```
import numpy as np
```

```
import matplotlib.pyplot as plt
```

```
from PIL import Image # python img library
```

```
ones_arr = np.ones((5,5))
ones_arr
```

```
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.]])
```

```
ones_arr = np.ones((5,5), dtype=int)
ones_arr
```

```
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]])
```

```
zero_arr = np.zeros((5,5))
zero_arr
```

```
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.]])
```

```
ones_arr * 255
```

```
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]])
```

```
%matplotlib inline
```

```
horse_img = Image.open(r'C:\Users\admin\vscode project\CV FOR GEN AI\horse.jpeg')
```

```
horse_img
```

```
type(horse_img)
```

```
PIL.JpegImagePlugin.JpegImageFile
```

```
horse_arr = np.asarray(horse_img)
```

```
horse_arr
```

```
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)
```

```
type(horse_arr)
```

```
numpy.ndarray
```

```
horse_arr.shape
```

```
(2334, 3502, 3)
```

```
plt.imshow(horse_arr) #display data as an image
plt.show()
```


```
horse_red = horse_arr.copy()
```

```
horse_red
```

```
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)
```

```
horse_arr = horse_red
```

```
plt.imshow(horse_red)
plt.show()
```


```
horse_red.shape
```

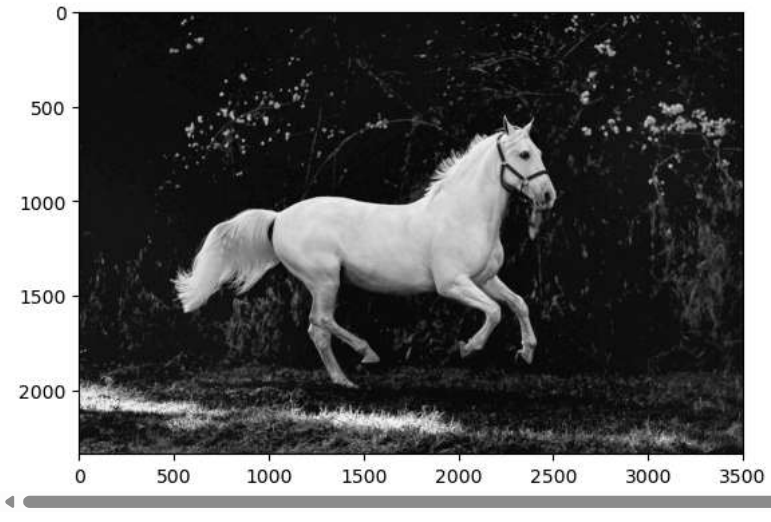
```
(2334, 3502, 3)
```

```
#RGB
plt.imshow(horse_red[:,:,0])
plt.show()
```


```
horse_red[:,:,0]
```

```
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)
```

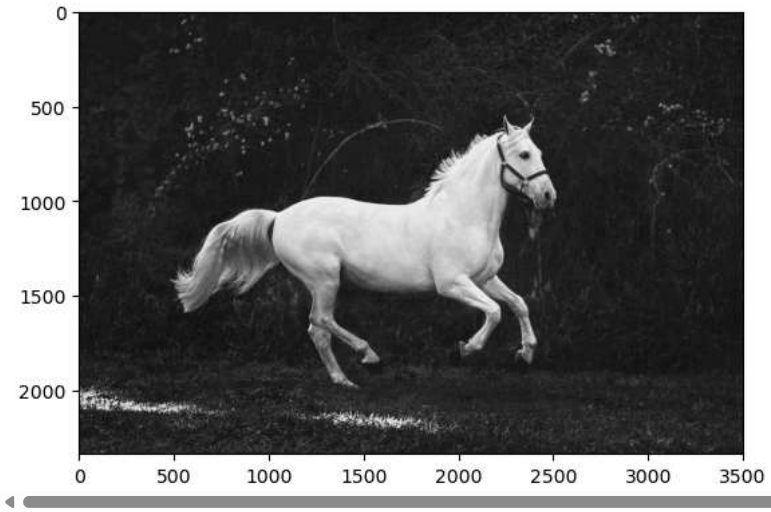
```
plt.imshow(horse_red[:,:,0], cmap='gray')
plt.show()
```




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


```
plt.imshow(horse_red[:,:,2], cmap='gray')
```

```
plt.show()
```




```
horse_red[:,:,2]
```

```
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)
```

```
horse_red[:,:,1]
```

```
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)
```

```
horse_red[:,:,0]
```

```
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)
```

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


plt.imshow(horse_red)
plt.show()
```


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

```
plt.imshow(horse_red)
plt.show()
```


```
arr1 = np.asarray(horse_img)
arr1
```

```
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)
```

```
arr1.shape
```

```
(2334, 3502, 3)
```

```
type(arr1)
```

```
numpy.ndarray
```

```
plt.imshow(arr1)
plt.show()
```


```
horse_img1 = arr1.copy()
```

```
horse_img1[:,:,0]
```

```
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)
```

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

```
plt.imshow(horse_img1)
plt.show()
```