplotlib.image.AxesImage at 0x1851f0e0770>
```

```
In [36]: plt.imshow(horse_red[:, :, 2], cmap='grey')
```

```
Out[36]: <matplotlib.image.AxesImage at 0x1851f0d1bb0>
```



```
In [37]: horse_red[:, :, 0]
```

```
Out[37]: array([[30, 31, 32, ..., 25, 24, 21],
               [37, 29, 23, ..., 28, 25, 21],
               [28, 26, 28, ..., 33, 32, 30],
               ...,
               [35, 40, 26, ..., 23, 13, 31],
               [33, 36, 21, ..., 25, 14, 31],
               [28, 31, 17, ..., 27, 13, 30]], dtype=uint8)
```

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

```
Out[38]: array([[26, 27, 28, ..., 21, 23, 20],
               [37, 26, 20, ..., 24, 24, 19],
               [29, 27, 29, ..., 29, 31, 28],
               ...,
               [30, 33, 15, ..., 22, 10, 25],
               [32, 34, 15, ..., 24, 11, 26],
               [31, 32, 15, ..., 27, 11, 25]], dtype=uint8)
```

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

```
Out[39]: array([[17, 18, 19, ..., 20, 21, 18],
               [29, 19, 13, ..., 23, 22, 20],
               [24, 22, 24, ..., 30, 29, 29],
               ...,
               [37, 40, 19, ..., 28, 19, 35],
               [38, 39, 17, ..., 29, 18, 33],
               [36, 36, 16, ..., 29, 16, 31]], dtype=uint8)
```

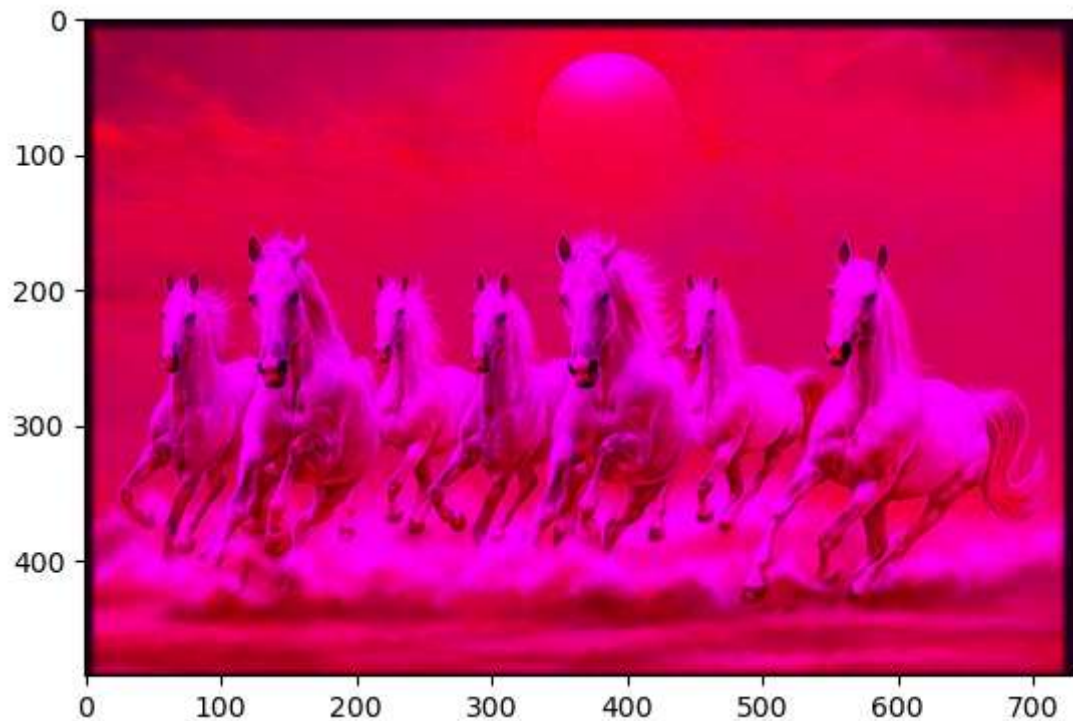
```
In [40]: horse_red[:, :, 1] = 0
```

```
In [41]: horse_red[:, :, 1]
```

```
Out[41]: 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 [42]: plt.imshow(horse_red)
```

```
Out[42]: <matplotlib.image.AxesImage at 0x1851f2cb560>
```



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

Out[43]: `array([[17, 18, 19, ..., 20, 21, 18],
[29, 19, 13, ..., 23, 22, 20],
[24, 22, 24, ..., 30, 29, 29],
...,
[37, 40, 19, ..., 28, 19, 35],
[38, 39, 17, ..., 29, 18, 33],
[36, 36, 16, ..., 29, 16, 31]], dtype=uint8)`

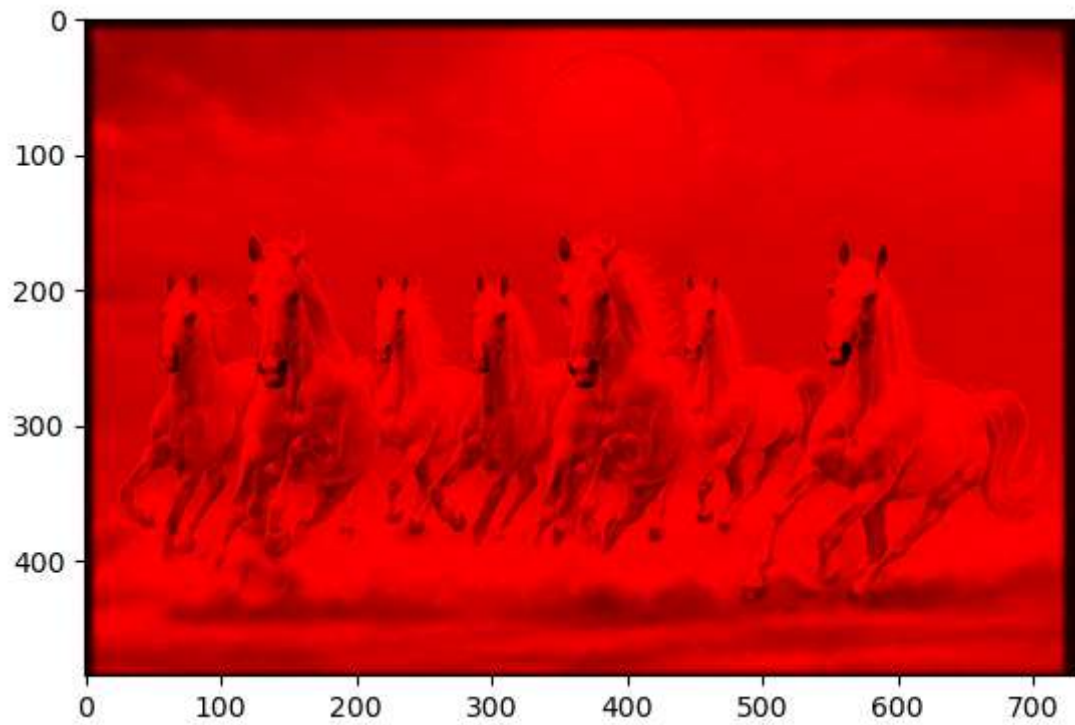
In [44]: `horse_red[:, :, 2] = 0`

In [45]: `horse_red[:, :, 2]`

Out[45]: `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 [46]: `plt.imshow(horse_red)`

Out[46]: `<matplotlib.image.AxesImage at 0x1851f0fd850>`



In [47]: horse_arr

```

Out[47]: array([[[30, 26, 17],
                  [31, 27, 18],
                  [32, 28, 19],
                  ...,
                  [25, 21, 20],
                  [24, 23, 21],
                  [21, 20, 18]],

                [[37, 37, 29],
                  [29, 26, 19],
                  [23, 20, 13],
                  ...,
                  [28, 24, 23],
                  [25, 24, 22],
                  [21, 19, 20]],

                [[28, 29, 24],
                  [26, 27, 22],
                  [28, 29, 24],
                  ...,
                  [33, 29, 30],
                  [32, 31, 29],
                  [30, 28, 29]],

                ...,

                [[35, 30, 37],
                  [40, 33, 40],
                  [26, 15, 19],
                  ...,
                  [23, 22, 28],
                  [13, 10, 19],
                  [31, 25, 35]],

                [[33, 32, 38],
                  [36, 34, 39],
                  [21, 15, 17],
                  ...,
                  [25, 24, 29],
                  [14, 11, 18],
                  [31, 26, 33]],

                [[28, 31, 36],
                  [31, 32, 36],
                  [17, 15, 16],
                  ...,
                  [27, 27, 29],
                  [13, 11, 16],
                  [30, 25, 31]]], dtype=uint8)

```

```
In [48]: horse_red
```

```

Out[48]: array([[30,  0,  0],
               [31,  0,  0],
               [32,  0,  0],
               ...,
               [25,  0,  0],
               [24,  0,  0],
               [21,  0,  0]],

               [[37,  0,  0],
               [29,  0,  0],
               [23,  0,  0],
               ...,
               [28,  0,  0],
               [25,  0,  0],
               [21,  0,  0]],

               [[28,  0,  0],
               [26,  0,  0],
               [28,  0,  0],
               ...,
               [33,  0,  0],
               [32,  0,  0],
               [30,  0,  0]],

               ...,

               [[35,  0,  0],
               [40,  0,  0],
               [26,  0,  0],
               ...,
               [23,  0,  0],
               [13,  0,  0],
               [31,  0,  0]],

               [[33,  0,  0],
               [36,  0,  0],
               [21,  0,  0],
               ...,
               [25,  0,  0],
               [14,  0,  0],
               [31,  0,  0]],

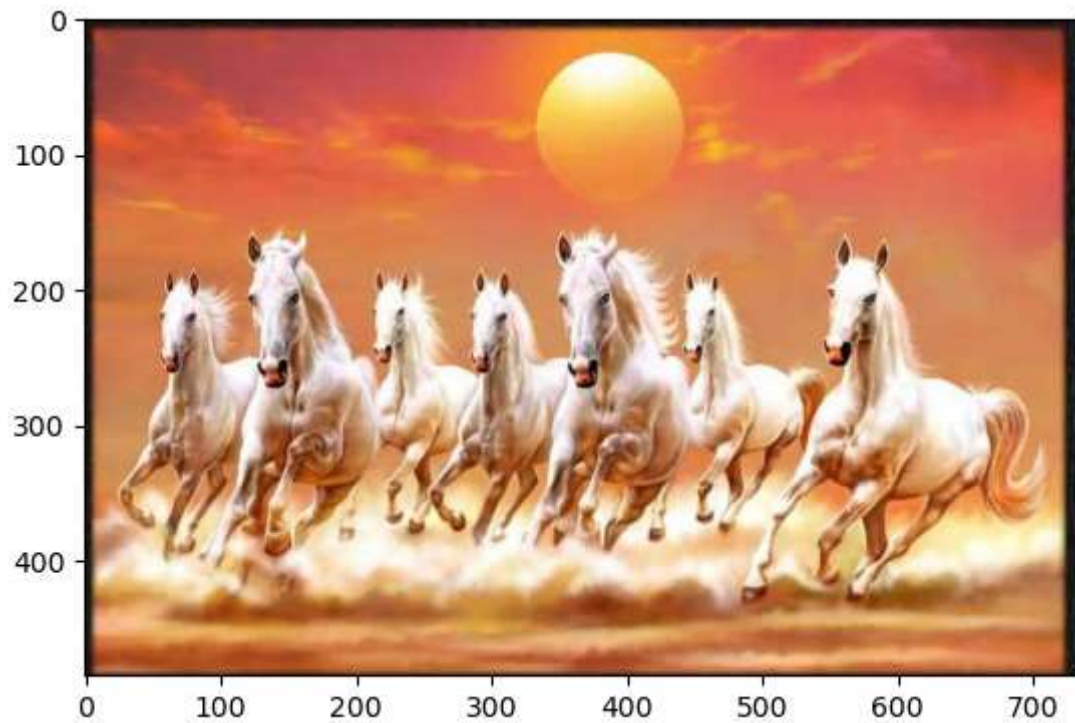
               [[28,  0,  0],
               [31,  0,  0],
               [17,  0,  0],
               ...,
               [27,  0,  0],
               [13,  0,  0],
               [30,  0,  0]]], dtype=uint8)

```

```
In [49]: horse_img
```


Out[49]:

In [50]: `arr1 = np.asarray(horse_img)`In [51]: `type(arr1)`Out[51]: `numpy.ndarray`In [52]: `arr1.shape`Out[52]: `(485, 735, 3)`In [53]: `plt.imshow(arr1)`Out[53]: `<matplotlib.image.AxesImage at 0x1851f3d3050>`



```
In [54]: horse_img1 = arr1.copy()
```

```
In [55]: horse_img1[:, :, 0] = 0
```

```
In [56]: plt.imshow(horse_img1)
```

```
Out[56]: <matplotlib.image.AxesImage at 0x1851f423d10>
```



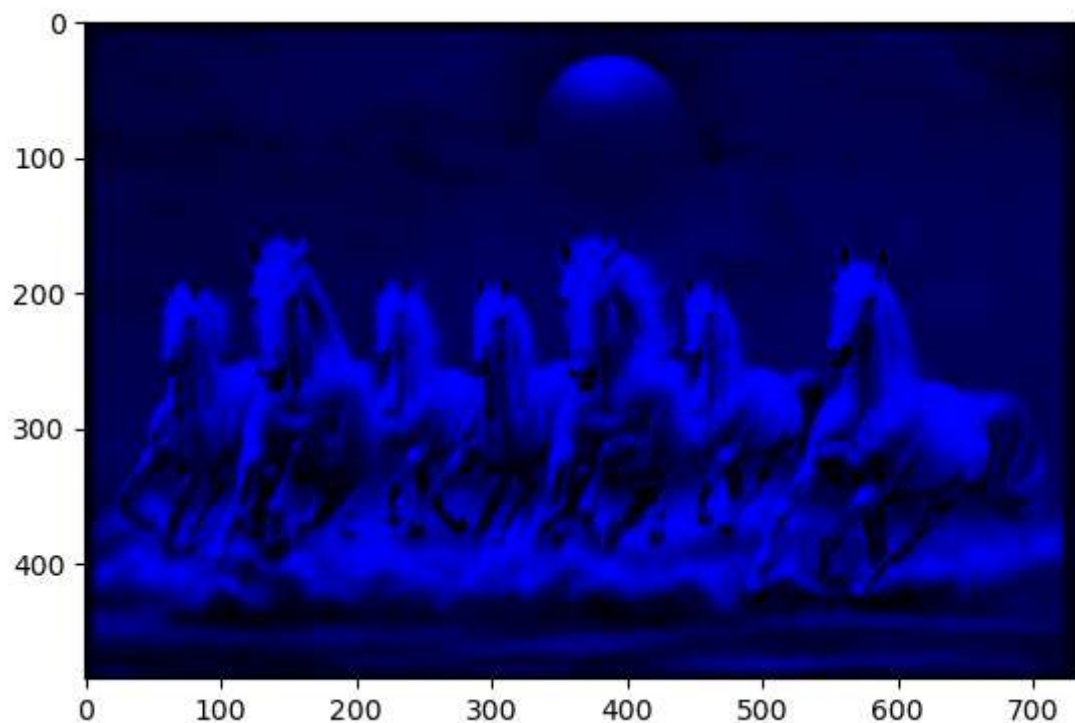
```
In [57]: horse_img1[:, :, 1]
```

```
Out[57]: array([[26, 27, 28, ..., 21, 23, 20],
               [37, 26, 20, ..., 24, 24, 19],
               [29, 27, 29, ..., 29, 31, 28],
               ...,
               [30, 33, 15, ..., 22, 10, 25],
               [32, 34, 15, ..., 24, 11, 26],
               [31, 32, 15, ..., 27, 11, 25]], dtype=uint8)
```

```
In [58]: horse_img1[:, :, 1] = 0
```

```
In [59]: plt.imshow(horse_img1)
```

```
Out[59]: <matplotlib.image.AxesImage at 0x1851e482900>
```



practicle 1 is completed

```
In [ ]:
```