

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

```
In [3]: import matplotlib.pyplot as plt
```

```
In [4]: from PIL import Image
```

```
In [11]: horse=Image.open(r"C:\Users\91630\OneDrive\Desktop\horse.jpg")
```

```
In [13]: horse
```

```
Out[13]:
```



```
In [15]: type(horse)
```

```
Out[15]: PIL.JpegImagePlugin.JpegImageFile
```

```
In [17]: horse_arr=np.asarray(horse)
```

```
In [19]: horse_arr
```

```
Out[19]: array([[[ 24,    6,    0],
   [ 26,    8,    0],
   [ 29,   13,    0],
   ...,
   [ 23,   21,    0],
   [ 23,   18,    0],
   [ 23,   17,    0]],

   [[237,  219,  205],
   [240,  222,  208],
   [244,  226,  212],
   ...,
   [216,  215,  187],
   [210,  206,  179],
   [207,  202,  173]],

   [[227,  208,  193],
   [230,  211,  196],
   [234,  215,  200],
   ...,
   [221,  219,  181],
   [218,  214,  179],
   [216,  212,  175]],

   ...,

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]],

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]],

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]]], dtype=uint8)
```

```
In [21]: type(horse_arr)
```

```
Out[21]: numpy.ndarray
```

```
In [23]: plt.imshow(horse_arr)
```

```
Out[23]: <matplotlib.image.AxesImage at 0x2230ebaf920>
```



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

```
Out[25]: (852, 1080, 3)
```

```
In [29]: horse_newimage=horse_arr.copy()  
horse_newimage
```

```
Out[29]: array([[[ 24,    6,    0],
   [ 26,    8,    0],
   [ 29,   13,    0],
   ...,
   [ 23,   21,    0],
   [ 23,   18,    0],
   [ 23,   17,    0]],

   [[237,  219,  205],
   [240,  222,  208],
   [244,  226,  212],
   ...,
   [216,  215,  187],
   [210,  206,  179],
   [207,  202,  173]],

   [[227,  208,  193],
   [230,  211,  196],
   [234,  215,  200],
   ...,
   [221,  219,  181],
   [218,  214,  179],
   [216,  212,  175]],

   ...,

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]],

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]],

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]]], dtype=uint8)
```

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

```
Out[31]: <matplotlib.image.AxesImage at 0x2230ebabc50>
```



```
In [33]: horse_newimage.shape
```

```
Out[33]: (852, 1080, 3)
```

```
In [35]: horse_arr==horse_newimage
```

```
Out[35]: 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 [37]: plt.imshow(horse_newimage)
```

```
Out[37]: <matplotlib.image.AxesImage at 0x2231094eb10>
```

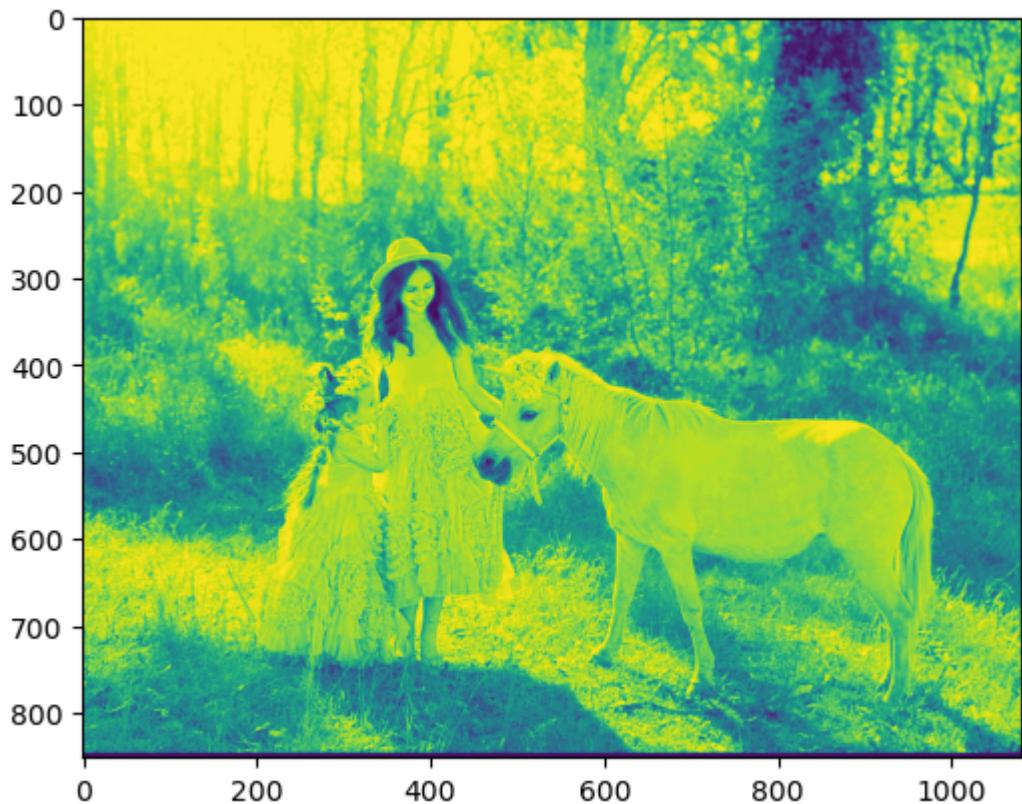


```
In [39]: horse_newimage.shape
```

```
Out[39]: (852, 1080, 3)
```

```
In [41]: plt.imshow(horse_newimage[:, :, 0])
```

```
Out[41]: <matplotlib.image.AxesImage at 0x2231093d160>
```

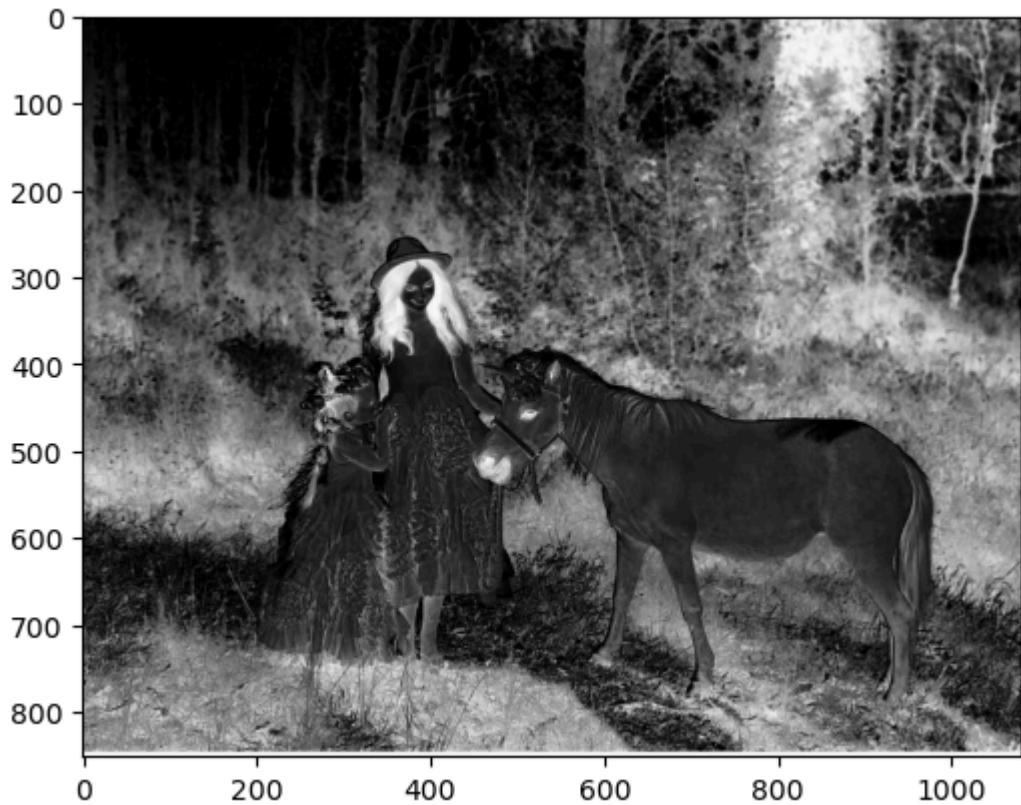


```
In [43]: horse_newimage[:, :, 0]
```

```
Out[43]: array([[ 24,  26,  29, ...,  23,  23,  23],
   [237, 240, 244, ..., 216, 210, 207],
   [227, 230, 234, ..., 221, 218, 216],
   ...,
   [ 12,  12,  12, ...,  12,  12,  12],
   [ 12,  12,  12, ...,  12,  12,  12],
   [ 12,  12,  12, ...,  12,  12,  12]], dtype=uint8)
```

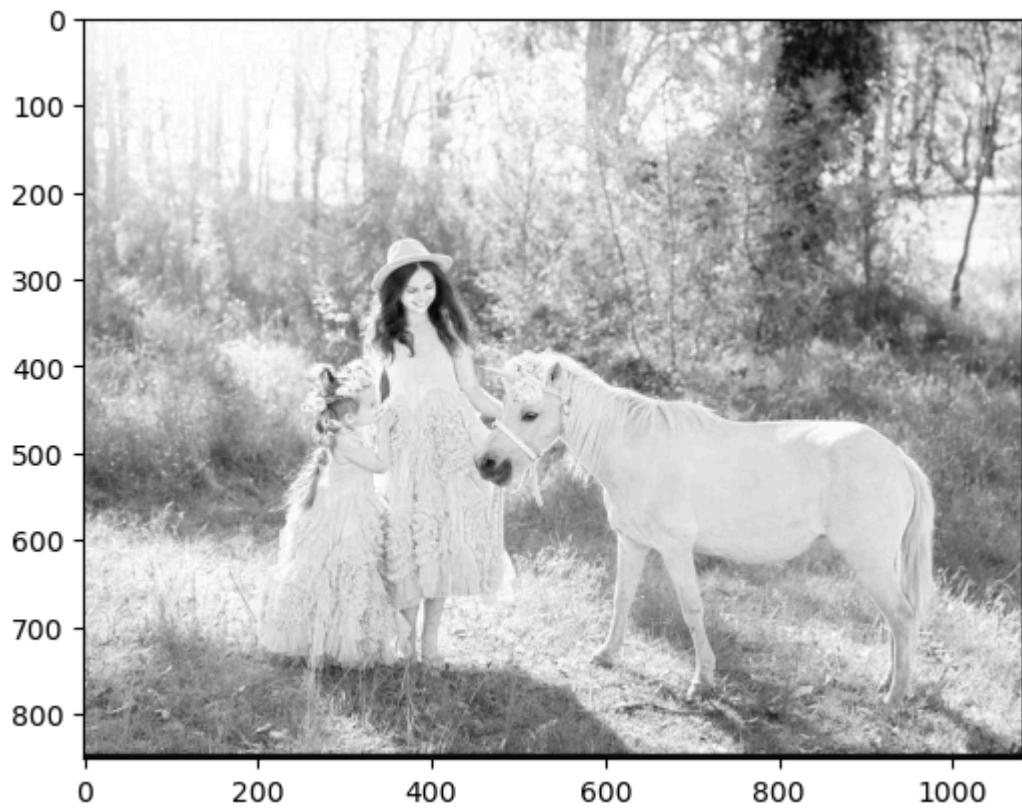
```
In [49]: plt.imshow(horse_newimage[:, :, 0], cmap='Greys')
```

```
Out[49]: <matplotlib.image.AxesImage at 0x2231150f3e0>
```



```
In [51]: plt.imshow(horse_newimage[:, :, 0], cmap='grey')
```

```
Out[51]: <matplotlib.image.AxesImage at 0x22311592630>
```



```
In [53]: plt.imshow(horse_newimage[:, :, 0], cmap='YlGn')
```

```
Out[53]: <matplotlib.image.AxesImage at 0x2230ebbb2c0>
```



```
In [55]: horse_newimage[:, :, 0]
```

```
Out[55]: array([[ 24,  26,  29, ...,  23,  23,  23],
   [237, 240, 244, ..., 216, 210, 207],
   [227, 230, 234, ..., 221, 218, 216],
   ...,
   [ 12,  12,  12, ...,  12,  12,  12],
   [ 12,  12,  12, ...,  12,  12,  12],
   [ 12,  12,  12, ...,  12,  12,  12]], dtype=uint8)
```

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

```
Out[57]: array([[  6,   8,  13, ...,  21,  18,  17],
   [219, 222, 226, ..., 215, 206, 202],
   [208, 211, 215, ..., 219, 214, 212],
   ...,
   [ 15,  15,  15, ...,  15,  15,  15],
   [ 15,  15,  15, ...,  15,  15,  15],
   [ 15,  15,  15, ...,  15,  15,  15]], dtype=uint8)
```

```
In [59]: horse_newimage[:, :, 1]
```

```
Out[59]: array([[  6,   8,  13, ...,  21,  18,  17],
   [219, 222, 226, ..., 215, 206, 202],
   [208, 211, 215, ..., 219, 214, 212],
   ...,
   [ 15,  15,  15, ...,  15,  15,  15],
   [ 15,  15,  15, ...,  15,  15,  15],
   [ 15,  15,  15, ...,  15,  15,  15]], dtype=uint8)
```

```
In [61]: horse_newimage[:, :, 2]
```

```
Out[61]: array([[  0,   0,   0, ...,   0,   0,   0],
   [205, 208, 212, ..., 187, 179, 173],
   [193, 196, 200, ..., 181, 179, 175],
   ...,
   [ 20,  20,  20, ...,  20,  20,  20],
   [ 20,  20,  20, ...,  20,  20,  20],
   [ 20,  20,  20, ...,  20,  20,  20]], dtype=uint8)
```

```
In [63]: plt.imshow(horse_newimage[:, :, 2])
```

```
Out[63]: <matplotlib.image.AxesImage at 0x2231022be30>
```



```
In [65]: horse_newimage[:, :, 2]=0
```

```
In [67]: horse_newimage[:, :, 2]
```

```
Out[67]: 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 [69]: plt.imshow(horse_newimage)
```

```
Out[69]: <matplotlib.image.AxesImage at 0x2230ebc46e0>
```



```
In [71]: horse_arr
```

```
Out[71]: array([[[ 24,    6,    0],
   [ 26,    8,    0],
   [ 29,   13,    0],
   ...,
   [ 23,   21,    0],
   [ 23,   18,    0],
   [ 23,   17,    0]],

   [[237,  219,  205],
   [240,  222,  208],
   [244,  226,  212],
   ...,
   [216,  215,  187],
   [210,  206,  179],
   [207,  202,  173]],

   [[227,  208,  193],
   [230,  211,  196],
   [234,  215,  200],
   ...,
   [221,  219,  181],
   [218,  214,  179],
   [216,  212,  175]],

   ...,

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]],

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]],

   [[ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20],
   ...,
   [ 12,   15,   20],
   [ 12,   15,   20],
   [ 12,   15,   20]]], dtype=uint8)
```

```
In [73]: horse_newimage
```

```
Out[73]: array([[[ 24,    6,    0],
   [ 26,    8,    0],
   [ 29,   13,    0],
   ...,
   [ 23,   21,    0],
   [ 23,   18,    0],
   [ 23,   17,    0]],

   [[237,  219,    0],
   [240,  222,    0],
   [244,  226,    0],
   ...,
   [216,  215,    0],
   [210,  206,    0],
   [207,  202,    0]],

   [[227,  208,    0],
   [230,  211,    0],
   [234,  215,    0],
   ...,
   [221,  219,    0],
   [218,  214,    0],
   [216,  212,    0]],

   ...,

   [[ 12,   15,    0],
   [ 12,   15,    0],
   [ 12,   15,    0],
   ...,
   [ 12,   15,    0],
   [ 12,   15,    0],
   [ 12,   15,    0]],

   [[ 12,   15,    0],
   [ 12,   15,    0],
   [ 12,   15,    0],
   ...,
   [ 12,   15,    0],
   [ 12,   15,    0],
   [ 12,   15,    0]],

   [[ 12,   15,    0],
   [ 12,   15,    0],
   [ 12,   15,    0],
   ...,
   [ 12,   15,    0],
   [ 12,   15,    0],
   [ 12,   15,    0]]], dtype=uint8)
```