

```
In [55]: import numpy as np
```

```
In [57]: import matplotlib.pyplot as plt
```

```
In [59]: from PIL import Image
```

```
In [221... horse_image=Image.open(r'C:\Users\Lenovo\Desktop\Sandya\horse.jpg')  
horse_image
```

Out[221...



```
In [223... plt.imshow(horse_image)
```

Out[223... <matplotlib.image.AxesImage at 0x13efa4f7f50>



```
In [225... horse_array=np.asarray(horse_image)
```

```
In [227... horse_array
```

```

Out[227... array([[127, 147, 172],
                [126, 146, 171],
                [125, 145, 170],
                ...,
                [115, 132, 142],
                [115, 132, 142],
                [115, 132, 142]]],

          [[126, 146, 170],
            [126, 146, 170],
            [125, 145, 169],
            ...,
            [115, 129, 138],
            [115, 129, 138],
            [115, 129, 138]]],

          [[125, 145, 169],
            [125, 145, 169],
            [124, 144, 168],
            ...,
            [117, 128, 134],
            [117, 128, 134],
            [117, 128, 134]]],

          ...,

          [[166, 137, 59],
            [175, 146, 66],
            [187, 158, 78],
            ...,
            [161, 127, 40],
            [159, 125, 38],
            [172, 138, 51]]],

          [[177, 148, 70],
            [180, 151, 71],
            [195, 166, 86],
            ...,
            [168, 133, 49],
            [176, 141, 57],
            [185, 150, 66]]],

          [[186, 157, 79],
            [185, 156, 76],
            [190, 161, 81],
            ...,
            [161, 126, 44],
            [177, 142, 60],
            [182, 147, 65]]], dtype=uint8)

```

```
In [229... horse_array.shape
```

```
Out[229... (183, 275, 3)
```

```
In [231... horse_array.size
```

```
Out[231... 150975
```

```
In [235... type(horse_image)
```

Out[235...] PIL.JpegImagePlugin.JpegImageFile

In [239...] `type(horse_array)`

Out[239...] `numpy.ndarray`

In [241...] `plt.imshow(horse_image)`

Out[241...] `<matplotlib.image.AxesImage at 0x13ef9e433e0>`



In [245...] `horse_red_arr=horse_array.copy()`

In [247...] `horse_red_arr`

```

Out[247... array([[127, 147, 172],
                  [126, 146, 171],
                  [125, 145, 170],
                  ...,
                  [115, 132, 142],
                  [115, 132, 142],
                  [115, 132, 142]]],

          [[126, 146, 170],
            [126, 146, 170],
            [125, 145, 169],
            ...,
            [115, 129, 138],
            [115, 129, 138],
            [115, 129, 138]]],

          [[125, 145, 169],
            [125, 145, 169],
            [124, 144, 168],
            ...,
            [117, 128, 134],
            [117, 128, 134],
            [117, 128, 134]]],

          ...,

          [[166, 137, 59],
            [175, 146, 66],
            [187, 158, 78],
            ...,
            [161, 127, 40],
            [159, 125, 38],
            [172, 138, 51]]],

          [[177, 148, 70],
            [180, 151, 71],
            [195, 166, 86],
            ...,
            [168, 133, 49],
            [176, 141, 57],
            [185, 150, 66]]],

          [[186, 157, 79],
            [185, 156, 76],
            [190, 161, 81],
            ...,
            [161, 126, 44],
            [177, 142, 60],
            [182, 147, 65]]], dtype=uint8)

```

```
In [249... horse_red_arr==horse_array
```

```

Out[249... 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 [251... plt.imshow(horse_array)
```

```
Out[251... <matplotlib.image.AxesImage at 0x13ef9e7bf50>
```



```
In [255...] plt.imshow(horse_image)
```

```
Out[255...] <matplotlib.image.AxesImage at 0x13ef9f33ef0>
```



```
In [257...] plt.imshow(horse_array)
```

```
Out[257...] <matplotlib.image.AxesImage at 0x13ef9e41a00>
```




```
In [259...] plt.imshow(horse_red_arr)
```

```
Out[259...] <matplotlib.image.AxesImage at 0x13ef9f765a0>
```



```
In [261...] plt.imshow(horse_red_arr[:, :,0])
```

```
Out[261...] <matplotlib.image.AxesImage at 0x13ef9feb470>
```



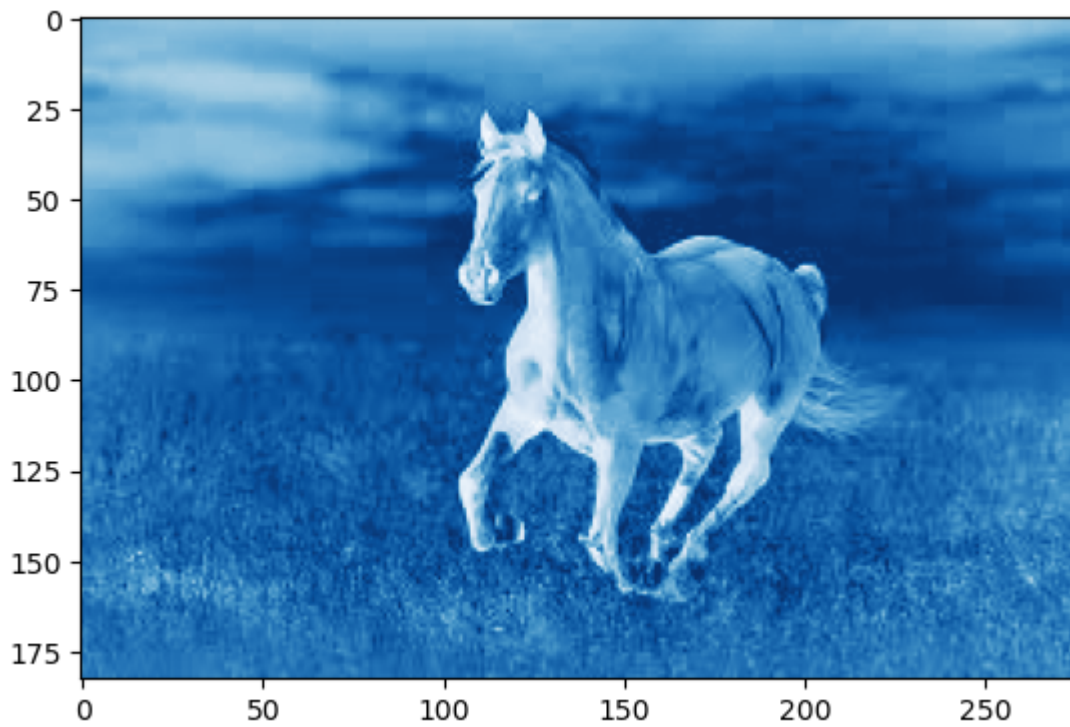
```
In [280...] plt.imshow(horse_red_arr[ :, :,0], cmap='grey')
```

```
Out[280...] <matplotlib.image.AxesImage at 0x13efc6d5d60>
```



```
In [284...] plt.imshow(horse_red_arr[ :, :,0], cmap='Blues')
```

```
Out[284...] <matplotlib.image.AxesImage at 0x13e8202a480>
```

```
In [286... plt.imshow(horse_red_arr[ :, :,0], cmap='Reds')
```

```
Out[286... <matplotlib.image.AxesImage at 0x13e8219e3f0>
```



```
In [290... plt.imshow(horse_red_arr[ :, :,0], cmap='RdPu')
```

```
Out[290... <matplotlib.image.AxesImage at 0x13e820c6e10>
```



```
In [292... plt.imshow(horse_red_arr[ :, :,0], cmap='YlGnBu')
```

```
Out[292... <matplotlib.image.AxesImage at 0x13e8210cb30>
```



```
In [299... plt.imshow(horse_red_arr[ :, :,0], cmap='magma')
```

```
Out[299... <matplotlib.image.AxesImage at 0x13e823d3080>
```



In [301... `plt.imshow(horse_red_arr[:, :,0], cmap='cividis')`

Out[301... `<matplotlib.image.AxesImage at 0x13e824663f0>`



In [303... `horse_red_arr[:, :,0]`

Out[303... `array([[127, 126, 125, ..., 115, 115, 115],
[126, 126, 125, ..., 115, 115, 115],
[125, 125, 124, ..., 117, 117, 117],
...,
[166, 175, 187, ..., 161, 159, 172],
[177, 180, 195, ..., 168, 176, 185],
[186, 185, 190, ..., 161, 177, 182]], dtype=uint8)`

In [356... `horse_red_arr[:, :,1]`

Out[356... `array([[147, 146, 145, ..., 132, 132, 132],
[146, 146, 145, ..., 129, 129, 129],
[145, 145, 144, ..., 128, 128, 128],
...,
[137, 146, 158, ..., 127, 125, 138],
[148, 151, 166, ..., 133, 141, 150],
[157, 156, 161, ..., 126, 142, 147]], dtype=uint8)`

In [358... `horse_red_arr[:, :,2]`

Out[358... `array([[172, 171, 170, ..., 142, 142, 142],
[170, 170, 169, ..., 138, 138, 138],
[169, 169, 168, ..., 134, 134, 134],
...,
[59, 66, 78, ..., 40, 38, 51],
[70, 71, 86, ..., 49, 57, 66],
[79, 76, 81, ..., 44, 60, 65]], dtype=uint8)`

In [360... `horse_red_arr[:, :,1]=0`

In [362... `horse_red_arr[:, :,1]`

Out[362... `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 [330... `plt.imshow(horse_red_arr)`

Out[330... `<matplotlib.image.AxesImage at 0x13e82535940>`



```
In [364... horse_red_arr[:, :,2]=0
```

```
In [366... horse_red_arr[:, :,2]
```

```
Out[366... 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 [368... plt.imshow(horse_red_arr)
```

```
Out[368... <matplotlib.image.AxesImage at 0x13e8365d310>
```



```
In [370... horse_red_arr
```



```

Out[370...] array([[127,  0,  0],
                  [126,  0,  0],
                  [125,  0,  0],
                  ...,
                  [115,  0,  0],
                  [115,  0,  0],
                  [115,  0,  0]],

                [[126,  0,  0],
                  [126,  0,  0],
                  [125,  0,  0],
                  ...,
                  [115,  0,  0],
                  [115,  0,  0],
                  [115,  0,  0]],

                [[125,  0,  0],
                  [125,  0,  0],
                  [124,  0,  0],
                  ...,
                  [117,  0,  0],
                  [117,  0,  0],
                  [117,  0,  0]],

                ...,

                [[166,  0,  0],
                  [175,  0,  0],
                  [187,  0,  0],
                  ...,
                  [161,  0,  0],
                  [159,  0,  0],
                  [172,  0,  0]],

                [[177,  0,  0],
                  [180,  0,  0],
                  [195,  0,  0],
                  ...,
                  [168,  0,  0],
                  [176,  0,  0],
                  [185,  0,  0]],

                [[186,  0,  0],
                  [185,  0,  0],
                  [190,  0,  0],
                  ...,
                  [161,  0,  0],
                  [177,  0,  0],
                  [182,  0,  0]]], dtype=uint8)

```

In []: