

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

```
In [2]: import matplotlib.pyplot as plt
```

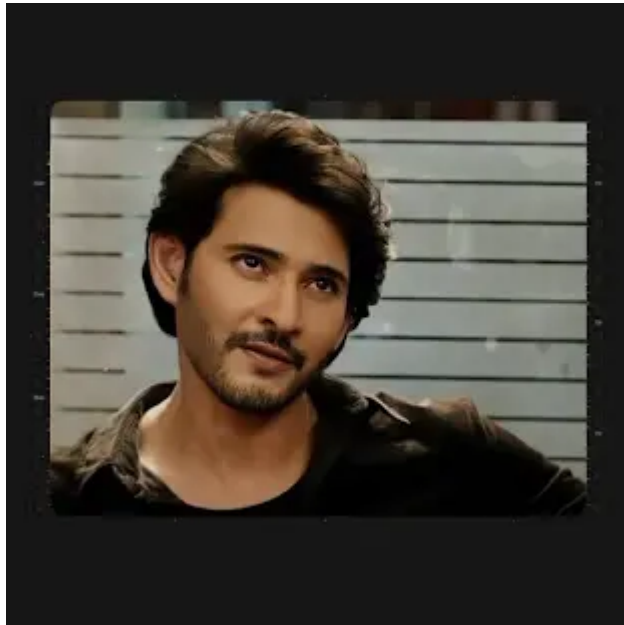
```
In [3]: %matplotlib inline
```

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

```
In [5]: mahesh = Image.open(r"C:\images\mahesh.jpg")
```

```
In [6]: mahesh
```

Out[6]:



```
In [7]: type(mahesh)
```

```
Out[7]: PIL.WebImagePlugin.WebImageFile
```

```
In [8]: mahesh_arr = np.asarray(mahesh)  
mahesh_arr
```

```
Out[8]: array([[22, 22, 22],
               [22, 22, 22],
               [22, 22, 22],
               ...,
               [22, 22, 22],
               [22, 22, 22],
               [22, 22, 22]]],

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]],

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]],

          ...,

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]],

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]]
```

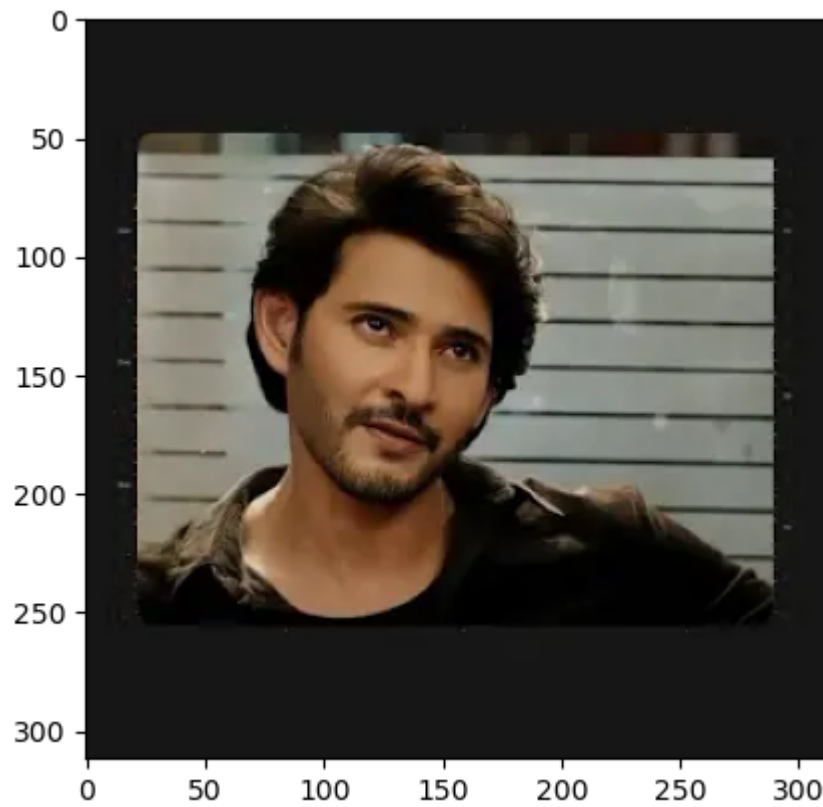
```
[22, 22, 22]],  
[[22, 22, 22],  
 [22, 22, 22],  
 [22, 22, 22],  
 ...,  
 [22, 22, 22],  
 [22, 22, 22],  
 [22, 22, 22]]], dtype=uint8)
```

```
In [9]: type(mahesh_arr)
```

```
Out[9]: numpy.ndarray
```

```
In [10]: plt.imshow(mahesh_arr)
```

```
Out[10]: <matplotlib.image.AxesImage at 0x19633383c50>
```



```
In [11]: mahesh_arr.shape
```

```
Out[11]: (312, 312, 3)
```

```
In [12]: mahesh_red = mahesh_arr.copy()
```

```
In [13]: mahesh_red
```

```
Out[13]: array([[22, 22, 22],
               [22, 22, 22],
               [22, 22, 22],
               ...,
               [22, 22, 22],
               [22, 22, 22],
               [22, 22, 22]]],

           [[22, 22, 22],
            [22, 22, 22],
            [22, 22, 22],
            ...,
            [22, 22, 22],
            [22, 22, 22],
            [22, 22, 22]]],

           [[22, 22, 22],
            [22, 22, 22],
            [22, 22, 22],
            ...,
            [22, 22, 22],
            [22, 22, 22],
            [22, 22, 22]]],

           ...,

           [[22, 22, 22],
            [22, 22, 22],
            [22, 22, 22],
            ...,
            [22, 22, 22],
            [22, 22, 22],
            [22, 22, 22]]],

           [[22, 22, 22],
            [22, 22, 22],
            [22, 22, 22],
            ...,
            [22, 22, 22],
            [22, 22, 22],
            [22, 22, 22]]]
```

```
[22, 22, 22]],  
[[22, 22, 22],  
 [22, 22, 22],  
 [22, 22, 22],  
 ...,  
 [22, 22, 22],  
 [22, 22, 22],  
 [22, 22, 22]]], dtype=uint8)
```

```
In [14]: mahesh_red == mahesh_arr
```

```
Out[14]: 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]],

               ...,

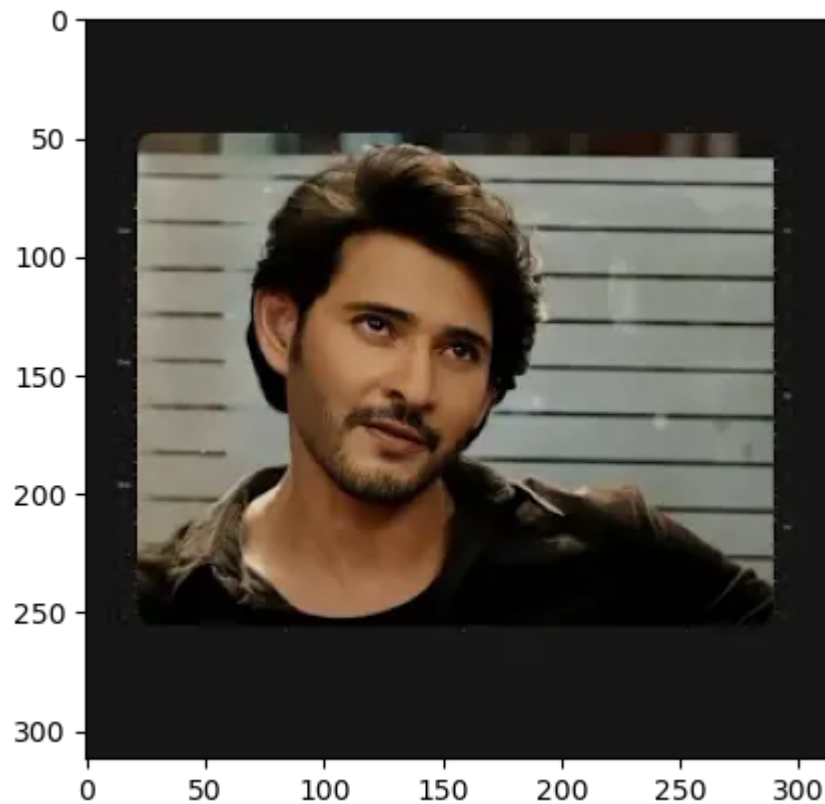
               [[ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True],
               ...,
               [ True,  True,  True],
               [ True,  True,  True],
               [ True,  True,  True]],

               [[ 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]])
```

```
In [15]: plt.imshow(mahesh_red)
```

```
Out[15]: <matplotlib.image.AxesImage at 0x196334193d0>
```

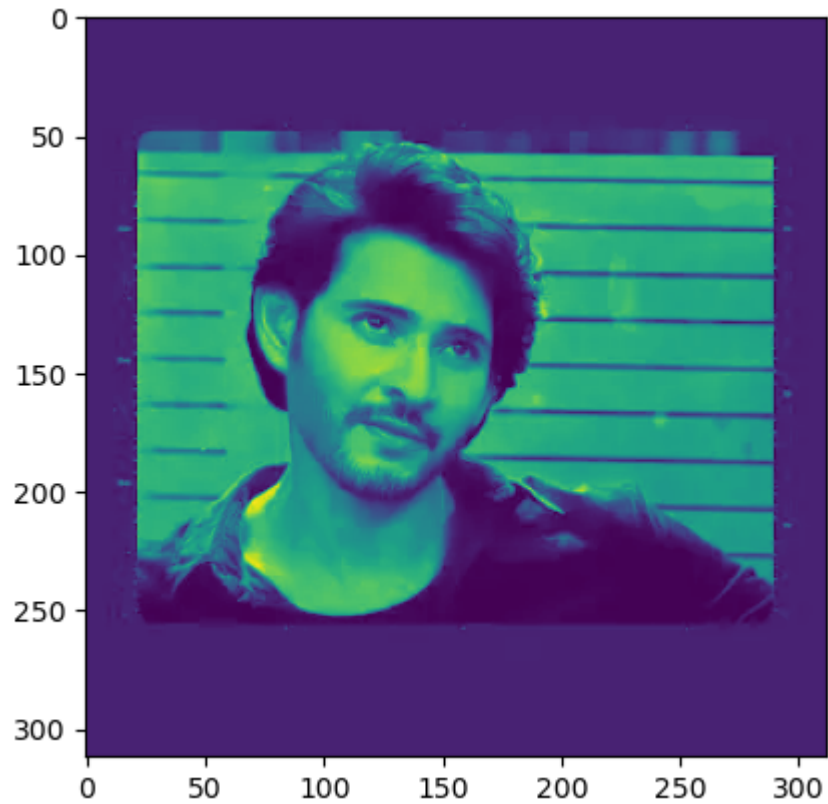


```
In [16]: mahesh_red.shape
```


Out[16]: (312, 312, 3)

```
In [17]: # R G B  
plt.imshow(mahesh_red[:, :, 0])
```

Out[17]: <matplotlib.image.AxesImage at 0x1963340a750>

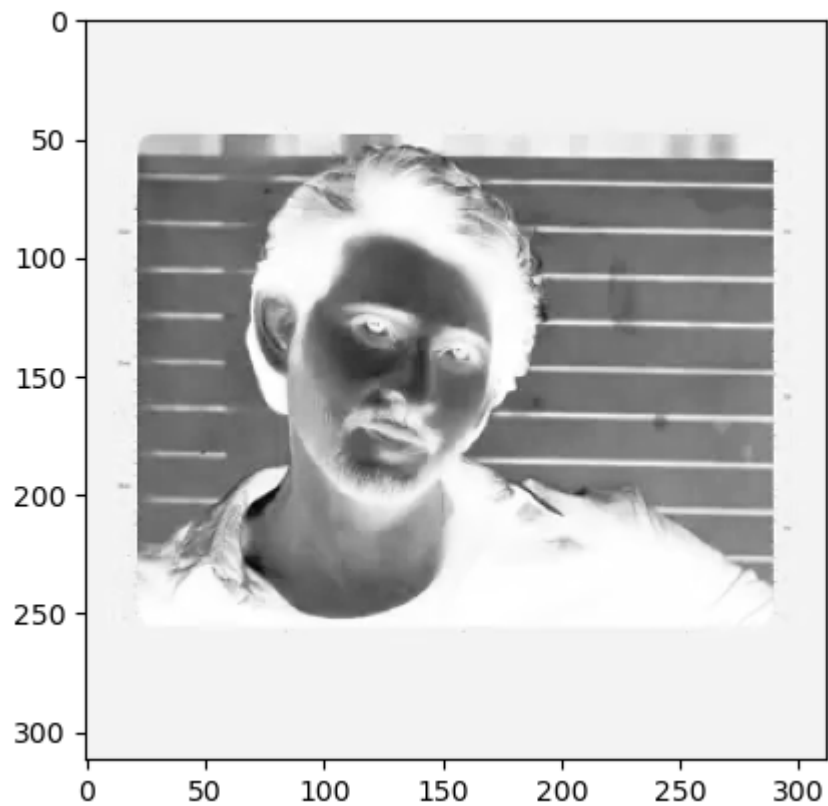


```
In [18]: mahesh_red[:, :, 0]
```

```
Out[18]: array([[22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               ...,
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22]], dtype=uint8)
```

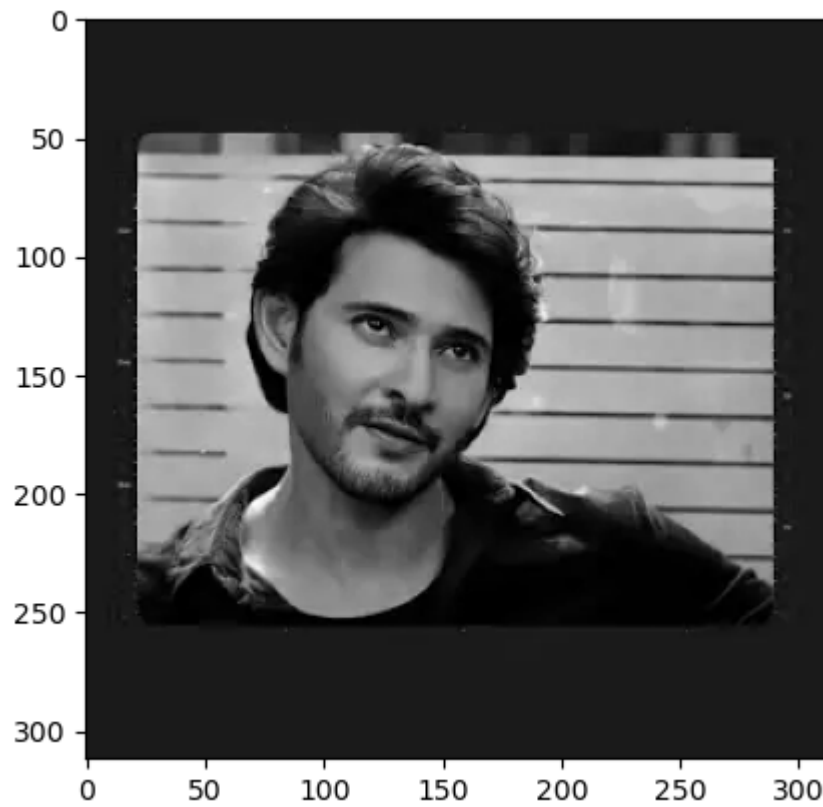
```
In [19]: plt.imshow(mahesh_red[:, :, 0], cmap='Greys')
```

```
Out[19]: <matplotlib.image.AxesImage at 0x196346a0ef0>
```



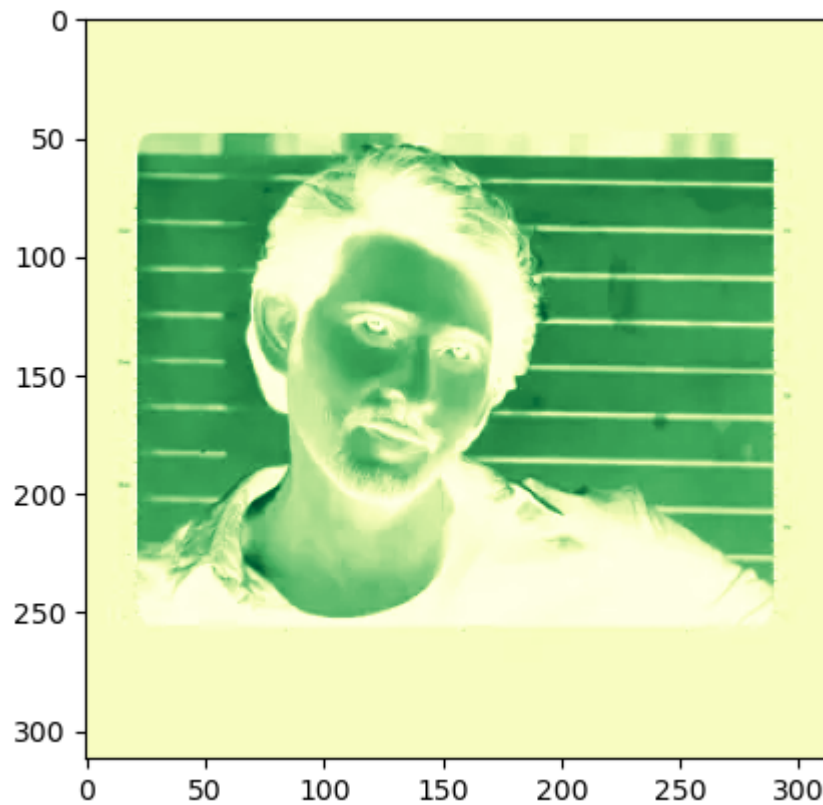
```
In [20]: plt.imshow(mahesh_red[:, :, 1], cmap='grey')
```

```
Out[20]: <matplotlib.image.AxesImage at 0x196347137d0>
```



```
In [21]: plt.imshow(mahesh_red[:, :, 1], cmap='YlGn')
```

```
Out[21]: <matplotlib.image.AxesImage at 0x1963478fce0>
```



```
In [22]: mahesh_red[:, :, 0]
```

```
Out[22]: array([[22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                ...,
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22]], dtype=uint8)
```

```
In [23]: mahesh_red[:, :, 1]
```

```
Out[23]: array([[22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               ...,
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22]], dtype=uint8)
```

```
In [24]: mahesh_red[:, :, 2]
```

```
Out[24]: array([[22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               ...,
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22],
               [22, 22, 22, ..., 22, 22, 22]], dtype=uint8)
```

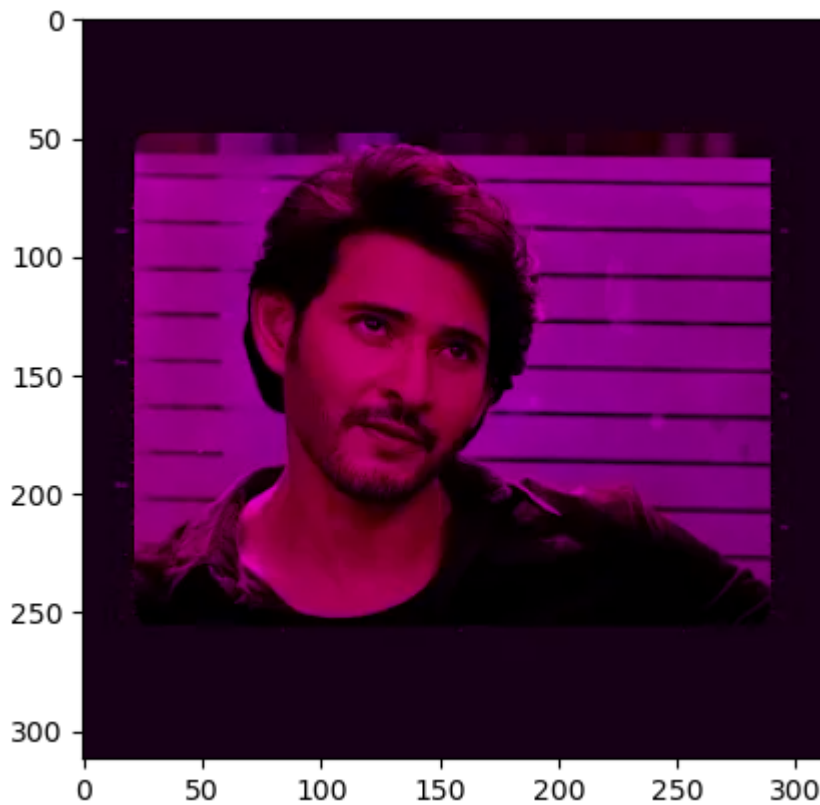
```
In [25]: mahesh_red[:, :, 1] = 0
```

```
In [26]: mahesh_red[:, :, 1]
```

```
Out[26]: 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 [27]: plt.imshow(mahesh_red)
```

```
Out[27]: <matplotlib.image.AxesImage at 0x1963449c470>
```



```
In [28]: mahesh_red[:, :, 2]
```

```
Out[28]: array([[22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                ...,
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22]], dtype=uint8)
```

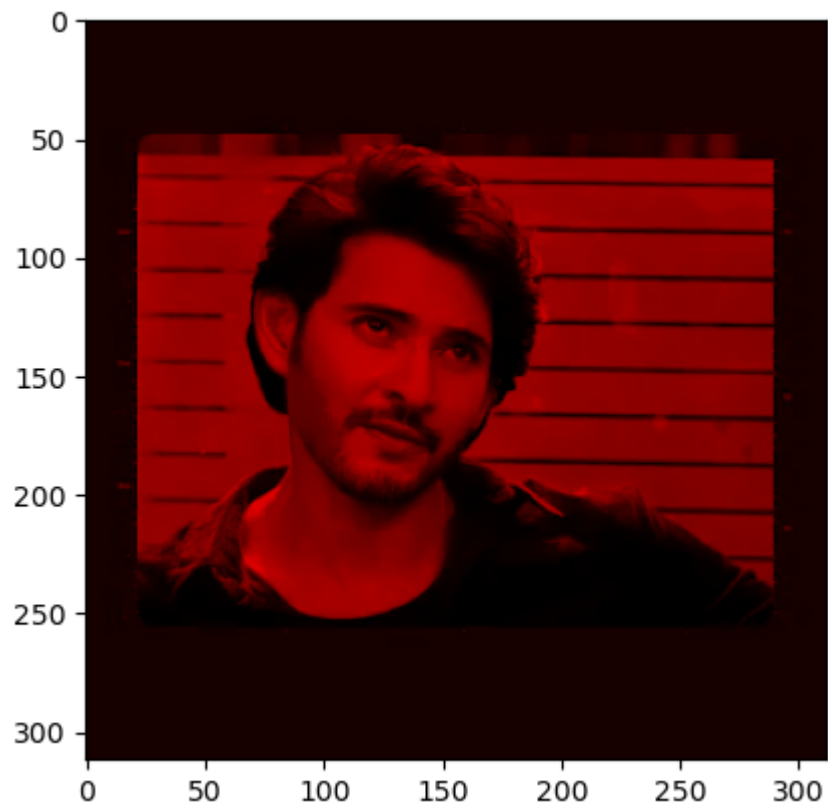
```
In [29]: mahesh_red[:, :, 2] = 0
```

```
In [30]: mahesh_red[:, :, 2]
```

```
Out[30]: 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 [31]: plt.imshow(mahesh_red)
```

```
Out[31]: <matplotlib.image.AxesImage at 0x1963340b260>
```



```
In [32]: mahesh_arr
```

```
Out[32]: array([[22, 22, 22],
               [22, 22, 22],
               [22, 22, 22],
               ...,
               [22, 22, 22],
               [22, 22, 22],
               [22, 22, 22]]],

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]],

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]],

          ...,

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]],

          [[22, 22, 22],
           [22, 22, 22],
           [22, 22, 22],
           ...,
           [22, 22, 22],
           [22, 22, 22],
           [22, 22, 22]]]
```



```
[22, 22, 22]],  
[[22, 22, 22],  
 [22, 22, 22],  
 [22, 22, 22],  
 ...,  
 [22, 22, 22],  
 [22, 22, 22],  
 [22, 22, 22]]], dtype=uint8)
```

In [33]: mahesh_red

```
Out[33]: array([[22,  0,  0],
                [22,  0,  0],
                [22,  0,  0],
                ...,
                [22,  0,  0],
                [22,  0,  0],
                [22,  0,  0]],

               [[22,  0,  0],
                [22,  0,  0],
                [22,  0,  0],
                ...,
                [22,  0,  0],
                [22,  0,  0],
                [22,  0,  0]],

               [[22,  0,  0],
                [22,  0,  0],
                [22,  0,  0],
                ...,
                [22,  0,  0],
                [22,  0,  0],
                [22,  0,  0]],

               ...,

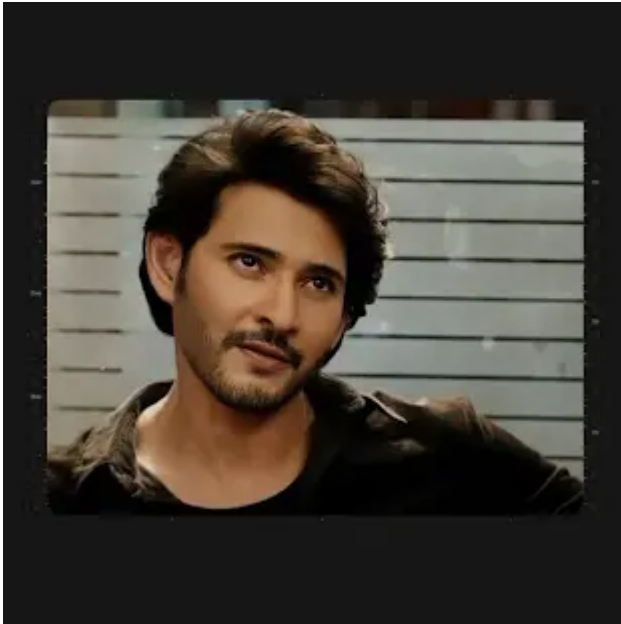
               [[22,  0,  0],
                [22,  0,  0],
                [22,  0,  0],
                ...,
                [22,  0,  0],
                [22,  0,  0],
                [22,  0,  0]],

               [[22,  0,  0],
                [22,  0,  0],
                [22,  0,  0],
                ...,
                [22,  0,  0],
                [22,  0,  0],
                [22,  0,  0],
```

```
[22, 0, 0]],  
[[22, 0, 0],  
 [22, 0, 0],  
 [22, 0, 0],  
 ...,  
 [22, 0, 0],  
 [22, 0, 0],  
 [22, 0, 0]], dtype=uint8)
```

In [34]: mahesh

Out[34]:



In [35]: arr1=np.asarray(mahesh)

In [36]: type(arr1)

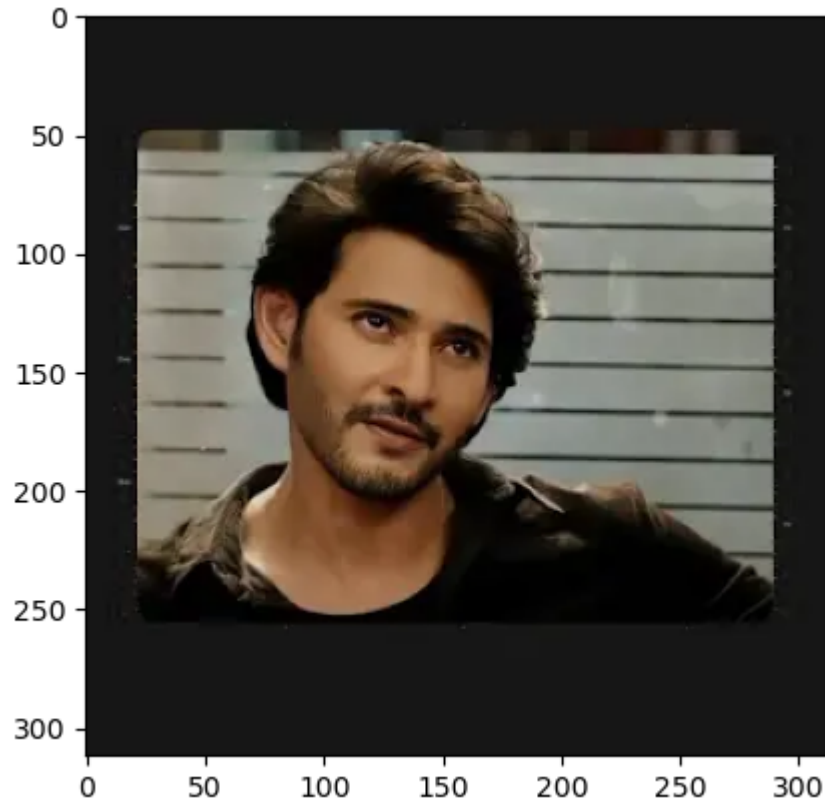
Out[36]: numpy.ndarray

In [37]: arr1.shape

Out[37]: (312, 312, 3)

```
In [38]: plt.imshow(arr1)
```

Out[38]: <matplotlib.image.AxesImage at 0x19634543bf0>

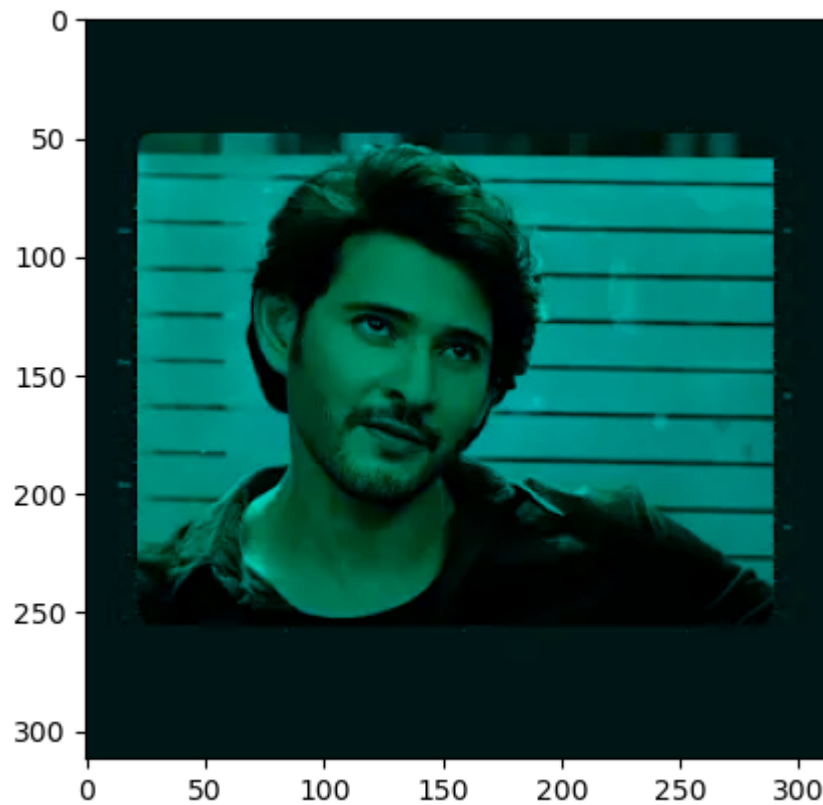


```
In [39]: mahesh1 = arr1.copy()
```

```
In [40]: mahesh1[:, :, 0] = 0
```

```
In [41]: plt.imshow(mahesh1)
```

Out[41]: <matplotlib.image.AxesImage at 0x196348547a0>



```
In [42]: mahesh1[:, :, 1]
```

```
Out[42]: array([[22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                ...,
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22],
                [22, 22, 22, ..., 22, 22, 22]], dtype=uint8)
```

```
In [43]: mahesh1[:, :, 1] = 0
```

```
In [44]: plt.imshow(mahesh1)
```

Out[44]: <matplotlib.image.AxesImage at 0x196348ca7b0>

