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

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

```
Out[2]: 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.]])
```

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

```python
In [4]: zero_arr = np.zeros((3,3),dtype=int)
        zero_arr
```

```
Out[4]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```python
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]])
```

```python
In [6]: ones_arr*255
```

```
Out[6]: 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]])
```

```python
In [7]: import matplotlib.pyplot as plt
```

```python
In [8]: %matplotlib inline
```

```python
In [9]: from PIL import Image# python imaging library
```

```python
In [10]: horse_img = Image.open(r"C:\Users\vishnu\Downloads\Compressed\pexels-wildlittlethin
         horse_img
```

Out[10]:

In [11]: `type(horse_img)`

Out[11]: `PIL.JpegImagePlugin.JpegImageFile`

In [12]:
```python
horse_arr=np.asarray(horse_img)
horse_arr
```

```
Out[12]: 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 [13]: `type(horse_arr)`

Out[13]: numpy.ndarray

In [14]: `horse_arr.shape`

Out[14]: (2334, 3502, 3)

In [15]: plt.imshow(horse_arr)

Out[15]: <matplotlib.image.AxesImage at 0x1b3f029bda0>

In [16]: horse_red=horse_arr.copy()
horse_red

```
Out[16]:  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 [17]: `plt.imshow(horse_red[:,:,0])`

Out[17]: <matplotlib.image.AxesImage at 0x1b3f1b0efc0>

```
In [18]: horse_red[:,:,0]
```

```
Out[18]: 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)
```
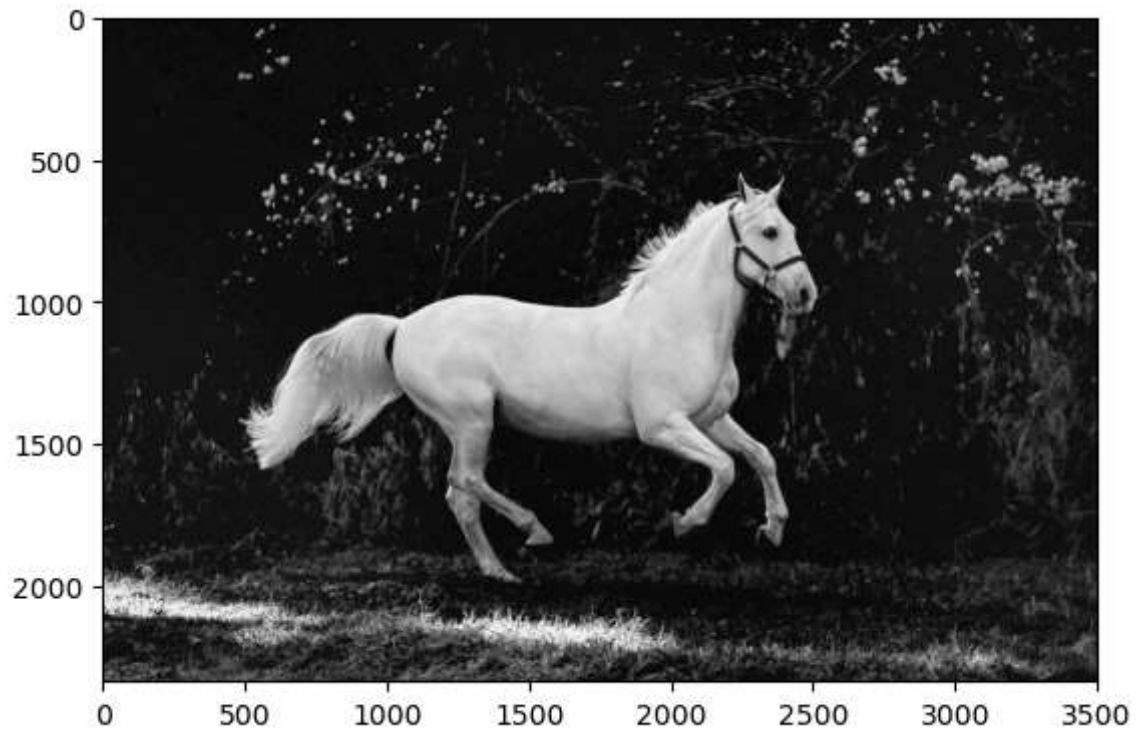
```
In [19]: horse_red.shape
```

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

```
In [20]: plt.imshow(horse_red[:,:,0], cmap='gray')
```

```
Out[20]: <matplotlib.image.AxesImage at 0x1b3f1b84d40>
```
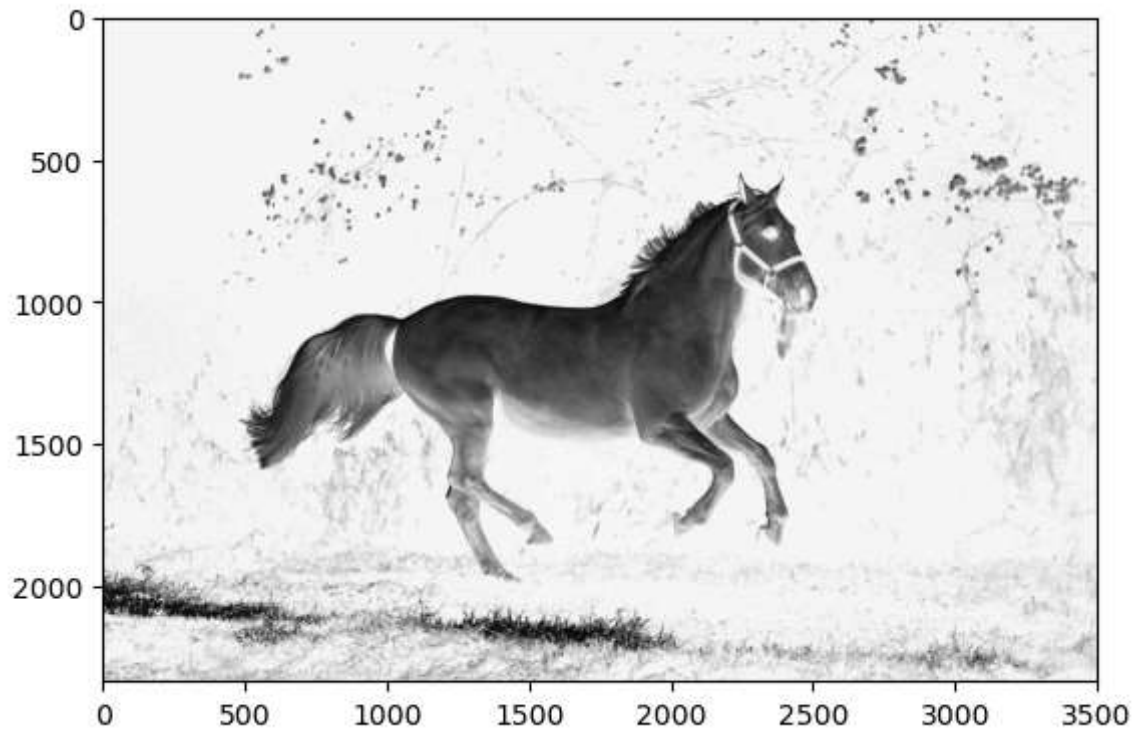
In [21]: `plt.imshow(horse_red[:,:,0], cmap='Blues')`

Out[21]: `<matplotlib.image.AxesImage at 0x1b3f1c225d0>`

In [22]: `plt.imshow(horse_red[:,:,0], cmap='Grays')`

Out[22]: `<matplotlib.image.AxesImage at 0x1b3f1c96b10>`

```
In [23]: horse_red[:,:,0]
```

```
Out[23]: 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 [24]: horse_red[:,:,1]
```

```
Out[24]: 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 [25]: horse_red[:,:,2]
```

```
Out[25]: 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 [28]: arr1 = np.asarray(horse_img)
```

```
In [29]: type(arr1)
```

Out[29]: numpy.ndarray

```
In [30]: arr1.shape
```

Out[30]: (2334, 3502, 3)

```
In [31]: plt.imshow(arr1)
```

Out[31]: <matplotlib.image.AxesImage at 0x1b3f1b85670>


```
In [35]: horse_img1 = arr1.copy()
         horse_img1
```

```
Out[35]: 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)
```

```python
In [36]: plt.imshow(horse_red[:,:,1], cmap='YlGn')
```

```
Out[36]: <matplotlib.image.AxesImage at 0x1b3f1e3a780>
```

```
In [37]:  plt.imshow(horse_img1)
```

Out[37]: <matplotlib.image.AxesImage at 0x1b3f1e48da0>


```
In [ ]:  # End With Explorative AI through open cv
```