

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

```
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.]])
```

```
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]])
```

```
In [4]: np.zeros((3,3))
```

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

```
In [5]: np.zeros((3,3),dtype=int)
```

```
Out[5]: array([[0, 0, 0],
               [0, 0, 0],
               [0, 0, 0]])
```

```
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]])
```

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

```
In [8]: # all the pictures keep inside the box
%matplotlib inline
```

```
In [9]: #importing Image from Python Image Library(PIL)
from PIL import Image
```

```
In [10]: horse_img=Image.open(r'C:\Users\world\Desktop\FullStackDSandAI\horse1.jpeg')
```

```
In [11]: horse_img
```

Out[11]:



```
In [12]: kids_img=Image.open(r'C:\Users\worl\Desktop\FullStackDSandAI\kids.jpg')  
kids_img
```

Out[12]:



In [13]: horse_img

Out[13]:

In [14]: `type(horse_img)`Out[14]: `PIL.JpegImagePlugin.JpegImageFile`In [15]: `horse_img_arr=np.asarray(horse_img)`
`horse_img_arr`

```
Out[15]: array([[[ 19,  19,  31],
   [ 18,  18,  30],
   [ 18,  18,  30],
   ...,
   [ 26,  36,  35],
   [ 26,  36,  35],
   [ 26,  36,  35]],

   [[ 19,  19,  31],
   [ 19,  19,  31],
   [ 18,  18,  30],
   ...,
   [ 20,  30,  29],
   [ 20,  30,  29],
   [ 20,  30,  29]],

   [[ 19,  19,  31],
   [ 19,  19,  31],
   [ 18,  18,  30],
   ...,
   [ 14,  24,  23],
   [ 14,  24,  23],
   [ 14,  24,  23]],

   ...,

   [[ 67,  53,  40],
   [ 87,  73,  60],
   [100,  86,  75],
   ...,
   [ 31,  36,  30],
   [ 33,  38,  32],
   [ 36,  41,  35]],

   [[ 75,  56,  42],
   [ 77,  59,  45],
   [ 80,  62,  48],
   ...,
   [ 19,  28,  25],
   [ 21,  30,  27],
   [ 24,  33,  30]],

   [[ 79,  60,  45],
   [ 84,  65,  50],
   [ 92,  73,  58],
   ...,
   [ 19,  31,  29],
   [ 21,  33,  31],
   [ 24,  36,  34]]], dtype=uint8)
```

```
In [16]: type(horse_img_arr)
```

```
Out[16]: numpy.ndarray
```

```
In [17]: horse_img_arr.shape
```

Out[17]: (183, 275, 3)

```
In [20]: #display Data into image  
plt.imshow(horse_img_arr)  
plt.show()
```



```
In [21]: horse_red_arr=horse_img_arr.copy()
```

```
In [22]: horse_red_arr
```

```
Out[22]: array([[[ 19,  19,  31],
   [ 18,  18,  30],
   [ 18,  18,  30],
   ...,
   [ 26,  36,  35],
   [ 26,  36,  35],
   [ 26,  36,  35]],

  [[ 19,  19,  31],
   [ 19,  19,  31],
   [ 18,  18,  30],
   ...,
   [ 20,  30,  29],
   [ 20,  30,  29],
   [ 20,  30,  29]],

  [[ 19,  19,  31],
   [ 19,  19,  31],
   [ 18,  18,  30],
   ...,
   [ 14,  24,  23],
   [ 14,  24,  23],
   [ 14,  24,  23]],

  .....

  [[ 67,  53,  40],
   [ 87,  73,  60],
   [100,  86,  75],
   ...,
   [ 31,  36,  30],
   [ 33,  38,  32],
   [ 36,  41,  35]],

  [[ 75,  56,  42],
   [ 77,  59,  45],
   [ 80,  62,  48],
   ...,
   [ 19,  28,  25],
   [ 21,  30,  27],
   [ 24,  33,  30]],

  [[ 79,  60,  45],
   [ 84,  65,  50],
   [ 92,  73,  58],
   ...,
   [ 19,  31,  29],
   [ 21,  33,  31],
   [ 24,  36,  34]]], dtype=uint8)
```

```
In [23]: horse_img_arr==horse_red_arr
```

```
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]]])
```

```
In [25]: plt.imshow(horse_red_arr)
plt.show()
```



```
In [26]: horse_red_arr.shape
```

```
Out[26]: (183, 275, 3)
```

```
In [28]: # R G B  
plt.imshow(horse_red_arr[:, :, 0])  
plt.show()
```



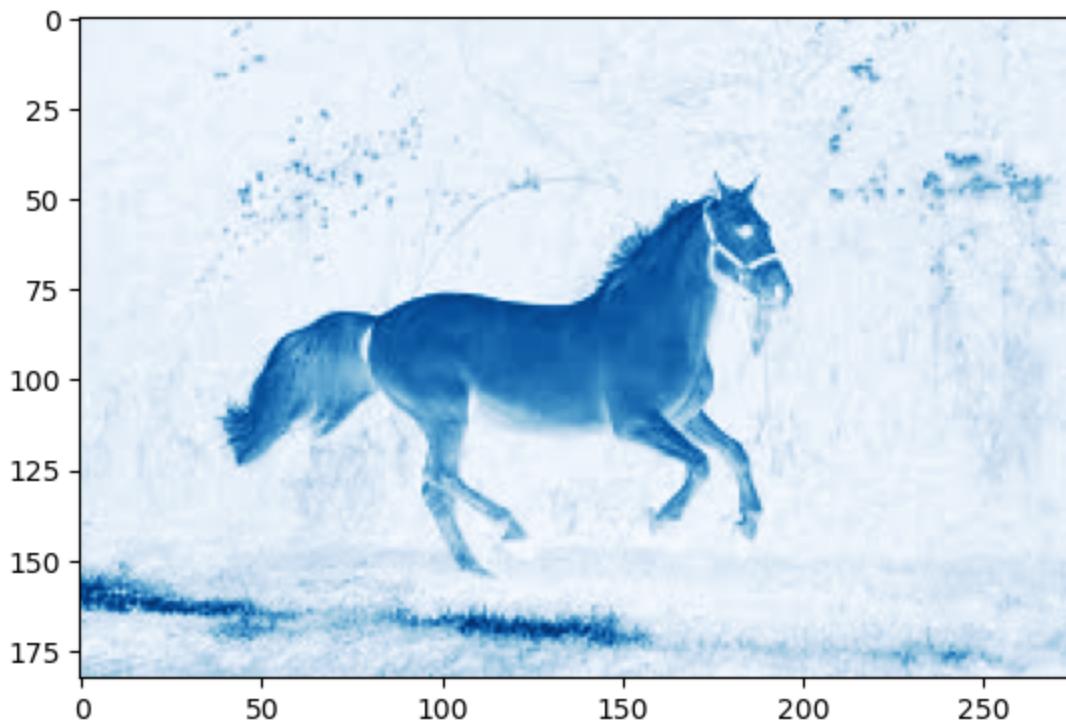
```
In [29]: horse_red_arr[:, :, 0]
```

```
Out[29]: array([[ 19,  18,  18, ...,  26,  26,  26],
   [ 19,  19,  18, ...,  20,  20,  20],
   [ 19,  19,  18, ...,  14,  14,  14],
   ...,
   [ 67,  87, 100, ...,  31,  33,  36],
   [ 75,  77,  80, ...,  19,  21,  24],
   [ 79,  84,  92, ...,  19,  21,  24]], dtype=uint8)
```

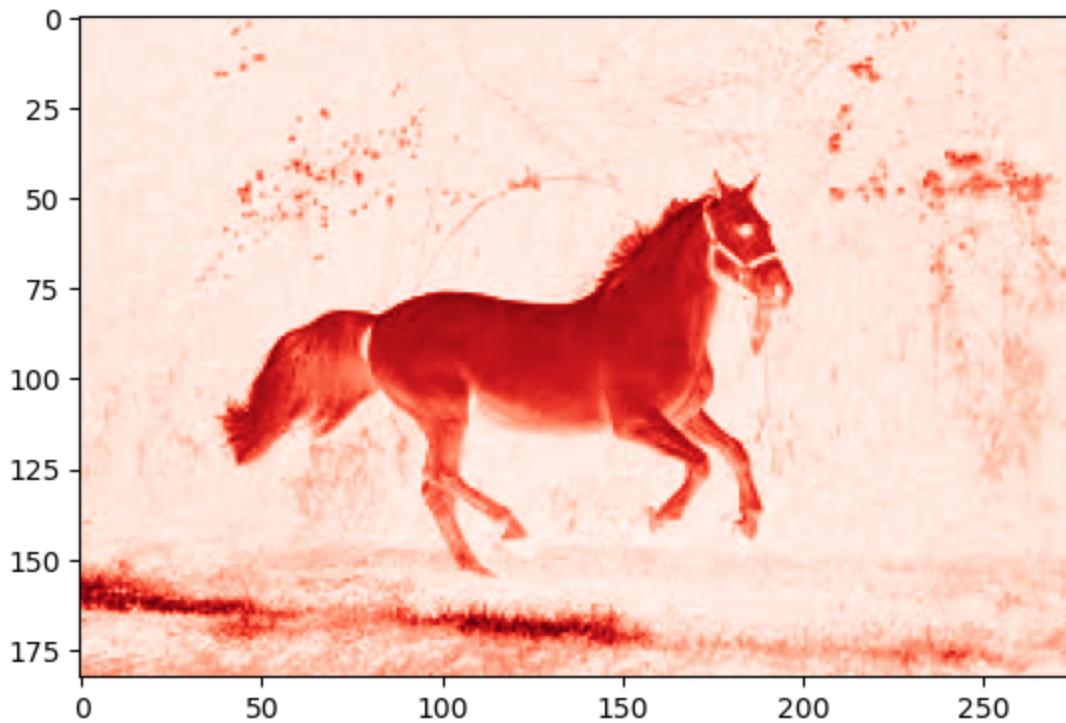
```
In [30]: plt.imshow(horse_red_arr[:, :, 0], cmap='gray')
plt.show()
```



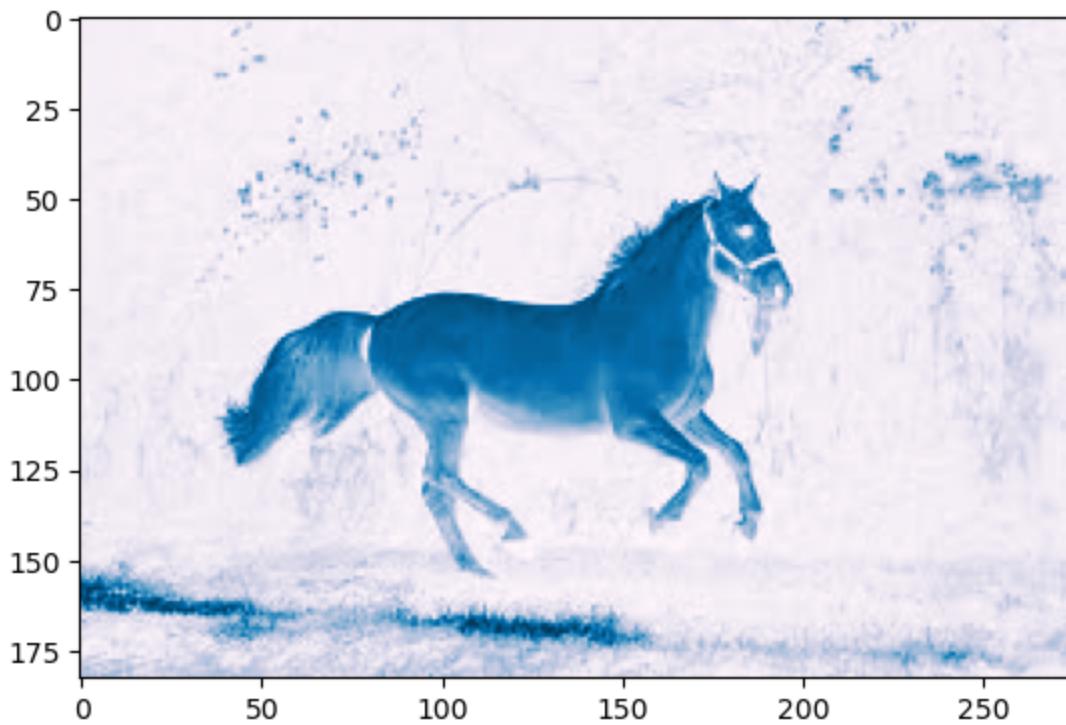
```
In [31]: plt.imshow(horse_red_arr[:, :, 0], cmap='Blues')
plt.show()
```



```
In [32]: plt.imshow(horse_red_arr[:, :, 0], cmap='Reds')
plt.show()
```



```
In [33]: plt.imshow(horse_red_arr[:, :, 0], cmap='PuBu')
plt.show()
```



```
In [35]: plt.imshow(horse_red_arr[:, :, 1], cmap='gray')
plt.show()
```



```
In [36]: horse_red_arr[:, :, 0]
```

```
Out[36]: array([[ 19,  18,  18, ...,  26,  26,  26],
   [ 19,  19,  18, ...,  20,  20,  20],
   [ 19,  19,  18, ...,  14,  14,  14],
   ...,
   [ 67,  87, 100, ...,  31,  33,  36],
   [ 75,  77,  80, ...,  19,  21,  24],
   [ 79,  84,  92, ...,  19,  21,  24]], dtype=uint8)
```

```
In [37]: horse_red_arr[:, :, 1]
```

```
Out[37]: array([[19, 18, 18, ..., 36, 36, 36],
   [19, 19, 18, ..., 30, 30, 30],
   [19, 19, 18, ..., 24, 24, 24],
   ...,
   [53, 73, 86, ..., 36, 38, 41],
   [56, 59, 62, ..., 28, 30, 33],
   [60, 65, 73, ..., 31, 33, 36]], dtype=uint8)
```

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

```
Out[38]: array([[31, 30, 30, ..., 35, 35, 35],
   [31, 31, 30, ..., 29, 29, 29],
   [31, 31, 30, ..., 23, 23, 23],
   ...,
   [40, 60, 75, ..., 30, 32, 35],
   [42, 45, 48, ..., 25, 27, 30],
   [45, 50, 58, ..., 29, 31, 34]], dtype=uint8)
```

```
In [39]: horse_red_arr[:, :, 1]=0
```

```
In [40]: horse_red_arr[:, :, 1]
```

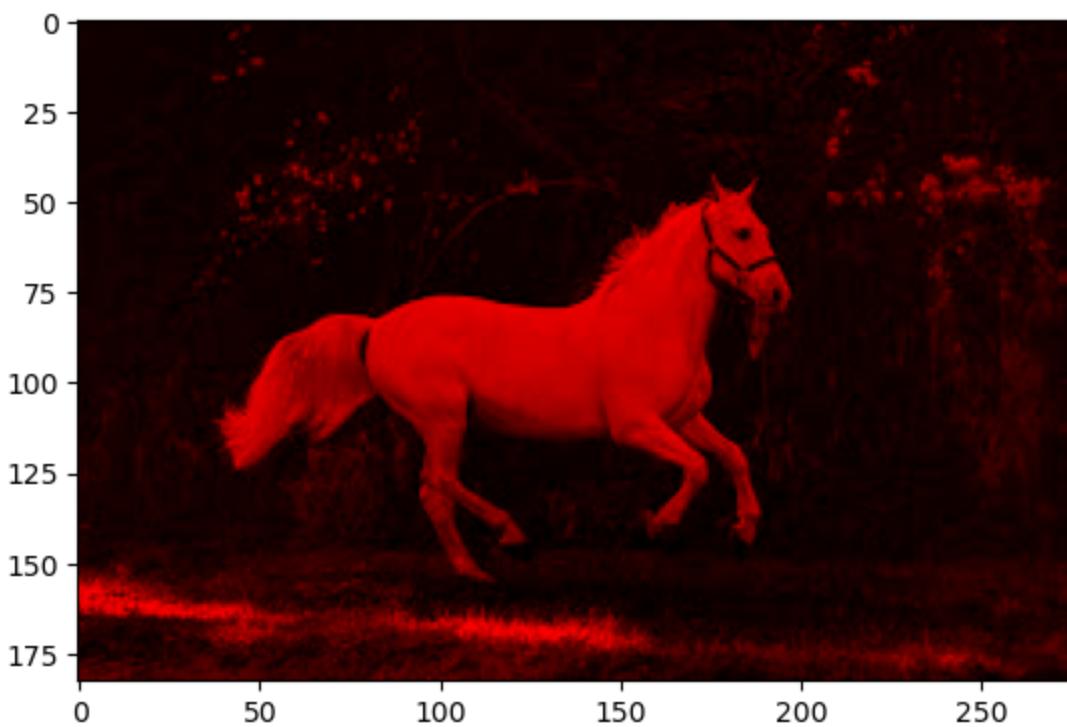
```
Out[40]: array([[0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0],
   ...,
   [0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0],
   [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [41]: plt.imshow(horse_red_arr)
plt.show()
```



```
In [42]: horse_red_arr[:, :, 2]=0
```

```
In [43]: plt.imshow(horse_red_arr)  
plt.show()
```



```
In [44]: horse_img_arr
```

```
Out[44]: array([[[ 19,  19,  31],
   [ 18,  18,  30],
   [ 18,  18,  30],
   ...,
   [ 26,  36,  35],
   [ 26,  36,  35],
   [ 26,  36,  35]],

   [[ 19,  19,  31],
   [ 19,  19,  31],
   [ 18,  18,  30],
   ...,
   [ 20,  30,  29],
   [ 20,  30,  29],
   [ 20,  30,  29]],

   [[ 19,  19,  31],
   [ 19,  19,  31],
   [ 18,  18,  30],
   ...,
   [ 14,  24,  23],
   [ 14,  24,  23],
   [ 14,  24,  23]],

   .....

   [[ 67,  53,  40],
   [ 87,  73,  60],
   [100,  86,  75],
   ...,
   [ 31,  36,  30],
   [ 33,  38,  32],
   [ 36,  41,  35]],

   [[ 75,  56,  42],
   [ 77,  59,  45],
   [ 80,  62,  48],
   ...,
   [ 19,  28,  25],
   [ 21,  30,  27],
   [ 24,  33,  30]],

   [[ 79,  60,  45],
   [ 84,  65,  50],
   [ 92,  73,  58],
   ...,
   [ 19,  31,  29],
   [ 21,  33,  31],
   [ 24,  36,  34]]], dtype=uint8)
```

```
In [46]: horse_red_arr
```

```
Out[46]: array([[[ 19,    0,    0],
   [ 18,    0,    0],
   [ 18,    0,    0],
   ...,
   [ 26,    0,    0],
   [ 26,    0,    0],
   [ 26,    0,    0]],

   [[ 19,    0,    0],
   [ 19,    0,    0],
   [ 18,    0,    0],
   ...,
   [ 20,    0,    0],
   [ 20,    0,    0],
   [ 20,    0,    0]],

   [[ 19,    0,    0],
   [ 19,    0,    0],
   [ 18,    0,    0],
   ...,
   [ 14,    0,    0],
   [ 14,    0,    0],
   [ 14,    0,    0]],

   ...,

   [[ 67,    0,    0],
   [ 87,    0,    0],
   [100,    0,    0],
   ...,
   [ 31,    0,    0],
   [ 33,    0,    0],
   [ 36,    0,    0]],

   [[ 75,    0,    0],
   [ 77,    0,    0],
   [ 80,    0,    0],
   ...,
   [ 19,    0,    0],
   [ 21,    0,    0],
   [ 24,    0,    0]],

   [[ 79,    0,    0],
   [ 84,    0,    0],
   [ 92,    0,    0],
   ...,
   [ 19,    0,    0],
   [ 21,    0,    0],
   [ 24,    0,    0]]], dtype=uint8)
```

```
In [47]: horse_img
```

Out[47]:



In []:

In []: